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TABLE OF MOTIONS

~~PAGE 53: The SSC recommends that the assessment for SEDAR 91, U.S. Caribbean Spiny Lobster for Puerto Rico, is based on the best scientific information available. [Motion carried on page 58.](#)~~

PAGE 74: The SSC considers the assessment for SEDAR 91, U.S. Caribbean Spiny Lobster for Puerto Rico, to represent the best available science. [Motion carried on page 75.](#)

Page 85: The SSC finds that the results presented in the SEDAR 91 U.S. Caribbean Spiny Lobster Puerto Rico are useful for providing management advice and developing fishing level recommendations for the Council. [Motion carried on page 88.](#)

PAGE 88: The current assessment indicates that the stock is currently above target and, therefore, experiencing a fishing down to the MSY proxy. In addition, the new stock assessment shows an increase in the overall size of the population (i.e., a higher unfinished population size), which leads to an increase in catches with all other things being equal. This increase in stock scale is greatly influenced by the final point in the new abundance indices, which adds further uncertainty in the model (as shown in the retrospective analysis). These conditions lead to a 3-year average ABC that will exceed the proxy-MSY OFL in 2029. Instead, the SSC recommends using the ABC that is derived from the OFL based on the proxy-MSY (F at SPR=30%) as a constant catch value for management. Further, the SSC recommends using the 2022-2024 landings average for each fleet as the provisional landings' values for 2025 and 2026. [Motion carried on page 91.](#)

PAGE 142: The SSC considered the assessment of SEDAR 84 U.S. yellowtail snapper for Puerto Rico to represent the best available science. [Motion carried on page 143.](#)

PAGE 54: The SSC finds that the results presented in the SEDAR 84 U.S. Yellowtail Snapper for Puerto Rico are not, at present, useful for providing management advice and developing fishing level recommendations for the Council. [Motion carried on page 157.](#)

PAGE 169: The SSC considers the assessment of SEDAR 84 U.S. Caribbean Yellowtail Snapper for Saint Thomas and Saint John to represent the best available science. [Motion carried on page 171.](#)

PAGE 172: Given the uncertainties noted during the review workshop, the SSC finds that the results presented in the SEDAR 84 U.S. Yellowtail Snapper for Saint Thomas/Saint John are not, at present, useful for providing management advice and developing

Commented [1]: 'unfished' instead of 'unfinished'?

1 fishing level recommendations for the Council. [Motion carried on](#)
2 [page 174](#).

3
4 [PAGE 189](#): The SSC considers the assessment for SEDAR 84 U.S.
5 Stoplight Parrotfish for Saint Croix to represent the best
6 available sciences. [Motion carried on page 190](#).

7
8 [PAGE 190](#): The SSC finds that the results presented in the SEDAR
9 84 U.S. Stoplight Parrotfish for Saint Croix are not at present
10 useful for providing management advice and developing fishing
11 levels recommendations for the Council. [Motion carried on page](#)
12 [191](#).

13
14 [PAGE 199](#): The SSC endorses the recommendations made by the data
15 and review panels and also makes the following recommendations
16 related to SEDAR 91 and 84: SSC final recommendations for SEDAR
17 84 YELLOWTAIL SNAPPER PR, SSC recommendations for SEDAR 84
18 YELLOWTAIL SNAPPER STT/STJ, SSC recommendations for SEDAR 84
19 STOPLIGHT PARROTFISH STX. [Motion carried on page 200](#).

20

Commented [2]: delete s, not plural

**CARIBBEAN FISHERY MANAGEMENT COUNCIL
SCIENTIFIC AND STATISTICAL COMMITTEE
PUBLIC VIRTUAL MEETING**

APRIL 8-10, 2026

The Scientific and Statistical Committees of the Caribbean Fishery Management Council convened via Zoom on Wednesday afternoon, April 8, 2026, and was called to order at 1:00 P.M. by the Council Chair, Vance Vicente.

CALL TO ORDER AND ROLL CALL

GERSON N. MARTÍNEZ: Buenas tardes. Parecen niños preparados para la escuela.

CRISTINA D. OLÁN-MARTÍNEZ: Buenas tardes, Gerson.

GERSON N. MARTÍNEZ: Saludos a todos ahí.

JULIAN MAGRAS: Good afternoon, everyone. Julian here.

VANCE P. VICENTE CERNUDA: Good afternoon, Julian.

CRISTINA D. OLÁN-MARTÍNEZ: Hi, Julian.

VANCE P. VICENTE CERNUDA: Good afternoon, all of you. Thanks for participating in this. The Fishery Management Council Scientific and Statistical Committee, which is a public virtual meeting being held today, April 8th, 2026, and will continue through April 10th, 2026. As usual, I first have to read the rules for the SSC meetings. And thanks, Kiara, for preparing it.

One, keep all microphones off. If virtual, make sure you have the microphone set to mute. If in person, please set your computer's microphone to mute and ensure you have the face-to-face microphone on the red light. The green light is only for when you have the turn to speak. Third, please raise your hand to be granted a turn. You will be notified when it is your turn.

And then please, speak loudly and clearly, so that we can hear your testimony better. Five, any document that is presented at the meeting by the speakers needs to be sent to Kiara or Liajay. Sixth, the meeting is being recorded, please do not chew gum or sweets during the process.

And seven, it is very important to identify yourself with your name and last name each time you speak. There will be verbatim

1 transcriptions of the meeting, and the transcriber needs to
2 determine the speakers. So, thank you for your attention and
3 cooperation.
4
5 For the roll call, I will first name each SSC member present at
6 the moment. Please confirm your attendance after hearing your name.
7
8 Then we will have the roll call for all other participants. So,
9 Vice Vicente, present. Richard Appeldoorn. Richard Appeldoorn? No
10 answer.
11
12 Jason Cope?
13
14 **JASON COPE:** Present, and good morning.
15
16 **VANCE P. VICENTE CERNUDA:** Morning, Jason. ¿Juan Cruz-Motta, J.J.?
17 ¿Juan Cruz-Motta? ¿Está entrando? Ok.
18
19 Tarsila Seara?
20
21 **TARSILA SEARA:** Hi. Can you hear me?
22
23 **VANCE P. VICENTE CERNUDA:** Hi, Tarsila.
24
25 **TARSILA SEARA:** I'm here.
26
27 **VANCE P. VICENTE CERNUDA:** Reni? Jorge García-Sais? Reinaldo? Reni?
28 ¿Todd Gedamke?
29
30 **TODD GEDAMKE:** Hola a todos. I'm present.
31
32 **VANCE P. VICENTE CERNUDA:** How are you, Todd?
33
34 **TODD GEDAMKE:** Very good. And you?
35
36 **VANCE P. VICENTE CERNUDA:** Good. Walter Keithly?
37
38 **WALTER KEITHLY:** Walter Keithly, present.
39
40 **VANCE P. VICENTE CERNUDA:** Wow. Thank you. Michelle T. Schärer-
41 Umpierre? Michelle? No answer.
42
43 Elizabeth Kadison? Elizabeth Kadison? No answer.
44
45 Skyler Sagarese?
46
47 **SKYLER ROSE SAGARESE:** Hi there. Can you hear me?
48

1 **VANCE P. VICENTE CERNUDA:** Skyler?
2
3 **SKYLER ROSE SAGARESE:** Yes.
4
5 **VANCE P. VICENTE CERNUDA:** Yes. Thank you.
6
7 **VANCE P. VICENTE CERNUDA:** J.J.? Juan Cruz-Motta, were you able to
8 connect? Were you able to connect?
9
10 **TARSILA SEARA:** I think J.J.'s having a hard time with the link.
11
12 **VANCE P. VICENTE CERNUDA:** He is having problems with the link.
13
14 **LIAJAY RIVERA GARCÍA:** But he's there.
15
16 **VANCE P. VICENTE CERNUDA:** But he's present. Lo marcamos presente.
17 Okay. So, 1, 2, 3, 4, 5, 6, 7. We have 7 SSC members. ¿Eso es un
18 quorum, no?
19
20 So, we have a quorum. Now please, other Caribbean Fishery
21 Management Council panel members, starting with the DAP Chairs.
22 Julian Magras?
23
24 **JULIAN MAGRAS:** Julian Magras, present. Good afternoon, everyone.
25
26 **VANCE P. VICENTE CERNUDA:** Good afternoon. Nelson Crespo?
27
28 **NELSON CRESPO:** Good afternoon, everyone. Nelson Crespo, present.
29
30 **VANCE P. VICENTE CERNUDA:** Nelson, saludo. Gerson Martínez?
31
32 **GERSON N. MARTÍNEZ:** Good afternoon, all. Gerson Martínez, present.
33
34 **VANCE P. VICENTE CERNUDA:** Okay. Let me see if I'm missing anybody.
35
36 **LIAJAY RIVERA GARCÍA:** Y ahora EBFM TAP Chair.
37
38 **VANCE P. VICENTE CERNUDA:** Okay. And now, please, the EBFM TAP
39 Chair.
40
41 **SENNAI HABTES:** Afternoon all. Sennai Habtes, present.
42
43 **VANCE P. VICENTE CERNUDA:** Hello. The OEAP Chair? ¿No esta? Okay.
44 Any other Chair that I might have missed? No?
45
46 Okay. Conference room attendees, beginning with Liajay.
47
48 **LIAJAY RIVERA GARCÍA:** Good morning. Buenos días. Liajay Rivera,

1 Council Staff.
2
3 **VANCE P. VICENTE CERNUDA:** Vance Vicente, Chair, SSC.
4
5 **KIARA M. MATÍAS ROJAS:** Buenas tardes. Kiara Matías, Council Staff.
6
7 **GRACIELA GARCÍA-MOLINER:** Graciela García-Moliner, Council Staff.
8
9 **VANCE P. VICENTE CERNUDA:** Okay. Thank you very much. Then we go to
10 all the other participants.
11
12 **LIAJAY RIVERA GARCÍA:** Of course.
13
14 **VANCE P. VICENTE CERNUDA:** Liajay.
15
16 **LIAJAY RIVERA GARCÍA:** So, we have, in the Zoom platform, Cristina
17 Olán, Adyan Ríos, David Behringer, Derek Soto, Kevin McCarthy,
18 María López, Martha Prada, Mich Walsh, Nathan, Rachel Banton, Refik
19 Orhun, Stephanie Martínez, and an unknown number ending with 507,
20 if they can identify themselves. And Jannette, the OAEF Chair, has
21 just entered the meeting.
22
23 **VANCE P. VICENTE CERNUDA:** Okay. Thank you.
24
25 **SARAH P. STEPHENSON:** Hi. This is Sarah. Can you hear me? I'm the
26 phone number.
27
28 **LIAJAY RIVERA GARCÍA:** Yes. We can. Thank you, Sarah.
29
30 **SARAH P. STEPHENSON:** Okay. Thanks.
31
32 **ADOPTION OF AGENDA**
33
34 **VANCE P. VICENTE CERNUDA:** Okay. So, we have on the screen the
35 agenda and the SSC expected input. Day 1, call to order and roll
36 call that's been done. Also, for today, this afternoon,
37 consideration of the SSC verbatim transcriptions, of April 2024
38 and of September 2025 minutes. And then we will need to adopt the
39 agenda. And then, SEDAR. We will go through the SEDAR 84 Caribbean
40 Stoplight Parrotfish Saint Croix: Final Review, which is going to
41 be presented by Adyan Ríos. Then SEDAR 84 Caribbean Yellowtail
42 Snapper Saint Thomas/Saint John, will also be presented by Adyan
43 Ríos.
44
45 SEDAR 84 Caribbean Yellowtail Snapper-- this is on day two --for
46 Saint Thomas and Saint John, also will be presented by Adyan. SEDAR
47 84 Caribbean Yellowtail Snapper Puerto Rico. That will also be
48 presented by Adyan Ríos. And then, Final Recommendations to the

1 Caribbean Fishery Management Council SEDAR 84.
2
3 And then, day three I don't-- On day three, April 10th, 2026, we
4 will go through the SEDAR 91 U.S. Caribbean Spiny Lobster Puerto
5 Rico assessment. It will be presented by Adyan Ríos. We'll have a
6 short break. And then the SSC final recommendations to the
7 Caribbean Fishery Management Council on SEDAR 91 Spiny Lobster
8 Puerto Rico. Then, Liajay will give us a brief summary of what is
9 the update of SEDAR 103. Then, if there's any other business that
10 we may want to add, and then also the planning for the next SSC
11 meeting.
12
13 So, I have read to you the agenda. Are there any proposed
14 modifications or any other business that you would like to consider
15 on the last day?
16
17 Kevin. Yes.
18
19 **KEVIN MCCARTHY:** Thank you, Mr. Chair. Kevin McCarthy, Southeast
20 Fishery Science Center. In speaking to a couple of the SSC members
21 offline for other matters, I understand that fewer of the SSC will
22 be available on Friday. And given the priority that the Caribbean
23 Council has set for SEDAR 91 Puerto Rico Spiny Lobster, I'm going
24 to request a change that we review SEDAR 91 Caribbean Spiny Lobster
25 today. Tomorrow, Puerto Rico yellowtail, that's SEDAR 84. And then
26 on Friday, U.S. Virgin Islands Yellowtail Snapper and Parrotfish.
27 Thank you.
28
29 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Kevin. I don't see any
30 problems with making those changes. So, if there aren't any other
31 additions or changes suggested, I need somebody to move, to present
32 a motion to accept the agenda for this meeting. Okay.
33
34 So, I need a motion. Yes. Jason?
35
36 **JASON COPE:** Yes. With those suggested changes, I'm happy to accept
37 this agenda.
38
39 **VANCE P. VICENTE CERNUDA:** Thank you, Jason. And then, any second?
40
41 **TODD GEDAMKE:** This is Todd Gedamke. I'll accept. Second it.
42
43 **APPROVAL OF THE APRIL 9-11, 2024, AND SEPTEMBER 23-25, 2025**
44 **MINUTES**
45
46 **VANCE P. VICENTE CERNUDA:** Thank you. Thank you very much. So, I'm
47 sure that all of you have read the minutes of the last 2 meetings.
48 I did look over them. And my only comment is, I would like to point

1 out, I mean, just to recall that in the first meeting, April 9th
2 to April 11th of 2024, there was one motion that was adopted, which
3 I will read just both just to recall.
4

5 "The SSC moves to accept the catch at F_SPR 40 as the ABC for the
6 queen triggerfish in both island platforms. Saint Thomas/Saint
7 John 97,809 pounds and Saint Croix, 18,808 pounds." It was a motion
8 proposed by Juan Motta and was seconded by Jason Cope. Regarding
9 the meeting, the September 23-25 meeting, there were also several
10 motions that were adopted.
11

12 One was that "The SSC moves to recommend the assessment of SEDAR
13 91 U.S. Caribbean Spiny Lobster for Saint Thomas and Saint John as
14 the best scientific information available." The other motion was
15 "The results presented in the SEDAR 91 U.S. Caribbean spiny lobster
16 for Saint Thomas and Saint John are useful for providing management
17 advice and developing fishing level recommendations for the
18 Council." The third motion adopted was that "The SSC recommends
19 including years using the average of 2021-2023 as the provisional
20 landing values for the 2024-2025 forecast for the SEDAR 91 U.S.
21 Caribbean Spiny Lobster for Saint Thomas and Saint John." The
22 fourth motion that was adopted was that "The SSC moves to recommend
23 the assessment for SEDAR 91 U.S. Caribbean Spiny Lobster for Saint
24 Croix as the best scientific information available." The fifth
25 motion adopted was that "The results presented in the SEDAR 91
26 U.S. Caribbean Spiny Lobster for Saint Croix are useful for
27 providing management advice and developing fishing level
28 recommendations for the Council." Lastly, "The SSC recommends
29 including years using the average of 2021-2023 as the provisional
30 landings' values for the 2024-2025 forecast for the SEDAR 91 U.S.
31 Caribbean Spiny Lobster for Saint Croix."
32

33 So, if any other members or from the public have any comments to
34 make regarding the verbatim, or the minutes of these two meetings,
35 please. No hay nadie.
36

37 Okay. J.J., please.
38

39 **JUAN J. CRUZ-MOTTA:** Motion to approve. Thank you.
40

41 **VANCE P. VICENTE CERNUDA:** I need a second.
42

43 **TARSILA SEARA:** This is Tarsila. I second.
44

45 **VANCE P. VICENTE CERNUDA:** Okay. So, the minutes and verbatims of
46 the SSC, of the April 9th through the 11th, 2024 meeting as well as
47 the September 23-25 of 2025 minutes, as well as the verbatims have
48 been approved.

1
2 Happy we didn't vote, but are there any objections? I don't see
3 any objections. So, the minutes have been approved.
4
5 So, SEDAR 91 U.S. Caribbean Spiny Lobster Puerto Rico Assessment:
6 Last meeting highlights. The assessment was conducted by the
7 Southeast Fisheries Science Center. The Southeast Fisheries
8 Science Center would explore bringing additional data for the
9 analysis needed to be looked at for SEDAR 91 assessment Puerto
10 Rico. And three, the Southeast Fisheries Science Center will
11 present SEDAR 91 Puerto Rico Assessment Results to the SSC for
12 final review.
13
14 So, Kevin, you're up to present the Caribbean Spiny Lobster Puerto
15 Rico Assessment of SEDAR 91. So, whenever you're ready.
16
17 **SEDAR 91 U.S. CARIBBEAN SPINY LOBSTER PUERTO RICO ASSESSMENT:**
18 **FINAL REVIEW—KEVIN MCCARTHY**
19
20 **KEVIN MCCARTHY:** Okay. Thank you, Mr. Chair. Kevin McCarthy. I
21 think we're going to start with me presenting, and we're going to
22 go through the index work. And then Adyan will take over and talk
23 you through the assessment modeling that was done. So, I'll present
24 it first.
25
26 Does green mean that I can share my screen?
27
28 **KIARA M. MATÍAS ROJAS:** Yes, Kevin. You can share it now.
29
30 **KEVIN MCCARTHY:** Okay. Perfect. And I will put this in presentation
31 mode. That's the wrong thing. Okay.
32
33 Are you seeing presentation mode?
34
35 **LIAJAY RIVERA GARCÍA:** Yes.
36
37 **KEVIN MCCARTHY:** Okay. Terrific. Alright. Well, good afternoon,
38 everyone, or good morning if you're our Westernmost SSC member.
39 I'm going to talk to you through the work that Stephanie Martínez
40 Rivera and I did, which means Stephanie did 98% of the work. But
41 I've done indices before, so I provided a little guidance.
42
43 We looked specifically at Puerto Rico. It says U.S. Caribbean, but
44 this was specifically Puerto Rico. Let me get started with, I want
45 to back up a little bit and sort of walk you through how we got
46 here. This was an analysis that this Council requested back in
47 August. We had planned on presenting this in December or November,
48 whichever month we had scheduled for the SSC meeting. But given

1 lapse in funding, that didn't happen.
2
3 Anyway, they requested this, and I'll talk to you through this. I
4 don't know, it's certainly been a long time since the SSC has
5 looked at a fishery dependent index of abundance. So, I apologize
6 if many of you already know all this stuff, but I want to walk us
7 through this fairly deliberately, but I don't want to take a
8 terrible amount of time.
9
10 So, if we go back to when we had landings, we could see that the
11 landings are going up in-- I don't know if-- can you see my cursor
12 on the screen or not?
13
14 **LIAJAY RIVERA GARCÍA:** Yes. We can.
15
16 **KEVIN MCCARTHY:** Oh, terrific. So, in these last few years things
17 have been bouncing around all over the place, but they're generally
18 going higher and higher and higher until we're up around 500,000
19 to 600,000 pounds in landings. However, if you look at these are
20 the number of commercial fishing trips that actually landed a spiny
21 lobster. We're looking here at, you know, it bounces around a bit,
22 but it's not shooting up like the landings did. So, as a result of
23 that, and I want to give credit where credit was is due, Daniel
24 Matos and colleagues at DRNA along with Ricardo López, they took
25 a look at the data, they brought this very figure to the data
26 workshop for spiny lobster. And what you could see is-- so this is
27 catch per trip of lobster. We're starting around 20 pounds and
28 going up to, let's call it 35. So, there's definitely an increase
29 over time. This begins in 2014 and goes to 2023.
30
31 And so, they presented this, but the panel, the data workshop
32 panel, because this is what we'd call a nominal index, didn't
33 recommend its use for the assessment. What they've done here is
34 this is across all gears, across all coasts. They've got this
35 upward trend in CPUE. They brought this back to the Council at
36 that August meeting and I'm glad they did. I'm glad they stuck
37 with it. Ricardo talked to the Council through this work, Ricardo
38 and Daniel. So, the recommendation was, let's dive into these data
39 a little more thoroughly. And so, that's what we did.
40
41 So, the first step was still, these are still nominal indices.
42 This hadn't been standardized or anything. I split out the data by
43 gear. So, these are all traps combined. At this point, we haven't
44 split lobster traps from fish traps. But I've also plotted it by
45 coast. And what you could see is there's certainly a general upward
46 trend from, say, and this big heavy black line is all traps
47 combined.
48

1 And so, you could definitely see this upward trend, particularly
2 in the East. That's this sort of orange line here. But most of
3 them are trending upwards, most of the coasts. And, again, this is
4 lobster trap. Here again, these are number of trips that landed
5 the-- these are trap trips that landed a spiny lobster, and the
6 effort's flat, at least in terms of trips since the mid 2-
7 thousands. There's not all there's not a lot more trips that are
8 being reported.

9

10 You see a similar trend in the dive CPUE. Again, this is just
11 nominal. We haven't standardized anything at this point. It's not
12 as dramatic an upward tick, it's definitely an upward trend. Again,
13 this is dive gear, by coast. And then, this is the number of trips
14 if they landed a spiny lobster. Again, it's flat. In fact, it's
15 been pretty much flat for the entire time series.

16

17 Recall that, well, maybe, Adyan, we'll get into this a little bit,
18 but we truncated the time series. There was some concern at the
19 data workshop that some of these landings may have in fact been
20 coming from The Dominican Republic. So, the actual time series for
21 the assessment begins in 1985. It also now runs through 2024. This
22 is an old plot where we didn't add the additional year of data,
23 but Adyan may talk about that a little bit more.

24

25 So, we had something that looked like it needed more investigation.
26 So, what we wanted to develop was a fishery independent index of
27 abundance. We're going to use this available data. We'll talk about
28 that now. This is a standardized index of abundance. So, it's a
29 little more involved than simply getting catch per unit effort
30 without further examination.

31

32 So, we use the commercial catch logbook. Each of those logbook
33 entries has information about the trip, the landing date, the kinds
34 of gear used, the coast, or we can get to coast depending upon the
35 landing site, gear specific fishing effort, the species that were
36 caught, way to the landings. I'll talk a bit about how we filter
37 those data. I'll also talk about a data subsetting routine that we
38 used. I'll get a little bit more into that later.

39

40 And ultimately, we wanted to end up with catch per unit effort,
41 which is defined as the whole weight of landings by gear quantity.
42 And in this case, gear quantity is the number of traps fished, or
43 the number of scuba tanks used. Those are all reported in the CCL.

44

45 So, what we did for data exploration, first of all, we combined
46 similar deer group groups of gears. You know, you have things
47 reported as scuba gear or spear with scuba, those kinds of things.
48 So, we took a look at all of that information and where it made

1 sense to combine gears. We did that. We removed some outliers. So,
2 you always get some strange reports that are coming in, whether
3 it's a typo in data entry or it wasn't legible. So, you get things
4 like, well, we used 50 tanks on a trip, and those are likely not
5 true. So, we did some outlier removal.

6
7 We also did some data exclusions, which I'll show you in a minute
8 what I mean by that. And basically, it had to do with are enough
9 trips, say, for a gear on one of the coasts for those data to be
10 included. I'll talk about the years that we included in this
11 analysis. That was also based on sample size. If there weren't
12 enough trips during the year, it didn't make sense to keep that.
13 It would be problematic for the analysis.

14
15 And the data were restricted to include only trips that had gear
16 effort information. Meaning, if they didn't report the number of
17 traps fished, if they didn't report the number of scuba tanks used,
18 then we couldn't use it in the analysis. When you do that, after
19 you apply all of these restrictions and things, you end up with
20 about 30% of the trips remaining that have sufficient data to run
21 the analysis. Now that's not the end of the world, provided those
22 trips are representative of the fishery as a whole.

23
24 You don't need to account for every single trip to do a CPUE index
25 analysis, but you do want something that's representative. So, if
26 there was some reason that the guys that reported all the data
27 were better fishers. They had higher catch rates, then this isn't
28 going to be representative of the fleet as a whole. I have no
29 reason to suspect that. So, we moved ahead with those 30% of the
30 data. And then, we'll talk about how we calculated the standardized
31 CPUE, at the end of this.

32
33 So, here's how we got to the time series of data that we ended up
34 using. So, as everybody who's done data analysis has experienced,
35 80% of your time goes into building the dataset and the actual
36 analysis is about 20% of the time. So, here what you see on the
37 left are the fish trap data. So, we split out the lobster traps
38 from the fish traps. This is the full time series 1985 to 2024.
39 So, I've added in that last year, which hadn't initially been in
40 the analysis when we began SEDAR 91.

41
42 It's divided up by coast and also by dry season and rainy season.
43 We define dry season as December, through April, and then May to
44 November, we defined as the rainy season. So, you could see here,
45 particularly in the West, there's very low, very low, number of
46 trips that made the cut in terms of having sufficient data. So,
47 it's really the early 2000s that we're starting to see enough trips
48 to do something with the North. Not surprisingly, we already know

1 this about the North. There's not a lot of-- we didn't end up with
2 sufficient traps or fish trap trips to include the North. And here
3 also in the South and in the East there's very few in the beginning.
4
5 So, on the right, this is the dataset we ended up with. We truncated
6 the data to begin the time series in 2001 all the way to 2024, and
7 we dropped the North Coast. That's specific to fish traps.
8
9 When we looked at lobster traps, we got a different picture. There
10 are tons of data from the South, a little bit in the East, not
11 much in the North, not surprising. Not much in the West, which was
12 surprising. So, for the West, that doesn't mean there isn't fishing
13 going on there using lobster traps. What it means is the reporting
14 of the data was not sufficient, so it got dropped in the data
15 filtering.
16
17 So, at the end of the day, what we elected to do was not include
18 spiny lobster traps for another index. We also decided not to
19 combine traps. We didn't combine the lobster traps with the fish
20 traps because we think targeting by the lobster traps is different
21 than the fish traps. So, you're mixing apples and oranges there.
22 So, we didn't want to do that. And you don't have to account for
23 every gear to have a good index. Again, what you want is data that
24 you understand so you can understand the results that you get.
25
26 Looking at the dive, we've got a similar situation here. I won't
27 belabor this, but when we looked at the data, we could still use
28 the north. There's a there's enough data there. It doesn't look
29 like it, but there's enough there. But we had to truncate this
30 time series to begin in 2012, and it goes through the end. The
31 most recent year was 2024.
32
33 So, those were our datasets. So, the next step is, okay, since
34 we've got fish traps and we've got divers and they don't just catch
35 lobster, how do we know that they were even targeting lobster? How
36 do we know that they were in lobster habitat? And we do this by a
37 species association analysis, which gets at, based upon the species
38 that were caught, can we presume that trip, even if they didn't
39 catch lobster, were fishing in lobster habitat? And we do this
40 through a method called Stephens-MacCall. It uses multiple
41 logistic regression to estimate a probability for each trip that
42 spine lobster was caught given the other species caught in the
43 trap.
44
45 So, what that means is we can identify zero trips. Zeros are data
46 in this case. And 0 is valid only if they were fishing in
47 presumptive lobster habitat. If they were fishing somewhere else
48 where lobsters don't occur, we didn't want to include that as a

1 zero. So, this analysis is meant to get at that.
2
3 We did separate analysis for each gear and coast combination. So,
4 we did dive gear in the North, and dive gear in the South as two
5 separate analyses. So, we did a number of these analyses and here
6 is what the results look like. So, this plot, let's take this one
7 where it's a little bigger. So, bars that go to the right mean a
8 positive association, bars that go to the left mean a negative
9 association. And it makes some sense.
10
11 You know, if you catch coney or boxfish or queen triggerfish in a
12 trap, you're fishing in lobster habitat. If you catch silk snapper,
13 you're not. So, if there's a bunch of silk snapper, that's not
14 going to be identified as a lobster trap. If you catch a bunch of
15 conies and boxfish and triggerfish on the West Coast, that would
16 be considered a lobs-- that would get classified as a lobster trip
17 even if no lobster were caught.
18
19 And we've got similar results for the dive. And so, no matter which
20 coast you're on, well, not so much the North, but if you're diving
21 and you're on the East Coast, the South Coast, or the West Coast,
22 and you catch queen conch, you probably weren't doing a lobster
23 trip according to this analysis. But if you're getting red hind,
24 queen triggerfish, or hogfish, you probably were in lobster
25 habitat. Again, you may or may not have caught a lobster and
26 brought it back, but you were in lobster habitat according to this
27 analysis.
28
29 Okay, so now we've got our dataset, we've filtered it down so that
30 it meets our data requirements and it's identified as fishing in
31 lobster habitat. That's our dataset. And now the analysis for
32 getting at CPUE, we modeled that using a pretty standard approach,
33 Delta GLM. This combines two separate generalized linear models.
34 One that describes, was there a lobster? Was there not a lobster?
35 So, it's a binomial model, in this case, Bernoulli submodel. So,
36 it's all ones and zeros. Did you catch one or not? So that's one
37 part of CPUE.
38
39 The other part is if you caught one, what was your catch rate? So
40 that would be the second one, this positive CPUE model. If you
41 caught a lobster, what was the catch rate? And what we're going to
42 do is combine these two to get our standardized CPUE. But first,
43 we want to go through, and we want to look at some variables that
44 might help explain what we're seeing.
45
46 So, we looked at, year. Year is always one of your variables
47 because you want a time series. We also looked at season. Again,
48 December to April is the dry season made in November, the wet

1 season. That's why you saw this earlier. We looked at coast. For
2 the fish trap index, we dropped the North Coast, but that's okay.
3 We're looking at South, East and West, and we had all the coasts
4 for the dive index.
5
6 The other thing we included, but only for the binomial model, that
7 presence/absence model, is this notion that how much gear was being
8 used. So, you can imagine that if you fish for 10 minutes, you
9 have a lower chance of catching a lobster than if you fish for an
10 hour. And so, that's what that's getting at. We didn't use it in
11 the catch rate side of things because it's not appropriate for
12 that submodel, but we wanted to understand and account for the
13 amount of time people were fishing that might play into whether or
14 not they caught a lobster or they didn't. So, that was included in
15 the binomial model or that Bernoulli model only.
16
17 So, here are the results from that first presence/absence Bernoulli
18 model. Initially, the way we do this is you put all those
19 explanatory variables in, all four that I just showed you. Then
20 you do a stepwise AIC, which tells you which model performs better,
21 but doesn't overparameterize. So, you get penalized if you got
22 more variables in the model, but you also receive a better AIC
23 score if there's if those variables are explaining the data a bit
24 better.
25
26 So, we run this backwards so that you start with the full model
27 and you'd gradually take away the different explanatory variables.
28 And what we ended up with is for the fish trap index, just the
29 Bernoulli submodel, the presence/absence, year, coast, and year
30 quantity were informative and were retained as the model. The dive
31 index, we kept all four. Year, coast, season and year quantity,
32 you do the same exact procedure for the CPUE submodel.
33
34 So, this is the positive, this is getting at the catch rates. And
35 here we ended up for both the fish trap and the dive index with
36 the same model, we kept year and coast. And so, now we've got our
37 two submodels built. We run those to get our standardized index,
38 and this is what we get for fish traps. So, you could see a couple
39 things on this.
40
41 The blue, which is labeled as GLM CPUE, that's the standardized
42 index. That's a result of these analyses. And the red is just the
43 nominal. That's if you just went in and you divided catch by the
44 amount of gear that was deployed, and you don't account for any of
45 these other variables.
46
47 So anyway, and then we did 1000 bootstraps to get the variability
48 around our standardized index. And what you're seeing is the index

1 is pretty flat for the first, say, almost half of the series. We've
2 got a big dip in 2013. Not quite sure what's driving that, but we
3 do have very low proportion positives, meaning the number of trips
4 that are reporting a lobster fell down to about 10% of the trips.
5 But then it takes off. Then, since 2013, it's been a steady upward
6 run, little bit of a bump here. You know, it may have dropped.
7
8 This is less affect-- things like COVID and things like, say, a
9 hurricane may or may not affect the catch rates in the same way
10 that they affect the landing. So, this isn't the same thing as
11 landings. Right? This is a catch rate. So, as long as they're
12 fishing and their fishing hasn't been impeded by something, if
13 they can get out on the water, the catch rate can be independent
14 of the same kind of forces that drives the landings.
15
16 Now it could be that you have a hurricane come through. There's no
17 fishing for a while, you go back out in two or three months, and
18 there are lobsters all over the place because nobody's been fishing
19 for a few months. So, that can affect catch rates, to be sure. But
20 we don't want to look at this the same way as we'd look at landings.
21
22 So, anyway, definitely an upward trend throughout the second half
23 of this time series. When we look at our residual plots, these all
24 look great. They look shockingly great. In fact, I've done a lot
25 of these in my former life as an analyst, and these look really
26 good. You don't see any weird patterns in the residuals. So, things
27 are looking really nice. These are all the ones in the Bernoulli
28 submodel.
29
30 And then, some more diagnostics, the log transform CPUE. Again,
31 this is shockingly good in how well it fits a normal distribution.
32 We do test for a gamma distribution versus a normal distribution.
33 It turns out that the normal distribution performed better. And I
34 can see why. It certainly fits it well. The sort of QQ plots for
35 the residuals look really good. There's a little bit of wonkiness
36 here on the ends, but that's really minor compared to some I've
37 seen. It's meant to fit that diagonal line.
38
39 And here's the index for the dive gear. Same sort of thing. You do
40 coincidentally get that drop in 2013, but then it's just a steady
41 up. I mean, it's a little bit flat here, but it's steadily
42 increasing.
43
44 And, not surprisingly, this usually happens. The nominal CPUE trend
45 kind of follows that really, really closely. That's pretty much
46 what they always do unless something really strange has happened.
47 And, again, the diagnostic plots look really nice. I have nothing
48 here that concerns me. And this is for the positive submodel, the

1 CPUE model. Again, the residuals are nothing to be concerned about.
2 Here, this is a little skewed. I've seen worse, but it is a little
3 skewed, but seems reasonable, and, also, the tails of the QQ plot
4 are a little off. I've certainly seen worse. It doesn't give me
5 great pause. And when you plot them both together on the same
6 scale, you're seeing the same kind of trend.

7
8 The way you can interpret this is, it's flat here, but when you
9 get up to here, if you're at 1.6 versus 0.8, this is relative
10 abundance of animals in the water. So, going from 0.8 to 1.6 is
11 double the numbers of animals in the water. That is a way to
12 interpret this. Provided it's, in fact, tracking abundance.

13
14 There are a couple of things, a couple of caveats here. We're
15 presuming that it's tracking abundance. That's why we go through
16 all of this. Fishers are very good at catching lobsters. So, that's
17 one of the dangers of a fishery dependent survey. You can have
18 very high catch rates even when the population levels are going
19 down.

20
21 I don't think that's what's happening here. This corroborates what
22 we're hearing from fisher testimony that there's a whole lot more
23 lobster over the last, 5, 10 years than we had been saying. That's
24 what this is showing. Couple of things, this could be because we've
25 had lots of strong recruitment for a number of years. That's our
26 operating hypothesis.

27
28 The other thing that could be happening, and I don't know that
29 this is, we don't have any evidence of this, but if fishers are
30 moving into new areas that are unexploited, you could also see an
31 increase in catch rates through that. I don't know that we've got
32 any information that suggests that. The model is not spatially
33 explicit in that way, so we're not accounting for that. We can't
34 detect that, but I haven't heard anything about somebody finding
35 a whole new area where the lobsters are just everywhere and in an
36 area that's never been fished before.

37
38 We're also seeing increased rates across most of the coasts. So,
39 that too suggests that this is a general thing. This isn't
40 something that is limited to the South Coast or the East Coast or
41 something like that. So, we think what we're seeing is improved
42 recruitment across these last, say, 10 years or so. And that's
43 what this index is reflecting is increased abundance.

44
45 I think that's it. So, thanks very much.

46
47 **QUESTIONS/COMMENTS**
48

1 **VANCE P. VICENTE CERNUDA:** Thank you, Kevin. Jason, please.
2
3 **JASON COPE:** Yeah, Kevin, thank you and Stephanie for this. I found
4 that really easy to follow, very logically laid out from the
5 filtering through the model fitting. And I think I just had some
6 clarification questions. I found it. And so, I'm looking at the
7 slides.
8
9 What slide is this? I think it's-- if you go back one slide, if
10 you don't mind?
11
12 **KEVIN MCCARTHY:** Yes, will do.
13
14 **JASON COPE:** Thank you. So, what's really interesting about this
15 is that you have two separate fisheries measuring what we hope is
16 the same sort of thing. I'm assuming their selectivities are
17 probably fairly similar. And what's really interesting is that you
18 did not z score standardize this so they're on the same scale.
19 They just are basically on the same scale as far as their CPUE,
20 which is, I think, really interesting. Just something for us to
21 just to consider.
22
23 You didn't have to scale-- So, the cues on these are probably very
24 similar, which is interesting and makes them kind of more
25 straightforwardly comparable. So, I just wanted to note that.
26
27 It's also interesting that, obviously, that 2013 dip, it's seen in
28 both of these things. The fish trap time series, much more dynamic
29 than the dive survey. And you noted, I mean, that is a really big
30 drop. I was curious, and I apologize if you did say something about
31 this already. I'm wondering if anyone in the fishing community
32 would be able to add something as an explanation on why there was
33 such a dip in CPUE in that year.
34
35 The reason I'm saying that is I'm just wondering, I think the
36 trends that you have here are probably right on. There's just a
37 bit more dynamic here in this fish trap. I'm just curious if
38 there's another variable for future consideration that might be
39 worth pulling out of the fishing community's experience that might
40 help understand why that's such a dip and might correct for it.
41
42 Because I guess my ultimate thing is I wonder, this is going into
43 the model, and you showed that the CVs around this, the uncertainty
44 around this was pretty, pretty small, probably underestimated. We
45 always underestimate it when we do these things. But in the model,
46 if that small CV is being used, the model is going to want to
47 follow these dynamics closer than having more of an ability to
48 kind of bypass some of these extreme values of up and down. And if

1 they weren't so extreme, the model wouldn't care as much, again,
2 with the tighter CV.
3
4 So, I think this is a combo question. Do you know of any reason
5 why it would have dipped that much or had that much dynamic in
6 that year? And then two, I don't know what CV-- or --what was used
7 in the model. Was it the CV coming out of this analysis, did worse
8 additional CV estimated, which we sometimes do in these assessments
9 to kind of get at this?
10
11 Yeah. I just didn't know how much how much this sort of dipped
12 down the model was kind of trying to track. So, maybe I'll hold my
13 questions because that's kind of a lot of stuff squashed into, one
14 question.
15
16 **KEVIN MCCARTHY:** Yeah. That's okay. Thanks, Jason. Kevin McCarthy.
17 Yeah.
18
19 A couple of things. So, what I did do, actually, did scale these.
20 I divided through by the mean of the common years. So, it is scaled
21 a little bit in that sense. As for the CVs coming out, I don't
22 think Adyan uses those. That's just sort of the standard code for
23 presentation purposes. She'll talk more about it in her
24 presentation, but I don't think she used these. I think she used
25 different uncertainty.
26
27 As for the 2013 dip, I think the way to get at that and to
28 understand that, is to really have conversations with the fishers.
29 Right? They're going to know. So, for the sake of everybody
30 listening, so much of this can be driven because it's a fishery
31 independent index.
32
33 So, much of this can be driven by the way the fishery operates.
34 And what we want to do, as Jason is getting at, I think, is to
35 account for things that don't have anything to do with the size of
36 the population of lobsters in the water. Right?
37
38 So one of the things that sometimes you would do, we didn't do it
39 for this one, you account for things like if you can catch more
40 lobsters because you've got another person on the boat with you,
41 that has nothing to do with how many lobsters are in the water.
42 So, you want to account for things like that. If there are
43 management regulations that go into effect that change the catch
44 rates, you want to account for that.
45
46 So, what we really need to do is talk to the fishers, because it's
47 really this 3-year period of 2012, '13 and '14 where we're really
48 low. You can say 2011 something else was going on, but it's not

1 unprecedented. But these are the 3 lowest years, 2013 by a lot.
2 So, I think the way to get at that is to have conversations with
3 the fishers in Puerto Rico and try and to get a handle on what may
4 have gone on there.
5
6 I just know it was extremely low proportion positive, the lowest
7 in the time series, and it wasn't a sample size problem. There
8 were as many or more trips in '12, '13, and '14 as there were in
9 in any other year. So, it's not a wonky sample size problem.
10
11 **JASON COPE:** Yeah. This is Jason Cope. Kevin, thank you. That's
12 exactly what I was kind of getting out. For the next iteration of
13 this, exactly what you said, maybe there's another factor or two
14 in there that might help kind of smooth this out a bit.
15
16 But like I said, I think you got the general trend, which is the
17 most useful thing for a relative index going into an assessment.
18 So, thank you, both you and Stephanie, for this presentation.
19
20 **VANCE P. VICENTE CERNUDA:** Thank you, Jason and Kevin. We have,
21 J.J. Motta, and then Tarsila, and then me.
22
23 **JUAN J. CRUZ-MOTTA:** Thank you. Thank you, Kevin, for the
24 presentation. Actually, quite nice. My question is regarding the
25 Stephens-MacCall analysis. I haven't used that one in a long, long
26 time. From the time I used it I remember that it was a pairwise
27 comparison and in this case a lobster versus lionfish, lobster
28 versus grouper and so on and so forth. So, the question is, has it
29 changed since that general approach or is it still the same
30 principle? Is it a pairwise comparison or does it take into
31 consideration that these things come in groups? That's the first
32 question.
33
34 And the second question is, related to that correlation structure
35 among all those species. What we know from the EBFM work is that
36 correlation structure changes through time, right? So, in this
37 case, you're having only one coefficient like regardless of time.
38 Yeah, how do you take into consideration that that correlation
39 structure changes through time? Thank you, Kevin.
40
41 **KEVIN MCCARTHY:** Yes, I'll take the last question for this. Kevin
42 McCarthy again. I'll take the last question first, J.J. Yes, it's
43 a struggle that is not unique to the Caribbean. Back when I was
44 doing this in The Gulf in the South Atlantic, there was always, do
45 you have time blocks where you look at those associations?
46
47 Certainly, you want to do it by the different gears because there's
48 every reason to believe that you'd have different suites of animals

1 who are susceptible to the gear. Different areas, it certainly
2 makes sense. So, we did it across all years, but I don't disagree
3 with you. Yeah, we could have refined it and maybe that's an
4 improvement for the future.
5
6 Again, that might be a useful conversation to have with the
7 fishers. You know? What makes sense for time blocks when you're
8 looking at these suites of species. Yeah, I don't disagree with
9 you, but for this one, we did it across the whole time block.
10
11 And I'm not aware of any changes to Stephens-MacCall. This is
12 another one we struggle with when trying to subset the data so
13 that you're not including zeros that aren't true zeros, that
14 they're out somewhere where there isn't any lobster anyway.
15 Stephens-MacCall, at the Science Center, the use of it depends
16 upon who you ask and when you ask them. So, we don't think-- it's
17 certainly not the only way to do this, but that's the way we went
18 this time around.
19
20 There are other approaches where people will use sort of the
21 species guilds, and I think that's a little less statistical. That
22 seems to be more, at least the way that I've seen it done seems to
23 be a little more open to interpretation. So, I'd love to talk to
24 you more about this, J.J., in terms of what other approaches you
25 found because I'm always happy to improve the process.
26
27 But, yes, I don't think Stephens-MacCall has changed.
28
29 I haven't talked to Andi Stephens in 20 years, so maybe she's made
30 some improvements since then.
31
32 **JUAN J. CRUZ-MOTTA:** Yeah. I mean, the recommendation would be to
33 use an index of association across all species instead of Stephens-
34 MacCall. That will be the recommendation. But I'm not suggesting
35 you change this, you do it if you see this again. So, if you use
36 for future analysis where you want to see what groups of species
37 are coming out together, I would use an index of association, *sensu*
38 *stricto*, rather than these pairwise analysis. That's all.
39
40 **KEVIN MCCARTHY:** Okay. Thanks, J.J. Yeah. And I know that people
41 have talked about taking that approach as well. But thanks for the
42 insight.
43
44 **JUAN J. CRUZ-MOTTA:** And for the record. I'm not suggesting you do
45 all this analysis again. I'm happy with what I saw today. Thank
46 you, Kevin.
47
48 **KEVIN MCCARTHY:** Thanks, J.J. Were there other questions?

1
2 **VANCE P. VICENTE CERNUDA:** [inaudible] try to find out what happened
3 in 2013 that could affect this catch per unit effort values, the
4 drop in that value. The only thing that—
5
6 (Part of Dr. Vicente Cernuda's comments are inaudible on the audio
7 recording.)
8
9 **KEVIN MCCARTHY:** Vance, you're cutting out.
10
11 **VANCE P. VICENTE CERNUDA:** Yes. Regarding the drop CPUE for 2013,
12 I don't know how socioeconomic factors could affect the CPU [sic]
13 value, but in 2013, there was a lot of upheaval in Puerto Rico.
14 There was a political transition in the government. And, also,
15 there were a lot of demonstrations and general unhappiness, from
16 what I just checked, just looking on the Internet for information
17 on 2013. I don't know if you have anything to add to that.
18
19 **KEVIN MCCARTHY:** I don't. Certainly, socioeconomic factors can
20 impact an index of abundance. In this case, what we're seeing is
21 there aren't fewer trips. We identified just as many trips in 2013
22 that met all of our criteria for amount of data as well as were
23 identified as fishing in lobster habitat. It's just the numbers of
24 trips that brought back lobster to the dock.
25
26 So, maybe there was some change where people didn't want lobster.
27 That's possible. Because remember, this isn't what was caught in
28 the boat, which would be great if we had that, but we don't. We
29 only have what they bring back to the dock. And so, if the fishers
30 are selecting things to retain and take back to the dock and throw
31 other things back that they caught, we don't know what that is. We
32 only know what they came to the dock with.
33
34 And so, if there was some market demand that said, you know what?
35 We don't need a lot of lobster, that could explain why we've got
36 lower proportion positives. But I don't have that information. We
37 really need to dig into that more.
38
39 **VANCE P. VICENTE CERNUDA:** Thank you, Kevin. Walter Keithly?
40
41 **TARSILA SEARA:** Excuse me, Mr. Chair. I've had my hand up for a few
42 minutes. I want to ask a question?
43
44 **VANCE P. VICENTE CERNUDA:** Yeah. I'm sorry, Tarsila. Please.
45
46 **TARSILA SEARA:** Thank you. This is Tarsila. Thank you, Kevin, for
47 a really great presentation. I have a comment and a question. My
48 comment is I think-- I would like to emphasize this is a great

1 example and an opportunity to make a case for the importance of
2 collecting local ecological knowledge, information from the
3 fishermen using the appropriate methods, right? So not just having
4 casual conversations, which are of course great, but treating local
5 ecological knowledge as data that needs to be collected and used
6 for management advice. I think this conversation today is a great
7 opportunity to make a case for that.

8
9 My question is, did you analyze the potential effects of management
10 actions on changes in effort? And is that something that you could
11 take into consideration, for instance, for time blocks as J.J.
12 suggested or if you looked at that at all?

13
14 **KEVIN MCCARTHY:** So typically-- this is Kevin again. So, typically
15 what we do, Tarsila, and thanks for the question. But, yeah, I
16 agree with you completely on your comment about local ecological
17 knowledge and doing it properly. Yeah, just talking to a few
18 fishers that happened to show up at a Council meeting or happened
19 to show up at a SEDAR meeting is a good start but not adequate.
20 So, I agree with you completely on that.

21
22 In terms of the management regulations, I'm going to put in a plug
23 for some work we've been doing for years and years, which is a
24 management history database. I've talked about it, and other people
25 have talked about it at Council meetings in the past when we give
26 our updates from the Science Center. That was specifically to
27 account for those kinds of management actions in this kind of time
28 series work when you've got fishery dependent data, whether it's
29 size composition data or CPUE data.

30
31 What we would do is go in and if there's a closure, if there's a
32 fishery closure, we would not use data from those times. So, the
33 more-- what I think I'm hearing is the sort of more elaborate
34 analysis where you'd come up with time blocks based upon management
35 changes. We haven't done that for this. We've just removed data
36 when there was a closure.

37
38 It gets a little bit tricky in a CPUE series if you change the
39 minimum size, which hasn't happened during this time series. But
40 if that happens you want to account for that somehow. So, that's
41 generally how it gets used, but there's probably some more
42 elaborate ways and more informed ways we could be incorporating
43 it. So, that might be an interesting thing we could chat about
44 sometime.

45
46 But in this, it's pretty straightforward if there was a closure,
47 let's not include those data because they're not landing lobsters.
48 Those aren't real zeros, that kind of thing.

1
2 **TARSILA SEARA:** Thank you, Kevin.

3
4 **VANCE P. VICENTE CERNUDA:** Skyler, please.

5
6 **SKYLER ROSE SAGARESE:** Yeah. Skyler Sagarese. I just wanted to
7 point out too that from SEDAR 57, and I'll post it, Adyan has put
8 together a really amazing timeline of different environmental,
9 like hurricanes, for example, economic and regulatory changes that
10 have come up. I'm going to post it right now. But this is the kind
11 of information that when we're trying to look at our data inputs
12 or our assessment results, having an idea of what's going on can
13 be really important.

14
15 So, just looking at this figure, looking at the fish tract index,
16 what concerns me here is if you were to treat that orange line as
17 an index of what's going on with the spiny lobster population,
18 that jumped from 2013 to 2018, that is a huge increase in biomass
19 for that stock. That's going to say, like-- that's just a massive
20 amount of addition of the population. Now I'm just trying to figure
21 out, is that biologically plausible, or there other issues? And I
22 think Jason hit on that. Are there other things that we need to be
23 standardizing out of this assessment?

24
25 And I do recognize that in Adyan's document, she says there were
26 a couple of hurricanes too as well in 2018. So, when we're looking
27 at these kinds of inputs, I think it's really important to have
28 that handle on what has been happening. And I am definitely a
29 little concerned about 2013, that huge drop.

30
31 But I think this is great. And Kevin, I just wanted to confirm
32 since I've been involved since SEDAR 46, my recollection, correct
33 me if I'm wrong, but this is really the first time where you were
34 able to thoroughly QA/QC the data and really work on getting
35 standardized indices from this fishery dependent data source. Is
36 that correct? Has that really just been the limitation in the past
37 as we only were able to produce nominals?

38
39 **KEVIN MCCARTHY:** That's correct. Yeah. Yeah. This is Kevin again.
40 Yeah.

41
42 This is the first standardized series from fishery dependent data.
43 Right? Of course, the NCRMP has their fishery independent survey.
44 I mean, they don't do lobsters, but they-- so we've had fishery
45 independent surveys that are that are more standardized. But it's
46 up to now for, coming out of logbook data, it's all been nominal
47 series.

1 So, this is the first one. You're right.
2
3 **SKYLER ROSE SAGARESE:** Yeah. Thanks, Kevin. Skyler Sagarese again.
4 Just following up. I just wanted to bring that up because when I
5 was trying to look back at some of the past assessments and I just
6 remember, from my past experience, a lot of times, this reappended
7 data indices were not recommended for use, but it sounds like that
8 was because it was more of a limitation of what we were able to
9 produce.
10
11 And so, this is really the first full blown standardization with
12 this data source. And I commend you, Kevin, and your team for doing
13 this, and I'm hoping that this will become one of those really
14 important data sources that we discussed during SEDAR 103. How
15 many of these species could we be using this information? So, thank
16 you.
17
18 **KEVIN MCCARTHY:** Thanks, Skyler. Yeah. And to be clear, I would be
19 remiss if I didn't confess that Stephanie did the vast majority of
20 the work. I provided a little guidance, but she did all the heavy
21 lifting.
22
23 We definitely want to look at this kind of approach for a number
24 of species in SEDAR 103. Again, Stephanie and Refik, Adyan has
25 also worked with this notion of this data triage approach where we
26 can identify which species have various data sources that are
27 adequate to help inform analysis. So, yeah, it's definitely in the
28 works for 103.
29
30 **VANCE P. VICENTE CERNUDA:** If there are any more questions, then we
31 would move forward and listen to Adyan. SEDAR 91, U.S. Caribbean
32 Spiny Lobster Puerto Rico Assessment: The Final Review. So, Adyan,
33 are you ready?
34
35 **SEDAR 91 U. S. CARIBBEAN SPINY LOBSTER PUERTO RICO ASSESSMENT:**
36 **FINAL REVIEW—ADYAN RÍOS**
37
38 **ADYAN RÍOS:** Yes. Thank you, Vance. Can you hear me okay?
39
40 **VANCE P. VICENTE CERNUDA:** Okay. We can hear you. Thank you.
41
42 **ADYAN RÍOS:** Awesome. And can you see my screen?
43
44 **LIAJAY RIVERA GARCÍA:** Yes. We can.
45
46 **ADYAN RÍOS:** Awesome. Okay. Let me just do a couple more things
47 here on my end. That way I see you and my slides. Okay.
48

1 Do people online see my slides?
2
3 **LIAJAY RIVERA GARCÍA:** No. They are not advancing.
4
5 **CRISTINA D. OLÁN-MARTÍNEZ:** Yes. They're advancing. What I see is
6 SEDAR 91, Puerto Rico with the lobster.
7
8 **ADYAN RÍOS:** Perfect. Okay. So, I don't oh, it doesn't show me
9 what you're seeing. Okay. Perfect.
10
11 Okay. Hello, everyone. Today we'll be talking about SEDAR 91, and
12 we'll cover just some background as to how we got to SEDAR 91, a
13 little bit of information about SEDAR '57, and then some of the
14 additional details that went into '91, including covering some of
15 those new sources of data. We'll also just provide a slightly more
16 detailed summary of the data and life history and then tell you
17 about the models that were in the report, as well as the model
18 that was provided as an additional sensitivity, including the
19 indices that Kevin just presented.
20
21 In SEDAR 91, we included a quantile analysis, which we'll talk
22 about later, but it's looking at the different quantiles in the
23 length data. So, looking at what's happening over time to the 95
24 percent of the largest lobster over time and what's happening to,
25 like, the lowest, the smallest lobster over time. And then, we
26 will cover some of the figures that are in the reports and then
27 get to a discussion and conversation about decisions that take
28 place before any finalization and next steps.
29
30 So, SEDAR 91 addressed the stock assessment for the U.S. Caribbean
31 spiny lobster. It consisted of an in-person data workshop followed
32 by webinars, before and after the workshop, and then followed by
33 a series of webinars to develop the assessment with the assessment
34 panel. The assessment report, the stock assessment report became
35 available in September of last year. And now we're, at the time to
36 determine whether the assessments represent best available science
37 and whether those, the results of the assessments are useful for
38 developing recommendations. So, that brings us to what we're aiming
39 to accomplish today. And if we go back in time, we can cover a
40 little bit of information about SEDAR 57.
41
42 So, this was the first application of stock synthesis in The U.S.
43 Caribbean, back in 2019. The models were developed using just the
44 catch time series length composition information for two fleets,
45 dive and pots and traps. And so, this is considered a data
46 limited/moderate implementation of stock synthesis. Importantly,
47 these used average recruitment, and that's something that we will
48 also talk about later. So, later, we'll also talk about predicting

1 recruitment versus using average recruitment over the entire time
2 series.

3

4 Following SEDAR 57, there was an update done in 2022 to provide
5 updated OFLs and ABCs. So, the landings were updated through 2022
6 so that 2023, 2024, and 2025 OFLs could be provided. SEDAR 91,
7 built on that same approach from SEDAR 57. And again, it's that
8 length based statistical catch at age model, and it brought the
9 data through 2023.

10

11 Stock synthesis was implemented. This is just, again, explaining
12 how we're using this model. It's a statistical catch at age model.
13 So, it's forward projecting, and it's tracking these lobsters by
14 age and applying the biology and the fishery dynamics to predict
15 those removals. And then, it fits the removals of our catch data
16 as well as our length composition data. And then now in the newest
17 sensitivity run, the index of abundance as well, or indices of
18 abundance.

19

20 This slide summarizes the sources of data. So, we have, just like
21 SEDAR 57, the landings time series from the self-reported fisher
22 logbooks. And then, for SEDAR '91, that was through 2023. And now
23 for the index sensitivity through 2024. Those years are also the
24 same for the length composition data from the port sampling. And
25 then, we carried over the life history parameters from SEDAR 57.
26 So, there hadn't been any publications that were reviewed during
27 the data workshop that led to recommending alternative life history
28 parameters.

29

30 And then, the next 3 points are new to SEDAR 91. So, the SEAMAP-C
31 and HJR, so these are 2 surveys that are over a brief period of
32 time, but they targeted a smaller lobster. So, it was great to try
33 and incorporate these into the assessment and see how the fit was
34 corresponding, like, was matching and predicting these data well.
35 And so, those are now included in the base run.

36

37 And then lastly, the fishery independent indices of abundance that
38 Kevin presented, those standardized indices of abundance that we
39 can use to understand or relate to what's happening to the stock
40 size in the water. So, that's why they're relative indices of
41 abundance, but they're not tracking other things. They're tracking
42 the number of lobsters in the water. And that's really exciting to
43 be able to add that. And then, in doing so, really changed or
44 improved the structure of the model to be dynamic and be reflecting
45 this change in the underlying population. By using those data to
46 predict recruitment deviations, we'll see the estimates of
47 recruitment that were, again, in SEDAR 91, in the stock assessment
48 report, as well as in SEDAR 57, just a single average recruitment

1 over the entire time period.
2
3 The next couple slides continue just to remind us about how the
4 information or what information went into the model. And so, again,
5 we had the landings and the length composition. And so, the
6 landings, these log normal area error and the composition data,
7 the length data had multinormal area error. And, in the SEDAR 91
8 assessments that are in the stock assessment report, those do not
9 have indices of abundance, but we do have indices of abundance for
10 the sensitivity run that was provided.
11
12 And those, sensitivity run included the indices by scaling the CVs
13 to 0.2 or standard errors. And so, that conversion is common in
14 some of our assessments in the Gulf of Mexico because, as Kevin
15 showed, the CVs on an index can be very tight. And so, increasing
16 those, but by doing so with, by scaling the mean is a way to retain
17 the information that you have and that some years are known better
18 than others. So, that still gets carried in. But then the model
19 isn't exclusively trying to fit these indices. It's trying to fit
20 all of the data. And so, that 0.2 is the scale that was used for
21 incorporating those indices.
22
23 The model has 2 sexes. So, it's a male and female information. So,
24 the length data is provided. So, from the port sampling data, we
25 do have all of those samples by sex. And so, we are able to build
26 those sex ratios. And we do have life history information, and
27 growth information and length weight/information, I believe, that
28 are also sex specific.
29
30 Moving on, we've got the natural mortality, 0.34. And we've got
31 the fecundity relationship coming from a study in Cuba and the
32 maturity, also referenced here from VA. The models do not have any
33 recreational fishing, and so just an underlying assumption is that
34 the recreational fishing is considered constant or ignored. And
35 so, this continues to be like another research recommendation to
36 potentially also use LEK to understand recreational fishing. But
37 this is still kind of a data limitation, but just a reminder that
38 we're working with commercial data and understanding the
39 relationship between the stock and the data that we have to model
40 for the commercial fleets.
41
42 There is no discard mortality included in the model. We know spiny
43 lobsters are discarded, but because of the, like, high survival
44 and the selective nature of traps and dive, that was a decision
45 that was also consistent from SEDAR 57 in that, we do have
46 discards, but all of those discards are assumed to survive. The
47 age structure of the model is from 0 to the 15 plus age group, and
48 the size bins are from 51 millimeters to 248 millimeters, which

1 translate to 2 to 9.8 inches.
2
3 There's only one area, so it's not a spatially explicit model.
4 It's all of Puerto Rico. And, we're assumed to have a single
5 spawning stock population with a Beverton and Holt recruitment
6 function. And although the stock synthesis is using a Beverton and
7 Holt recruitment function, so that's relating the spawning stock
8 size to the expected annual recruitment, that's being kind of
9 intentionally decoupled because we talked a lot about the potential
10 and situation we're in of likely external recruitment. And so, in
11 SEDAR 57 and in the update, a high steepness was assumed. That was
12 of 0.95. And then, upon review of that and the intended effect of
13 decoupling this spawner/recruitment relationship, the SEDAR 91
14 models used a 0.99. So, just really, taking that assumption, like,
15 fully to the-- I don't think you can put a steepness of one in SS.
16 So, that's the way we're able to accomplish that assumption of
17 external recruitment, which also allows the stock to have high
18 recruitment even at very low levels. Like, even if the stock is
19 small, it's saying that we're not relying on the local stock to
20 replenish the recruitment, we can still have high recruitment when
21 the when the local population is low. So, that's just how that
22 spawner/recruitment relationship works when we have a high
23 steepness.
24
25 We have length-based selectivity and retention, and we also have
26 models that assumed, especially in the report, I explored this a
27 little bit in the sensitivity with the indices, but we assume that
28 the commercial catches have a high precision. And then, an
29 important note, just to reiterate, is that catches have increased
30 in recent years, but Daniel and others at the Department of Natural
31 and Environmental Resources did provide that report of high
32 abundance. And then Kevin and Stephanie were really able to dig
33 into the data.
34
35 You know, it's a lot of work to explore and clean up that data.
36 There's changes in the forms and changes, but getting to that time
37 series of when the data are consistently in the effort units and
38 removing of the years prior where things might have been either
39 low sample sizes or the forms might have been different, it's
40 really great to take that forward for all of our assessments, that
41 methodology for trying to get at what is happening to the
42 population from our fishery dependent data. So, thanks to everyone
43 for bringing that information to the table now. And so, that's
44 something we were able to explore and provide now the SSC with a
45 comparison of the outcome and the fits and the sensitivity of the
46 model to using that information.
47
48 This slide is in the stock assessment report, but with one edition,

1 which is that last line in yellow. But I'll just kind of overall
2 orient a little bit, which is on the far left, we've got the stages
3 of model development, which were the initial model runs, what the
4 assessment panel and what is described in the assessment report as
5 the base model. And then, sensitivity runs. And then we've got the
6 codes here. So, the model is a shorthand, and the codes are just
7 for how we look at the models. That's also, commonly, how we see
8 on some of the plots and tables. So, I just included that here as
9 well.

10

11 But I also can bring your attention to the model description, which
12 generally is kind of additive. There are some cases where it
13 doesn't go, like, sequentially. But, if we look at this here, we
14 see that the initial model for that initial stage of model
15 development was the SEDAR 57 model with the parameters unchanged,
16 but with an important recommendation to change the start year to
17 1985. And this had data through 2023.

18

19 Then, the next model looked at estimating the initial fishing
20 mortality for each fleet, so, no longer fixing those parameters to
21 what they were in SEDAR '57. Subsequently, new data sources were
22 added. And then the initial, once all of those data sources are in
23 the model, the initial equilibrium catches are estimated-- No,
24 they were actually-- they were estimated, but they were initiated
25 at locations that came from exploring their likelihood profiles.

26

27 So, we know we have a lot of uncertainty in our initial conditions.
28 We don't have a model that goes all the way back to when fishing
29 was expected to be negligible or when the stock was unfished. So,
30 this helps us really guide the model to those assumptions and that
31 starting place. It still gets to freely estimate these parameters,
32 but this is where earlier analyses of those likelihood profiles
33 guide where those parameters start.

34

35 Then we have a number of selectivities explored. And so, these
36 first two were related to the selectivity pattern. And so, just
37 verifying that even if we initiate the model at a logistics
38 selectivity, it still estimates that dome. So, that explores our
39 assumptions of the dome shaped selectivity.

40

41 We also have a run where we look at the lower steepness, so a
42 steepness of 0.8. So really, instead of that assumption of external
43 recruitment, considering the recruitment to be really tied to the
44 local population size. And so, that's, again, that's a sensitivity
45 just to provide the example of basically the opposite of our
46 assumption. What if it is tied? 0.8 is still intermediate as far
47 as a steepness value, intermediate to high. But, yeah, I think
48 it's a useful sensitivity run included in the report, to be able

1 to understand the alternative to the assumption of our 0.99
2 steepness.
3
4 We also have a combined sex sensitivity. So, instead of providing
5 male and female specific length and growth information, it is just
6 the information for male used for both of them. And so, that helps
7 us approximate, "well, what if this was a simpler model of just a
8 single sex model with a single growth for both sexes."
9
10 Next, the length weight relationship was updated to parameters for
11 the entire region. And so, SEDAR 57 used parameters specifically
12 from Puerto Rico, but when we incorporate the data from the larger
13 U.S. Caribbean, there's more information, more samples, and it's
14 not, unless there's like a strong reason that the length/weight
15 relationship differs across areas, it's kind of good advice to use
16 the regional information and to have your larger sample size and
17 information going into your length/weight relationship.
18
19 We have two additional sensitivities related to how those initial
20 equilibrium catches were parameterized. So, how those parameters
21 were initialized, so where they started. And so, we have our high
22 and our low. And so, I mentioned earlier that the base model was
23 parameterized with the best initialization, and then they also
24 explored the high and low. And then, we have a run where we have
25 a higher CV on the catch data.
26
27 All of those that I've talked about, so far, are summarized in the
28 stock assessment report. So, there's tables about how these
29 sensitivity runs affect and how those initial steps of model
30 development affect the parameters and the derived quantities. And
31 then, now we also have the sensitivity run for indices.
32
33 So, that is the base model plus those fishery independent indices
34 of abundance and that additional year through 2024, which I forgot
35 to include here. So, there are a lot of tables that provide a
36 comparison of the results and quantities coming out of all of these
37 sensitivity runs. But for the sake of time, for today's
38 presentation, we're going to focus on the SEDAR 91 base model,
39 which the report kind of justifies as the best model of those
40 presented in the stock assessment report. So, building up to it
41 and also specifically exploring and evaluating the sensitivity of
42 all the other models described here. And then, the other model of
43 focus today will be the sensitivity with the indices.
44
45 Okay. Before I go forward with showing some of the data and the
46 analyses and the results, are there any questions? Drink some water
47 as well. Okay?
48

1 So, the first thing that I'm showing you here are the results of
2 the quantile analysis.
3
4 Oh, I see here. I see movement.
5
6 **GRACIELA GARCÍA-MOLINER:** Okay. We're having a little bit of
7 technical difficulty. Hold on a second, Adyan. Thanks.
8
9 Okay. Thank you very much. So, you can continue.
10
11 **ADYAN RÍOS:** Okay. Thank you. So, the first thing we're showing
12 here is the quantile analysis for the dive fleet. And so, this has
13 quantiles of the size data for each year. So, the tenth percentile,
14 the twenty-fifth, the fiftieth, the seventy-fifth, and the
15 ninetieth. And so, if we had the hundredth in here, that would be,
16 like, what was the largest lobster observed each year? Or if
17 that's-- so this allows us to see whether, not just the average is
18 changing over time, so the 0.5 quantile, but what's happening to
19 lobsters at the smallest sizes and lobsters at the largest sizes
20 relative to the ones we're seeing each year over time. And overall,
21 what we see is not a lot of change in our quantile analysis. A
22 little bit of change is associated with our retention of our
23 smallest lobsters. But overall, we see that for many years now we
24 have the ninetieth percentile, and the tenth percentile lobster
25 have remained similar, as has the mean.
26
27 And so, on the left here, we have females, and on the right, we
28 have males. And sometimes this plot gets a little wonky, and that's
29 usually due to low sample size. So, there's low sample size years.
30 I believe this is 2008 and earlier. But again, this is like a
31 forest level view of the length composition data that an analysis
32 like this could show us. Like, "hey, you're not seeing any small
33 lobster anymore, or your smallest lobsters have-- like, if the
34 smallest lobsters that we're seeing have been increasing in size,
35 then that would tell us that we're not seeing any smaller lobster.
36
37 And the same would be true for the large lobster. If the largest
38 lobster, the ninetieth percentile of our lobster is decreasing
39 over time, that means that we're not seeing the same amount of
40 large lobster that we used to. But that's not what we're seeing
41 overall in this quantile analysis.
42
43 I believe this is also a nice kind of diagnostic and look at the
44 length composition data that is also going to be incorporated into
45 SEDAR 103, just being able to get a snapshot of just looking at
46 the length data, what is happening over time to the mean as well
47 as to the largest lobsters and as well as to the smallest lobsters.
48

1 So, next we will look at the trap fleet. And here we have a few
2 more years of low sample size. But overall, again, this forest
3 level view did not raise any concerns and just highlighted that
4 consistent size that we're seeing over time in the length data
5 that we have for the two gears and the sexes.

6
7 Okay. Now we're going to get into some slides with more than one
8 plot. So, I'll take my time to orient. Here on the left, we have
9 the landings time series. On the right, we have the indices of
10 abundance. And we have the colors representing the fleets. So,
11 blue is diving, and green is the pots and traps. And then for
12 landings, we have the total in black.

13
14 What we also see here is that inclusion of that 2024 data point.
15 So, for pots and traps, we have a slightly higher value, and for
16 diving, it is a slightly lower value. On the right, we have the
17 standardized indices of abundance provided by Kevin and Stephanie
18 with the corresponding colors.

19
20 Kevin also showed this. We don't have the uncertainty plotted here,
21 but we do have that on our next slide where we show the fits to
22 that. So, I want to do that first before we go further into seeing
23 more of the comparison between the SEDAR 91 base model and this
24 SEDAR 91 sensitivity model. That's just what we're going to look
25 at next.

26
27 So, in the sensitivity model, here we have the fits and the
28 standard error bars. These standard error bars are actually
29 rescale-- I think they're rescaled by ISS, but I'll double check.
30 But anyways, it's meant to represent 95% uncertainty around the
31 coin estimates of those indices of abundance.

32
33 We're seeing pretty good fits for a data limited model. We do see
34 that we're not capturing all years well. So, for example, there's,
35 like, a conflict in 2012 between the two indices. So, dive is
36 showing a decrease, and trap is showing an increase. So, the
37 model's kind of confused there. Oh, wait. That's not 2012. Let's
38 see. Yeah. That is 2012, 2010, '11, '12. They both show that they
39 both have the corresponding decrease.

40
41 So, I guess the point here that I wanted to make before I got
42 confused by my axes was that we're not capturing this deep drop,
43 and we're also not capturing really detailed fits to these indices,
44 but we are capturing this overall trend of increasing abundance
45 from 2012 on-- or from 2013 on.

46
47 **VANCE P. VICENTE CERNUDA:** Excuse me, Adyan. Jason has a comment.
48

1 **ADYAN RÍOS:** Yes.
2
3 **JASON COPE:** Yeah. Jason Cope. Yeah. Adyan, I actually think this
4 is a good thing to see that your model is ignoring that major dip,
5 because what's wild there also is that the highest confidence
6 interval is around that tiny value just because the values, I
7 think, are tiny and you put in constant CVs. But I think I'm happy
8 to see that the model isn't forcing itself to do some really wild
9 decrease and is kind of going through here.
10
11 It would be interesting as an additional, sort of, curiosity run
12 to flip on the added variance option. I think you would probably
13 show that you get the same results, but you'll just blow up the
14 CVs on this in order to incorporate those funky low numbers there
15 in 2012 through 2013 but still get probably very similar results.
16 So, I am not discouraged by your lack of fitting that. I'm happy
17 it's not fitting it.
18
19 **ADYAN RÍOS:** Thanks, Jason.
20
21 **VANCE P. VICENTE CERNUDA:** Okay, Adyan. Continue, please.
22
23 **ADYAN RÍOS:** So, now that we have the comparison now moving forward
24 between SEDAR 91 base and the CPUE sensitivity run with the
25 indices, and we just saw the fits to the indices for the model
26 that produces the selectivities on the right. So, on the right
27 here is the selectivities by gear for the-- sorry, by fleet for
28 that sensitivity run. And on the left, we have the values resulting
29 from the SEDAR 91 base model. And in the document that we provided
30 for the sensitivity, we also have tables that show the changes in
31 these sensitivities. And what you can see is they're very similar,
32 and those changes in those tables are quite small.
33
34 So, overall, the dynamics of the fleets in these models are not
35 changing by incorporating the additional indices. And that's good
36 because what we're trying to understand is that the indices relate
37 to the underlying population. And so, we still have similar fits
38 to the length composition data as well, because that's related.
39 The selectivity relates a lot to length composition data,
40 predicting the length composition data that are estimated. Okay.
41
42 So, now we'll move on to what's not the same, and this comes out
43 from the derived quantities. And we'll talk a little bit about why
44 this happens and why we kind of expect this to happen. What we see
45 here is the fraction of unfished spawning output. So, this is the
46 total biomass divided by the unfished spawning biomass. And we
47 have a reference line for 0.3.
48

1 What we see on the left is this relative spawning output before we
2 incorporate dynamic recruitment. So, this model uses a fixed, not
3 fixed, but a single average recruitment throughout the entire time
4 series. The model on the right does not, and we're going to talk
5 more about those recruitment deviations that are the cause of the
6 pattern change that we see here.

7
8 And so, on the left, we see that we have this M shape, and we still
9 see that on the CPUE sensitivity, because keep in mind our indices
10 don't start until 2001. But then during the period of time where
11 we do have the indices incorporated along with those recruitment
12 deviations, we do see quite a different interpretation of what's
13 happening to the stock.

14
15 And so, when we account and when we use the indices and provide
16 information for the model to understand that we have data telling
17 us about the relative abundance of lobster over time, it
18 incorporates that information and it tells us that, there was a
19 decline, but over the last decade, there has been an increase in
20 the spawning stock population. And so, this is saying that those
21 higher catches aren't actually fishing down the stock. Those higher
22 catches that we've seen in recent years aren't eating into our
23 standing sustainable stock size. They're actually capturing
24 additional individuals that have been added to the population
25 because of recruitment.

26
27 That's only possible to do because we have the indices of
28 abundance, and therefore we're estimating recruitment. Before we
29 used a dynamic model like this to understand what's happening to
30 recruitment, when you have the same recruitment every year, the
31 same expected recruitment every year, and your catch increases,
32 the model still expects your stock to only have received that same
33 number of recruitments. So, that's why it interprets that the stock
34 has been actually sharply declining while your catches have been
35 sharply increasing because you're not allowing the model to
36 understand that these catches are actually happening on a larger
37 stock that is being fed by this increased recruitment.

38
39 Okay, so I've kind of explained what I wanted to there, and I hope
40 that kind of-- we can come back to this slide too, but you now see
41 how the underlying trend in the stock kind of reflects what we see
42 in the indices.

43
44 This is another way of looking at that information, but now it's
45 not a ratio. I will point out that in these comparison slides,
46 maybe I should go back one for a second, our axes do change. And
47 I apologize for that. I'm going to try and learn how to fix these
48 to be a common axis. I just wanted to kind of bring your attention

1 to that detail. So, the reference line is still here but do pay
2 attention to the axes as I move forward.
3
4 And so, that brings us to our next slide, where we see that the
5 unfished spawning output was below. It increased a little bit. So,
6 this is the incorporation of the index, and the recruitment
7 deviations and it is actually saying that the bucket, the actual
8 total size of this population, could have actually been a little
9 bit higher when it was unfished.
10
11 And then we can keep going. We have a table later that gets us at
12 the MSY proxy, which tells us about the comparison between the two
13 models, about how the model is predicting the productivity of the
14 stock. So, providing that estimate of maximum sustained
15 productivity for each of these models' structures of the SEDAR 91
16 Puerto Rico spiny lobster.
17
18 Next, we have the fishing mortalities. And again, seeing the scale
19 and going up to, close to 3 or a little bit above 3 in that terminal
20 year and now being between 2 and 2.5. And so, the model previously
21 was saying, in these years you've been capturing 20%, 25%, 30% of
22 the available fish. And, again, that's because it only knew that
23 it was only expecting a certain amount of fish to enter the fishery
24 every year, grow to the size of capture, and then be available to
25 the fishery. And the fishery was reporting those larger catches
26 that we see. But that gets rescaled and understood to be different
27 when the stock is actually increasing over time, based on that
28 dynamic recruitment. So, that is what we see for the change in the
29 fishing mortality.
30
31 Next, we have the estimates of recruitment. And again, our scales
32 are changing. So, on the left here, it's a little bit over 1000,
33 and here it's just a little bit more over 1000. And so, that's
34 what our average recruitment is being predicted as. Here is our
35 average recruitment during years that are considered to be less
36 informed by available data. And I'm going to talk on this side a
37 little bit about what we mean by that and what we can also look
38 at.
39
40 And so, when you turn on recruitment deviations, you want to do
41 that only for the years where you have data like an index of
42 abundance, and when you have that understanding of length
43 composition and catch to be able to help predict that recruitment.
44 Recruitment happens because the model predicts that a certain
45 number of fish must have come into the stock in order for these
46 landings to have existed a few years later. So, that's how it kind
47 of relates to recruitment gets predicted, kind of, forward
48 projected to match what the size of the lobster that we have, the

1 amount of lobster that we have, and then the relative abundance of
2 lobster that we have. And so, doing that, the run that we had
3 prepared for the sensitivity only turned on our recruitment from
4 2001 to 2021. And so, it had these initial years that used the
5 model's average recruitment and the final years that used the
6 model's average recruitment too.

7
8 Now, this is an important decision, but it's quite common to turn
9 off the recruitment deviations in your most recent years because
10 that's when your model has the least amount of information to
11 predict recruitment. But we also looked at, I think I did pull
12 together an example of changing that to be all years or changing
13 that to be one year fewer. But this is an important thing to talk
14 about.

15
16 I'm glad that when I did my practice presentation, this question
17 came up because it is a very good question to say. Because these
18 do influence your projections. These final year estimates of your
19 most recent recruitment do carry forward into your projections.
20 But we do have a comparison, and we can look at that a little bit
21 later.

22
23 What we do see here is the level of uncertainty in the model-
24 predicted recruitment, as well as a drop in the last year predicted
25 recruitment, but not far below average. So, it's kind of back at
26 average recruitment. And then, with those three final years of
27 average recruitment. I did use the adjusted bias ramp, and I do
28 have additional slides that I was able to put together for that.
29 But I did want to highlight that and make sure that we talk about
30 that later when we come back to this. Okay. This is the next slide.
31 Oh, yes.

32
33 Okay. So, now I just want to bring your attention to what we saw
34 in the figures of that terminal year of each of these assessments
35 and what it interpreted the fishing mortality to be relative to
36 the F_{MSY} proxy of SPR_{30} . And so, in the previous model with that
37 static dynamic of that constant average recruitment, it estimated
38 the value to be at 1.26 or that the fishing was happening at 126%
39 of what it should be for that sustainable fishing mortality of the
40 F_{SPR30} .

41
42 Now with the indices and that dynamic recruitment and that
43 recruitment of 10 years of good recruitment, I forgot to point
44 that out here. So, like 10 years of above average recruitment. The
45 model says that the fishing mortality that we're seeing is actually
46 pretty close to the expected fishing mortality that is sustainable.
47 So, that ratio is 0.96.

48

1 And then, these are terminal years as well. So, I did want to
2 highlight that. So, this was run through 2023. This is run through
3 2024.

4
5 And then we also have the values of the spawning stock biomass
6 relative to the spawning stock biomass that produces the long-term
7 sustainable yield. And the previous model said that the stock was
8 slightly overfished at only 92% of that expected long-term value.
9 And then the current model says that we've actually seen a really
10 strong recruitment and growth in the stock, such that it's actually
11 at 132%.

12
13 Now we can take a quick look at the MSY proxies. And so, these are
14 first shown in what the model uses, which is metric tons. And so,
15 the sustainable maximum yield of the stock, previously, including
16 the recruitment deviations and the indices, was about 180 metric
17 tons, and now it's about 200 metric tons. And when we translate
18 that to pounds, it reflects 396,000 to 446,000. That's a 50,000-
19 pound increase.

20
21 Okay, so I did compile some additional slides related to the topics
22 that I brought up, but I do want to open the floor for questions
23 and just kind of orient to where we want to be heading, which is
24 discussion of these models and whether they can be used for
25 management advice. Any other questions or models that we want to
26 see. And then, in order to move forward, like always for all our
27 assessments, we need to make assumptions about what to include for
28 the landings between our terminal year and the year when we want
29 to start our projections. And so, I think that would be 2025 and
30 2026.

31
32 In past assessments, we've used a 3-year average, but that's just
33 something that we always want to revisit just in case there's more
34 information about, like, right now more fishing is happening than
35 we saw in the past 3-year average, or less fishing is happening
36 than we saw. Or should we just leave it at that 3-year average and
37 then just update it in a few years when those data are available?

38
39 And then, in order to get the ABC from the OFLs, we will also need
40 to just, you know, use a P^* . In the past, we've used 0.45. And the
41 sigma, which is recommended by the SSC to account for scientific
42 uncertainty. In the past, we have used 0.5.

43
44 So, open the floor to questions, and then I think we can circle
45 back to some of the additional questions that I prepared for.

46
47 **VANCE P. VICENTE CERNUDA:** So, the floor is open for questions.
48 Skyler, please.

1
2 **QUESTIONS/COMMENTS**
3

4 **SKYLER ROSE SAGARESE:** Skyler Sagarese. Thanks, Adyan. So, I just,
5 first of all, want to say you've done a ton of work on this model.
6 I think a lot of the improvements that you've made have made it a
7 much better product.
8

9 I was just curious, because you're proposing this model for
10 management advice, were you able to run the diagnostics for it to
11 just make sure that everything was behaving as expected? I know
12 it's a bit more work, but I would think that we would certainly
13 want to make sure that this model is performing well enough to
14 propose management advice from it.
15

16 **ADYAN RÍOS:** Absolutely. Thank you, Skyler. I do have that. I have
17 the R naught likelihood profile, and the steepness likelihood
18 profile. So, I'm just making notes to myself as to what to show,
19 just to come back to. So, diagnostics.
20

21 I can show them right now, or I can, kind of, listen to everyone's
22 questions and then go back in order. Okay. Let's go show them right
23 now, and then I'll just keep going until we get to another question
24 that pops up.
25

26 **VANCE P. VICENTE CERNUDA:** Yeah, Adyan. We would need a 15-minute
27 break and then come back at 03:15.
28

29 **ADYAN RÍOS:** Sounds good. Thank you.
30

31 (Whereupon, a brief recess was taken.)
32

33 **VANCE P. VICENTE CERNUDA:** Hello. Can you hear me? Yes. Okay. So,
34 it's 03:15.
35

36 So, we shall continue with Adyan. She's going to be responding to
37 Skyler's request. So, Adyan, whenever you want to come back in,
38 we're ready.
39

40 **ADYAN RÍOS:** I will in one moment. I have one more copy/paste.
41

42 **VANCE P. VICENTE CERNUDA:** Okay. Whenever you-- whenever you can.
43

44 **ADYAN RÍOS:** Okay. One more second. Sharing my screen now. Okay.
45

46 So, the first question was about diagnostics. I have all of those
47 that we can look at, except the initial F likelihood profile. In
48 previous SEDAR 57 models, we started with estimating only the

1 initial F for the, I believe, the trap fleet. The dive fleet
2 started at a negligible amount. And so, all of the effort of that
3 first year was estimated into one fleet, which facilitates the
4 likelihood profile. But the likelihood profile is a bit trickier
5 to do on the two fleets of just, kind of, increasing the initial
6 fishing mortality by, like, a ratio, to kind of-- It can be done.
7 It has been done, but I haven't been able to do it for the current
8 assessment. Matt did it for SEDAR 91. But that brings us to saying
9 what we do have, which are the jitters and the R naught likelihood
10 profile, the steepness likelihood profile, and the retrospective.

11
12 So, CPUE sensitivity is really stable. It always hits the same
13 likelihood, even when we run it with a 20% jitter on varying the
14 initiated parameters where the model starts fitting and estimating
15 those parameters. Previously, in SEDAR 91, it looks like there
16 were a couple runs that landed at different likelihoods. So, one
17 that went way off into a different combination of parameters at a
18 different equilibrium catch, and one that looks like it went off
19 as well, but just slightly different. Like, when we see pretty
20 stable jitters, both for the SEDAR 91 base model and the CPUE
21 sensitivity.

22
23 Next, we have the likelihood profiles. In the SEDAR 91 stock
24 assessment report, we can't really see this curve, this likelihood
25 profile, because there was one, it was-- wait, no. It's steepness
26 that I want to come back to. So, this one's fine. This one is
27 directly from this

28
29 This is matching from the SEDAR 91, base likelihood profile for R
30 naught. And we do see that there's a minimum, but we have the same
31 kind of really low, similar likelihoods across a pretty wide range
32 of R naught. So, that just shows the model is predicting the R
33 naught with the best likelihood, but there's also a space over
34 which there's almost equally predicted R naught. So, when we get
35 into changes in log likelihood, like less than one or less-- that
36 means that the model's performing pretty equally at those different
37 values of--

38
39 Over here. So, we also see that in the earlier model, the only
40 element of the likelihood is the length data. So, that's equal to
41 the total. That's because we were fitting catch exactly. And so,
42 now in the CPUE sensitivity, we've got likelihood components from
43 catch, from the length data, from the indices, from the estimated
44 recruitment, and from the estimated equilibrium catch.

45
46 Next, we have the steepness profiles, and here's where I removed
47 one that hadn't converged. When I removed that, we saw something
48 that-- we couldn't really see the shape. It was pretty-- it looked

1 like it was just completely flat because the value that had gone
2 way higher really distorted and lost the perception of what we see
3 here. But when I remove that, we do see that the SEDAR 91 base
4 does have a lowest likelihood. But again, every steepness above
5 0.8 has, like, pretty similar likelihood. So, the difference
6 between the log likelihood, whether it's one or 0.99 versus 0.8 is
7 less than 0.5.

8
9 Now, with the CPUE sensitivity run, we see that the model and based
10 on the length data and the index data and the recruitment
11 estimates, really prefers a steepness of, like, the highest we can
12 allow it to be. So, again, steepness is fixed at 0.99 in both
13 models, but this sensitivity shows us the outcome and how well
14 it's being estimated by showing us what likelihoods do we get when
15 that value is changed. So, how unlikely does that lower our values?
16 And then, we see that much lower values are becoming very unlikely.

17
18 So, that's it. So, those are the three that we have comparing
19 between the 91 and the CPUE sensitivity that I was able to just
20 bring these into the slides instead of, kind of, navigating in my
21 browser. And then, I also have the retrospective. I'm just going
22 to show the retrospective just for the CPUE sensitivity. The
23 retrospective for the SEDAR 91 base is in the SEDAR 91 report. And
24 so, we can also pull those up if we want to, but I just wanted to
25 start showing the retrospective. We have like 3 different slides
26 coming now with information about the retrospective.

27
28 I'm going to take just a quick second here. Escape. Make these a
29 little bigger. And I apologize for the overlapping legend.

30
31 Okay. So, on the left here, we have our estimates of F, predicted
32 by the model, when we peel off consecutively one year of
33 information. And so, it's changing slightly, but this isn't a
34 terrible retrospective pattern. We see the biggest shift going
35 from when we remove that fifth year of data, and we also see a
36 shift when we remove that first year of data. So, we go from blue
37 to this cluster and then down to red.

38
39 So, that's the effect of the peeling off of data on F. And here it
40 is on recruitment. And so, the final years of recruitment are the
41 ones that were associated with the highest uncertainty. And we do
42 see a bit of a retrospective pattern here, and we'll see that on
43 the next slides as well, as the model is having a tough time
44 predicting that final year of recruitment and then the subsequent
45 year of what happens in that next year.

46
47 So, here's the fix to the index with those peeling off of
48 information. And so, we've got the dive on the left and the trap

1 on the right. And, we do see a retrospective pattern, kind of
2 showing that the model constantly wants to predict a lower index
3 value in the terminal year. So, it wants to predict a lower value
4 in 2024. And then, when we only have data through 2023, it wants
5 to predict a lower value. And so, that is a bit of a concerning
6 retrospective pattern that we might want to investigate if that
7 continues to happen across, just because it's saying, like, when
8 we add a new year of information, we might expect this fit to be
9 a bit higher, reflecting what we're seeing in this trend that it
10 constantly predicts lower than expected until we get data for that
11 next year.

12
13 But again, the models have the least amount of information in that
14 terminal year. So, that's not too unexpected, but it is a little
15 bit of a concern for how we move forward with projections. And
16 that might be something I might be able to check really quick if
17 it happens when I use different recruitment settings.

18
19 **VANCE P. VICENTE CERNUDA:** Adyan, I have to interrupt you. Jason
20 Cope needs to intervene.

21
22 **ADYAN RÍOS:** Thank you, Jason. Yeah. Help me out here.

23
24 **JASON COPE:** Sure. Hi. Yeah. Jason Cope. Question about those fits.
25
26 If I'm thinking about this right, because this is the model that
27 includes the CPUE, and therefore, allow it to fit the CPUE. I
28 thought that model was fitting it really well. I don't recall a
29 dip at the end, and the data 0 years, wouldn't that one be the
30 model that fits-- that has all the data in it and it's fitting
31 for? But that one's also showing a dip, and I don't recall seeing
32 that in the actual model. It seems like it fits really well.

33
34 **ADYAN RÍOS:** Yeah. Good point.

35
36 **JASON COPE:** So, I'm not sure what that's doing. I'm just curious
37 if that retrospective was run on a model that truly isn't the real
38 base model because this looks-- because we're looking at what,
39 that left, the dive.

40
41 **ADYAN RÍOS:** Yeah.

42
43 **JASON COPE:** Yeah. And it's fitting it good. So, I don't-- yeah.
44 That might just be an artifact of a different model that you ran
45 the retro on. And--

46
47 **ADYAN RÍOS:** Yeah. So, I can double check that.

48

1 **JASON COPE:** Okay. Great.
2
3 **ADYAN RÍOS:** Yeah. Because that was weird to see it going all the
4 way through 2024. Yep.
5
6 **JASON COPE:** Yeah. I'd say it should show really nice fits, and I
7 expect, if you use that base model, that it will continue to show
8 pretty nice fits. It might wiggle a little bit because of that,
9 like you said, that recruitment uncertainty kind of gets a little
10 higher. But this dip, there's something funky here.
11
12 **ADYAN RÍOS:** Yeah. And then, just the last of the retrospectives
13 are these-- I forgot what these are called, but these are, like,
14 predicting the next year. And I'll try and fix the axes on this,
15 but we can't really tell what's going on. So, we'll come back to
16 that.
17
18 And then here's one where we actually can see the axes. And we're
19 seeing that dip again, that predicted dip in subsequent estimated
20 year. And so, that's something that definitely want to double check
21 and look into because that's not what we, kind of, saw when we fit
22 the data through 2024, earlier, in the fits that we saw. Okay.
23
24 So, that covers the retrospectives. I'll also circle back to, like,
25 this, that, kind of, like, instability that we saw in the
26 recruitment deviations. I wonder if it also relates to what year
27 I'm running the recruitment deviations through. And so, I did want
28 to just show how I'm using the recruitment deviation and variance
29 and how I am using the bias ramp, that SS, those recommended years.
30 And that it does, we do see, like, that highest uncertainty in
31 that last 2022 associated with that kind of decrease compared to
32 the previous 10 years back to being similar to average recruitment.
33 So, I know, Jason, you had kind of mentioned to me before-- Yeah.
34 Go ahead.
35
36 **JASON COPE:** Yeah. No. Thank you for this. This is very informative.
37 So, what it's telling me is that you have a fair bit of information
38 on recruitment to be estimated, and so your decision to flip that
39 switch and estimate recruitment is one supported by data.
40
41 My guess is you mentioned the question on what you do with those
42 last few years where you probably don't have much information
43 because of the lag, and selectivity selecting for the lengths,
44 which is where you're getting your recruitment information from,
45 mostly. And in this version, I believe this is probably the base
46 model version, you've already made the decision of cutting those
47 off, which is why we see that last year kind of just stop.
48

1 My curiosity, you might be able to support your point for turning
2 those off if you show a model that actually estimates through the
3 end of the year. My guess is that information content, maybe just
4 to orient everyone, I'm looking at that middle figure. And
5 theoretically, if there wasn't much information, we would expect
6 those dots to be closer to that red line or above it or something
7 like that. When it drops below that red line, we interpret that,
8 usually, as the model having some information. And my guess is
9 those last, in this case, 3 years, if you turn them on an estimated
10 recruitment through those, I'm guessing that they are going to
11 dive closer to that 0.6 value, that red line, which does tell you
12 could turn them effectively off, like you're doing.

13
14 So, I think what you've chosen to do is probably the right
15 decision. You could show that with that model estimating all the
16 way through the time series. And, yeah, yeah, there you go.
17 Perfect. Thank you. And so, yeah, those last two are basically
18 there showing you that you'd really—

19
20 Now, my guess is if you bias corrected using this exact model in
21 those, you might get the exact same result as what you've already
22 done, which is turn them off. But I think that plot that you just—
23 - that little floating one that you just showed is supportive of
24 your decision to turn off the last three.

25
26 So, great. Thanks.

27
28 Are these ones you're showing here that model that estimates it
29 all the way to the end or doesn't? And I can't hear anyone now.

30
31 **ADYAN RÍOS:** Well, I've been speaking, and that's unfortunate.
32 [laughter]

33
34 **JASON COPE:** Okay. It's not just me.

35
36 **ADYAN RÍOS:** Yeah. So, thanks. Sorry about going silent on you
37 there. But, yeah, I was showing these models as the comparison of
38 the F and the fraction unfished and the recruitment for when we
39 have it on through 2024, and then also when we have it on just
40 through 2021. So, peeling one year off as well.

41
42 So, it doesn't really have a big outcome on our interpretation of
43 F and of our relative biomass. But I assume that this would be
44 influential into projections.

45
46 **JASON COPE:** That's exactly right. That was what I was going to say
47 is even though your terminal stock status and stuff doesn't care
48 about this, you rightfully point out it is going to push that

1 forward And then it's going to take, as you mentioned earlier, any
2 projections are going to be based on an average recruitment going
3 forward or pulling it off the stock recruit curve. And so, it's
4 yeah. You don't want that red thing happening.
5
6 So, all of this supports your decision on turning off those last,
7 at least couple of recruitment deviations.
8
9 **ADYAN RÍOS:** Thanks, Jason. I actually think that in the forecast
10 file, we might be reverting to the average recruitments, but that's
11 still only for the average recruitments going forward. So, again,
12 those--
13
14 **JASON COPE:** Correct.
15
16 **ADYAN RÍOS:** --recruitments in those last couple of years. And
17 these are poorly informed. Do you see, like, how high the rates
18 are in those last years?
19
20 **JASON COPE:** Yeah, but It is going to push forward an age structure
21 that, like you said, is not informed and saying something really
22 severe, which is a complete failure in recruitment, which I don't-
23 - not the type of precaution, I think, we're looking for when we
24 want to do our projections. So, again, you're right in turning
25 those off.
26
27 **ADYAN RÍOS:** Thanks. Make that a little bit bigger.
28
29 Okay. So, I do have just one slide here that I thought might come
30 up as a question. Let me see if there are any questions in the
31 chat. Okay. Not yet.
32
33 So, I did really focus on comparing the base to the, CPUE
34 sensitivity run, but there were models that were explored in that
35 model development process. And so, I did want to just kind of point
36 out that these are also models that we were able to kind of look
37 at and think about and understand. So, that's how we got to 3g. In
38 case you were wondering if-- about 3g, I kind of quell that
39 curiosity here.
40
41 And so, initially, I wasn't directly exploring recruitment
42 deviations in data limited models. Kind of, the framework, or the
43 approach that I had, was that that would be something that I would
44 do at the very end, once I understood the model dynamics. And so,
45 that's why that follows this structure. But I was also trying to
46 find a good fit between the data components without recruitment
47 deviations. And so, that's what led to the two decisions of
48 deviating from estimating the exact patch and using a more detailed

1 F estimation approach, that estimates the parameter for each year.
2 So, that went into those decisions of getting us to model three.
3
4 But I also have model 00g, which is essentially the base, plus rec
5 devs, plus trap index, plus dive. And then we also have, model 3C,
6 which I have a slide here on the next-- information on the next
7 slide, which kind of gets at how was the model fitting the catch
8 before we included the rec devs?
9
10 And so, before we included the rec devs, there was a period of
11 time in the late 2000s where the model is-- I always get these
12 confused. --solid line is the is the observed. So, the model is
13 predicting lower landings.
14
15 No. Sorry. Observed solid line. Yeah. And expected. I always get
16 those confused with the observed and expected versus predicted.
17
18 So, anyway. So, there's that discrepancy in the diving fleet during
19 these periods of years and these periods of years. And I note that,
20 like, I think all of these years are the ones where we are, like,
21 carrying over that correction factor. So, the correction factors
22 are not year specific in these years. I wasn't too surprised. It
23 got me curious of saying like maybe there is some variability in
24 that correction factor. But again, we go back to fitting our
25 catches and treating them as strongly informing our model, when we
26 use the recruitment deviations.
27
28 And then this slide shows that 00g compared to 3g. Let me make
29 this big. And so, we get really similar trends, but we get a
30 slightly different R naught, which isn't too surprising. So,
31 essentially here, what I think-- the big difference between these
32 two models is that the blue one is fitting the catch exactly, and
33 the red one is not. They're fitting the index similarly, and the
34 trends are similar. But what we see change is that R naught. And
35 that's not too surprising because we did have that low likelihood
36 surface for R naught as well.
37
38 Jason?
39
40 **JASON COPE:** Yes. Jason Cope.
41
42 **VANCE P. VICENTE CERNUDA:** Yeah. Jason?
43
44 **JASON COPE:** Thank you. Thank you, Vance. And, yeah, Adyan, this
45 is great. I will say I prefer the double 00g version, the one
46 without the variance on the catches, because I think of these
47 models, all these sensitivities, they're little, tiny experiments,
48 and we like to control our experiments. And the addition of the

1 variance on the catches, they're saying something. They're saying,
2 "we don't know if these catches are right and we're going to let
3 the model wiggle around and figure out what catches it wants." My
4 worry is that it's got so many wiggles to do, with moderate data,
5 that it becomes a place where variance just gets soaked up. And
6 it, ultimately, as you show very well here, it creates an
7 alternative reality for the catches.

8
9 And so, I think then the question becomes, is the catch series
10 that went in the best catch series? Or do people believe that the
11 catch series that was estimated or realized by this model, that
12 was able to change it, a better realization of catches? And just
13 in my mind, I prefer to kind of go in on these models saying, "this
14 is our best estimate of catches."

15
16 You can show these sensitivities, but controlling catch in this
17 experience, for me, I would rather propose alternative catch
18 histories that might be realistic rather than let the model wiggle
19 it and do something that, for me, becomes more of a black box.
20 Like, why is it doing that? Why did it choose it higher
21 here and whatever? And like you say, it has a little bit of effect
22 on scale, as it should, because the scale of this model is
23 determined by the catches that are realized.

24
25 And so, again, I prefer to control that in these models. This is
26 one of per person's opinions. And so, I definitely don't want to
27 say, "that's the right way," but kind of arguing, I like the fact
28 that you provide this 00g version. For me, I think it's a bit more
29 preferable because I know what the catches are versus the model
30 did something to realize new catches and then you have to back up
31 and say, do I believe that? And I guess that would be a question
32 for the rest of the group. Thanks.

33
34 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Jason. Are there any
35 other questions or comments? I don't hear anything. So, Adyan, can
36 you continue, please?

37
38 **ADYAN RÍOS:** Okay. Thank you. I think that's a great observation.
39 And, like, I think it's part of the model development of going
40 down the road of exploring these fits and the effect of these
41 individual indices and things like that. But then, when it comes
42 down to it's a-- I recall why I went down this road and others,
43 but it does make sense to like, kind of bring it back to finishing
44 our experiments and then coming back to like the 00g model.

45
46 And so, the diagnostics for the 00g would take me, probably, like,
47 10 to 15 minutes to run. And so, we could have those. I could
48 probably plot the comparison between 00 and 00g, and that will

1 kind of give us the material for justification of the potential
2 for 00g being the model for which management advice would be based.
3
4 I could compare, maybe, the three ones that are in red on one plot
5 similar to what we have shown here and just kind of see if that
6 gets us to a final recommendation.
7
8 **VANCE P. VICENTE CERNUDA:** Okay. Richard Appeldoorn, please.
9
10 **RICHARD APPELDOORN:** Yes. I'm getting back to Jason's comments on
11 catch. One of you, I think it was you mentioned something about
12 not having a good handle on correction factors in the later years.
13 Is that the case?
14
15 **ADYAN RÍOS:** Yeah.
16
17 **RICHARD APPELDOORN:** So what years are in question here?
18
19 **ADYAN RÍOS:** Is Refik gone? He knows it by heart, and I know Kevin
20 knows it as well.
21
22 **VANCE P. VICENTE CERNUDA:** Kevin?
23
24 **KEVIN MCCARTHY:** Yeah. Thanks, Vance. Kevin McCarthy. So, the
25 correction factors become less certain starting in 2020 with the
26 beginning of the electronic reporting. So, we use an average of--
27 a coast specific average of correction factors for the preceding
28 several years and those get applied to the landings by coast since
29 starting in 2020 through current, right now, but through the end
30 of this time series 2024.
31
32 **RICHARD APPELDOORN:** Yeah, certainly during the beginning of that
33 period, you've got COVID issues and things like that. So, fishing
34 isn't going on like the way it has in the past. And who knows how
35 that's affecting what the corrective factor ought to be. So, this
36 goes back to Jason's comment about not really letting the model
37 try to do something but there may have been something going on
38 that we're not capturing.
39
40 **VANCE P. VICENTE CERNUDA:** Adyan?
41
42 **ADYAN RÍOS:** Yeah, and I think that's something that LEK could help
43 with, when we kind of try and determine what alternative time
44 series should be considered. And then, I think that 2017 was also
45 interpolated. The hurricane year. So again, this is telling the
46 model "do whatever you want," which is not some-- it's done as,
47 like, experimental. But I do think that our best path forward might
48 be to not treat that as an experiment and treat our landings as

1 known. And if we do think that maybe the correction factors were,
2 well, hopefully, maybe those will become available too as we move
3 forward.

4
5 But for now, interpolation of correction factors has been the
6 solution proposed at the data workshop for all of our species to
7 account for these years where they haven't been year specific and
8 it's like an average. And so, I think that has been, like, the
9 approach that we've been using consistently in our assessments to
10 use the catch that we have. And we're able to consider other catch
11 time series, but they need to be based on, like, a hypothesis of
12 what that time series should be with justification and development
13 of that other time series.

14
15 **RICHARD APPELDOORN:** Yeah. I agree. Thank you.

16
17 **VANCE P. VICENTE CERNUDA:** Any other questions or comments for
18 Adyan? I don't hear anybody. So, Adyan, you want to start making
19 some conclusions? Or--

20
21 **ADYAN RÍOS:** I would like to provide the-- I would like half an
22 hour, for us to come back in half an hour to just be able to see
23 the remaining diagnostics for that 00g plot. And that way-- Because
24 I don't want to push it into tomorrow. I could do it in this half
25 hour and then we could look at it tomorrow. But then I also want
26 to leave time for the presentations that we need to do tomorrow.

27
28 **VANCE P. VICENTE CERNUDA:** Okay. Jason?

29
30 **JASON COPE:** Yeah. Jason Cope, thank you. One thing we could discuss
31 while Adyan's running those models. Adyan, you presented to us the
32 idea of how we're going to treat uncertainty and come up with a--
33 use the OFL and come up with an ABC. Maybe the SSC can have that
34 discussion while you're running that model, because I don't think
35 that that's going to change given this model diagnostics that
36 you're going to show us. The two models are very similar.

37
38 There might be a little bit more catch coming out of this new one,
39 but I don't think there's any change in what we need to talk about
40 regarding this decision and how we treat the output of the model.
41 So, I would propose that we have this discussion while you're doing
42 that, and then you can present us with the results when you're
43 ready.

44
45 **ADYAN RÍOS:** That sounds good. I'm wondering if, maybe, Cristina
46 or Liajay, if you guys have my slides and you want to just pull it
47 up and run the slides in case there needs to be moving around just
48 so that I can go off screen and make use of my multiple screens.

1
2 **LIAJAY RIVERA GARCÍA:** Yes, Adyan. We can do that. Do you mean the
3 one on the email or the one-- did you recently send another with
4 these new slides?
5
6 **ADYAN RÍOS:** Let me-- file. Where do I do this? Download.
7
8 **KEVIN MCCARTHY:** So, Adyan, just so you know, you're sharing your
9 screen still.
10
11 **ADYAN RÍOS:** I'm still sharing the presentation screen. Yeah. I can
12 stop. Thank you. How do I stop?
13
14 **VANCE P. VICENTE CERNUDA:** Well, in addition, Jason, we have to, as
15 the SSC, determine whether the information that has been presented
16 to us is best-- the best available scientific data, and that if we
17 feel that it is sufficient for the SSC to submit catch information
18 for the Caribbean Fishery Management Council on this forthcoming
19 meeting in September. I mean, later on in October.
20
21 So, I need somebody to make a motion saying, well, the SSC accepts
22 the information provided in this final-- Well, my computer went
23 out. --final recommendation on SEDAR 91 spiny lobster Puerto Rico
24 is based on the best scientific information available.
25
26 I need somebody to put that in, and then we can take a take a vote
27 on it. That's the SEDAR process.
28
29 **LIAJAY RIVERA GARCÍA:** Thank you, Adyan. We just received the
30 PowerPoint.
31
32 **RICHARD APPELDOORN:** You've got Jason waiting.
33
34 **VANCE P. VICENTE CERNUDA:** Yes, Jason. Vance.
35
36 **JASON COPE:** Yes. This is Jason Cope. Vance, you're right. We have
37 a couple of things we want to do. Obviously, we want to see this
38 last model. I really don't anticipate-- everything that I've seen
39 and all the reasoning we've seen the new data and how it was worked
40 up. I feel like that was an appropriate way. I think we outlined
41 some really good research recommendations for further improvement.
42 I love the discussion on local ecological knowledge. It infuses so
43 many of the discussions we're having here, so, that's great.
44
45 So, I think everything that I've personally seen seems to support
46 the best available information. One thing I did want to say is
47 that is that SEDAR 57 model presented itself as this platform from
48 which additional information, when available, could get added. And

1 this new model is kind of meeting that expectation, living up to
2 that promise. And so, building off of that previous one that we
3 accepted, I feel like we've added some very good information,
4 fishery dependent relative abundance index, and I think it was
5 done in an appropriate way.

6
7 And so, everything that I've seen thus far, I feel, again, I don't
8 know if this is premature until we officially see the this 00g
9 model and its diagnostics, but I just want to throw out there I
10 have not seen anything that would go against my support of this
11 being the best available information and model for management
12 advice.

13
14 **VANCE P. VICENTE CERNUDA:** So, we have the alternative for waiting
15 half an hour or so or concluding this SEDAR 91 Spiny Lobster Puerto
16 Rico tomorrow morning. In the meantime, I don't know whether Adean
17 wants to begin filling up the other parts of the agenda, such as
18 the SEDAR 84 stoplight parrotfish-- ¿no? Sí, por eso. Entonces,
19 ¿que hacemos? ¿Ah?

20
21 **VANCE P. VICENTE CERNUDA:** Ok, so, we'll wait for half an hour to
22 conclude this. Jason, you wanted to discuss?

23
24 **JASON COPE:** Sorry, this is Jason Cope. On this topic right here,
25 last time, this is how we moved forward. What I've seen is, I think
26 that the CVs coming out of these new models are much lower than
27 the sigma of 0.5. So, using a sigma of 0.5 again seems very
28 appropriate. It's what we did last time.

29
30 I don't think we have any arguments to say it should be higher. I
31 don't think I would support for it to be lower and using what's
32 coming out of the model. So, I would support this in in the P* of
33 0.45. I mean, I don't have any problem with that either.

34
35 So, I don't know if we can have some discussion on this point
36 because if we can if we can come to a conclusion about this, then
37 all we're left to do is accept the model, and then it the OFL and
38 the ABC are going to come-- well, the OFL will come from the model,
39 the ABC will come from this control rule. And I think we're-- I
40 think we're there, but I would love discussion or to hear what
41 others on the SSC think.

42
43 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Jason. Richard
44 Appeldoorn.

45
46 **RICHARD APPELDOORN:** Yes. Jason, do you recall how much lower the
47 models were coming up with CVs?

48

1 **JASON COPE:** So, on one of the slides and I think if we back up one
2 from here, I think there was a slide that said, so the MSY proxy
3 right there has a CV of, like, 10%. This new model having-- again,
4 just extrapolating out or guessing the 00g model seemed to have a
5 very similar uncertainty as this model, certainly didn't have
6 something way, way higher. And so, I anticipate it to be something
7 around here, which is well below 0.5. And so, using 0.5 seems
8 appropriate.
9
10 **RICHARD APPELDOORN:** [inaudible] It could actually be lower.
11
12 **JASON COPE:** It could be lower than this.
13
14 **RICHARD APPELDOORN:** Well, lower than the 0.5?
15
16 **JASON COPE:** Oh, it's going to be. Yeah, it's going to be way, way
17 lower. But the decision to use the 0.5 is based on recognizing
18 that these models, this one model by themselves are inherently
19 underestimating uncertainty, which is why we have all those other
20 sensitivities and likelihood profiles and all those things. And if
21 we actually did an ensemble model, truly representing uncertainty,
22 it would definitely be at least 0.5.
23
24 So, bumping these reference models up to 0.5 for our control role,
25 I think, is very appropriate. And it's what other places do in the
26 country.
27
28 **RICHARD APPELDOORN:** All right. Thank you. That makes it a lot
29 clearer.
30
31 **VANCE P. VICENTE CERNUDA:** Any other comments or discussion until
32 we get ready for Adyan to come back to us? I hear none. So, we'll
33 be waiting for-- Richard. Pardon? Richard.
34
35 **RICHARD APPELDOORN:** Oh, as I understand it, we have two questions.
36 One is, do we have the best available data? And the second question
37 is, given that, is that level of data acceptable for providing
38 management advice? And those are two different questions. Right
39 now, I'm not seeing anything that doesn't say we have the best
40 available data.
41
42 We can answer that one. But whether it's acceptable for management
43 advice, that's what we're waiting for Adyan to give some last few
44 graphs on. That's my understanding.
45
46 **VANCE P. VICENTE CERNUDA:** Okay. So, we can take the first one,
47 whether the committee, Scientific and Statistical Committee
48 believes that the final recommendations, the final review for The

1 Caribbean stoplight-- I mean, for the-- Jesus Christ. Caribbean
2 spiny lobster Puerto Rico is based on the best available
3 information.
4
5 **RICHARD APPELDOORN:** Well, I would make a motion to that effect.
6
7 **VANCE P. VICENTE CERNUDA:** Yes, go ahead.
8
9 **RICHARD APPELDOORN:** Well, I'm making a motion that the SSC feels
10 that the data used and the modeling approach used for SEDAR 91
11 Spiny Lobster Puerto Rico is the best available data. You can work
12 on the English.
13
14 **VANCE P. VICENTE CERNUDA:** Sorry. *The SSC moves to recommend the*
15 *assessment for SEDAR 91 U.S. Caribbean Spiny Lobster for Puerto*
16 *Rico as the best scientific information available.* That is the
17 motion by Richard Appeldoorn. Any discussion? Richard, do you
18 accept the way it's written down?
19
20 If okay. If there's no-- then we're open for discussion--
21
22 **RICHARD APPELDOORN:** I'm still reading.
23
24 **VANCE P. VICENTE CERNUDA:** --before we go for voting.
25
26 **RICHARD APPELDOORN:** Vance, I'm thinking.
27
28 **VANCE P. VICENTE CERNUDA:** Okay.
29
30 **ADYAN RÍOS:** Hello, Richard. This is Liajay. Can you repeat that
31 again? We can't hear you.
32
33 **RICHARD APPELDOORN:** I haven't said anything yet. Walter has his
34 hand up, though.
35
36 **VANCE P. VICENTE CERNUDA:** Walter, please.
37
38 **WALTER KEITHLY:** Thanks, Mr. Chairman. Just a technical point. I
39 wonder if anybody looked at the relative prices of lobster with
40 other species. I was looking at the CPUE and large increases over
41 time over the past decade. And Skyler had a little bit of concern
42 with the large jump from 2013 through 2015 roughly saying, is it
43 possible? Now, I realize that could be external recruitment,
44 doesn't necessarily mean local recruitment to the stocks. I guess
45 with external, you could have large increases from one year to the
46 next.
47
48 But you could also have significant changes and increases in your

1 CPUE if they're able to target lobster to some extent. And the
2 price of lobster has increased relative to the other prices that
3 are of the species that were given earlier as being in the same
4 areas as lobster. Thank you, Mr. Chairman.
5

6 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Walter. I think Kevin
7 addressed that issue regarding what a lobster habitat or lobster
8 place is, by knowledge of the fishermen and also by association
9 with certain reef fish. So, I don't know if Kevin wants to jump in
10 on this one again. Yes, Kevin.
11

12 **KEVIN MCCARTHY:** Thanks, Vance. Kevin McCarthy. Walter, we didn't
13 directly answer your questions as we didn't look at prices. Yeah.
14 There's certainly a role there or could be, but we didn't look at
15 prices in this CPUE analysis.
16

17 **VANCE P. VICENTE CERNUDA:** Walter?
18

19 **WALTER KEITHLY:** If I could follow-up on that Mr. Chairman and
20 Kevin, you maybe gave the answer, but I can't remember. You looked
21 by different gears. Did you look at specifically the lobster trap
22 versus fish trap? Because you said the lobster trap would be able
23 to target more specifically for lobster. Was there a significant
24 difference in your changes in CPUE for those 2 gears?
25

26 **KEVIN MCCARTHY:** So, this is Kevin again. So, we didn't do the full
27 analysis for the lobster trap because there were so many-- there
28 was a lot of missing data. So, it didn't meet the criteria we had
29 set for having sufficient data. What we did see, though, in
30 exploring the data is that the proportion positive, meaning the
31 trips that came back with a lobster, for all of all of the trips
32 that went out that fished lobster traps, that percentage of the
33 trips that came back with lobster landings was really high. I mean,
34 of course, they're targeting lobster. You know?
35

36 So, they would have 95, 99% proportion positives. There may have
37 been one or two years where it dipped, but it dipped to, like, 90%
38 or something like that if I'm recalling correctly. So, the
39 proportion positives for the fish traps were around 80%. There may
40 have been a couple of years when it dipped a little lower or went
41 a little higher, but it was quite a bit less.
42

43 So, the main difference I saw was proportion positives, which is
44 why I'd say they're specifically targeting lobster and the fish
45 traps aren't necessarily doing that. Maybe some of them are. But
46 we didn't put together an index for the lobster trap only, just
47 because the data were insufficient for a couple of the coasts and
48 for a lot of the years.

1
2 **WALTER KEITHLY:** Okay. Yeah. Okay. Thank you.
3
4 **VANCE P. VICENTE CERNUDA:** Kevin, I just remember, Julian, in our
5 last meeting stating that they get targets specifically for trigger
6 fish depending on the bait that they use in their traps. Was any
7 type of attractive bait used for lobsters in this fish trap study?
8
9 **KEVIN MCCARTHY:** Well, it wasn't a study. This is Kevin again. It
10 wasn't a study. We used the data coming out of the commercial
11 logbook reporting forms. So, they baited them however the fishers
12 normally fish.
13
14 And I'm sure that differs among differs among-- Sorry about that.
15 I was getting an echo. I'm sure that it differs among the different
16 fishers. You know, they're probably, if you got 100 guys fishing,
17 you might have 100 different ways of doing things. So, we had no
18 control over that.
19
20 **VANCE P. VICENTE CERNUDA:** Okay. Thank you. Richard Appeldoorn.
21
22 **RICHARD APPELDOORN:** Yes. So, my very unscientific input into this
23 is based on two things. One, talking with Andy Maldonado, who's a
24 diver, who was informing me that the catch of lobsters have
25 increased so much that the price has gone way down to the
26 fishermen. There's nothing gone down in the price of lobster in a
27 restaurant. That's just increased substantially and of course
28 driven by inflation in the early 2020s. [crosstalk]
29
30 **JULIAN MAGRAS:** This is Julian. Can I make a comment?
31
32 **VANCE P. VICENTE CERNUDA:** Yes, Julian.
33
34 **JULIAN MAGRAS:** Yes, Julian Magras for the record. So, just to talk
35 about the question. One of the questions was if we can target the
36 size and stuff like that. It's what the market demand is. The
37 market demand has a certain size of any species that we harvest,
38 what it can use. As it pertains to the lobsters, there's a certain
39 size of lobsters that are harvested in the lobster traps,
40 especially the Florida plastic traps.
41
42 You don't normally catch a lobster that's bigger than 6 pounds in
43 those traps. So, your average lobsters are, like, a pound and a
44 half. It's, like, a pound and a half to, like, 4 pounds average,
45 that you would catch, besides the ones that we released, the
46 shorts.
47
48 So, the bigger lobsters now are more caught by diving or by the

1 nets in Puerto Rico. So, but it all boils down to what the market
2 demand is. And most of that is restaurants in Puerto Rico compared
3 to the Virgin Islands where the local people that buy a lot of the
4 lobsters also. I hope that helps.

5
6 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Julian. We have Skyler
7 next.

8
9 **SKYLER ROSE SAGARESE:** Yes, Skyler Sagarese. Walter, I can't answer
10 your question directly, but I'm looking through the Caribbean
11 ecosystem status report. And it does have a plot that shows the
12 percentage of total revenue by grouping, by island platform. So,
13 it's not giving us price per pound, but it's at least giving us an
14 idea of over the time series how much of that total revenue has
15 been lobster.

16
17 I don't know if that would help, but I'll post that link as well.
18 You can download the ecosystem status report for Caribbean region.
19 And I know the staff putting that together are always interested
20 in input on what other metrics could be really helpful. So, that's
21 something maybe for us to consider. Thank you.

22
23 **VANCE P. VICENTE CERNUDA:** Thank you, Skyler. Richard Appeldoorn.

24
25 **RICHARD APPELDOORN:** Yeah. Can I get back to the motion? Yes?

26
27 **VANCE P. VICENTE CERNUDA:** Yes. We'll go back to the motion.

28
29 **RICHARD APPELDOORN:** Okay. I'd like to revise the wording just a
30 bit. So, delete "moves to." And then after "recommend" would be
31 "recommends that". And then after "Puerto Rico," would be--

32
33 **LIAJAY RIVERA GARCÍA** Sorry. Could you repeat again?

34
35 **RICHARD APPELDOORN:** After "Puerto Rico," we're going to say, "is
36 based on the best scientific." So, delete "as" and--yeah, delete
37 the "as."

38
39 That sounds more like I think what we're supposed to be addressing,
40 or I could refer the committee to every other assessment we have
41 made where we've had to answer this question and use the wording
42 from those.

43
44 **VANCE P. VICENTE CERNUDA:** Well, let me read it as it's written
45 down. Okay? Motion number one. The SSC recommends the assessment
46 for SEDAR 91 U.S. Caribbean Spiny Lobster for Puerto Rico is based
47 on the best scientific information available. That's the way it
48 reads right now. Any discussion or any comments?

1
2 **RICHARD APPELDOORN:** After "recommends" is the word "that."
3
4 **VANCE P. VICENTE CERNUDA:** "Recommends that the assessment of SEDAR
5 91 U.S. Caribbean Spiny Lobster for Puerto Rico is based on the
6 best scientific information available." Does that read better?
7
8 **RICHARD APPELDOORN:** Yes, sir.
9
10 **VANCE P. VICENTE CERNUDA:** Okay. Okay. So, we need to have somebody
11 to second the motion. J.J., please?
12
13 **JUAN J. CRUZ-MOTTA:** J.J. Cruz, I second the motion.
14
15 **VANCE P. VICENTE CERNUDA:** Thank you. ¿Quién fue la otra? Elizabeth?
16 Elizabeth.
17
18 **ELIZABETH KADISON:** I'm sorry. I was just raising my hand to second
19 the motion.
20
21 **VANCE P. VICENTE CERNUDA:** Okay. So, do we have a discussion on
22 this motion before voting? J.J.?
23
24 **JUAN J. CRUZ-MOTTA:** Yes. I basically agree with what Richard
25 proposed. That's all.
26
27 **VANCE P. VICENTE CERNUDA:** Okay. So, we need to vote. First, I have
28 to read it. The motion reads as follows.
29
30 "The SSC recommends that the assessment for SEDAR 91, U.S.
31 Caribbean Spiny Lobster for Puerto Rico, is based on the best
32 scientific information available."
33
34 So, it's open for voting. So, SSC members say their name and say
35 yes or no or abstain.
36
37 **JASON COPE:** Jason Cope, yes.
38
39 **ELIZABETH KADISON:** Elizabeth Kadison, yes.
40
41 **TARSILA SEARA:** Tarsila Seara, yes.
42
43 **RICHARD APPELDOORN:** Richard Appeldoorn, yes.
44
45 **JUAN J. CRUZ-MOTTA:** J.J. Cruz, yes.
46
47 **SKYLER ROSE SAGARESE:** Skyler Sagarese, yes.
48

1 **WALTER KEITHLY:** Walter Keithly, yes.
2
3 **VANCE P. VICENTE CERNUDA:** Vance Vicente, yes.
4
5 **TODD GEDAMKE:** Todd Gedamke, yes.
6
7 **VANCE P. VICENTE CERNUDA:** Okay. So, the results are the following.
8 All 9 members in today's meeting have voted to approve motion
9 number one. So, therefore, let me read it again. Motion number one
10 moves to-- Dale un poquito arriba que no veo.
11
12 "The SSC recommends that the assessment for SEDAR 91 U.S. Caribbean
13 Spiny Lobster for Puerto Rico is based on the best scientific
14 information available." *So, the motion is approved.*
15
16 J.J., you want-- you have your hand raised do you want to add
17 anything?
18
19 **JUAN J. CRUZ-MOTTA:** My apologies, Vance. I forgot to put it down.
20 Thank you.
21
22 **VANCE P. VICENTE CERNUDA:** You're forgiven. Thank you.
23
24 Yes. We have some time before Adyan comes back to us. Would you
25 like to discuss what research recommendations the SSC wants to,
26 present to the Council in the forthcoming meeting regarding the
27 spiny lobster, of course, Puerto Rico.
28
29 Yes. Jason?
30
31 **JASON COPE:** Yeah. Jason Cope. It sounds like there were lots of
32 really good ideas regarding the next version of the standardized
33 indices that are being used here and how other factors might help
34 inform that standardization process. I'll let others speak to maybe
35 what those things might be, but it seems like there was value in
36 noting that speaking with fishing community and community members
37 might identify some additional factors. It also sounded like there
38 was still some desire, again, to talk to community members about
39 recent catch and catch correction.
40
41 Those really stood out to me as some research recommendations to
42 make sure we don't lose. Thanks.
43
44 **VANCE P. VICENTE CERNUDA:** Okay. Thank you, Jason. Can you write it
45 down, please?
46
47 **JASON COPE:** I can write it down in a generic way. I would
48 definitely like people who know more than me on those things to

1 fill it out. But if the generic version of just saying, "Hey, go
2 find some more factors for the standardization and figure out the
3 catch correction." I can write that down.
4
5 **VANCE P. VICENTE CERNUDA:** Yes, make it generic. I mean, we can
6 develop it later.
7
8 **JASON COPE:** Where do you want me to write that?
9
10 **LIAJAY RIVERA GARCÍA:** Hi, Jason. This is Liajay. We have developed
11 a blank template document. It is in Google Drive shared as SEDAR
12 84 and SEDAR 91 SSC recommendations. So, we will be sending all
13 the SSC members the link so they can provide their input in that
14 document.
15
16 **JASON COPE:** Terrific. Thank you.
17
18 **VANCE P. VICENTE CERNUDA:** Tarsila, come in.
19
20 **TARSILA SEARA:** Yes. I just wanted to ask Jason if it's okay to
21 edit your recommendation here, to add sort of "local ecological
22 knowledge data collection, rather than just saying "community
23 members may be a rich source of information?"
24
25 **JASON COPE:** I love it. Please, Yes.
26
27 **TARSILA SEARA:** All right. Thank you.
28
29 **JASON COPE:** This is Jason. Let me offer an open invitation to
30 anyone who would like to edit any of this stuff that, at least,
31 I'm putting down in this document.
32
33 **VANCE P. VICENTE CERNUDA:** Yes, Jason. Regarding local ecological
34 knowledge data, I would, specifically, emphasize the necessity to
35 determine the way that the traps are prepared. For example, baited
36 or not baited. If it's baited by locality. If there are differences
37 of baiting by locality or by depth, because that can really make
38 a big difference.
39
40 **JASON COPE:** I added just an example, parenthetical example there.
41 I don't know if that's too remedial or if that at least captures
42 the type of thing that you're thinking about. But please, please
43 edit as you see fit.
44
45 **VANCE P. VICENTE CERNUDA:** Is there any of the SSC members working
46 on these research recommendations, or can I just, read them now as
47 complete? Let me know.
48

1 **JASON COPE:** This is Jason. I'm all done.
2
3 **VANCE P. VICENTE CERNUDA:** So, I'll just begin reading it. And if
4 there are any changes in the meantime, you can add them or make
5 them. ¿Puedes subirlo un poquito la letra?
6
7 Okay. I'm going to read the April 8th, 2026 SSC meeting, research
8 recommendations for SEDAR 91 Spiny Lobster Puerto Rico.
9
10 One, investigate further potential factors for use in the catch
11 per unit effort index standardization. The fish trap survey in
12 particular showed large dynamics outside biological bounds that
13 may be due to other factors currently not included in the
14 standardization process. Collection of Local Ecological Knowledge
15 data can be a good source to understand potential factors. Exempli
16 gratia, how traps are baited.
17
18 Two. When developing fishery-dependent indices of relative
19 abundance, consider alternative trip selection methods and/or
20 improvements to the Stephens and MacCall 2004 trip selection
21 approach, such as exploring whether species correlation
22 coefficient vary over time periods.
23
24 Three. Model sensitivity analysis showed that when catch is given
25 a larger variance, the model will deviate from the inputted catch
26 time series, especially towards the end of the time series. The
27 period of catches is also recognized as more uncertain and
28 currently derived from a catch correction process that can also
29 improve. Local ecological knowledge may bear further insight into
30 the best catch time series and how to calculate it, and it is
31 preferred to model catches with low uncertainty rather than let
32 the model estimate catches.
33
34 Four. Adding recreational or other removal fleets will help us
35 estimate the overall scale of the lobster population and offer a
36 more complete estimate of the overall fishing mortality.
37
38 Do you have room and time to make any additional changes?
39
40 Can somebody, Richard or Jason or whoever, write something up as
41 part of the research recommendations to consider socioeconomic
42 events in helping explain variations in catches and in catch per
43 unit effort indexes, etcetera. Like, for example, in 2013 there
44 was a lot about political upheavals. People were unemployed,
45 especially government employees were more than 60 to 70% of them.
46 They were cut down, and there were protests in the streets. People
47 were worried about other things rather than eating lobster.
48

1 So, anyhow, can somebody write something up like that regarding to
2 evaluate socioeconomic factors as a potential-- socioeconomic
3 factor that can potentially explain variabilities in the catches
4 of lobsters or other reef fish taxa. I don't know. Something like
5 that.
6
7 **JASON COPE:** Would it be alright to add that to bullet point one
8 as another source of information that could--
9
10 **VANCE P. VICENTE CERNUDA:** Yes, definitely. Yes, Jason. That's good.
11
12 **TARSILA SEARA:** Yes. I agree. I was going to suggest that. This is
13 Tarsila. I think that's a good idea, Jason.
14
15 **JASON COPE:** Does someone with a little bit better handle over
16 socioeconomic language want to take that, or do you want me to
17 hack it away and then you can change it?
18
19 **VANCE P. VICENTE CERNUDA:** Well, let's see. Walter can contribute
20 to that. Walter?
21
22 **WALTER KEITHLY:** Yes, sir. Thank you. Collection of local
23 ecological knowledge data as well as other socioeconomic data or
24 analyses can contribute.
25
26 **VANCE P. VICENTE CERNUDA:** Now it reads, regarding socioeconomic
27 factors, "collection of local ecological knowledge data and other
28 socioeconomic analysis can contribute to understanding potential
29 factors. Example, how traps are baited." Walter?
30
31 **WALTER KEITHLY:** Thank you, Mr. Chairman. One thing that I think
32 we really need to stress in these recommendations is the collection
33 of recreational data on lobster. You know, I've been sitting here,
34 I voted in favor of the previous motion, but in 2011 or '12, right
35 around that time, they changed the bag limit, a significant
36 reduction of bag limit or potential significant reduction bag limit
37 for recreational fishermen, which that in itself might explain the
38 increase in the CPUE among the commercial sector. I doubt it did,
39 but again, this type of information is pretty important to
40 determine the validity of using the CPUE. Thank you.
41
42 **VANCE P. VICENTE CERNUDA:** Yeah. I totally agree. We have to include
43 to determine what is the recreational fishing pressure for not
44 only the lobster, but for other fisheries resources, definitely.
45
46 **WALTER KEITHLY:** Well, this is Walter, again, Keithly. Again, we
47 used to collect it for the finfish under the MRIP or MRFS program,
48 whatever, but we've never collected it for lobster. And my point

1 being that they passed a law right around the time that we started
2 seeing that large increase in the CPUE for the commercial sector.
3 They passed legislation reducing tax limits, bag limits for the
4 recreational sector. And something like that could be affecting
5 the CPUE for the commercial sector.
6
7 Again, I thought of it, but I'm just not sure if it's that big of
8 a issue, but it could be. Thank you.
9
10 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you. That's a very valid
11 point. We have Richard Appeldoorn, then Kevin, then Tarsila.
12 Richard?
13
14 **RICHARD APPELDOORN:** Yeah. Just for the committee's information,
15 against my better judgment, I got involved with a stock
16 reconstruction for Puerto Rico that went up to 2022. As part of
17 that, I did some probably questionable calculations based on the
18 MRAG report that attempted to come up with estimates for conch and
19 lobster recreational fishing. It wasn't really successful, but if
20 you make a whole bunch of assumptions, I came up with something
21 where the recreational catch was probably about 6% of what the
22 commercial catch is. So, it's not very high even allowing for a
23 lot of variability in the rest of it.
24
25 **VANCE P. VICENTE CERNUDA:** Well, that's new to me. Thank you,
26 Richard.
27
28 **RICHARD APPELDOORN:** Yes. It hasn't been published yet, but I was
29 just checking the files while we were going through this.
30
31 **VANCE P. VICENTE CERNUDA:** That's good. No. I never thought it was
32 going to be that low, 6% of the commercial catch. I was expecting
33 a bigger percentage value. Anyhow, Kevin?
34
35 **RICHARD APPELDOORN:** It may be. Remember, the MRAG study was not
36 successful. So, they gave data, and I was using that data. But
37 they were trying to come up with a sampling plan to try to estimate
38 these values. And they weren't getting enough data to do that,
39 which tells you something about how good the data must have been,
40 which is not too much.
41
42 So, this just emphasizes the point Walter made is that we really
43 do need to know what the recreational catches are for some of these
44 invertebrates.
45
46 **VANCE P. VICENTE CERNUDA:** Kevin?
47
48 **KEVIN MCCARTHY:** Yeah. Thank you, Mr. Chair. Kevin McCarthy. Just

1 further information for the committee. Specifically in Puerto
2 Rico, Grisel Rodríguez had, and has for the last two years, a
3 recreational survey going, that unlike MERFs and MRIP is not
4 limited to finfish. So, when they bring lobsters to shore, her
5 port samplers are quantifying those. So, all the invertebrates,
6 everything that comes in.

7
8 At the moment, that is limited to vessels. So, she's not yet doing
9 the shoreline mode of recreational fishing. But if it's a vessel,
10 I think she's covering the for-hire fishery as well. If they happen
11 to be-- they'll try and talk to everybody and if it's a commercial
12 vessel, they don't do a full interview, but they'd note the fact
13 that a commercial vessel had landed. But if they're recreational
14 fishers or for-hire, they do the complete interview and quantify
15 the catch.

16
17 So, that has been ongoing for the last, about 2 years. And the
18 intent on the Virgin Island is to have a similar kind of sampling.

19
20 So, we're not repeating the mistakes of MRIP and MERFs by not
21 measuring lobster and not quantifying conch and that sort of thing.
22 If they come to shore with it, it's being recorded in the dataset.

23
24 Thanks.

25
26 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Kevin. Tarsila?

27
28 **TARSILA SEARA:** Yes. I just wanted to go back to some of the factors
29 that we were mentioning as potentially impacting the CPUE index.
30 And I think a lot of the things that we discussed during Kevin's
31 presentation covered the potential socioeconomic factors, the
32 management actions. And I think I just wanted to clarify if we're
33 comfortable with this just being-- with all of these being covered
34 under other factors, or if we would want to list these suggestions
35 that were made during the discussion here.

36
37 Because I think we're encompassing a lot of these things here, but
38 not explicitly. So, I just wanted to ask the committee if we want
39 to be explicit or if we're comfortable with that being covered
40 under other factors.

41
42 **VANCE P. VICENTE CERNUDA:** Thank you, Tarsila. Any additional
43 comments?

44
45 **LIAJAY RIVERA GARCÍA:** Ella hizo una pregunta.

46
47 **VANCE P. VICENTE CERNUDA:** ¿Quién?

48

1 **LIAJAY RIVERA GARCÍA:** Tarsila.
2
3 **VANCE P. VICENTE CERNUDA:** Yeah. Any responses to Tarsila's
4 question?
5
6 Adyan?
7
8 **ADYAN RÍOS:** We can come back to me when you guys are finished with
9 this.
10
11 **VANCE P. VICENTE CERNUDA:** I didn't hear you.
12
13 **ADYAN RÍOS:** We can discuss what I ran when this section concludes.
14 I just wanted to let you know.
15
16 **VANCE P. VICENTE CERNUDA:** Yes. I don't know how much time we'll
17 have. At 05:00, meeting will be adjourned. Although within 10
18 minutes or whatever it's going to be, whatever time it's going to
19 take you, 10 minutes may not be enough. That's up to you.
20
21 You can wrap it up tomorrow morning, and that might give you some
22 additional time to prepare for these last items that we need to
23 discuss. So, it's up to you, Adyan.
24
25 **ADYAN RÍOS:** No. That sounds good. I'm still seeing the
26 retrospective issue, so I'm going to have to ask for help on that.
27 So, that's what I was just going to show. But I do have the metrics
28 that don't come from diagnostics.
29
30 So, the F_SPR, SSB_SPR, and the MSY proxy. And so, those changed
31 a little bit like we saw when we looked at the comparisons, but
32 I'm happy to revisit those tomorrow or, yeah, I think tomorrow.
33
34 **VANCE P. VICENTE CERNUDA:** Well, show us what you have so far, and
35 then let's see how long it takes. Okay? Thank you. Oh, Tarsila,
36 you have a question?
37
38 **TARSILA SEARA:** No.
39
40 **VANCE P. VICENTE CERNUDA:** Okay.
41
42 **ADYAN RÍOS:** Okay. So, I added values to the slides that we showed
43 earlier. And so, this is for this 00g run, and the F_SPR ratio
44 says that the stock is doing a little bit better. Sorry, that
45 fishing is even lower. So, it's at 80%, 81%.
46
47 And the SSB_SPR goes up to 1.5. And that's because we saw this
48 earlier of the change in the R naught.

1
2 **VANCE P. VICENTE CERNUDA:** So, if I remember correctly, anything
3 above one, one or above one is considered close to overfishing? Or
4 what?
5
6 **ADYAN RÍOS:** It's-- so if it's over one for F, that would be
7 overfishing. And if it's under one for SSB, that would be
8 considered overfish. So, this further states that with this strong
9 recruitment that's driven by these indices of abundance, the
10 fishing is at 80% and the stock is at 150%.
11
12 **VANCE P. VICENTE CERNUDA:** Okay. Thank you.
13
14 **ADYAN RÍOS:** Okay. That also drives up the MSY proxy to 227. And
15 again, this is that comparison of fitting our catch with high
16 precision versus the experiment of how the model fits the catch.
17 So, this also brings the MSY proxy to 500,000. And then we have
18 the R naught plot, and then we also have the steepness likelihood
19 profile, redoing this plot without these two points so that we can
20 see it's probably going to be the same straight line down to one
21 that we saw for model 3g.
22
23 And then just back to this retrospective, I double checked what
24 model is in the retrospective folder when it generates the
25 retrospective of model 0, and it matches what we have in our
26 regular folder. So, I don't know why the retrospective plots, the
27 index is like this. So, I think that's something that I'm going to
28 have to ask for more time to investigate.
29
30 **VANCE P. VICENTE CERNUDA:** Yeah. Jason, come in, please.
31
32 **JASON COPE:** Yeah. This is Jason Cope. Adyan, I wonder if it's
33 something in the way that the retrospective's treating the end
34 year. I wonder if it's adding the projected catch or-- it must be
35 doing something with the end year. Because this year-- so this
36 thing says the model's end year is 2024. Is that correct in your
37 final base model, or is it 2023?
38
39 I feel like it's adding, a forecast year. It's doing something
40 funky.
41
42 **ADYAN RÍOS:** Yeah.
43
44 **JASON COPE:** But do you recall if--
45
46 **ADYAN RÍOS:** No. The terminal year is 2024, but it's not giving us
47 a data point in 2024.
48

1 **JASON COPE:** Yeah. Something-- I feel like it's something in the
2 forecast or the starter setup or something like that. And I don't
3 know. If you want to send me along a base thing, base model file,
4 I can do a quick look. But I think it's something in the treatment
5 of the retrospective, code where it's the-- yeah.
6
7 Something's weird.
8
9 **ADYAN RÍOS:** Yeah. I'll share this 00g model, and hopefully we can
10 understand that retrospective. And then I think that was the final
11 piece of information that we wanted to convey.
12
13 **JASON COPE:** Yep.
14
15 **ADYAN RÍOS:** And then the other things like a table of the
16 parameters that are estimated. I mean, we also already have the
17 selectivities for this model. And let's see.
18
19 **VANCE P. VICENTE CERNUDA:** Skyler, you want to add something?
20
21 **SKYLER ROSE SAGARESE:** Yeah. Skyler Sagarese. No. I was just going
22 to follow-up with Jason and Adyan. It is very weird.
23
24 It looks like it is one of those, you know, for example, it'll
25 give you spawning soft biomass and then end year plus one. It seems
26 like there's just something funky going on with those indices
27 trends.
28
29 **ADYAN RÍOS:** Mhmm.
30
31 **SKYLER ROSE SAGARESE:** And, Adyan, is this model-- did you reupdate
32 your 00g? Isn't that through 2023 only, or did you update it
33 through 2024 data?
34
35 **ADYAN RÍOS:** So, I did 00g on the 2024, which is almost like that.
36 So, you're right. So, this doesn't go here. It actually goes--
37 it's 8524 00g. It's not 8523.
38
39 I didn't pick up on this one because I already have one that has
40 that additional year of data with this one. Thank you for catching
41 that.
42
43 **SKYLER ROSE SAGARESE:** Yeah. Skyler Sagarese. Yeah. Thanks, Adyan.
44 Because I just-- looking at those plots, it looks like the last
45 black dot, the last observed data looked like it was 2023, not
46 2024.
47
48 **ADYAN RÍOS:** Mhmm. But I got

1
2 **SKYLER ROSE SAGARESE:** Which is really odd.
3
4 **ADYAN RÍOS:** We'll look into it because I just opened the data file
5 too, and I still have data all the way through 2024 and indices
6 through 2024 and everything. So, thank you, everyone. Back to you,
7 Vance, unless there are more questions for me.
8
9 **VANCE P. VICENTE CERNUDA:** Okay, Adyan. Okay. Well, if you're done,
10 I'm sorry. It's almost 05:00. Then tomorrow, first thing in the
11 morning, before we enter into the other SEDAR, the yellowtail
12 snapper and stoplight parrotfish.
13
14 Adyan, can you have the table showing us the OFL and the ABCs the
15 numbers that we need to present to the Council later on this month?
16
17 **ADYAN RÍOS:** Depending on solving this, yes.
18
19 **VANCE P. VICENTE CERNUDA:** Yes.
20
21 **ADYAN RÍOS:** I believe you guys already made the decision on the
22 sigma. And so, yeah, we'll either have that tomorrow morning or
23 tomorrow. That's definitely going to happen before this SSC meeting
24 concludes.
25
26 Yeah.
27
28 **VANCE P. VICENTE CERNUDA:** Yeah. Well, thank you. I appreciate that.
29 You know, with the different scenarios that you think that we
30 should look at before coming to a final decision. So, then I
31 propose this meeting to adjourn until tomorrow morning.
32
33 Tomorrow at 01:00PM. 1:00 PM tomorrow morning.
34
35 **LIAJAY RIVERA GARCÍA:** No. Afternoon.
36
37 **VANCE P. VICENTE CERNUDA:** Me caso en na'. In the afternoon. I'm
38 tired today, believe me. Anyhow, so really, thanks all of you for
39 such a productive meeting and for all your participation. So, we
40 adjourn now and see you tomorrow at 1:00PM.
41
42 Okay? Thank you.
43
44 **JASON COPE:** Thank you.
45
46 **KEVIN MCCARTHY:** Thanks, everyone.
47
48 **ELIZABETH KADISON:** Thanks.

1
2 **GERSON N. MARTÍNEZ:** Goodnight, all.
3
4 **SKYLER ROSE SAGARESE:** Thank you.
5
6 **TARSILA SEARA:** Thank you.
7
8 (Whereupon, the meeting recessed for the day on April 08, 2026.)
9
10 - - -
11
12 APRIL 09, 2026
13
14 THURSDAY AFTERNOON SESSION
15 - - -
16
17 **CRISTINA D. OLÁN-MARTÍNEZ:** Necesito que me hagan co-host.
18
19 **KIARA M. MATÍAS ROJAS:** Sorry, voy. Te pongo ahora.
20
21 **VANCE P. VICENTE CERNUDA:** Good afternoon, all SSC members and other
22 participants. In this second day of the SSC meeting, April 9th,
23 2026, it is 01:00PM. We will begin. First, with roll call, please.
24
25 **GERSON N. MARTÍNEZ:** ¿Va a empezar por cualquier persona o van a
26 empezar con los que están en el cuarto?
27
28 **LIAJAY RIVERA GARCÍA:** No, no. SSC.
29
30 **VANCE P. VICENTE CERNUDA:** Lo leo-- First the SSC members. Richard
31 Appeldoorn? Jason Cope?
32
33 **JASON COPE:** Present. Good morning.
34
35 **VANCE P. VICENTE CERNUDA:** Good afternoon. Well, good morning. Juan
36 Cruz Mota?
37
38 **JUAN J. CRUZ-MOTTA:** Present. Good morning. Good afternoon,
39 everybody.
40
41 **VANCE P. VICENTE CERNUDA:** Good afternoon. Tarsila Seara?
42
43 **TARSILA SEARA:** I'm here. Hello.
44
45 **VANCE P. VICENTE CERNUDA:** Jorge García has excused himself, so he
46 would not be present today. Todd Gedamke. Todd? Walter Keithly?
47
48 **WALTER KEITHLY:** Good morning. Walter Keithly, present.

1
2 **VANCE P. VICENTE CERNUDA:** Okay. Michelle Schärer sent me an email,
3 she has been excused from this meeting for some health reasons.
4 Elizabeth Kadison?
5
6 **ELIZABETH KADISON:** Present. Good afternoon.
7
8 **VANCE P. VICENTE CERNUDA:** Ms. Skyler Sagarese?
9
10 **TARSILA SEARA:** Skyler Sagarese, present.
11
12 **VANCE P. VICENTE CERNUDA:** Hi, Skyler. Me, Vice Vicente, present.
13 Richard? Richard?
14
15 **RICHARD APPELDOORN:** Yeah, present.
16
17 **VANCE P. VICENTE CERNUDA:** Yeah. And Todd?
18
19 **TODD GEDAMKE:** Todd Gedamke, present. Good afternoon.
20
21 **VANCE P. VICENTE CERNUDA:** Okay.
22
23 Okay. So, 4, 5, 6, 7, 8, 9. We have 9 members, so we do have a
24 quorum. Well, we have a plan for today-- pardon?
25
26 **LIAJAY RIVERA GARCÍA:** Tienes que presentar el resto de la gente.
27
28 **VANCE P. VICENTE CERNUDA:** Ah, I'm sorry. I'm sorry. I'm sorry.
29
30 The DAP Chairs. Julian Magras?
31
32 **GERSON N. MARTÍNEZ:** Julian Magras está de vacaciones, salió hoy.
33
34 **JULIAN MAGRAS:** Julian Magras, present. [laughter]
35
36 **GERSON N. MARTÍNEZ:** Oh, is that him?
37
38 **VANCE P. VICENTE CERNUDA:** Okay, Julian, we hear you.
39
40 **GERSON N. MARTÍNEZ:** No vacation yet?
41
42 **JULIAN MAGRAS:** I don't think that my phone [inaudible] but I'm
43 going to be there.
44
45 **VANCE P. VICENTE CERNUDA:** Gerson Martínez?
46
47 **GERSON N. MARTÍNEZ:** Gerson Martínez, present.
48

1 **VANCE P. VICENTE CERNUDA:** Nelson Crespo?
2
3 **NELSON CRESPO:** Good afternoon, everyone. Nelson Crespo,
4
5 **VANCE P. VICENTE CERNUDA:** The TAP Chair, Sennai.
6
7 **SENNAI HABTES:** Good afternoon, all. Sennai Habtes EBFM TAP Chair.
8
9 **VANCE P. VICENTE CERNUDA:** And OEAP Chair, Jannette Ramos.
10
11 **JANNETTE RAMOS-GARCÍA:** Good afternoon, everyone. Jannette Ramos-
12 García, OEAP Chair.
13
14 **VANCE P. VICENTE CERNUDA:** Thank you, Jannette. Okay. So, now we-
15 Welcome to the Conference room here at Caribbean Fishery Management
16 Council.
17
18 **LIAJAY RIVERA GARCÍA:** Buenos Días. Liajay Rivera García, Council
19 Staff.
20
21 **VANCE P. VICENTE CERNUDA:** Vance Vicente, SSC ¿Graciela?
22
23 **GRACIELA GARCÍA-MOLINER:** Graciela García Moliner, Council staff.
24
25 **KIARA M. MATÍAS ROJAS:** Buenas tardes. Kiara Matías, Council staff.
26
27 **LIAJAY RIVERA GARCÍA:** And in the Zoom chat, we have Adyan Ríos,
28 Cristina Olán, Kevin McCarthy, Jesús Rivera-Hernández, Kate
29 Zamboni, Maggie Ríos, María López, Martha Prada, and Stephanie
30 Martínez. And that is all, Chair.
31
32 **VANCE P. VICENTE CERNUDA:** Okay. So, first, we'll go-- we have as
33 an agenda, unless any changes are suggested. Today, April 9th,
34 2026, from one to 01:30PM. We will conclude the SEDAR 91 U.S.
35 Caribbean Spiny Lobster Puerto Rico assessment. This is the final
36 review. This will be presented by Adyan Ríos.
37
38 From 01:30 to 3PM, we will cover SEDAR 84, Caribbean Yellowtail
39 Snapper, Puerto Rico. The final review also, which will be
40 presented by Adyan Ríos from the Caribbean Branch of the Southeast
41 Fishery Science Center. We have a 15-minute break between 3:00PM
42 and 03:15PM. And lastly, from 03:15PM to 5:00PM, we will cover
43 SEDAR 84, Caribbean yellowtail Snapper, Saint Thomas/Saint John
44 final review. This would also be presented by Adyan Ríos.
45
46 Are there any suggestions, changes in order? Any-- if I don't hear
47 any, well, then the agenda for today, April 9th, 2026, has been
48 adopted. Okay. Kevin, please.

1
2 **KEVIN MCCARTHY:** Thank you, Mr. Chair. Kevin McCarthy. So, maybe
3 I'm misunderstanding. So, the proposal for the agenda today,
4 obviously, we'll finish spiny lobster, and then it's yellowtail
5 snapper for Puerto Rico followed by final recommendations for
6 yellowtail snapper for Puerto Rico. And then I thought tomorrow we
7 would move on to the Virgin Islands. Is that correct?
8
9 **VANCE P. VICENTE CERNUDA:** Okay. Graciela?
10
11 **GRACIELA GARCÍA-MOLINER:** So, Kevin, that was something that we
12 were going to ask you. But we would like to have the final
13 recommendations from the SEDAR 91 Lobster, Puerto Rico, today.
14
15 **KEVIN MCCARTHY:** Yes.
16
17 **GRACIELA GARCÍA-MOLINER:** Okay. So, then that would follow-- then
18 we will follow with SEDAR 84, Yellowtail, Puerto Rico. That's where
19 you want to start, right?
20
21 **KEVIN MCCARTHY:** Correct.
22
23 **GRACIELA GARCÍA-MOLINER:** Okay. And then we'll, as long as we have
24 time, finish the Yellowtail Puerto Rico and begin with the
25 Yellowtail Saint Thomas. Hopefully, we'll have final
26 recommendations for SEDAR 84 Yellowtail Puerto Rico and Saint
27 Thomas/Saint John today.
28
29 Or, if we don't finish today, then begin Friday with final
30 recommendations on the yellowtail for both Puerto Rico and Saint
31 Thomas/Saint John and finalize the SEDAR 84 for stoplight
32 parrotfish for Saint Croix tomorrow, Friday.
33
34 **KEVIN MCCARTHY:** Let me take two minutes and confirm with Adyan if
35 that schedule works for her. So, give me two minutes. Thank you.
36
37 **GRACIELA GARCÍA-MOLINER:** Okay.
38
39 **VANCE P. VICENTE CERNUDA:** Well, in the meantime, I would like to
40 state the following. I want to let the SSC members know that we
41 have a very strong mandate to please try to think about these items
42 that I'm going to mention so that we make sure that at the end of
43 the meeting, we can agree whether or not we have complied with our
44 duties, which are as follows. This is regarding the SEDAR process.
45 The Council Scientific and Statistical Committee will review the
46 stock assessment reports, and we, the SSC, are asked, number one,
47 whether the assessment represents the best available science.
48 Number two, whether the results presented in the stock assessment

1 reports are useful for providing management advice and developing
2 fishing level recommendations for the Council.

3
4 Three, an SSC may request additional analysis to be conducted or
5 may use or may use the information already provided in the stock
6 assessment report as the basis for their fishing level
7 recommendations. For example, overfishing limit level, OFLs, and
8 acceptable biological catch. Four, the Caribbean Council will
9 review the assessments at the forthcoming April 21 through April
10 22, 2026, meeting. And just as a note, the documentation on SSC
11 recommendations is not part of the SEDAR process and is handled
12 through each Council.

13
14 Okay. That being read. Open for comments. Kevin?

15
16 **KEVIN MCCARTHY:** Yep. Thank you, Vance. Kevin McCarthy. I don't
17 think we're-- I think it's going to take a bit longer to get
18 through yellowtail, Puerto Rico than maybe it has been allotted
19 here. There's a lot to cover, and I think we have yet to completely
20 finalize the presentations for the Virgin Islands.

21
22 So, we were counting on that happening on Friday. And I know
23 there's going to be some people that aren't available on Friday,
24 but I think the Virgin Islands assessments are pretty
25 straightforward. But the yellowtail, Puerto Rico, is going to take
26 a bit longer than maybe the time allotted here. So, I don't think
27 we're prepared for the Virgin Islands discussions until tomorrow.

28
29 **VANCE P. VICENTE CERNUDA:** This is, for both?

30
31 **KEVIN MCCARTHY:** Yes. I think we can get-- those won't take long
32 individually. I think we can get through both Saint Thomas/Saint
33 John and Saint Croix in a single meeting tomorrow afternoon and
34 still have time for-- I know Liajay was going to present an update
35 for SEDAR 103. I think we'll still have time for all of that. But
36 I think that yellowtail Puerto Rico is going to take a little while
37 to go through that information.

38
39 And, of course, we have to finish up spiny lobster as well.

40
41 **GRACIELA GARCÍA-MOLINER:** Okay. So, the agenda for today is amended
42 to read Lobster, Puerto Rico now. And as soon as we're done with
43 the final recommendations for that, SEDAR 84 Yellowtail Snapper,
44 Puerto Rico will go on. Correct?

45
46 **KEVIN MCCARTHY:** Yes. Thank you. If that was directed to Kevin.
47 Thank you.

48

1 **GRACIELA GARCÍA-MOLINER:** Thanks.
2
3 **VANCE P. VICENTE CERNUDA:** Okay. Now we're clear. Walter, come in.
4
5 **WALTER KEITHLY:** Hey, Mr. Chairman. Just to ask before we move on
6 to SEDAR 84. Right?
7
8 **VANCE P. VICENTE CERNUDA:** What's your question? Walter?
9
10 **WALTER KEITHLY:** Can you hear me?
11
12 **VANCE P. VICENTE CERNUDA:** Yes. We didn't understand what
13 specifically you want to say. You said something before--
14
15 **WALTER KEITHLY:** No. I'd like to wait till the end of the discussion
16 on the U.S. Caribbean spiny lobster at Puerto Rico. But then, after
17 we've done that discussion, I would like to ask make a few comments
18 and ask one or two questions regarding the stock assessment and so
19 on.
20
21 **VANCE P. VICENTE CERNUDA:** Okay. Okay. We can do that.
22
23 **WALTER KEITHLY:** Thank you, Mr. Chairman.
24
25 **VANCE P. VICENTE CERNUDA:** Sure. No problem. So, if Adyan is going-
26 - I'm sorry. Richard, we have a comment from you.
27
28 **RICHARD APPELDOORN:** Yeah. In light of your listing of the SSC
29 requirements, the motion that was passed yesterday talked about
30 best available data and not representing the best available
31 science. So, we need to amend that at some point. It doesn't have
32 to be right away.
33
34 **VANCE P. VICENTE CERNUDA:** Regarding that, it is not enough
35 information for management advice, is that what you're saying,
36 Richard? Yeah. I understand that yesterday, the motion-- yes. I
37 understand that the data is good.
38
39 It's based on the best available information, and we all agree,
40 and that was a motion. But regarding whether there is enough
41 information to provide catch advice to the Council that we haven't
42 voted for, I don't know how to handle that one. You want to make
43 a motion?
44
45 **RICHARD APPELDOORN:** No. I'm saying that when you were reading out
46 what our responsibilities were, you said we had to make a ruling
47 on whether the assessment represents the best available science.
48 So, that's not just the data. That's the analysis of that data.

1 So, *that first motion should be amended to reflect that this was*
2 *the best available science, but not the best available data.*
3
4 **VANCE P. VICENTE CERNUDA:** Well, you want to do it now, Richard?
5
6 **RICHARD APPELDOORN:** That would be fine with me.
7
8 **VANCE P. VICENTE CERNUDA:** Yeah. Write the motion and then read it
9 out.
10
11 **LIAJAY RIVERA GARCÍA:** Just allow me a second till I can share this
12 with--
13
14 **VANCE P. VICENTE CERNUDA:** Hold on. Richard, can you see what is on
15 the screen? Yeah.
16
17 **RICHARD APPELDOORN:** You like me to refine the wording?
18
19 **LIAJAY RIVERA GARCÍA:** Sorry. I pulled up the wrong motion document.
20
21 **RICHARD APPELDOORN:** So, I would take out "moves to recommend."
22
23 **LIAJAY RIVERA GARCÍA:** Sorry, Richard. That was not the document
24 referring to the motion of yesterday. So, allow me a second for me
25 to find the right document. Sorry, that about that.
26
27 **RICHARD APPELDOORN:** It sure looked like the right document.
28
29 **LIAJAY RIVERA GARCÍA:** I believe this is the right one. Let me
30 know, Richard.
31
32 **RICHARD APPELDOORN:** Yes, okay, that's fine. So, I would get rid
33 of "recommend that" and say "considers" "the assessment for SEDAR
34 91 U.S. Caribbean Spiny Lobster for Puerto Rico" "represents"
35 delete "is" delete "based on," "the best available--" "the best
36 available science." Yes, "the best available signs."
37
38 **LIAJAY RIVERA GARCÍA:** ¿Borro eso?
39
40 **RICHARD APPELDOORN:** No. Yeah. Delete the rest. Yes. Mhmm.
41
42 Alright, "represents" should be "to represent." That's good.
43
44 **VANCE P. VICENTE CERNUDA:** Okay. So, I will read it, and then we
45 have to vote since it has been modified.
46
47 **JUAN J. CRUZ-MOTTA:** Yes, I am. Thank you.
48

1 **VANCE P. VICENTE CERNUDA:** So, let's read the motion again first,
2 and then we need to-- it has already been second. Okay. So, okay.
3 So, okay. So, everybody in accordance with the amendment?
4
5 **ELIZABETH KADISON:** Yes.
6
7 **VANCE P. VICENTE CERNUDA:** Okay. So, any opposition? No? So, the
8 motion moves.
9
10 And then it reads, the SSC considers the assessment for SEDAR 91.
11
12 **LIAJAY RIVERA GARCÍA:** You need the voting of the motion.
13
14 **VANCE P. VICENTE CERNUDA:** Si, si. If there was no objections, then
15 that means that it was accepted. Well, we need to specifically
16 vote. Those in accordance, those in favor.
17
18 **RICHARD APPELDOORN:** Rich Appeldoorn, yes.
19
20 **VANCE P. VICENTE CERNUDA:** Yeah. Next.
21
22 **ELIZABETH KADISON:** Elizabeth Kadison, yes.
23
24 **VANCE P. VICENTE CERNUDA:** Okay. Tarsila?
25
26 **TARSILA SEARA:** Yes.
27
28 **VANCE P. VICENTE CERNUDA:** Jason? Jason Cope? Skyler?
29
30 **SKYLER ROSE SAGARESE:** Skyler Sagarese, yes.
31
32 **VANCE P. VICENTE CERNUDA:** Todd Gedamke?
33
34 **TODD GEDAMKE:** Todd Gedamke, yes.
35
36 **VANCE P. VICENTE CERNUDA:** Okay. Vance Vicente, yes.
37
38 **JUAN J. CRUZ-MOTTA:** J.J. Cruz, yes.
39
40 **VANCE P. VICENTE CERNUDA:** Okay.
41
42 **WALTER KEITHLY:** Walter Keithly, yes.
43
44 **VANCE P. VICENTE CERNUDA:** Okay. So, all in accordance. Jason? We're
45 still holding for you. Hello?
46
47 **JASON COPE:** Sorry. Sorry. Can you repeat?
48

1 VANCE P. VICENTE CERNUDA: Yes.
2
3 JASON COPE: Hello?
4
5 VANCE P. VICENTE CERNUDA: Okay.
6
7 RICHARD APPELDOORN: Jason, are you in favor of the motion?
8
9 JASON COPE: Oh, yes. Yeah. Sorry. I thought my thumb went up.
10
11 LIAJAY RIVERA GARCÍA: Okay.
12
13 VANCE P. VICENTE CERNUDA: *So, the motion carries.* So, Adyan,
14 whenever you're ready, we're ready for you.
15
16 ADYAN RÍOS: Wonderful. Okay.
17
18 Okay. So, yesterday's conversation ended with the discussion of
19 the 00g, which is the base model from SEDAR 91 with the updated
20 terminal year, with the trap index, the dive index, and the
21 recruitment deviations.
22
23 And, what we did during break, and then, just refined slightly for
24 it today, was to run the diagnostics on this model and also report
25 the derived quantities. So, we have the estimates of F over F_SPR30
26 and SSB over SSB_SPR30. And we showed these yesterday. And so,
27 again, just showing the effect of this strong recruitment for a
28 sustained period of time, how it changes the model outcome.
29
30 Next, we have the MSY proxy, which goes up to 227 metric tons,
31 which equates to 500,000 pounds.
32
33 Okay. That's also something we looked at yesterday. Let me go to
34 the next slide.
35
36 Yesterday I showed the steepness. However, it wasn't easy to see
37 because there were two runs that just went off at a much higher
38 likelihood. And so, now I've removed those two runs. And, again,
39 we see the same steepness that we saw for model-- Steepness
40 likelihood profile that we saw for model 3g, where we get lower
41 likelihoods at higher steepness, especially for the length data.
42
43 On the right, we have the R naught profile. And, again, we see,
44 like, this little area of very similar likelihood profiles across
45 slightly different values of R naught. But we do have a minimum.
46 And then we have-- well, I might-- we could zoom in on that. It's
47 pretty flat across a few of these runs. I meant to just kind of
48 reiterate that.

1
2 And then yesterday, we were seeing an issue with how my plots were
3 being generated where it wasn't showing the last point, the final
4 year of information. I was able to correct that. And now the code
5 runs to show that point and not show us this like waterfall effect
6 that we were seeing before. So, thank you to Jason for taking a
7 quick look to help me diagnose this.
8
9 So, here we have our fits to our indices, and we're still seeing
10 a bit of a decline. And so, that's still something that, each
11 subsequent year, the model isn't kind of expecting that realized
12 recruitment or that realized index of abundance to continue to
13 increase and so it's kind of expecting that we're going to see a
14 slight decrease or the population's going to stay the same. But
15 what we've seen is that, even though it's kind of expecting the
16 population to stay at a similar level to where it was in this
17 retrospective, we really see a continued increase. That's what's
18 driven by these subsequent years of information, particularly this
19 increase that we see in this index on the right, which is the
20 [trap?] index.
21
22 We also have our retrospective outputs for our spawning output and
23 for our absolute F. And so, we do see the model slightly changing,
24 in these retrospectives as those indices provide additional
25 information and additional increase in that index of abundance,
26 telling us that the population in the water has been continuing to
27 increase. But when we take off each successive year, the model
28 kind of recalibrates.
29
30 However, we also can see how that also changes the R naught value.
31 So, it changes it from what we saw in the lowest likelihood
32 profile, from around 7-- almost 7.2 to below 7. So, when we peel
33 back those years of information. Of course, more years of
34 information are always better, but we also know that there are
35 uncertainties across the most recent year of data as well as in
36 our datasets overall. And so, this type of retrospective comes
37 back to highlighting the importance of other types of data that
38 can help further improve the model. And that's related to
39 understanding more things about selectivity, understanding really
40 digging into what's happening with this abundance signal and how
41 tied to the actual abundance do we think it is.
42
43 And so, that concludes the observations that we were expecting to
44 see. And then the last thing that I did was based on the assumption
45 of 3-year averages for the years 2025 and 2026.
46
47 So, I put in the forecast file that the 2025 and 2026 would have
48 the same average catch by fleet as the fleets did for 2022, 2023,

1 and 2024. And then, now that I've included that, I generate the
2 OFLs for 2027, 2028, and 2029. I calculated the average of those
3 3 years. I would like to add-- I'm going to add one more number
4 here just to have that average in pounds.

5
6 I also just re-referenced what the long-term sustainable yield was
7 estimated to be. And so, again, like, when a when a stock is above
8 the size that can produce your sustainable maximum yield, you're
9 able to fish it down because the stock is, you know, we were
10 seeing, I'd say, like, was it 150? Yeah. Percent of the size that
11 would continue to produce that long-term equilibrium sustainable
12 maximum yield.

13
14 Okay. So, I just wanted to, again, emphasize that as OFLs go
15 forward, the projection intends to bring the stock to the size
16 that produces that long term MSY. And so, that's why the OFLs go
17 down, because the stock is above the size that can produce MSY.
18 And so, in this first year, 2027, the model is telling, "yes, you
19 can catch 317 metric tons, and that will continue to push the stock
20 towards that long-term value of 227. And so, that's why we see, as
21 the stock is being fished down to its size where it gets to the
22 MSY, we see these values decline. We've also referred to that
23 before as, like, the ramp down to MSY.

24
25 And this 3-year average-- let me open up my Excel where I have
26 these guys. Let me drag this down. Oops.

27
28 And so, that average is 609 pounds. And so, this is quite a bit of
29 an increase, but the index is also telling us that there's quite
30 a bit of an increase in what we understand to be happening in the
31 water with the abundance based on our indices.

32
33 So, that concludes what I have for you today for spiny lobster.
34 The next, I guess, the last step would be just for me to calculate
35 what the ABCs are based off of the sigma and the P*, which is
36 really quickly. I can have that in just 2 minutes. But, yeah, I
37 have this information available, which gets us to the OFL. Any
38 questions?

39
40 **VANCE P. VICENTE CERNUDA:** [inaudible]

41
42 **RICHARD APPELDOORN:** I have a question.

43
44 **VANCE P. VICENTE CERNUDA:** Well, can you [inaudible] the number too
45 small? Thank you. Richard?

46
47 (Part of Dr. Vicente Cernuda's comments are inaudible on the audio
48 recording.)

1
2 **RICHARD APPELDOORN:** Yes. First a lead off question. The growth
3 parameters that you're using in the model, date from when? Let me
4 know when that study was done.
5
6 **ADYAN RÍOS:** Oh, this one, the Cuba study, SEDAR 8?
7
8 **RICHARD APPELDOORN:** Yeah, SEDAR 8. That's a while ago.
9
10 **ADYAN RÍOS:** Yeah. I think that was 2005 maybe.
11
12 **RICHARD APPELDOORN:** Okay. So, here's what I'm thinking. And this
13 is based on work that was done decades ago in the state of Maine
14 where they were able to show a very distinct correlation between
15 lagged temperature and recruitment to the fishery, lobster
16 fishery. And it was based on the idea that when water temperatures
17 were warmer, they grew faster and therefore exposed to mortality
18 less time before they recruited to the fishery. And it had a very
19 strong effect, but this lag was like 5 or 6 years.
20
21 So, we're not talking about that kind of lag in spiny lobster.
22 They're in the water 6 to 9 months as plankton, and within a year
23 or year, I think, they can enter the fishery. So, that effect might
24 not be as great because the times aren't so high. But I'm wondering
25 whether this recruitment effect that we're seeing is a function of
26 warmer temperatures. And we've certainly had significantly warmer
27 temperatures going into this period since 2005.
28
29 I'm not asking for any kind of assessment to be redone based on
30 this, but it might be something that we would want to look at in
31 the future about whether there is a temperature effect that might
32 be driving enhanced recruitment. So, that's my comment.
33
34 **VANCE P. VICENTE CERNUDA:** Jason Cope?
35
36 **JASON COPE:** Yeah. Jason Cope. For Rich's observation there, should
37 we add that to the research recommendations? Because it sounds
38 like a mechanistic possibility to explain, and I think, Adyan, you
39 were saying that it's likely that the recruitment in the model is
40 being informed. And we saw that there's well informed recruits in
41 the model by the index, you thought? Probably by the lengths too,
42 but maybe by the index. So, this sounds like a mechanistic thing
43 that might be looked at, might even be possible part of the
44 standardization. Who knows? So, should we capture that in the
45 research recommendations?
46
47 **RICHARD APPELDOORN:** That sounds good to me.
48

1 **VANCE P. VICENTE CERNUDA:** Yes. I think so. So, wait till Liajay
2 gets back so we can go to the research recommendations so that we
3 can add Jason's recommendation. Or in the document, Jason.
4
5 Jason?
6
7 **JASON COPE:** Yes. Yeah. Jason Cope yeah. No. That was just my
8 recommendation of Rich's recommendation that that should go into
9 the research recommendations. But I will say, everything I've seen
10 here, all of this makes a lot of sense to me. Obviously, there's
11 uncertainty here. The model is very sensitive to that final index
12 value, which has shown, if you take that final index value out,
13 it's less of an increase. That's why you see the model kind of
14 leveling off and not seeing as much recruitment and dropping the
15 R to 0 and all that stuff.
16
17 But that's an extension. It just so happens you get these
18 assessments where you're building an index, and it's picking up an
19 important abundance dynamic. And it's saying it's going up instead
20 of leveling off or going down, and that makes a difference. So,
21 I'm not surprised to see the behavior in the retrospective. And
22 so, all of this is making, personally, sense to me.
23
24 And, I guess I would say that this assessment, to me, is useful
25 for management recommendations. And so, I would, if people are
26 ready, propose that motion.
27
28 **VANCE P. VICENTE CERNUDA:** Okay. I need somebody to write it down
29 so we can vote on it. Skyler?
30
31 **SKYLER ROSE SAGARESE:** Yes. Skyler Sagarese. I did draft a research
32 recommendation in that document that I suggest. Please re-word if
33 you see fit.
34
35 I do want to caution when we start talking about the environmental
36 linkages and I mean, Jason mentioned it. It's like a-- it's more
37 of a hypothesis testing of mechanisms. It's really important for
38 us to hypothesize what exactly we think is being affected. Number
39 one, do we think the warming ocean temperatures have been affecting
40 our growth parameters? Has it been affecting recruitment
41 estimates? All of the above?
42
43 I think we just want to be clear on what exactly we would want to
44 look at because then we'd have to find all the different data
45 streams to be able to look for quantitative evidence of those
46 relationships. So, please, please re-word re-write it as needed.
47 I just drafted something quickly there.
48

1 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Skyler. Kevin?
2
3 **KEVIN MCCARTHY:** Thank you, Vance. Kevin McCarthy, I would just
4 add for the SSC, just the information this is exactly the kind of
5 thing that we can investigate within the SEDAR 103 process. You
6 know, these linkages between environmental events, environmental
7 data and other data streams. So, this is a really timely
8 recommendation from you all.
9
10 Thanks.
11
12 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Kevin. Yeah. We're
13 waiting for Adyan to finish the table.
14
15 **ADYAN RÍOS:** All set. So, I've added the ABC in metric tons based
16 on the P* of 0.45 and the sigma of 0.5, as well as the corresponding
17 values in pounds.
18
19 **VANCE P. VICENTE CERNUDA:** Yes. Thank you very much. That's good.
20 If you can enlarge it a little bit, let us look at it carefully,
21 and then, we have to vote whether we accept these final SSC review
22 and decisions for the SEDAR 91. U.S. Caribbean Spiny Lobster Puerto
23 Rico. So, let's look at this carefully. Richard? Richard?
24
25 **RICHARD APPELDOORN:** Yeah. Just so we're aware of what's going on,
26 we're ruling on the OFLs, not the ABCs because that requires the
27 P*, which is the Council's decision, and they haven't made that
28 decision yet. Those are what they would be if the Council continues
29 using the same P* value.
30
31 **VANCE P. VICENTE CERNUDA:** Graciela.
32
33 **GRACIELA GARCÍA-MOLINER:** But the SSC has-- this Graciela, the SSC
34 has to recommend the ABC. You can make a statement like, "We've
35 done this with the P* of, what was it, 0.45." Right? But if the
36 Council decides [inaudible] the ABC. But we need to do that here.
37
38 **RICHARD APPELDOORN:** Alright. Thank you for that clarification.
39
40 **VANCE P. VICENTE CERNUDA:** Thanks. Yes. That is correct.
41
42 **ADYAN RÍOS:** I just caught that I'm using a P* of 0.45. Okay. Well,
43 never mind. For a second, I was looking at the map I said, "I used
44 0.45," but that's what I was intending to use. We are good.
45
46 **GRACIELA GARCÍA-MOLINER:** Don't scare me.
47
48 **VANCE P. VICENTE CERNUDA:** Jason Cope.

1
2 **JASON COPE:** Yes. Thank you, chair. This is Jason Cope. I am curious
3 about the 3-year average. What is that? Is that there just to show
4 that? Is that something that's on the table as a suggested, either,
5 OFL/ABC. So, I would like to talk about it if it is a proposal.
6
7 **VANCE P. VICENTE CERNUDA:** Adyan Ríos.
8
9 **ADYAN RÍOS:** Thank you, Vance. Let me see here real quick if--
10 Okay. No, I don't see Sarah online. So, this is just what the
11 Council has been doing for most all of the species that we've
12 recently worked with and had stock assessment-based management
13 advice.
14
15 That is intended to, I guess, reflect what's easier for management,
16 to keep one number on the books for multiple years. So, I will see
17 if anybody else is raising their hand to speak to as to why this
18 has been kind of like a default way of providing information. I'm
19 not seeing any other hands.
20
21 **JASON COPE:** Could I point out something with it because that makes
22 that makes sense. And on averages, again, you would much rather
23 not have things bouncing around and so forth. My concern here is
24 something that you pointed out, which was because this is above,
25 at this point, a target and we're fishing down to a target when
26 you start taking averages of fishing down to a target you by
27 definition will be overfishing and so my worry is that that 3-year
28 ABC is higher than the MSY 30% SPR OFL. So, that top-- yeah.
29 Whatever that would be.
30
31 **ADYAN RÍOS:** Yeah.
32
33 **JASON COPE:** So, cell b2, that is smaller than whatever-- e bottom
34 row.
35
36 **ADYAN RÍOS:** Mhmm.
37
38 **JASON COPE:** And so that's my worries. Anytime you're fishing down
39 to a target, taking averages, I think, sounds scary. What would be
40 the alternative what folks do is say, "Oh, you're above target.
41 Well, then just fish at MSY."
42
43 **ADYAN RÍOS:** Mhmm.
44
45 **JASON COPE:** At a constant, and then it becomes that constant catch.
46 So, it captures the same thing, but you avoid that troublesome
47 thing. Plus, you build in a little more precaution, given the
48 system and all that sort of stuff. So, maybe that's an alternative

1 suggestion is to use the MSY 30% SPR and take the ABC from there.
2
3 **ADYAN RÍOS:** Correct. I believe that's done in other regions as
4 well in this sort of situation of either taking the ramp or
5 building in at just getting to the MSY proxy with that as your
6 OFL.
7
8 **JASON COPE:** Yeah. You don't want to-- people don't deserve to be
9 penalized because an average was taken that is basically allowing
10 them to conduct overfishing but not intending to. You know what I
11 mean? It was just like, well, this is in the books. But if we can
12 show clearly that in, 2 or 3 years, in 3 years, that will be
13 technically overfishing.
14
15 **KEVIN MCCARTHY:** Mhmm.
16
17 **JASON COPE:** Yeah. That seems like that's not a great thing, and
18 that's not fair to the communities fishing this. And so, something
19 that's above that-- or something that's below that average, but
20 certainly in line with MSY would seem to buffer any uncertainties
21 and kind of protect the community a bit more. But I'd love to hear
22 what others have to say.
23
24 **VANCE P. VICENTE CERNUDA:** Richard, can you jump on this, please?
25
26 **RICHARD APPELDOORN:** Oh, I was going to ask whether Adyan could
27 give us the ABCs that would correspond to the 30% SPR estimate?
28
29 **ADYAN RÍOS:** Yes, I can.
30
31 **RICHARD APPELDOORN:** Or, is the suggestion we don't lower the ABC
32 and we actually fish for that 502,000 pounds?
33
34 **JASON COPE:** I think you'd want to continue with the control rule,
35 because at some point, you're going to get yourself up against
36 that MSY. Assuming everything is correct, the assessment won't
37 change, and everything that would be leading you to fishing at the
38 OFL, which I don't think our control rule intends that. So, Rich,
39 I agree. It'd be good to see what the ACL of that 227 looks like.
40 It's probably in the low 200s.
41
42 **ADYAN RÍOS:** Okay.
43
44 **RICHARD APPELDOORN:** And one last request would be, what is the
45 current ABC?
46
47 **GRACIELA GARCÍA-MOLINER:** Richard, the current ABC is 376,452
48 pounds. That's the ABC. Could you hear me? No? Okay.

1
2 So, the current ABC is 376,452. And usually, the spiny lobster ACL
3 equals 0.95 times the ABC that the SSC provides.
4
5 **VANCE P. VICENTE CERNUDA:** Jason Cope.
6
7 **JASON COPE:** Yeah. Jason Cope. Thank you, Mr. Chair. I just want
8 to make sure that we're all following the same thing here. If I'm
9 seeing this right, there's a significant bump up even though we
10 are keeping the same MSY proxy, we are keeping the same
11 productivity of the stock because we haven't changed growth,
12 natural mortality and, all importantly, steepness.
13
14 The thing that's really changed is with the flipping on of the
15 recruitments and this new index has bumped up, as Adyan has shown,
16 the scale of the stock. The stock has moved upward. And it's also
17 changed what the current stock status is, how depleted it is from
18 an unfished state. And the combination of those two things, but
19 really, mainly, that bump up in that R0 value is really what's
20 pushing this up. And we also show that that's very sensitive to
21 that final index point still going up.
22
23 So, I'm just making sure that we all realize that this has
24 increased from the last time because of, mainly, an increase in
25 scale that has a lot to do with that increase in that index. And
26 that final index value, in particular shown through the
27 retrospectives, is very sensitive because you will get a drop in
28 that R0 if that increase, for some reason, wasn't real. But we do
29 believe it is real, and so that's what we're going off of. That's
30 the best available information.
31
32 I propose that this model is the best thing, or useful for
33 management. But just an awareness here. So, I think that still
34 makes me think, using a 3-year average is definitely not the right
35 thing to do. Doing something more like going with the MSY constant,
36 still raising the ultimate ABC here, with an eye on the fact of
37 what's the population doing? Is that index going to still be going
38 up? Is it going to be leveling off? We don't know yet. We'll know
39 in a couple years when we get more data, but just something to
40 keep an eye on.
41
42 So, again, I think my leaning towards a constant catch based off
43 the MSY proxy is more prudent than an average. Thanks.
44
45 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Jason. Richard
46 Appeldoorn.
47
48 **RICHARD APPELDOORN:** Yeah. So, as, I guess, a point of direction,

1 we need to first make the formal motion that, the analysis is
2 suitable for making management advice. And then secondly, a motion,
3 at least for me, reflecting Jason's arguments as to why we would
4 recommend ABC that comes from the current, 30% SPR MSY value.
5
6 **VANCE P. VICENTE CERNUDA:** Yes, Richard. Maybe you can start writing
7 up the second motion because I think the first motion that you
8 mentioned, I think, is clear. We're going to ask for a motion that
9 states that the results presented in the stock assessment report
10 are useful for providing management advice and developing fishing
11 level recommendations for the Council. That will be the first
12 motion. Then the second motion, I wasn't clear.
13
14 So, if you can write it down, I appreciate it.
15
16 **RICHARD APPELDOORN:** Well, I'll make a motion that we take your
17 wording on what you just read as the first motion that we should
18 be addressing. And I would ask Jason to draft the second motion
19 because he had arguments for why we should be a little bit more
20 conservative in a ramping down situation.
21
22 **JASON COPE:** This is Jason. I'm happy to do that. Where do I get
23 that document?
24
25 **RICHARD APPELDOORN:** And also that the sensitivity to that last
26 recruitment point.
27
28 **JASON COPE:** Yeah.
29
30 **LIAJAY RIVERA GARCÍA:** Hi, Jason. This is Liajay. The document is
31 available in the SSC folder. However, I have it at hand as well.
32 But we have right now the SSC review and decisions table provided
33 by Adyan shared on screen.
34
35 So, I don't know if you want to write it directly or if you want
36 me to present it on the screen for everybody.
37
38 **JASON COPE:** I mean, I can just write it right on the screen. I can
39 [crosstalk]
40
41 **LIAJAY RIVERA GARCÍA:** Okay. I'll send you the link.
42
43 **JASON COPE:** Okay. Thank you.
44
45 **LIAJAY RIVERA GARCÍA:** Okay. So, Kiara sent it to you via email.
46
47 **VANCE P. VICENTE CERNUDA:** Adyan Ríos.
48

1 **ADYAN RÍOS:** Thank you, Vance. Adyan Ríos. I was going to just stop
2 sharing my screen and send this updated table to you via email, if
3 that sounds good.
4
5 **VANCE P. VICENTE CERNUDA:** Yes. Thank you. Jason Cope, please. Yeah.
6
7 **JASON COPE:** This is Jason Cope. I'm happy to second motion number
8 two.
9
10 **VANCE P. VICENTE CERNUDA:** Okay. So, I'll read the motion. Motion
11 number one for today. Well, number two. I'm sorry.
12
13 *The results presented in the SEDAR 91 U.S. Caribbean Spiny Lobster*
14 *Puerto Rico are useful for providing management advice and*
15 *developing fishing level recommendations for the Council.* Written
16 by Jason. Right?
17
18 Jason?
19
20 **JASON COPE:** Oh, sorry. I should lower my hand.
21
22 **VANCE P. VICENTE CERNUDA:** Okay. Thank you. The motion was proposed
23 by Richard Appeldoorn and second by Jason Cope. So, any more
24 discussion before we vote? I hear none.
25
26 We move to-- I'm sorry, Richard. Richard?
27
28 **RICHARD APPELDOORN:** Do we want to put it in the very beginning?
29 "The SSC finds" not in the very beginning. Okay. Yeah. Fine.
30
31 "The SSC finds the results." That's what's on record who's making
32 the motion.
33
34 **VANCE P. VICENTE CERNUDA:** Okay. So, now it--
35
36 (Part of Dr. Vicente Cernuda's comments are inaudible on the audio
37 recording.)
38
39 **RICHARD APPELDOORN:** "Finds *that* the results."
40
41 **VANCE P. VICENTE CERNUDA:** Pardon?
42
43 **RICHARD APPELDOORN:** After "results," put in the word "that." No,
44 excuse me. Before the word "results" is where the "that" goes.
45 "Finds that the results--" yes. Thank you.
46
47 **VANCE P. VICENTE CERNUDA:** Okay. So, I'll read it again. The SSC
48 finds that the results presented--

1
2 (Part of Dr. Vicente Cernuda's comments are inaudible on the audio
3 recording.)
4
5 **RICHARD APPELDOORN:** Vance, you're breaking up.
6
7 **VANCE P. VICENTE CERNUDA:** I'm sorry. I can read it again.
8
9 The SSC finds that the results presented in the SEDAR 91 U.S.
10 Caribbean Spiny Lobster, Puerto Rico, are useful for providing
11 management advice and developing fishing level recommendations for
12 the Council.
13
14 Are you happy with that, Richard?
15
16 **RICHARD APPELDOORN:** I'm just elated.
17
18 **VANCE P. VICENTE CERNUDA:** Jason?
19
20 **JASON COPE:** Looks great.
21
22 **VANCE P. VICENTE CERNUDA:** So, we're going to vote on this motion.
23 Okay. I'll start with Tarsila Seara.
24
25 **TARSILA SEARA:** Tarsila Seara, yes.
26
27 **VANCE P. VICENTE CERNUDA:** Juan J. Cruz?
28
29 **JUAN J. CRUZ-MOTTA:** J.J. Cruz, yes.
30
31 **VANCE P. VICENTE CERNUDA:** Elizabeth Kadison? Jason Cope?
32
33 **JASON COPE:** Yes.
34
35 **LIAJAY RIVERA GARCÍA:** Richard Appeldoorn, can you hear us?
36
37 **RICHARD APPELDOORN:** I can hear you now.
38
39 **LIAJAY RIVERA GARCÍA:** Okay. So, I'll transfer my mic to Vance.
40
41 **VANCE P. VICENTE CERNUDA:** Thank you, Richard. Skyler Sagarese?
42
43 **SKYLER ROSE SAGARESE:** Yes.
44
45 **VANCE P. VICENTE CERNUDA:** Todd Gedamke?
46
47 **TODD GEDAMKE:** Yes.
48

1 **VANCE P. VICENTE CERNUDA:** Walter Keithly?
2
3 **WALTER KEITHLY:** I will abstain.
4
5 **VANCE P. VICENTE CERNUDA:** Okay. One abstain. Vance Vicente, yes.
6 ¿Elizabeth Kadison?
7
8 **ELIZABETH KADISON:** Yes.
9
10 **VANCE P. VICENTE CERNUDA:** Sí, ya había votado ya. Yes, Richard ya
11 votó. Yeah. Okay. Thank you all.
12
13 So, the motion carries unanimously except for Walter Keithly who
14 has abstained. *Motion carries.*
15
16 **RICHARD APPELDOORN:** Well, that should be 8, yes? One abstention.
17 Or am I miscounting?
18
19 **VANCE P. VICENTE CERNUDA:** Yeah. We're waiting, for Jason to
20 complete motion number three.
21
22 **JASON COPE:** Sure is wordy. I think it's mostly there. It probably
23 needs some wordsmithing, particularly at the last sentence, but go
24 ahead and have folks review it.
25
26 **VANCE P. VICENTE CERNUDA:** Okay. So, I will read it for review.
27 Motion Three by Jason Cope. The stock-- motion three reads, "The
28 stock is currently above target and, therefore, experiencing a
29 fishing down to the MSY." Hold on.
30
31 Can you all hear me?
32
33 **ELIZABETH KADISON:** Yes.
34
35 **VANCE P. VICENTE CERNUDA:** Okay. Okay. Again, motion three. I begin.
36 "The stock is currently above target and, therefore, experiencing
37 a fishing down to the MSY proxy. In addition, the new stock
38 assessment shows an increase in the overall size of the population,
39 that is a higher unfinished population size, which leads to an
40 increase in catches with all other things being equal. The increase
41 in stock scale is greatly influenced by the final point in the new
42 abundance indices, which adds further uncertainty in the model,
43 between parenthesis, as shown in the retrospective analysis. This
44 condition lead to a 3-year average ABC that will exceed the proxy-
45 MSY OFL in 2029. It is proposed instead to use the ABC that is
46 derived from the OFL based on the proxy-MSY, between parenthesis,
47 F at SPR equal 30%, close parenthesis, as a constant catch value
48 for management."

1
2 That's the way it reads right now. Open for discussion. Richard
3 Appeldoorn?
4
5 **RICHARD APPELDOORN:** Two things. First one's a question. That first
6 sentence, should it be that "the analysis shows the stock is
7 currently above target?"
8
9 **ELIZABETH KADISON:** Yes.
10
11 **RICHARD APPELDOORN:** Okay.
12
13 And then the second one is, the last sentence where it says, "it
14 is proposed." I would like to change--
15
16 **VANCE P. VICENTE CERNUDA:** Can you repeat your first comment?
17 Beginning the sentence, what did you say? "The" what "stock"?
18
19 **RICHARD APPELDOORN:** "The current analysis shows the stock."
20
21 **VANCE P. VICENTE CERNUDA:** Okay. Hold on. "The current analysis
22 shows us the stock is currently above target." Okay. Next.
23
24 **RICHARD APPELDOORN:** The last sentence that begins with--
25
26 **VANCE P. VICENTE CERNUDA:** "It is proposed." Yeah.
27
28 **RICHARD APPELDOORN:** I think should read "the SSC recommends" or
29 "SSC proposes." Yes.
30
31 **VANCE P. VICENTE CERNUDA:** Okay. "The SSC recommends" elimina ese
32 y entonces, "it is proposed instead." "Recommends to use"
33
34 **RICHARD APPELDOORN:** No, leave "instead."
35
36 **VANCE P. VICENTE CERNUDA:** "Recommends to use"
37
38 **RICHARD APPELDOORN:** You could put "instead" in front of "the SSC."
39
40 **VANCE P. VICENTE CERNUDA:** Okay. Pásalo para allá.
41
42 **RICHARD APPELDOORN:** And a comma after "instead."
43
44 **VANCE P. VICENTE CERNUDA:** So, it reads, "Instead, comma, the SSC
45 recommends to use the ABC that is derived from the OFL based on
46 the proxy- MSY, parenthesis, F at SPR equal 30%, close parenthesis,
47 as a constant catch value for management."
48

1 Is that what you want?
2
3 **RICHARD APPELDOORN:** Looks good to me. And I will second the motion.
4
5 **VANCE P. VICENTE CERNUDA:** Okay. So, motion by Jason Cope, seconded
6 by Richard Appeldoorn. Sí, sí, ya vi. Pa'llá voy. So, it's open
7 for open for--
8
9 **RICHARD APPELDOORN:** Please, spell the name correctly.
10
11 **VANCE P. VICENTE CERNUDA:** Open for further discussion. Skyler?
12
13 **SKYLER ROSE SAGARESE:** Skyler Sagarese. Just a friendly amendment.
14 Maybe start that motion by saying, "The current assessment
15 indicates that the stock is currently above target" to define this
16 was from a stock assessment.
17
18 **ELIZABETH KADISON:** Yeah.
19
20 **RICHARD APPELDOORN:** Right.
21
22 **VANCE P. VICENTE CERNUDA:** Skyler Sagarese?
23
24 **SKYLER ROSE SAGARESE:** Yeah. Skyler Sagarese. I'm not sure we have
25 to include it in this motion, but in the past, we've said how those
26 interim years of forecasted catches should be. And Adyan showed us
27 using the 3-year average from 2022 to 2024 as the placeholders for
28 2025 and 2026. Do we have to provide support for that in this
29 motion, or can we just say that whatever results that were
30 presented to us were acceptable?
31
32 **RICHARD APPELDOORN:** Well, that information is part of the record.
33
34 **SKYLER SAGARESE:** Yes. Skyler Sagarese. I just wanted to confirm
35 because last time, for Saint Thomas/Saint John, we literally made
36 a motion specifically saying that. But if that's baked into what
37 Adyan presented to us, then I'm happy with that.
38
39 **VANCE P. VICENTE CERNUDA:** Yes. Write it down just to see if he can
40 follow motion three or it should be a separate one. Skyler, if you
41 can write it down, that'll be useful. Adyan Rios, come in.
42
43 **ADYAN RÍOS:** Yeah. No. I was just wondering if the sentence about
44 "these conditions lead to a 3-year average ABC that will exceed
45 the proxy MSY OFL in 2029." I just wanted to point out that that's
46 been true in the past when we've used the 3-year average. So, while
47 it's still correct, I think the average approach leads to, like,
48 it being lower in 2027, that there's presumably, like, buildup

1 that allows the average to exceed the OFL for 2029. So, I'm just
2 getting back into the mechanics of that argument.
3
4 And then I also just wanted to point out what the current landings
5 are at above 250.
6
7 **VANCE P. VICENTE CERNUDA:** Yes. Thanks. I don't see any problems in
8 including that as part of motion three. Are there any comments? I
9 don't hear any further comments, so I have to read it again before
10 we vote.
11
12 So, here we go. "The current assessment indicates that the stock
13 is currently above target and, therefore, experiencing a fishing
14 down to the MSY proxy. In addition, the new stock assessment shows
15 an increase in the overall size of the population. Parenthesis, *id*
16 *est*, that is, a higher unfished population size, close parenthesis,
17 and comma, which leads to an increase in catches with all other
18 things being equal. This increase in stock scale is greatly
19 influenced by the final point in the new abundance indices, which
20 adds further uncertainty in the model. Parenthesis, as shown in
21 the retrospective analysis, close parenthesis, and period. These
22 conditions lead to a 3-year average ABC that will exceed the proxy-
23 MSY OFL in 2029. Instead, the SSC recommends to use the ABC that
24 is derived from the OFL based on the proxy-MSY, parenthesis, F at
25 SPR equal 30%, close parenthesis, as a constant catch value for
26 management. Further, the SSC recommends using the 2022 dash 2024
27 landings average for each fleet as the provisional landing values
28 for 2025 and 2026."
29
30 The floor is open for further discussion.
31
32 So, shall there be no further discussion, we will go through the
33 voting process, beginning with Tarsila Seara.
34
35 **TARSILA SEARA:** Tarsila Seara, yes.
36
37 **VANCE P. VICENTE CERNUDA:** ¿Lo estás apuntando? Okay. J.J. Cruz?
38
39 **JUAN J. CRUZ-MOTTA:** Yes.
40
41 **VANCE P. VICENTE CERNUDA:** Elizabeth Kadison?
42
43 **ELIZABETH KADISON:** Yes.
44
45 **VANCE P. VICENTE CERNUDA:** Jason Cope?
46
47 **JASON COPE:** Yes.
48

1 VANCE P. VICENTE CERNUDA: Richard Appeldoorn?
2
3 RICHARD APPELDOORN: Yes.
4
5 VANCE P. VICENTE CERNUDA: Skyler Sagarese?
6
7 SKYLER ROSE SAGARESE: Yes.
8
9 VANCE P. VICENTE CERNUDA: Todd Gedamke?
10
11 TODD GEDAMKE: Todd Gedamke, yes.
12
13 VANCE P. VICENTE CERNUDA: Walter Keithly?
14
15 WALTER KEITHLY: Walter Keithly will abstain, again.
16
17 VANCE P. VICENTE CERNUDA: Good. And, Vance Vicente, yes. So, this
18 is a unanimous decision to move the motion ¿Qué dijo? ¿Quién? ¿No?
19 Walter, did you abstain? I didn't understand.
20
21 ¿De verdad? Okay. I'm sorry. There's-- yes. There's one abstention.
22 Walter Keithly. I misheard you. So, with one abstention, *the motion*
23 *carries*.
24
25 Adyan, do you need to make any other comments, or are you ready to
26 begin with the SEDAR 84 Caribbean Yellowtail Snapper, Puerto Rico
27 final review?
28
29 ADYAN RÍOS: Do we want to take a break?
30
31 VANCE P. VICENTE CERNUDA: Okay.
32
33 ADYAN RÍOS: Thank you.
34
35 VANCE P. VICENTE CERNUDA: We'll be back at--
36
37 WALTER KEITHLY: Chairman, this is Walter. I had asked for a couple
38 of minutes.
39
40 VANCE P. VICENTE CERNUDA: Okay. Okay. Walter, go ahead.
41
42 WALTER KEITHLY: Thank you, Mr. Chairman. I hate to bring up some
43 of the stuff this late in the game, but I'm going to. Perhaps Kevin
44 or Adyan can answer the first question. In the summary of the
45 Puerto Rico spiny lobster SEDAR 91 additional sensitivity runs,
46 under the first sentence in the background and objectives, it is
47 stated that the SSC requested additional sensitivity runs for the
48 Puerto Rico stock. Graciela had sent us an email on September 5th,

1 2025, saying we were not going to be reviewing it.
2
3 And the only thing I could find in the minutes was Kevin's
4 discussion that they had some additional indices that they wanted
5 to look into. But I never saw anywhere where I said the SSC had
6 asked for any additional sensitivity runs. Perhaps I am mistaken.
7 I'd like Kevin or somebody to answer that, then I have another
8 question.
9
10 **VANCE P. VICENTE CERNUDA:** Let Kevin answer the first one, please.
11
12 **KEVIN MCCARTHY:** Yeah. Thank you, Mr. Chair. Kevin McCarthy here.
13 You're not wrong, Walter. That's a typo.
14
15 That should have read that the Council requested this, not the
16 SSC. The Council requested this in their August 2025 meeting. We
17 had a lengthy discussion then, and we talked about additional runs
18 to include the indices of abundance if they could be produced and
19 they were. We also added, I think, another year in the time series.
20 So, we brought it from 2023 as the terminal year to 2024.
21
22 So, you're not incorrect. It was not the SSC. It was the Council.
23 So, we should correct that in an updated version of the document.
24
25 **WALTER KEITHLY:** Before that clarification, which brings me to the
26 next issue though, you gave this report, the initial 91 assessment,
27 to the Council before it went to the SSC. And I don't know if that
28 is traditional protocol or not, but it's going to be beside the
29 point. But I have to believe the Council raised some issues with
30 91, Puerto Rico 91, SEDAR 91, only because it was showing the stock
31 to be overfished with overfishing occurring.
32
33 I have to believe that if everything was rosy, they would have not
34 asked for any additional analysis. Am I incorrect on that comment?
35 Or do you think I am?
36
37 **VANCE P. VICENTE CERNUDA:** Yeah. Kevin.
38
39 **KEVIN MCCARTHY:** Yeah. Kevin McCarthy. Well, I can't speak to the
40 motivations of the of the Council when it comes to overfished
41 versus not. But some additional background was that the Puerto
42 Rico DRNA brought to the Council there, and I showed this
43 yesterday-- Well, I showed one of the figures yesterday that, was
44 from, Matos et al., working paper.
45
46 It was a figure out of a working paper for SEDAR 91 data workshop.
47 And at that time, because it was a nominal index, the panel, the
48 SEDAR data workshop panel elected not to include it, because it

1 was a nominal index, and it wasn't recommended for use in the
2 modeling. So, there was-- I believe, there was a presentation.
3 There was certainly discussion from DRNA, at the Council meeting,
4 that they had additional information that supported the anecdotal
5 information of fishers that the catches-- that the abundance was
6 a lot higher in recent years. So, they took the data in a sort of
7 initial analysis supporting what the fishers were saying.

8
9 And I think based on that information, whatever other motivation
10 they may have had, but based on that information on this abundance
11 of data, they requested that the Science Center do some additional
12 analyses with those abundance data.

13
14 **WALTER KEITHLY:** This Walter. I actually agree with you the
15 abundance data had I would have seen it earlier. But it's just the
16 process that bothers me that. Yes, I fully suspect that if it had
17 shown a rosy picture, there would not have been this additional
18 analysis being conducted.

19
20 One last question, though. I do-- something that's always bothered
21 me with many of these assessments, but especially lobster. When
22 you're using a steepness parameter of 0.99, doesn't that strongly
23 suggest some and possibly quite a bit of external recruitment?
24 And, again, especially with lobster, because you have this-- I'm
25 not a biologist, and somebody with a life history background can
26 possibly help me. But they have a long platonic stage of floating
27 in the water and so forth. And it's like 9 months or something as
28 I recall.

29
30 Shouldn't-- I would think that the much of the production for
31 Puerto Rico would come from other areas throughout the Caribbean
32 and maybe South America even. Can somebody help me out there?

33
34 **ELIZABETH KADISON:** I would like.

35
36 **WALTER KEITHLY:** I don't hear-- let me finish up my comments. I
37 haven't heard anything yet, and I'll be quiet after I make one
38 last comment. That if, in fact, that is correct, this large amount
39 of external recruitment, then it seems you'd have a different MSY
40 where MSY would be dependent on fishing effort in other nations or
41 areas, not just what is happening locally in Puerto Rico. And I'll
42 stop there. Thank you, Mr. Chairman.

43
44 **VANCE P. VICENTE CERNUDA:** Oh, thank you. Thank you very much,
45 Walter. Kevin?

46
47 **KEVIN MCCARTHY:** Yes. Thank you, Mr. Chair. Kevin McCarthy. So, I
48 don't disagree with you, Walter. Again, yes, you would certainly

1 suspect that there is an awful lot of connectivity across the
2 Caribbean for something that is so long in the plankton.

3
4 I think the steepness, whether or not that means it's recruitment
5 from outside Puerto Rico, which I certainly suspect it is, there's
6 certainly a disconnect between recruitment and the local
7 population. Right? There's not that strong tie between the two.
8 So, whether that means you don't need a lot of animals to produce
9 a gazillion other recruits, or whether that means they're all
10 coming from outside, we'd have to have some other information that
11 was not included within this stock assessment to get at that.

12
13 But I don't disagree. It certainly is the most reasonable
14 hypothesis that with such long lived planktonic larvae, they're
15 going to be coming from places outside of the region, of Puerto
16 Rico. By the region, I mean, the U.S. Caribbean. They could be
17 coming from wherever.

18
19 **WALTER KEITHLY:** This is Walter again. Would that then not lead to
20 conclusion that you don't have a single MSY, but a different MSY
21 for each level of fishing in other areas.

22
23 And that's the reason I voted to abstain from the last two motions,
24 by the way. If something just bothers me about what we're doing
25 here, the way we've handled this.

26
27 **KEVIN MCCARTHY:** Well, certainly, lobsters are of interest to
28 WECAFC to do a more comprehensive or broader scale assessment of
29 some kind. Now, what kind of success are they going to have given
30 the available data across the region? I don't know. But WECAFC
31 certainly has got working groups that are concerned with things
32 like lobster and conch as well, although they're not as long in
33 the plankton. But I'm sure they move around quite a bit.

34
35 **VANCE P. VICENTE CERNUDA:** Yes. We have, Jason Cope.

36
37 **JASON COPE:** Yeah. This is Jason Cope. Two comments. One, to
38 Walter's observation about assessment scrutiny. I agree, Walter.

39
40 That is not a mirage. It's something we should definitely be
41 thoughtful about because, and this happens all over the world,
42 assessments that bring big changes often get way more scrutiny
43 than things that report things that are easier to maybe uptake.
44 And so, that's just something-- I think your point is a very
45 important one that we should be on guard for, because we should be
46 as objective as possible. That's why we have the best available
47 scientific information, sort of qualities.

48

1 It doesn't matter what the results are. It's how it was done.
2 What's the process? How do we do things? So, I just want to affirm
3 to you that I think your observation is an important one, and we
4 should always have that on the front of our mind.
5

6 For the second one about steepness, and it is a strong assumption
7 in this assessment that steepness is 0.99. Maybe what you just
8 said is worthy of a research recommendation just to say steepness
9 is kind of pinned at that really high thing. It's done for a
10 transparent reason because of outside recruitment. But what does
11 that mean for the overall uncertainty in the assessment? I find
12 that a very reasonable thing and an important one to capture in
13 the research recommendations, just something to revisit in the
14 next assessment.
15

16 Thanks.

17
18 **VANCE P. VICENTE CERNUDA:** Yes. Thank you. Thank you, Jason. Adyan
19 requested a 15-minute break, so we'll be back at 02:45.
20

21 (Whereupon, a brief recess was taken.)
22

23 **VANCE P. VICENTE CERNUDA:** Welcome back to the afternoon session of
24 the SSC meeting of April 9th, 2026. It's 02:45.
25

26 As soon as Adyan Ríos is ready, she will be presenting us the SEDAR
27 84 Caribbean Yellowtail Snapper, Puerto Rico final review. So,
28 anytime that you're ready, Adyan, we're ready.
29

30 **SEDAR 84 CARIBBEAN YELLOWTAIL SNAPPER PUERTO RICO: FINAL**
31 **REVIEW-ADYAN RÍOS, CARIBBEAN BRANCH SEFSC, NOAA FISHERIES**
32

33 **ADYAN RÍOS:** Thank you, Vance. I'm getting set up.
34

35 Okay. We are ready to get started with the SEDAR 84 Yellowtail
36 Snapper review for Puerto Rico at the Caribbean Fishes Management
37 Council SSC meeting on April 9th, 2026.
38

39 I'm going to provide a bit of background to start us off. And so,
40 SEDAR 84 was a benchmark assessment that addressed the stocks of
41 Caribbean yellowtail snapper in Puerto Rico and Saint Thomas/Saint
42 John, and stoplight parrotfish in Saint Croix. It consisted of an
43 in-person data workshop in 2024, a series of webinars, and an in-
44 person review workshop in 2025.
45

46 The stock assessment report became available in August 2025. And
47 in September 2025, in anticipation of the review that we're having
48 now, the SSC discussed with us about additional model runs just

1 after our last SSC meeting, I believe it was in August, a
2 discussion about the results from the CIE reviews, which were also
3 summarized and presented to the Council at the last Council
4 meeting. And we'll talk a little bit more about those going
5 forward.

6
7 These supplemental runs extend the terminal year from 2022 to 2024
8 and investigate parameters of steepness, the average length at
9 maximum age, and the degree of dome shaped selectivity for the
10 NCRMP, fishery-independent survey. And then, just like our last
11 presentation, I included this comment about being here to review
12 and what we, the SSC is tasked with, which is the recommendation
13 as to the best available science and data, and whether the results
14 are useful for providing management advice.

15
16 Continuing into some of the background, for this species, this
17 species has island-based fisheries management plans effective as
18 of October 2022, and it has annual catch limits. The annual catch
19 limit for Snapper Unit 5, which only has one species. So, the
20 annual catch limit for yellowtail snapper for that entire unit is
21 315,806 pounds. And that was based off of the approach, I'll
22 discuss it further, but it uses the reference years of 1988 to
23 2011. It's based on commercial landings, but it applies to all
24 harvests. And just like the understanding and implementation of
25 annual catch limits, it corresponds with accountability measures
26 when those are exceeded in the current fishery management plans.

27
28 So, this plot shows us in pounds. I think later plots are in metric
29 tons, but this plot was one that was used during the assessment
30 webinars, basically to show the different components. So, we have
31 a different-- even though there's only one fleet in the model,
32 that fleet is made up mostly of hand lines, a little bit of sein,
33 a little bit of trap, and a little bit of recreational catch as
34 well.

35
36 I've added some additional information here. We see that the year
37 with the highest landings was about 2,000, up over, close to
38 700,000 pounds. And then, we also see these lines that are
39 referencing the current ACL, the current ABC, and the current SYL.
40 I'll talk a little bit about those in a moment. There's just a lot
41 to talk about on this slide.

42
43 We also have lines showing when the federal size limit was
44 implemented. It was implemented with like a ramp. I think it was
45 8 inches, 9 inches, 10 inches, all the way up to 12. And so, the
46 12 inches total length kicks in a little bit later. And then we
47 also have the year noted here when Puerto Rico also adopted a
48 corresponding, matching size limit for territorial waters. So,

1 that's designating the years where those were implemented.
2
3 Next, I want to point out that the recreational landings were
4 calculated as 7.78% of the commercial lines. So, the green
5 represents 7.78% of the blue. And that came from comparing the
6 available MRIP information. So, the landings that we have from
7 MRIP for those years, comparing those to vertical lines, and only
8 to the vertical lines because that was deemed to be more similar
9 to the recreational component that also targets yellowtail
10 snapper.
11
12 And one more note there as to why the MRIP data are not used. The
13 MRIP data, in some years, have very low sampling, and so they're
14 flagged for being highly uncertain. And so, instead of using those
15 data directly, we just developed this ratio and then applied that
16 ratio across all years so that we would also have estimates of
17 recreational catch outside of the years for which we have those
18 MRIP data.
19
20 I also wanted to just point out a little bit more about the current
21 management, so how the current ACL and ABC are derived. And so,
22 the SYL is a sustainable yield level, and it represents a level
23 that the Council has confidence, can be sustained based on
24 historical trends, an evaluation of the best scientific
25 information available at the time when that decision was made,
26 which included the SSC's productivity susceptibility rankings that
27 factored into the buffers and scalars that buffer the ABC from the
28 SYL.
29
30 As you can see, the recent last 15-- or it's been, let's see, 2008.
31 Since 2008, landings have not exceeded the ACL or the ABC that we
32 currently have. I guess it goes even further back. So, we go back
33 to 2004 or years where those landings were higher. In recent years,
34 we're not seeing that increase.
35
36 I'll also come back to this at the end when we're just, again,
37 revisiting some of the ancillary information that connects to the
38 trends that we see across various of the model runs. But what I
39 want to also point out is the start of the time series. We know
40 that we're starting in a period of time when the stock was already
41 quite fished. That was the reason for that federal size limit.
42
43 I also have some slides near the end that kind of provide a
44 reference as to anecdotes or evidence presented in the original
45 fishery management plan that implemented this size limit, of that
46 concern of smaller yellowtail snapper being caught than
47 previously. And then, I don't have species specific data going
48 further back, but we do know that we do have like a reference that

1 tells us a little bit about the total landings for all species.
2 And so, we do know that for a finfish, like, yellowtail snapper,
3 that the landings prior to 1983 were substantial. And so, that's
4 just another, as we have this time series of landings up, I just
5 wanted to make sure that I touch on a few of those points. And,
6 again, that the majority of the landings come from the lines year
7 group.

8
9 Here we go. So, in 1986, we have-- just a bit more background. In
10 1986, we had the 8 inches total length size limit increased one
11 inch per year. So, that was fully effective in 1989 according to
12 the fishery management plan. Then in 1990, there was a requirement
13 for the fish to be landed intact.

14
15 In 2005, there was a comprehensive amendment. In 2012, there was
16 a recreational bag limit as well as the implementation of the ACL.
17 And there was an implementation of the ACL based on those two
18 sectors. So, a specific commercial ACL and a specific recreational
19 ACL. And then that was reevaluated, and then later just one ACL
20 based on commercial data established in 2022.

21
22 Just to also orient us to the regulations in Puerto Rico. So, the
23 first regulation was in 1936, which banned the use of nets at river
24 mouths. This captures, I think, a lot of information of the events
25 for Puerto Rico, but some of these have more details, therein. But
26 I just kind of included what I thought was tangentially kind of
27 relevant to yellowtail snapper.

28
29 So, we have 1998. The law was amended. Wait. No. The law Regulation
30 278 goes in effect in 1998 with amendments in 2004, 2005, 2009,
31 and 2010. In 2004, they have the 10.5-inch fork length, and so
32 that corresponds to the 12-inch total length size limit.

33
34 In 2004, beach seines were prohibited from river mouths. Then seines
35 were prohibited in jurisdictional waters. Then seines were allowed
36 again, but not at river mouths. And again, I think the seines are
37 a little bit relevant just because we do have some small level of
38 catch from the seines in the early years, and that does reflect, I
39 think, generally smaller fish. But I don't really think of
40 yellowtail snappers hanging out at the river mouth.

41
42 All right. So, moving forward. We also, I guess I'm jumping ahead
43 a little bit here, but since we're thinking about size limits and
44 regulations, I wanted to bring up the use of the time blocks that
45 were explored in SEDAR 84 for yellowtail snapper in Puerto Rico.
46 We have the original implementation in 1989 of the size limits
47 going to the 12-inch total length. And then in 2004, we have the
48 corresponding size limit in Puerto Rico.

1
2 Then in 2010, we saw some regulations, not particularly related to
3 yellowtail snapper, but I had been kind of asked to just, when we
4 looked at this length composition data for our commercial fleet,
5 try and understand when these shifts in fishing behavior might
6 have occurred. And this is another kind of topic where local
7 ecological knowledge and conversations with, like, not just
8 conversations, but strategic data collection that informs these
9 types of decisions would also be helpful to conduct. But if you
10 kind of look at this plot, if I took these lines off, you'd see
11 that we really stopped seeing the 21-centimeter fish right about
12 that time when Puerto Rico adopted the size limit. So, we don't
13 see a huge change in our size composition when the federal size
14 limit went in. And so, there is no time block at this time.

15
16 I did have one time block here, and I did notice that there also
17 seems to be a shift happening after 2010. And I'm not sure if it
18 might relate to what was happening with other species, but there's
19 a time block in our models for 2010. And on the right here, this
20 shows the logistics selectivity for our commercial fleet, and it
21 just shows that we do see the targeting, presumably, the targeting
22 and the effective selectivity going a little bit larger during
23 that time lock and then returning to something. It's subtle. It's
24 not a huge difference.

25
26 So, you could argue potentially for not having time blocks, but I
27 did think that this one in particular, the 2004, when the size
28 limit is effective both in territorial and in federal waters did
29 make sense. And I think that we did hear a lot during the data
30 workshop about targeting nature of the fishery, the chumming, the
31 targeting going out certain times, certain moons, and attracting
32 snapper of a of a given size.

33
34 And so, that also kind of plays into potential for dome shaped
35 selectivity. But, as you'll see, the models for all three of the
36 SEDAR 84 are more on the limited side. And so, that was not
37 explored, in particular because, also, we saw large yellowtail
38 snapper in the in the TIP data, in the length composition data
39 that we get from the port samplers.

40
41 Okay. So, that's what I kind of wanted to cover as far as the
42 background for regulations and how it plays into some of the
43 modeling decisions that factor into our time blocks, which
44 particularly were tied to the selectivity and the targeting nature
45 of fishing for yellowtail snapper.

46
47 That brings me to the assessment history. So, just referencing
48 some of the previous work that has been done for spiny lobster in

1 the-- sorry, for yellowtail snapper in the Caribbean. We have a
2 study by Rich Appeldoorn in 1992 of broader reef fish assessment
3 and analyzing length frequencies. However, for management advice
4 and in particular, too, I guess, what we determined in our analysis
5 for the data workshop report was characterizing that as limited in
6 scope and the data resolution.

7
8 We also have a 2005 SEDAR 8. This explored trends in CPUE and
9 length frequency changes, but there was insufficient data to
10 parameterize models. And so, SEDAR 8 was unable to determine stock
11 status. We also have SEDAR 46 which applied Tom Carruthers Data-
12 Limited Methods Toolkit to the available data. SEDAR 46 evaluated
13 six species across island units. So, two for Puerto Rico, two for
14 Saint Thomas, and two for Saint Croix. And that included yellowtail
15 snapper in Puerto Rico. However, the results were ultimately not
16 used for management advice, even though it did receive best
17 scientific information available at the time.

18
19 That brings us to SEDAR 84. And so, the models for SEDAR 84 were
20 fit using a catch time series for a single fleet. We have a fishery
21 independent index of abundance. That is the National Coral Reef
22 Monitoring Program. And we also have length composition data from
23 both the fleet, so the commercial, and the fishery independent
24 coral reef survey. And all these data were implemented in a data
25 limited approach using stock synthesis.

26
27 So, jumping ahead a little bit to the conclusions of where did
28 SEDAR 84 end up in its review. So, we have models that we'll
29 summarize today, that were in the stock assessment report. A few
30 additional models were in an addendum to the stock assessment
31 report, and those were developed with the reviewers at the review
32 workshop. And then we also have the models that have explored the
33 parameter space and the rigidity that was highlighted by the CIE
34 review.

35
36 The models presented in the stock assessment report were not found
37 appropriate to be the basis for the management advice. So, that
38 was the conclusion by the CIE review. The CIE reviewers did give
39 us recommendations and did express some of the main concerns. And
40 some of those were the models being deterministic and sensitive to
41 fixed assumptions. And the models were also difficult to isolate
42 and clearly identify the most influential sources of uncertainty.
43 We also identified key uncertainties, including initial
44 equilibrium, natural mortality, steepness, and population
45 processes.

46
47 So, in response to that model rigidity and those key uncertainties,
48 we conducted a phased exploration of these parameters and also

1 updated the data through 2024. I'll take a moment to just point
2 out that these recommendations were-- these kinds of findings were
3 true for all three of the models. So, all of the SEDAR 84. The
4 yellowtail snapper in Puerto Rico, the yellowtail snapper in Saint
5 Thomas/Saint John, and the stoplight parrotfish in Saint Croix.

6
7 What I want to highlight there is the reviewers and the way we
8 spent the workshop. We really focused on exploring the most data
9 rich of those three assessments, which is Puerto Rico, which is
10 what we'll be talking about today. And so, a lot of the issues,
11 that we talk about today are also true for the U.S. Virgin Islands,
12 with the U.S. Virgin Islands having additional complexities in
13 that they have a much shorter time series, fewer port sampling,
14 sample sizes. And in Saint Croix, we have the additional biological
15 complexity of working with a species that also changes sex. So,
16 the stoplight parrotfish does have the sex change,
17 hermaphroditism.

18
19 I think that's just-- I know that a few of the SSC members can't
20 be here tomorrow, so I think when it comes to the research
21 recommendations, I think they might be similar today and tomorrow,
22 based on those similarities. But I also wanted to point out that
23 the additional work was invested in the richest data model, and
24 incorporating some of those recommendations from the CIE
25 reviewers.

26
27 Okay. That brings us to a summary of the sources of data. I
28 mentioned briefly, but here we have them all on one slide. We have
29 landings from self-reported fisher logbooks. We have length
30 compositions from the port sampling. So, those are the fishery-
31 dependent length compositions. We also have length compositions
32 from the Fishery Independent Survey. We have the index of abundance
33 from that fishery independent survey. And then we also have local
34 and recent life history information available from the otolith
35 analysis and gonad histology.

36
37 I have some of the kind of takeaways from the data workshop and
38 from the assessment workshop coming up. So, I'll just share those
39 with you.

40
41 So, the data workshop did recommend using the life history data
42 that were made available in the SEDAR working papers. So, those
43 were provided by Virginia, Jesus, and Noemí. Then we also have
44 commercial landings with a start date in 1983. We accepted the use
45 of the coat-specific expansion factors that were the proxies for
46 2020 to 2022 to be based on the years the average across 2014 to
47 2019.

48

1 We were asked to consider uncertainty around the landings. We were
2 asked to identify and flag outliers, potential outliers in the
3 commercial self-reported landings data. The data workshop
4 recommended that discards would not be modeled and that they are
5 to be negligible. So, this is saying that although we know there's
6 discards due to the size limit, this model is assuming that all of
7 those discards survive. So, we're not accounting for discarded
8 mortality.

10 The recommendations continue with utilizing the TIP lengths for
11 the available years to inform selectivity and annual population
12 trends. The data workshop recommended using the National Coral
13 Reef Monitoring Program data from 2014 to 2022. These data go back,
14 I think, to 2001. However, prior to 2014, they were only focused
15 on the Southwest-- or on the West Coast of Puerto Rico, in the
16 Parguera region. And the review workshop, so in 2014, that spatial
17 scope of that survey changes to cover the entire island. And so,
18 that justified that decision from 2014 to 2022. There were
19 recommendations from the CIE to explore taking that back further,
20 but that also raises questions as to like the spatial structure
21 comparability.

23 The reviewers also recommended trying to unify the data between
24 Saint Thomas and Saint John and Puerto Rico. But that also is
25 something we explored, and it increased the complexity of the model
26 to a point where, I really thought that that's different from what
27 our parameters going into the assessment were. So like, the terms
28 of reference really state that we have our island specific
29 management and our island specific models. So, that's why you won't
30 see that kind of explored further.

32 We explored it in the review workshop where we also tried various,
33 like, different selectivities and other approaches. But today's--
34 Or not today, but the additional, the supplemental sensitivity
35 runs really focused on some of the fixed parameters, and not so
36 much in redefining that structure or spatial scope or the years
37 that were included for the data in the models.

39 Lastly, the data workshop recommended not considering fishery-
40 dependent information for an index of abundance. That comes back
41 to those conversations about targeting. Yeah. So, I think there
42 might be a little more to recall there, but that was what our
43 discussions and decisions were at the time. So, I think it's an
44 important note to mention that with the index of abundance and the
45 work that went into the standardization for spiny lobster, I think
46 there might be potential for looking into that into further depth
47 for SEDAR 103.

1 On, SEDAR 103 we're in the webinar stages of reviewing the data
2 prior to the methods workshops, the in-person method workshop. It
3 is a procedural workshop, and I think that's something that might
4 be revisited but not available at this time.
5
6 **VANCE P. VICENTE CERNUDA:** Adyan, Kevin needs to intervene.
7
8 **ADYAN RÍOS:** Yeah. Thank you for letting me know. Yes. Go ahead,
9 Kevin.
10
11 **KEVIN MCCARTHY:** Thank you, Mr. Chair. Kevin McCarthy. So, Adyan,
12 also, I think in those conversations due to the way the yellowtail
13 fishery is conducted, there was real concern for hyperstability in
14 a fishery-dependent index. So, I think that was a major concern as
15 well just due to the nature of the way the fishery operates. So,
16 that was another issue that came up and why we preferred, "we"
17 being the panel, preferred the fishery-independent survey over an
18 attempt to put together a standardized index from fishery-
19 dependent data. Thanks.
20
21 **VANCE P. VICENTE CERNUDA:** Thank you, Kevin.
22
23 **ADYAN RÍOS:** Thank so much, Kevin. Okay. Following the workshop,
24 the data workshop, we looked into the landings outliers and
25 retained them as valid trips. We also accepted and structured the
26 model as having one commercial fleet. That model being stock
27 synthesis, and that stock synthesis was deemed to be compatible
28 with the available data and our standard practices.
29
30 Our model was configured with one area, one fleet, and one survey.
31 It went from 1983 to 2022, and the 40% SPR was used as a proxy for
32 MSY. Then we tested sensitivities for growth, the initial
33 equilibrium, and the way we tested those sensitivities in the model
34 stability were through, looking at the gradients on the parameter
35 estimates, investigating the fits, so looking at the residual fits
36 to the data, developing likelihood profiles for key parameters,
37 and also running those retrospectives and jitter analyses.
38
39 So, I'm going to tell a bit of the story of the assessment
40 development that's in the stock assessment report, the review
41 workshop report, and the supplemental sensitivities document. So,
42 I'm going to start at the beginning.
43
44 And so, we began the data limited models using what's called super
45 period length compositions. The length composition data, there's
46 years where the sample sizes are quite on the low side. So, we're
47 talking under 30 or under 50 trips that were sampled in a year.
48 And so, that's one potential reason why you might pull information

1 is that there's not a lot of information for individual years, so
2 you might pull and combine information across years when you're in
3 that situation. On the flip side of that, SS also knows, like, you
4 tell it how many samples are in a year for it to understand whether
5 there's a year with higher samples.

6
7 So, it's kind of, like, relative. Like, it's making sure that SS
8 knows that a year with more samples is given more weight than a
9 year with very few samples. So, it is also possible to not
10 aggregate and leave those data in. However, we also had discussions
11 about how the targeting nature of the sampling-- oh, sorry, not of
12 the sampling of fishing, of targeting certain sizes very
13 effectively, which raised some concerns as to the potential for
14 the length data to not be a reference of cohort strength and more
15 so of that efficiency in targeting specific sizes or those
16 preferences in targeting specific sizes over time. And in that
17 situation, the super year approach allows us to still fit to the
18 data and use it to understand the selectivity and understand and
19 model the size of the fish being removed from the population but
20 not allow the trends in these sizes to influence directly cohort
21 strength as it's modeled in this forward structured, forward
22 projecting age structured model.

23
24 And then, I guess, of note, also, we start with that assumption of
25 external recruitment related to fixing steepness at 0.99 and also
26 fixing the uncertainty around the recruitment, so the variability
27 around recruitment at 0.7. So, the model development process then
28 looked at the growth equation that was used in the model.

29
30 The survey data, the NCRMP survey data saw very small fish, and
31 this growth shows that these fish grow very, very fast. But the
32 NCRMP data shows a large proportion of fish grow under 12
33 centimeters, which is pretty small. And these fish grow to 12
34 centimeters, or I think they grow to, like, a little bit higher
35 than that very quickly. And so, the growth model became-- fitting
36 those small fish in the NCRMP data with the selectivity based off
37 of the model's understanding of what sizes are available for that
38 survey to be seeing those fish come into existence based on this
39 growth curve in the model. And so, it became an important attribute
40 that we looked into further in the sensitivity runs that came after
41 the review workshop as well. So, those recent suite of sensitivity
42 runs also take a-- we'll be talking more about growth later.

43
44 Okay. Then we also looked at the assumptions of, just, that
45 continuous recruitment. So, that is not estimating the recruitment
46 deviation, so only having that long, that overall average
47 recruitment, and also increasing catch uncertainty as was
48 requested by the data workshop. Of note, during these models, the

1 catch data were still predicted exactly because we weren't giving
2 the model that flexibility of individual annual Fs. And so, that's
3 something that was also explored following the-- in later
4 sensitivity runs.

5
6 The assessment development went on to incorporate the indices of
7 abundance, the fishery, the annual length composition data as
8 opposed to the aggregated one, so the super year. Sometimes I also
9 call it the pooled approach. We also incorporated dome shaped
10 selectivity for that fishery independent survey.

11
12 Dome shaped selectivity was justified based on the sizes that we're
13 seeing. And so, the survey's seeing-- it's a survey that operates
14 on coral reefs and it's seeing a smaller yellowtail snapper than
15 we are seeing in the commercial fleet. We talked a little bit about
16 time blocks earlier, so those were implemented in this later stage,
17 as well as turning on recruitment deviations. And I do want to
18 note that those recruitment deviations were turned on for all
19 years, even though our indices don't start until 2014. And so,
20 that's also something that we come back to in later explorations.

21
22 I've walked you through what was on that last slide. I basically
23 talked you through everything we have here. But, again, like, in
24 case there's a specific model that we want to revisit, this is
25 just that table that allows me to go back to finding it and to
26 showing that progression towards those steps that I described on
27 the previous slide.

28
29 That brings us to the model development that was explored during
30 the workshop, and that made it into the addendum that the reviewers
31 referenced in their CIE reviews. And the first, review workshop
32 model changed the model from a two-sex model to a single sex model,
33 so fewer parameters, even though those parameters were being, fixed
34 to the same information. So, this simplifies the model.

35
36 We'll also talk about further model simplification steps later in
37 the next slide. Just because when you're trying to run those
38 experiments about understanding this parameter space, it's helpful
39 and important to simplify where you can, to really be able to
40 isolate the effects of key changes. And so, that was one of those
41 simplifications. We also changed the F method to estimate annual
42 S so that the data would not-- so, that the uncertainty that we
43 were trying to reflect in the catches would still be represented
44 and carried into the model.

45
46 That also brought us to bumping up the catch standard error to
47 0.3. This was also because we're seeing this kind of, not tug of
48 war, but this competing between the model fitting the catch data

1 versus the index and the length data, and so, that also brought us
2 to investigating the survey standard errors and realizing that
3 those needed to be adjusted to log space. And so, those were also
4 corrected. I think they just increased very slightly or decreased
5 very slightly.
6
7 But that brings us to what the reviewers and the team at the review
8 workshop kind of considered to be and say how can we better
9 understand this model? What can we try and have it do? Or how can
10 we improve some of our understanding of the key uncertainties?
11
12 One of the first things was to try and estimate growth. This is
13 kind of an experiment because we really don't have age data in the
14 model. So, it's kind of just saying, what does the model reconcile
15 between predicting those catches, predicting that index, and
16 predicting the length composition? What estimated growth did it
17 expect? And depending on different settings, it estimated it lower,
18 higher, or similar to where it was. But this is, I think one of
19 the research recommendations I've included later, it also alludes
20 to the Florida model for-- not Florida, the Southeastern U.S. model
21 for the yellowtail snapper, where those data have been incorporated
22 into SS. And so, it does give SS more information to really
23 estimate where that, especially that growth during those small
24 years. And we'll look at the growth information that we have and
25 again, why it's difficult to understand that growth for those very
26 young fish.
27
28 So, that's not something-- Estimating growth is something I
29 consider doing further in the sensitivity runs that we've talked
30 about recently, but we actually don't have a model that's
31 structured to estimate growth. So, it's an experiment that we
32 ventured into during the review workshop, and I did not revisit
33 that.
34
35 But what I did revisit was looking at a fixed alternative value,
36 and we'll talk about that a little bit later. But it does tell us
37 a little bit about using an alternative value, a higher maximum
38 length, does kind of knock the model into, in some cases, into a
39 implausible scenario of very low productivity. And so, that's
40 something we'll discuss a little bit later, but I did want to just
41 kind of revisit kind of the key uncertainties and some of the
42 important points that came up and that are represented in the stock
43 assessment report and in the addendum.
44
45 That brings us to the next models that we see here, trying to
46 increase the data for the survey. So, trying to include those
47 additional years of information when only La Parguera was sampled.
48 So, that adds, an additional survey.

1
2 We also explored that while trying to see if that estimated growth.
3 We had some convergence problems when we tried to just add
4 complexity to the model, but still have a lot of rigidity in some
5 of these assumptions, of key assumptions of these parameters. And
6 then, the exploration and recommendation of, "well, okay. So, maybe
7 the model needs a little bit more information. So, what if we kind
8 of pull in the Saint Thomas/Saint John data into a larger Puerto
9 Rico, Saint Thomas/Saint John model," which we ran it at the time.
10 I see the strength in or the logic of wanting to include more data
11 and how close these islands are, but when you also look at the
12 data, the landings from Puerto Rico are much higher than the Saint
13 Thomas/Saint John data. So, it's become still, kind of, like a
14 Puerto Rico driven model with some information being incorporated
15 from the two indices, the two fishery independent indices that we
16 do have from Saint Thomas and Saint John.
17
18 There's the traditional NCRMP, and then there's a series of years
19 for which they went into deeper water. And so, they have those two
20 indices that tell us a little bit more about the difference in the
21 size composition in those two different domains and those two
22 different depths that are sampled by the regular coral reef program
23 and then the deep coral reef program.
24
25 This just summarizes the ones that made it into the report, but we
26 tried working with this model and looking into different ways of
27 trying to understand the model dynamics and the key sensitivities
28 and the key uncertainties that would help make some of the
29 assumptions and address some of the concerns with the model
30 rigidity. And so, that tells the story of how we got to where we
31 ended up, and then what we tried next to kind of explore the
32 parameter space and just communicate what consistencies we see
33 across model runs. So, that's what we'll talk about going forward.
34
35 So, now we come to the runs that were prepared in response to
36 exploring that model rigidity and those key assumptions. And we
37 did so with this kind of phased approach where we start with the
38 review workshop one model. So, that model that had a couple of
39 really good suggestions for simplification to a single sex. Then
40 we also corrected catch units. I'll touch on that in a upcoming
41 slide, and we'll also look at the implications of that.
42
43 The next kind of stage of development was turning off recruitment
44 deviations. So, as I mentioned, recruitment deviations were on for
45 all years. And what I ended up trying later in the model
46 development was recruitment deviations, but only for the years
47 that have the information from the indices that is intended--
48 indices of abundance telling us about what's in the water, telling

1 us about recruitment, telling us about that relative abundance.
2
3 And so, that's a step that we, you know, I turn it off, but then
4 I intentionally turn it back on in a different way. And that's
5 important to note because the recruitment deviations in a lot of
6 the models that we were exploring at the review workshop, when
7 those were all on, they can pick up a lot of the dynamics of other
8 attributes, of other attributes in the model, and so that can be
9 a bit of a concern. So, you really kind of want to develop your
10 model and then turn on recruitment deviations. You really want to
11 develop your model, understanding some of the key uncertainties
12 and ways that the model fits the data without recruitment
13 deviations, as well as then with them, and only using them in years
14 where you think that the model really can inform recruitment
15 signals.
16
17 So, after just kind of this brief cleanup, right, I then updated
18 the model through 2024. So, we had two additional years of data
19 because the previous model went through 2022. And then I took some
20 additional structural simplification steps, as well as a direct
21 recommendation from the CIE review. So, I guess I'll come back to
22 this in a minute because I just want to briefly talk about all the
23 stages.
24
25 Then I looked at the sensitivity of specific parameters by looking
26 at and using informed estimates to base, like, what is a value, a
27 plausible value for this based off of a reference or based off of
28 a justification that we'll get into later, and then just doing
29 that in a single factor sensitivity, and then looking at a bit of
30 the permutation of those scenarios, of the combinations of those
31 alternative parameters. And then lastly, I looked at the
32 recruitment estimation with specific runs that I'll kind of
33 hopefully clarify to you soon.
34
35 I want to come back to structural simplification and just the steps
36 that were done to try and improve the model in a way that would
37 allow me to understand, to isolate the effects of the uncertainties
38 that we wanted to look into.
39
40 So, I have a plot for it later in the presentation, but the first
41 one was just using a Lorenzen m. And so, instead of applying the
42 same natural mortality to all ages, this scales the natural
43 mortality to be applied at different levels at age, but to
44 effectively average out to the same overall natural mortality. And
45 so, the natural mortality is much higher for younger fish, than it
46 is for older fish.
47
48 I also adjusted the growth, and we'll see that and talk a little

1 bit more on that on a on a dedicated slide. But in brief, I adjusted
2 the settlement age to be from 0 to 1, and so that allows fish to
3 kind of grow linearly to the size at age one from 0 instead of
4 trying to use the von Bertalanffy growth to understand what size
5 those very young fish, those young of the year, what size they
6 are.

7
8 I also simplified the model to only one settlement. So, previously,
9 we were using 4 settlements, and that was intentional to account
10 for the annual spawning-- the ability of this species to spawn
11 year-round that we saw in the gonad analysis and the life history
12 information. However, to simplify the model, and especially
13 because I was looking at the selectivities, and this creates four
14 different selectivities, or season specific selectivities, for
15 those settlement seasons, I simplified that, and I think that was
16 also a good recommendation, because we do want to work with a
17 simple model. This is a data limited kind of approach and adding
18 that kind of seasonal dynamic, while it's in line with the biology
19 of this species, the one settlement is not necessarily a step we
20 would take in a very data limited approach. So, that was just an
21 additional simplification.

22
23 The situation for estimating those really small fish was still
24 challenging, and so, originally, we had fish bend under 9
25 centimeters, and so we were estimating the fish that were observed
26 in the in the coral reef survey. They saw fish less than nine.
27 They saw fish between nine and twelve. And so, we were trying to
28 kind of really predict or the model was trying to fit to those
29 data that we see. That's kind of challenging for the model to
30 really predict those very small fish, especially given the growth
31 curve, which shows that these fish grow so fast. So, they're only
32 that size for, like, an instant. So, how could the survey have
33 seen them?

34
35 So, to alleviate how those data were being fit, and to improve the
36 fit overall, I adopted a bin that was all the way to twelve. So,
37 instead of zero to nine and nine to twelve, the smallest bin just
38 captures everything before your second bin, and so our second bin
39 now starts at twelve centimeters. And then we use the 3-centimeter
40 bins, from there until, I believe, 48 centimeters plus group. Okay.

41
42 Now we get into the combos of the factors that I explained above.
43 And I had some convergence and bounding on when I just kind of
44 grouped them all. So, then I took like a bit of a more structured
45 approach and just grouped a few of them. We'll also talk about
46 another moving piece in this model, which is the domed selectivity.

47
48 So, we talked about domed selectivity earlier, about how it's meant

1 to reflect like a window of the sizes that are exposed to a gear
2 or to a given survey, and that can be because of the gear in
3 particular, or it can be spatial, like, certain sizes might not be
4 in the same places. And so, dome shaped selectivity is what we
5 justified for the survey.

6
7 But what's important to note is that the model, like, can move
8 around and how much dome between estimating the stock dynamics of
9 the virgin, you know, the unfished stock size, the unfished
10 spawning stock size, and all of the fishing mortality, in addition
11 to estimating the level of that dome, those tend to be correlated.
12 Because the higher the dome-- so imagine the dome not going all
13 the way down to zero. The higher that dome, the more the model is
14 telling, for that selectivity, the model is inferring that I should
15 be seeing these fish. And so, if they're not there, that's because
16 they haven't grown or they've been fished out, or they weren't
17 recruited, as opposed to a dome that goes all the way down and
18 then when you don't see the fish, you say, "Oh, I don't see them
19 because they're not seen by this survey." And so, they're probably
20 out there. That's called cryptic biomass. So, they're out there,
21 but they're just not seen by this survey.

22
23 And so, that dome can be very influential. That assumption of how
24 much cryptic biomass is out there and how much of these large
25 individuals, what percent, like, what probability of these large
26 individuals are expected to be seen in the areas surveyed by the
27 coral reef survey, by the divers, is also related to the model
28 dynamics in that way. And in order to really isolate-- So, this
29 was another variable that causes a bit of trouble because it can
30 move around so much when you're trying to understand and isolate
31 the effects of other variables. And so, I fixed it, and so that
32 gets me, so that the combination of these structural
33 simplifications gets us to the simplified model that I then, I
34 believe, is simplified and in a good place to then explore and
35 understand sensitivity of important parameters individually, so
36 isolating effects, that wasn't really possible prior to making
37 these simplifications and these kind of ending up with this Model
38 15.

39
40 Just for reference, I don't think I mentioned this earlier, but
41 this is just the key. So, if there are runs that we want to look
42 at directly, this is kind of just the shortcut for me knowing to
43 go look it up.

44
45 And so, we've got the model run. We've just made it all the way to
46 model 15. We've got the terminal year in there. The letter
47 represents what stage. So, we've got the stage where I removed--
48 the first stage was a, and then b, and then c, and then I got a

1 little creative over here or d, e, and f. I didn't get creative.
2 The p's are the creative part. I don't remember why I used p.
3
4 Anyways. So, we've got that shortcut and, I guess, just the
5 description of the labels that allow us to kind of, these are the
6 labels that I use on the figures. So, this is just, again, just
7 orienting you back to the key.
8
9 Okay. So, I think I'm going to keep going through the slides
10 because I do have this slide coming back again later to talk more
11 about the multifactor and the recruitment estimation and the
12 outcomes of those runs. Let's see.
13
14 Our next slide will tell us a little bit more about the alternative
15 length that I explored. So, that's L1, the estimated selectivity
16 [inaudible] that I that I looked into. Whether I estimated or fixed
17 it to an alternative value. And so, we did that for the domed
18 selectivity, as well as for steepness.
19
20 Okay, so that brings us to our next table to explain. So, here are
21 the parameters that I was able to explore during these, for these
22 additional sensitivity runs and to try and isolate their effects.
23 So, I did that for the length at the maximum age, the dome shaped
24 selectivity, the steepness, and whether or not we use recruitment
25 deviations.
26
27 And this first column of values tells us what the parameters were
28 in the simplified model. And so, it used our L infinity of 42.2.
29 Kevin, do you have a question? Okay.
30
31 **VANCE P. VICENTE CERNUDA:** Oh. Yes, Kevin. Go ahead.
32
33 **KEVIN MCCARTHY:** No. That was a mistake. Didn't mean to I must have
34 hit something on my--
35
36 **ADYAN RÍOS:** Okay, continuing. The first column is the parameters
37 of that simplified, so that model 15. And so, we have a fixed L
38 infinity of 42.2. We have the fixed dome selectivity of -2, about
39 -2, -1.9. We have a fixed steepness of 0.99, and we have
40 recruitment deviations turned off.
41
42 Then we have the alternate values explored first in those single
43 sensitivities and later in the combined, the combination of
44 sensitivity runs. And then lastly, it was as to whether these
45 parameters were also included in versions where they were estimated
46 or not. And so, the L infinity was not estimated. However, we did
47 explore the model's estimates of the dome shape selectivity as
48 well as the steepness. And then ultimately also turning on those

1 recruitment deviations only for the years of 2014 to 2022.
2
3 Even though our indices go through 2023 and our terminal year is
4 2024, these were kind of chosen as those years of good-- of the
5 model being able to be informed by the indices and carrying over
6 that recruitment signal.
7
8 Okay. So, we're going to now cover-- I'm just going to jump back
9 on slide. So, we're going to cover some of the details that go
10 into the correction and the structural simplification. So, when I
11 presented this plot on the left, which is in pounds, I had
12 calculated the recreational landings with that appropriate 7
13 point, I believe it was 78%.
14
15 However--
16
17 **GRACIELA GARCÍA-MOLINER:** Apologies to all. We're working on it.
18
19 (Whereupon, a brief recess was taken.)
20
21 **LIAJAY RIVERA GARCÍA:** Good afternoon, everybody, and welcome
22 again. This is the SSC meeting backup link. We have just created
23 it, so we apologize for the inconveniences that recently happened,
24 and it went outside of our power as it was being spammed. So, we
25 are waiting for the rest of the people to come into the meeting.
26 If you see if you don't see someone who was there, please share
27 this link with them.
28
29 We try to gather all the people we had in the list, but it's better
30 to double check once we wait here for the rest. So, we're going to
31 give it, like, two or three minutes to see everybody there. We see
32 most of the SSC members are coming in, but we had other DAP, OEAP,
33 and EBFM TAP members here. So, thank you for your patience.
34
35 Although we have quorum, we are in communication with Adyan, and
36 she will be joining in a couple of minutes. So, stand by.
37
38 Hi, Adyan. We see you back again.
39
40 **ADYAN RÍOS:** Hi.
41
42 **LIAJAY RIVERA GARCÍA:** So, we are giving you co-host, and you're--
43 - Okay. We can see your screen. Thank you.
44
45 **ADYAN RÍOS:** Okay. Let's give one more second for Kevin to join.
46 And I do think we'll be able to get through the presentation in
47 the remaining hour. It just, we might not have a lot of time for
48 discussion and questions. So, let's just see where we end up. But

1 again, like Kevin said, tomorrow's discussion of the U.S. Virgin
2 Island models includes a lot of redundant topics of the
3 presentation that we've covered today.
4
5 Okay. I will proceed. We were getting back into things. I wanted
6 to just briefly touch on the correction to the catch. And so, as
7 I explained earlier, that almost 8% that made up recreational
8 catch, when I had estimated this with the data for metric tons, I
9 had accidentally carried in a 0.8 just from earlier when we were
10 exploring different ratios thinking that I think the error comes
11 from being close to that 7%, but 80% is very different than almost
12 8%.
13
14 Since that's applied across all years, what it effectively does is
15 scale everything and so adding these additional years of
16 information and revisiting the equations that created that allowed
17 us to spot that mistake and correct it. And so, since in the model
18 we're just using metric tons, this is what the catch time series
19 was when it was over expanded to have that ratio incorrect versus
20 now that it is correct, as well as those additional 2 years of
21 data.
22
23 Oh, wait, the 2 years of data aren't shown in this version, I don't
24 think. 2021, 2022. They're not. I'll show those later. So, this
25 was the first step that I did. It was to correct that. Or maybe
26 they are. Yes, I think this is '21, '22, '23, '24.
27
28 Okay. And so, this is just showing you the plot corresponding to
29 those components. So, I just wanted to, again, double check that
30 now this has been corrected and in metric tons. We do have the
31 information accurately showing that that maximum is 300. 300 in
32 that correction.
33
34 Next, I want to show you the NCRMP density index. And so, this is
35 the index that we said was island wide. It starts in 2014, and we
36 have 2014, 2016, 2019, 2021, and 2023. We also have the data
37 available. They've already processed their data for 2025, but it
38 is not included in this model because this model has a terminal
39 year of 2023.
40
41 I wonder if it's possible to kind of include that one year of
42 information in projections and forecast, but we can come-- we're
43 not kind of making a strong recommendation to use any particular
44 model. We'll kind of get to that conclusion at the end. But what
45 we're seeing is how these models are responding, what the parameter
46 space and the uncertainty that's been explored, and how that
47 relates to current management. But it is good news to see that
48 over-- this is-- since 2014, we see a blip down in 2016, but

1 overall, the index shows it's been pretty steady in those years.
2 And then we see that most recent years showing a pretty drastic
3 increase, that 2025 data point for the survey.

4
5 Okay, so before we move on as well, I also wanted to-- before we
6 move on to, like, the results from the models, I also wanted to
7 show the additional length composition information. That also goes
8 now with an additional year for the survey and an additional two
9 years of commercial data, the port sampled commercial fleet length
10 composition. So, those are going through 2024 now.

11
12 Next, I want to just kind of dive into a bit of the implications
13 of some of these changes and explorations. So, first we have that
14 landings correction. So, the dynamics are quite consistent. What
15 changes is the scale. And so, that's what we kind of expect when
16 the landings change, especially as, like, a scaler, right? Like,
17 a multiplier across all years. We see that affecting the scale of
18 the model, but not the trends and not the fits. So, the report
19 also has the selectivities and, I believe, yeah, more tables and
20 information about this. But overall, I just wanted to present that
21 this is not something-- I have got to close my door. I'll be right
22 back.

23
24 So, one, this change is not having a big effect on our
25 interpretation of the stock status and of the stock trends over
26 time for that structure of the model. Then, we turn off the
27 recruitment deviations. And so, this led to a bit of an important
28 change.

29
30 So, first, we kind of did this in a couple different approaches,
31 but the one I'm presenting in the report and in the table is-- Oh,
32 wait, no, this is right. So, we have our review workshop, then we
33 have our corrected catch units, and this is showing you the fit to
34 the catch data, then the fit to the catch data when we turn off
35 the recruitment deviations. And the fit to the catch data without
36 the recruitment deviations kind of highlights this conflict
37 between the data inputs.

38
39 Because without recruitment deviations, when the model is fitting,
40 you know, assuming an annual average recruitment across all years,
41 it doesn't want to predict these catches. It predicts much lower
42 catches over this period, and then higher catches in the more
43 recent period. So, that's something that I wanted to also simplify
44 and in a way correct, because we only have indices starting in the
45 later years, so I think it's important to apply that same
46 philosophy that we talked about previously of really only turning
47 on recruitment years when we think we have information to help
48 inform those cohorts that are being predicted and forward projected

1 in the model. And so, to return the model to fitting the catches
2 without recruitment deviations, I reduced the CV down.
3
4 And so, increasing the CV was something that we had explored during
5 the review workshop because we were expecting to see some
6 uncertainty in the catches, so we kept ramping that up. And then,
7 when I turned those recruitment deviations off, I saw I was able
8 to understand a little bit more about what those recruitment
9 deviations were doing. And so, it does seem like an improvement to
10 turn recruitment deviations off, have it the average recruitment
11 overall years based on the data and the model. But then later
12 you'll see that I do turn them back on as an experiment once we've
13 established the model and understood more of the uncertainties, I
14 do turn them back on to help bring that dynamic nature of the
15 biological population into the model.
16
17 We do, just like we've talked about with Spiny Lobster, when we do
18 have an index and we have a model that's responsive to that index,
19 we're set up to be able to make quicker kind of management advice
20 about what we expect to happen in the future. So, it's really great
21 to have indices and to have those indices be incorporated into the
22 model in a way that's dynamic. So, if we see those indices
23 increasing, the model is able to interpret that is because the
24 underlying population is increasing, or alternatively, if those
25 indices are decreasing, the underlying population is decreasing.
26
27 Okay, so that brings us to model six. So, I just wanted to show
28 you what that step in the development process of simplifying and
29 isolating the effects of the individual components and decisions
30 of those assumptions that went into the models.
31
32 I also alluded to earlier about that wiggle room and where the
33 dome ends up related to also estimating other parameters. And so,
34 I'm showing here the selectivities associated with the model runs
35 that follow that same story. And so, ultimately, we see this
36 selectivity going from 0.4 down to closer to 0.2. Those are
37 probability. So, above 25 centimeters, the probability of still
38 being seen by the survey was 40% down to 20%. And so, that has,
39 when it's interpreted along with the length composition data, it
40 interprets, "okay, well, I'm not seeing fish above 25 at a high
41 probability because I don't expect to see them, or I'm not seeing
42 them because they're just not there." And so, this is just another,
43 important, attribute that was that I was also able to isolate and
44 explore in the subsequent runs.
45
46 Now I want to get to describing the changes we made to growth. So,
47 originally, we were using von Bertalanffy growth equation, which
48 incorporates the K and the L infinity. And then we also had the

1 model, I had adjusted the model to start at 0, size 0 for age 0
2 fish.
3
4 And this, recall that the National Coral Reef Survey sees a lot of
5 fish less than 10 centimeters, and so that's not a lot of
6 opportunity that the model was allowing for them to be seen and
7 exist at or very short period of time, very high very low CVs on
8 those young fish. And the CVs that I had also kind of included
9 just based off of looking at the distribution of the data that we
10 have in the working papers, I had included pretty wide CVs on the
11 older fish as well. And what this does is it really allows the
12 model, when we were exploring, potentially estimating or adjusting
13 this to different values, you're not able to really isolate the
14 effect of that adjustment if there's a really high CV because you
15 still are able to-- the model still allows that variability around
16 that estimate.
17
18 So, in the simplification and in the attempt to isolate the factors
19 to better understand the sensitivities of this model, I adopted
20 the growth on the right, which has higher CV for the small
21 individuals, lower CV for the large individuals, and a faster
22 growth to age 1, all the way through the size that corresponds
23 with where the von Bertalanffy growth kicks in at that size.
24
25 Here we also have the natural mortality, how it was rescaled to be
26 higher on the youngest individuals. Okay. The report has the-- I
27 think I have them in the slides as well later. The comparison of
28 the outcome of these changes, of the changes in growth and the
29 changes in the simplified model, compared to prior to the
30 simplification. And then, as well as compared to after the
31 simplification.
32
33 Here's where we get to the growth information. And I guess I
34 mentioned alternative 50.8 briefly when we were talking about the
35 alternative estimates. I just wanted to point out where I got that.
36 And so, the information from the data workshop working paper that
37 we used came from this fit, the fixed T naught. And so, we used
38 the 424 and the associated K.
39
40 But I also wanted to just revisit and show our growth. You know,
41 we have-- It's very common to have fewer individuals at that
42 smallest age 0. And so, that's, again, a big topic in this model
43 of, we have this index of abundance, we're seeing small
44 individuals, we want to use that information, but we also need to
45 be thoughtful about how we do that with the growth curve.
46
47 And then, I do have information here as well about what they use
48 in SEDAR 96. So, they used an L infinity of 42 as well, but they

1 actually use that-- they're estimating growth inside SS. So, they
2 actually estimated, I think, at 38. And they also estimated their
3 T naught. I think it was much higher. I think it was, like,
4 somewhere, like, an 18, or something, centimeters. And they also
5 use a much, well, not much. They used a lower maximum age of 20.
6 However, we do see an individual that is 26 in the U.S. Caribbean,
7 specific data.

8
9 We also see how the kind of origin of the information is coming
10 from fishery-dependent and fishery-independent sources, and that
11 aligns nicely with the size limit. However, we do see that, like,
12 we do see this similar spread. We do see this similar spread in
13 the SEDAR 96 data. So, when it came to, kind of exploring the
14 sensitivity to this and trying to determine a value to just really
15 test the limits, kind of, like, explore the model space.

16
17 I could do this with, like, uncertainty grid or a likelihood
18 profile where I try, like, a range of bunch of parameters. But
19 because there were so many different things that I was exploring,
20 I kept it simple, and I just chose a value based on alternative
21 fits to this same data. So, that's where that value of 50.8 comes
22 in. But again, the von Bertalanffy fit that was recommended by the
23 data workshop was this 42.4. So, I do report the effects of that.

24
25 The effects of that are what we'll see when we look at the
26 combinations of the models that end up in this implausible
27 scenario, what we call these implausible scenarios, and that are
28 documented in the report, are all associated pretty much with when
29 we use this larger L infinity. And so, this kind of shows that if
30 we entertain the hypothesis that the L infinity was much higher
31 than what we're seeing by fitting directly to the data with that
32 fixed T naught, then that would mean that the model's not really
33 converging on a plausible population trajectory. And so, it just
34 provides that context of all the consistency that we see across
35 the models with the 42.2 and then this kind of jump to the
36 implausible state of really highly depleted and low productivity
37 that wouldn't support current catches. So, that's what defines
38 that, those runs as being implausible.

39
40 So, I did want to just bring us back to this and back to kind of
41 the modifications that I made to the growth in order to try and
42 isolate the effects of some of the key parameters and dynamics in
43 the model. Okay. That brings us to just talking a little bit--
44 Yeah, go ahead.

45
46 I'm sorry.

47
48 **VANCE P. VICENTE CERNUDA:** Richard? Yeah.

1
2 **RICHARD APPELDOORN:** In that graph where you show all the points
3 of age and length, I understand how you get the age of the fishery
4 dependent ones. How do you get the age of the fishery independent
5 ones? Were those also-- those were captured but just not in the
6 commercial fishery?
7
8 **ADYAN RÍOS:** Correct. Those are, I think I--
9
10 **RICHARD APPELDOORN:** Okay. They're not from the divers. That's
11 fine. that's all I need.
12
13 **ADYAN RÍOS:** Right. Okay. So, the blue ones come from purchasing
14 fish from fishermen, and then the red ones are from intentionally
15 seeking out fish of those sizes, not through the fishery.
16
17 Okay. So, this brings us to just kind of this kind of forest level
18 view of everything that was explored in the recent report and in
19 the efforts to understand the model rigidity and those key
20 assumptions and their effects on trends and on scale and such.
21
22 And so, on the left here, I've highlighted in blue the ones that
23 we, like, particularly discussed and looked at the steps into it.
24 And so, there's also additional plots in the report that show
25 comparing 1, 2, 6, and 7, and then 7, 15, and, I think, 33. So,
26 this is just showing that ramp to how I got to this model 33.
27
28 And then also, we talked a little bit about what the alternative
29 values were. So, that alternative length of 50.8, what turning on
30 the estimation for that dome selectivity, turning on the estimation
31 for the steepness, or fixing those to those two alternative values
32 that I included. I used 0.8 for steepness, and that was based
33 similar to what was used in the SEDAR in Southeast United States.
34 And the alternative selectivity was at that, I think it was at
35 that, like, higher 40 compared to the estimate that I fixed it at,
36 which was closer to the 20% probability of seeing those large fish
37 in the dive, in the domain that is available to the divers.
38
39 In red, you see the versions that either bound or converge in this
40 highly, highly depleted scenario. And all of those, except one,
41 are all associated with that larger length. And so, also when we
42 use that alternative steepness and estimate that selectivity, it
43 kind of shows that-- it kind of also takes the model to different
44 kind of interpretation of what's been going on. But what we see
45 across all the other runs, in our single factor sensitivity and
46 our multiple factor sensitivity grid, do align with the trend that
47 we'll be kind of showing going forward, which is showing that the
48 stock started at a highly depleted state as supported by

1 information that we have from the late seventies prior to when
2 this assessment begins in the eighties. And then, just also
3 factoring in our catch series and our length data and these
4 indices, kind of, corroborating all of that signal that is
5 supported by the various other runs and combinations explored.

6
7 I also took the-- So, in addition to the single factor selectivity,
8 I also took the simplified model and estimated recruitment only
9 for those years with the index. And then I also looked at
10 estimating the selectivity and estimating the selectivity and the
11 steepness, and I've got those comparisons.

12
13 And so, they're just showing that they corroborate in the trend
14 that we see, especially across all years. But, then we do see this
15 like growth in the spawning stock biomass suggesting what we kind
16 of conclude in the report as all of these models and this
17 refinement to isolate and identify the effects of these particular
18 components, all corroborate that current management. So, that
19 current ACL, the current landings are consistent with what we're
20 able to explore and see here. So, instead of saying, like,
21 potentially saying, this is the model for which management advice
22 should be based on. It's kind of saying, this suite of models and
23 these explorations show that the current management is effectively
24 allowing seeing increases in our spawning stock biomass.

25
26 So, it is a limitation of data limited methods, and it highlights
27 the importance of using SS and evaluating these detailed
28 assumptions, but also potentially what we have coming up with SEDAR
29 103 of investigating approaches that also allow us to understand
30 what's happening across the trends and what are the data telling
31 us, and how does that help us understand how current management is
32 expected to be operating. So, is it being effective at maintaining
33 the stock in a good place? And what we see now is that with the
34 recent time series of landings, which we focused on a little bit
35 at the beginning, we're seeing these increases.

36
37 And so, that's presented in report with the various comparisons
38 between the ones highlighted in blue. And then there's also, I
39 believe, likelihood tables and other information, other tables
40 presented in the report for all of the runs. And so, this is just
41 that kind of forest level view of the situation where the model is
42 not being in a consistent story, and then all the other instances
43 where it is, and then what those were.

44
45 So, I'll focus on some of those key, kind of, changes made. And in
46 these plots, the labels are always in the plot on the top right.
47 And so, we've got the model with the-- turning back on the
48 recruitment deviations here.

1
2 So, here we're going from the model where we turned off recruitment
3 deviations, which is in blue, followed by the model where we
4 extended the data one year, followed by the model where we've
5 simplified the dynamics, and then followed by the model where we
6 estimated recruitment trends. So, that captures what we're seeing
7 as far as the fit to the index, the estimated spawning output, the
8 estimates of F being very high at the start of the time series,
9 but declining over time, and then also incorporating the
10 recruitment deviations only in the later years.

11
12 So, here we have the comparison of the recruitment estimation. So,
13 only on the models, the last three models, where we were estimating
14 recruitment deviations. So, you see how recruitment deviations
15 allow that dynamic fit to the index of abundance in the top left
16 here. And then we have the runs where we estimate the end
17 selectivity, as well as the end selectivity and the steepness. And
18 so, those are not deviating far from-- I guess, the tables are in
19 the report, I don't have those tables here. But, again, just
20 highlighting that we do see a model that starts with very high
21 depletion, but we do see that F has gone down. And then in recent
22 years, the models estimate that low F during this period where
23 we're seeing the spawning output increase.

24
25 **VANCE P. VICENTE CERNUDA:** Adyan, sorry to interrupt, but Skyler
26 needs to come in.

27
28 **ADYAN RÍOS:** Yes, please.

29
30 **SKYLER ROSE SAGARESE:** Yeah. Skyler Sagarese. I just had a question
31 about-- if you go back one slide, I believe. Go back one. When you
32 show those aged year recruitments, how well estimated are your rec
33 devs?

34
35 So those seem to have really large bounds on them. I'm wondering
36 if when you do estimate them, if they have CVs above one, meaning
37 that they aren't well estimated. So, I'm just curious about that.

38
39 **JASON COPE:** Adyan, you might be muted. I don't hear anyone. Am I
40 the only one?

41
42 **ADYAN RÍOS:** Thank you. I was talking and I was muted. Okay. I'll
43 back up. Yes.

44
45 Thank you so much, Skyler. I've made a note to myself to pull that
46 up because I do see your point very, very much so. Also, I think
47 there might not be a lot of information in the final years of the
48 data. There are fewer sample sizes and things like that. And so,

1 in order to estimate these recruitment deviations, you need to
2 have that index of abundance informing your cohorts, but then also
3 some signal in your length composition data or in some other
4 element that really allows you to infer that there's been cohorts
5 coming into existence, strong cohorts.
6
7 So, I only have a few more slides left, so I'm just going to finish
8 those up, and then I will pull up the plot that tells me about
9 the, that we looked at earlier for lobster, that tells whether the
10 recruitment deviations are being informed well by the data.
11
12 Okay, so this last couple slides just goes into some of the
13 references that I found that kind of highlight what was happening
14 before '83. And so, this slide shows shallow water reef fish
15 landings, commercial plus recreational, from '75 to '82. And we do
16 see, like, obviously, this isn't just yellowtail snapper, but we've
17 got-- let's see, shallow water reef fish.
18
19 We've got lobster over here. We've got reef fish. Oops. Just
20 showing that by the time we're starting our data series in '83,
21 this is past the period of really higher, much higher exploitation.
22 And so, we don't have this broken out by species, but we also have
23 the observation in the federal register, I believe, it's where I
24 got this, of reporting the large percentage of fish that were being
25 caught below the size limit, what eventually became the size limit.
26 So, this is what prompted the creation of the size limit.
27
28 And so, prior to-- Or let's see. I think I don't have the years
29 associated with this table. That could be something nice to add,
30 but it's from the same source. That's linked in slides as well.
31 But just pointing out, again, that, like, we are starting from
32 high depletion. So, that is also something that we see from the
33 model runs. And those that consistently converge and provided that
34 consistent trend.
35
36 So, we need to come back to the SSC review and decisions. I just
37 copied this from the other presentation, but the recommendation
38 that we put forth in the review of the sensitivity runs was that
39 current management is seemingly-- what we're seeing here is not
40 suggesting that there's concerns with current management where
41 it's at.
42
43 Okay, that ends that presentation. So, I'm going to pull up the
44 R4SS just to take a quick look at one of the first run before we're
45 estimating--
46
47 Yeah. So, it really-- this is the plot that we looked at earlier
48 as to high values show that the recruitment is not informed. And

1 what we're seeing is it's not, so these are, this is kind of
2 reflective of our index. We don't have data in every year of our
3 index, so it doesn't have information, which is an interesting
4 result that it's, kind of, responding to the lack of information
5 in that year, it appears.
6
7 Skyler does that kind of help with-- Oh, go ahead, Jason.
8
9 **JASON COPE:** Well, let me-- This is Jason. Let me let Skyler answer
10 first.
11
12 **SKYLER ROSE SAGARESE:** Yeah, Skyler Sagarese. Yeah. Thanks, Adyan.
13 This is helpful. This is kind of what I expected.
14
15 I mean, it's not terrible, but it's-- yeah. As you mentioned,
16 because that index is not every year, it definitely questions
17 whether these are trustworthy enough to consider.
18
19 **JASON COPE:** Umm. This is Jason.
20
21 **VANCE P. VICENTE CERNUDA:** Jason?
22
23 **JASON COPE:** Yeah. Thank you, Mr. Chair. This is Jason Cope. Adyan,
24 do you mind going to-- so, you have length compositions in here.
25 Can we go to that? Yeah.
26
27 Great. And go ahead and scroll down. So, here are the residual
28 plots. I'm just curious if-- I mean, because you technically, you
29 should have some-- you are getting smaller individuals. You would
30 think that you would have some information on recruits from this.
31 And I was just curious if in the earlier years where you're not
32 estimating recruitments, if we're seeing a pattern, And, it's kind
33 of hard to-- yeah. Maybe go down to the mean, mean length plots a
34 little farther down. Oh, this might-- I think that's the--
35
36 **ADYAN RÍOS:** Yeah. I am sorry. I just also like looking at it
37 without the fit first as well. By the gear.
38
39 **JASON COPE:** Sure.
40
41 **ADYAN RÍOS:** And then I'll go back to the to the mean one, now.
42
43 **JASON COPE:** Sure. And I know this is kind of hard because we have
44 to overlay, in our brains, selectivity changes. Right? Because you
45 have the selectivity changes. And this is-- and so I got a little
46 confused with the proposed reference model.
47
48 Is it with this the recruits at the very end on? or is it off?

1
2 **ADYAN RÍOS:** So, this is estimating recruitment deviations?
3
4 **JASON COPE:** At the very end.
5
6 **ADYAN RÍOS:** At the very end.
7
8 **JASON COPE:** Yeah. Like, 2011 forward or 2014, whatever it was.
9 Yeah. But does it also have a catch variance as well?
10
11 **ADYAN RÍOS:** It does, but it doesn't veer too far off.
12
13 **JASON COPE:** It's not too far off. Yeah. Because the interesting
14 thing is because the recruits-- I'm curious if because the recruits
15 are on, they soak up any differences between the catch from the
16 time that they're turned on onward. But before that, because there
17 are no recruitment estimates, that's where the model is able to
18 adjust itself where it may have adjusted for recruitment, now it's
19 doing it through catches.
20
21 I'm just kind of curious, if you ran a model with recruits being
22 estimated for the whole time series and you had your CVs on; would
23 you see any differences in the catches? I don't know if-- I don't
24 know if you would.
25
26 **ADYAN RÍOS:** That was--
27
28 **JASON COPE:** Did you have one?
29
30 **ADYAN RÍOS:** Yeah. That was this one. Wait. No. That's when I turn
31 off the recruitment deviation.
32
33 **JASON COPE:** Yeah. You turn it off. Yeah. Then it's all-- yeah.
34 Then it's all catches. The catches soak up all of the process
35 errors.
36
37 **ADYAN RÍOS:** Mhmm.
38
39 **JASON COPE:** Yeah. So, that's exactly what you-- I'm not surprised
40 you see that, and that's definitely not desirable because you don't
41 know why it's-- yeah. It's population processes are now being
42 translated through catches. So, you have something where it's kind
43 of a hybrid where you're letting it do process error from whatever
44 it was 2011 or 2014 onward.
45
46 **ADYAN RÍOS:** Yeah.
47
48 **JASON COPE:** And then behind that, it's able to adjust the catches.

1 My curiosity is if you did leave the catch CV at 0.1, but turn on
2 recruitment for the whole time series, estimate the variance, and
3 then look at that plot that you just pulled up that Skyler
4 requested.

5
6 **ADYAN RÍOS:** Yeah.

7
8 **JASON COPE:** I'm curious to see if the difference in catch goes
9 away and it soaks up that process there through recruitment and if
10 those are actually informed. Because those would be informed not
11 by the index, but by your length comps, which is absolutely
12 reasonable. That's what length comp should be doing if they're
13 catching kind of smaller individuals. So, more of a curiosity runs
14 for me because that might reconcile some stuff too.

15
16 **ADYAN RÍOS:** Yeah. So, I can run that, and then maybe send it out
17 by email since I know you're not here tomorrow? But what would say
18 is recall the conversation too about the concern about our
19 commercial length composition data? About that targeting behavior
20 and how initially we were exploring it as a super year? So, I do
21 see the value in running that as an experiment to understand, like,
22 where does it go. But like, my gut still tells me that we were
23 still concerned about using those data for cohort signals.

24
25 **JASON COPE:** So, okay. So, with that with that comment, are you
26 suggesting that they might be good enough to capture-- Basically,
27 the-- and I think you said this maybe earlier. The lengths might
28 be good enough to get your selectivity, but that's it. We don't
29 want them messing around.

30
31 And so, if that's the case, you could-- and this is done. You fit
32 this model like you just did now, and then you go back in, you fix
33 your selectivity curves that you think are realistic and that have
34 been defined by these length comps.

35
36 **ADYAN RÍOS:** Yes.

37
38 **JASON COPE:** But you drop the lengths totally. You get them out of
39 there because they did their job. You fix to the selectivities
40 that you think are reasonable from those lengths, and then you let
41 the model run forward. And like you said, you're probably not going
42 to have any ability to estimate recruits beforehand. You basically
43 have the exact same model.

44
45 Another way to do this would be just to go into the lambdas, make
46 your-- basically, use your control file, new, your control new
47 file. Fix your selectivities. So, turn those phases off in that
48 control new. Go down and turn the lambdas to 0 for the length comps

1 and then just rerun your exact model that you have here. And that
2 would take out your concern of those lengths still being in there.
3
4 And even if they're not-- even if they're not informing recruits
5 because you've turned them off, they're still in the likelihood
6 and who knows what the heck they're doing in order to reconcile
7 their fits to that data early on. Because it's still-- those data
8 are still in there and the dot model's like, oh, we have got to
9 fit these. And it may be pulling your model in ways that you don't
10 want.
11
12 And so, this becomes basically an age structured production model
13 but with smart selectivities defined by your lengths instead of
14 these surplus production models that just assume everything's
15 equal to maturity and all this stuff. So, it's a nice setup of an
16 age structured production model. And I think it may do exactly
17 what you're doing removing who knows what those lengths are kind
18 of moving around right now, which might be your catches in the
19 past.
20
21 **ADYAN RÍOS:** Right.
22
23 **JASON COPE:** Anyway, something to look at. Again, is this, like, a
24 sensitivity suggestion, or is this a future research
25 recommendation? I don't know. But it's definitely a curious run
26 that I think might be useful.
27
28 **ADYAN RÍOS:** Thanks, Jason. I think it would be like a sensitivity
29 suggestion if there's still a chance that we think that one of
30 these models would be a base case. In the report, I've included,
31 like, the range of MSY proxies from the various models and just,
32 kind of, in the ballpark of current management. But still, like,
33 that would be refined with the base case with the strongest support
34 for all of the parameters and the uncertainty that we can capture.
35
36 I do think that research recommendations involve better
37 understanding. I think I included those key ones in the report
38 that suggested understanding dome selectivity. So, understanding
39 the probability of the divers observing large yellowtail snapper.
40 And so, I think that can be done with, like, if there's another
41 survey in another area that we can then, kind of, help understand
42 selectivities across surveys for getting at better characterizing
43 that dome. Yeah. Go ahead, Jason.
44
45 **JASON COPE:** Yeah. Thank you, Jason Cope. Also, can you remind me
46 and my apologies for not remembering. You've noted one of the
47 really important aspects or characters of this assessment is that
48 when the data start, the thing is already, like, massively

1 depleted.
2
3 **ADYAN RÍOS:** Mhmm.
4
5 **JASON COPE:** I mean, it just can't even go much lower. All it can
6 do is kind of go up, and that lower bound is going to constrain
7 and let them all do something. Can you remind me how it gets to
8 such a low value? I'm assuming it's an equilibrium catch.
9
10 **ADYAN RÍOS:** Yes.
11
12 **JASON COPE:** Yeah. And, again, I know this has been probably said
13 1000000 times. How did that come about that level, and what was
14 it?
15
16 **ADYAN RÍOS:** So, we used the 3-year geometric mean for the fleets
17 as the input, and then the CV on catch still allows it to deviate
18 a little bit. So, I think the report has the realized catches for
19 each run. And I think that's one of the ones where it deviates.
20 Let's see here.
21
22 You see that first year really ramping up?
23
24 **JASON COPE:** Yeah.
25
26 **ADYAN RÍOS:** And then same with the Fs, which I do think I have
27 that.
28
29 **JASON COPE:** Yeah. The Fs are wild. Yeah. They're really, really
30 high, and that's reflecting that incoming. But the-- so, are you
31 saying that the equilibrium catch also had air on it? So, it was
32 able.
33
34 **ADYAN RÍOS:** Yes.
35
36 **JASON COPE:** Okay. And is that in a table? So I'm just-- I guess,
37 from those plots, I could tell the F is, like, "woah. This thing
38 is high."
39
40 **ADYAN RÍOS:** Mhmm.
41
42 **JASON COPE:** What is the realized? I just may have missed it in the
43 in the PDF. What is the realized estimated equilibrium catch in
44 metric tons? It has got to be, like, massive to get it so low, I
45 would think.
46
47 **VANCE P. VICENTE CERNUDA:** Richard?
48

1 **ADYAN RÍOS:** Yeah.
2
3 **VANCE P. VICENTE CERNUDA:** Richard Appeldoorn?
4
5 **RICHARD APPELDOORN:** A comment on how much this is depleted. It's
6 depleted. I don't think there's any question about that and we
7 don't have good species-specific data from that, but we do have
8 good family or reasonably good family specific data. And unlike
9 almost every other family you could think of, except maybe
10 dolphinfish, snappers as a proportion of the catch go up,
11 substantially. And so, they're withstanding a lot of this degree
12 of exploitation.
13
14 Now, and yellowtail is the most pelagic like of the snappers and
15 probably is able to withstand it even more. Just to let you know,
16 looking at this percentage of the catch at snappers, in 1970 it
17 was 20%. In 2010, was 50% and that's almost a straight line.
18 There's variance around that. And of course, that's going to
19 reflect bringing in particularly the queen snapper fishery and the
20 areas associated with that that drives that up.
21
22 But snappers, as a whole are withstanding fishing pressure a lot
23 greater than a lot of the other family.
24
25 **VANCE P. VICENTE CERNUDA:** Richard?
26
27 **RICHARD APPELDOORN:** That's my comment.
28
29 **VANCE P. VICENTE CERNUDA:** Yeah. Richard, I need to ask you for a
30 favor. I have to leave. I have a very important meeting. I have
31 three vessels, cable lane vessels in the North Atlantic, and I am
32 the environmental supervisor, and I must have a meeting with them,
33 now. So, I need to leave.
34
35 **RICHARD APPELDOORN:** It is five o'clock. It is five o'clock. Are
36 we adjourning till tomorrow?
37
38 **VANCE P. VICENTE CERNUDA:** Well, okay. If that's the case, that's
39 better. But, okay, maybe we can adjourn and continue the discussion
40 tomorrow. So, it's 05:00. So, we adjourn this meeting until
41 tomorrow.
42
43 Bye.
44
45 **GERSON N. MARTÍNEZ:** Alright, people. Stay safe.
46
47 **JASON COPE:** Bye, everyone.
48

1 (Whereupon, the meeting recessed for the day on April 9th, 2024.)
2
3 - - -
4
5 APRIL 10, 2026
6
7 FRIDAY AFTERNOON SESSION
8 - - -
9
10 **VANCE P. VICENTE CERNUDA:** Ahora sí, ok. Good afternoon, SSC, Chairs
11 and participants. Today is April 10th, 2026. This is the third and
12 last day of the first 2026 SSC meeting. This is the first of the
13 SSC meetings, and this is a virtual meeting.
14
15 So, welcome back. So, let's begin with the roll call, and then we
16 will discuss the agenda for today. So, first, Tarsila Seara?
17 Tarsila Seara?
18
19 Juan J. Cruz is going to be a little bit late, and he'll be coming
20 in in the next 5 or 10 minutes.
21
22 Elizabeth Kadison? Michelle is excused. Michelle Schärer is
23 excused. Jason Cope? Hold on. We have a little bit of a technical
24 problem.
25
26 **LIAJAY RIVERA GARCÍA:** Good morning, everybody. This is Liajay
27 Rivera. Good afternoon, everybody. This is Liajay Rivera. We would
28 like to make a note.
29
30 We have made a different or several changes in the security
31 settings. So, now for a turn, please raise your hand. We have
32 turned off the cameras and the audios. Any chat, any message that
33 you send will be directly sent to the host and co-host, and those
34 will be Kiara and myself. So, please, if you want to raise a turn
35 beside the option of raising the hand in Zoom, you can write us to
36 ask for a turn to speak.
37
38 Now I think we are ready to make the roll call. We have given you
39 permissions to speak. So, Mr. Chair, you may continue.
40
41 **VANCE P. VICENTE CERNUDA:** Kate Zamboni, yes. Please, come in.
42
43 **KATHERINE M. ZAMBONI:** Let's see. Did I unmute myself? Okay. I was
44 just wondering if everyone understood which link to use. When there
45 weren't responses with the roll call, I wondered if people were
46 using the alternative link.
47
48 But if the no response was because of the enhanced security

1 settings that may not be an issue.
2
3 **LIAJAY RIVERA GARCÍA:** Correctly. I wanted to-- This is Liajay,
4 for the record. Yes. We wanted to make that note first so everybody
5 was sure that we were going to continue using the same link, but
6 that was because we ensured that the security settings were
7 upgraded.
8
9 So, now it is going to be more restricted, but you still have
10 access. Just reach out to Kiara and myself. But it's the same link
11 as in the federal register.
12
13 Oh, yeah. And that if they and-- yes, they can turn the raise hand
14 button in the task bar of the Zoom, or they can just write to us
15 directly in the chat.
16
17 **VANCE P. VICENTE CERNUDA:** Okay. Let's see how it works. Let's go
18 through the roll call. Tarsila Seara? Juan J Cruz has excused
19 himself. He'll be coming a little bit later in the meeting. Okay.
20 He's already in. Okay. So, he's present.
21
22 **JUAN J. CRUZ-MOTTA:** Yeah. Good afternoon. I made it. J.J. Cruz
23 here. Thank you.
24
25 **VANCE P. VICENTE CERNUDA:** Welcome, J.J. Elizabeth Kadison?
26
27 **ELIZABETH KADISON:** Yes, present. Thank you. Elizabeth Kadison.
28
29 **VANCE P. VICENTE CERNUDA:** Michelle Schärer has been excused. Jason
30 Cope? Jason Cope, has also been excused. ¿Reni Garcia? Jorge
31 García.
32
33 **JORGE R. GARCÍA-SAIS:** Presente.
34
35 **VANCE P. VICENTE CERNUDA:** Qué bien, gracias. Richard Appeldoorn?
36
37 **RICHARD APPELDOORN:** Okay. I'm here. I have trouble unmuting.
38 Present.
39
40 **VANCE P. VICENTE CERNUDA:** Thank you. Skyler Sagarese? Okay.
41 Present.
42
43 **SKYLER ROSE SAGARESE:** Skyler Sagarese, present.
44
45 **VANCE P. VICENTE CERNUDA:** Thank you. Todd Gedamke, Partially
46 excused. Walter Keithly? Walter Keithly?
47
48 **WALTER KEITHLY:** I am here.

1
2 **VANCE P. VICENTE CERNUDA:** Good. And Tarsila Seara?
3
4 **TARSILA SEARA:** I'm here. Can you hear me?
5
6 **VANCE P. VICENTE CERNUDA:** Yes. We can hear you, now. Okay. Those
7 members that are here in the conference room. Oh, the-- I'm sorry.
8
9 I'm sorry. DAP Chairs. Julian Magras?
10
11 **JULIAN MAGRAS:** Julian Magras, present. Good afternoon, everyone.
12
13 **VANCE P. VICENTE CERNUDA:** Thank you. Gerson Martínez?
14
15 **GERSON N. MARTÍNEZ:** Gerson Martínez, presente.
16
17 **VANCE P. VICENTE CERNUDA:** Bienvenido. Nelson Crespo?
18
19 **NELSON CRESPO:** Good afternoon, everyone. Nelson Crespo, present.
20
21 **VANCE P. VICENTE CERNUDA:** Sennai is not present. And Jannette Ramos
22 the OEAP chair is excused.
23
24 **VANCE P. VICENTE CERNUDA:** Okay. Now the conference members.
25
26 **KIARA M. MATÍAS ROJAS:** Buenas tardes. Kiara Matías, Council Staff.
27
28 **LIAJAY RIVERA GARCÍA:** Buenas tardes. Liajay Rivera, Council Staff.
29
30 **GRACIELA GARCÍA-MOLINER:** Graciela García Moliner, Council Staff.
31
32 **VANCE P. VICENTE CERNUDA:** Vance Vicente, Chair of the SSC. And the
33 rest.
34
35 **ADYAN RÍOS:** Okay. Liajay for the record. We'll read the Zoom
36 participant list. Adyan Ríos, Alberto Fort, Carlos Farchette,
37 Derek Soto, Emily Ott. I have an iPhone. I believe it is Julian,
38 correct?
39
40 Jesús Rivera-Hernández, Kate Zamboni, Katherine Goodwin, Kevin
41 McCarthy, Martha Prada, Refik Orhun, Stephanie Martínez. And a
42 phone number ending in 216; Please provide your name in the chat.
43 Thank you. That is all, Mr. Chair.
44
45 So, we provided here a meeting recap of yesterday. This will be
46 later available, but it's just a summary of what was approved,
47 including the first and second day, starting with the verbatim
48 transcriptions, the adoption of the agenda, the SEDAR 91 Caribbean

1 Spiny Lobster on the first day with a motion for the determination
2 of the assessment as best scientific information available. And on
3 the second day, yesterday, we continued with the discussion of
4 SEDAR 91, Puerto Rico. We also started the discussion for SEDAR 84
5 with the Caribbean Yellowtail Snapper for Puerto Rico and continued
6 in the afternoon. And now, Mr. Chair, I will delegate to you the
7 rest of the agenda.
8

9 **VANCE P. VICENTE CERNUDA:** Okay. Good afternoon again. We have for
10 today's agenda five items to cover. Number one, we will continue
11 with and complete the final review on SEDAR 84 Caribbean Yellowtail
12 Snapper for Puerto Rico for approval/disapproval of the stock
13 assessment report and thus discussion also on OFL and ABCs, and
14 develop and list the research recommendations. Adyan Rios will be
15 the speaker.
16

17 Second, we will initiate and then complete the final review on
18 SEDAR 84 U.S. Caribbean Yellowtail Snapper Saint Thomas/Saint John
19 for approval/disapproval of the stock assessment report and
20 recommendations on OFL and ABCs and develop and list the research
21 recommendations. The speaker will be Adyan Ríos also.
22

23 Third, we'll initiate and complete the final review on SEDAR 84
24 Caribbean Stoplight Parrotfish Saint Croix for
25 approval/disapproval of the stock assessment report and
26 discussions on the recommended OFL and ABCs and develop and list
27 the research recommendation. The speaker will be Adyan Ríos.
28

29 Then the last speaker will be Liajay Rivera, who will update us on
30 SEDAR 103. As you know, well, SEDAR 103 is headed towards providing
31 the development and application of alternate stock assessment
32 methods for Caribbean island-based FMP species.
33

34 Then, will discuss what should we cover in the next meeting, this
35 year's meeting, so that we can discuss that and present it in the
36 next Council meeting. So, are there any comments or any proposed
37 changes or recommendations to today's agenda? It's going to be a
38 little bit busy, so we may have to extend past 05:00 today. But,
39 anyhow, I'm open to discussions on the agenda.
40

41 Okay. Nobody? So, the agenda-- We will follow the agenda that I
42 just presented. And then, if Adyan Ríos is ready, she will continue
43 and try to complete the final review of SEDAR 84 Caribbean
44 Yellowtail Snapper for Puerto Rico for approval/disapproval of the
45 stock assessment report. So, Adyan Ríos, whenever you're ready,
46 we're ready for you.
47

48 **ADYAN RÍOS:** Thank you, Vance. One second.

1
2 Okay. So, yesterday, we covered the slides that are in the slide
3 deck that was shared yesterday as well. And we talked about the
4 model development during the assessment, the model development
5 during the review workshop, and then the subsequent sensitivities,
6 investigating key parameters, and how those do show that the model
7 continues to have that sensitivity and alternate kind of scenario
8 outcome, particularly considering the alternative growth and the
9 alternative, steepness, especially those combined.
10
11 And, we began our discussion and, Jason Cope had done a
12 recommendation of extending the recruitment deviations over the
13 entire time with the fixed selectivities, as a way to address the
14 concern that's documented throughout the assessment of whether the
15 TIP length data should be used as cohort to inform cohort
16 recruitment, and whether the model should be fitting to those or
17 whether those should be just being used to inform selectivity. And
18 so, that is very in line with the development and the concerns
19 that have been raised and been looked into. Jason had asked whether
20 that is a recommendation at this point-- or, sorry, a request or
21 a recommendation. I think that's where we left off our discussion.
22
23 I am able to-- it is kind of straightforward for implementing, but
24 we still, like, I have looked into it, and we still are in this
25 situation of the uncertainty in that selectivity and in that
26 steepness. And we can make the same assumption-- Well, it's
27 possible to say, "Well, we want to also assume a steepness, like
28 the 0.99 that we did for lobster. But I think we lack the same
29 kind of understanding of the stock connectivity and the extent of
30 self-recruitment, to make that assumption for some of the species,
31 some of the finfish. I think that we would want to further evaluate
32 that.
33
34 And so, that's another potential reason for making this more of a
35 research recommendation and a methodological recommendation into
36 the upcoming SEDAR 103. I also wanted to highlight some texts from
37 the stock assessment report, from the CIE reviewers. Where is it?
38 I think it's in here.
39
40 **VANCE P. VICENTE CERNUDA:** I have a quick question for you.
41
42 **ADYAN RÍOS:** Please go ahead.
43
44 **VANCE P. VICENTE CERNUDA:** See if you can help me. If you recall
45 the review workshop models, the SEDAR 84 PR Yellowtail review
46 workshop model. There was one model that you were requested to
47 make a run to consider the Puerto Rico and Saint Thomas/Saint John
48 as one single stock. And I see that the model PRSTJRW1, you need

1 to cover that. And then, it does not converge. Can you explain a
2 little bit about, if you recall that request, then what "does not
3 converge" mean, please?
4

5 **ADYAN RÍOS:** Yeah. So, the model that Vance is referring to is the
6 CIE reviewers recommendation to include Saint Thomas and Saint
7 John data into a single model with Puerto Rico and use the longer
8 time series of the indices. And so, in the explorations between
9 that assessment-- So not converging means that the model couldn't
10 determine a best combination of parameters to fit the data.
11

12 So, when we initiate the model with respective parameters for the
13 dynamics that we're accounting for, like, we're estimating the R
14 naught and the selectivities, if the model goes into a space where
15 it just really stops fitting the data and hits values for those
16 parameters that are very unlikely, that's referred to as a model
17 that doesn't converge.
18

19 In those runs, we were, by increasing the spatial scope, we were
20 also increasing the complexity of the model to have additional
21 fleets and additional surveys, which corresponds to a multiple of
22 the sensitivities because each-- Sorry, not sensitivities,
23 *selectivities*, because each of those fleets and surveys gets its
24 corresponding parameters, like, accompanying its respective data
25 that the model then also tries to fit.
26

27 I think there's-- And I think I mentioned this yesterday, that
28 there's biological relevance to this recommendation and to this,
29 I'll call it, like, an experiment as well, as developing the models
30 in this wider scope. However, like, going back to our terms of
31 reference and how SEDAR 84 is kind of intended for the purpose of
32 island-based management advice and the determined scope of island-
33 based assessments, that was not further pursued.
34

35 And so, we kind of, instead of pursuing additional complexity, we
36 kind of took the approach of addressing other concerns that the
37 CIE brought up, which related to inability to isolate the effects
38 of specific uncertainties. And so, the approach that we took for
39 the additional sensitivities didn't follow that path. It followed
40 the path of how we can simplify the model and explore key
41 uncertainties to better describe and understand the scope of the
42 model.
43

44 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Adyan. We have Tarsila
45 and then Skyler.
46

47 **TARSILA SEARA:** Hi. I just wanted to say, Vance, I'm having a
48 really hard time hearing you, your mic.

1
2 **VANCE P. VICENTE CERNUDA:** Can you hear me well?
3
4 **TARSILA SEARA:** That was better. Yes.
5
6 **VANCE P. VICENTE CERNUDA:** Okay. I'll speak louder. Thank you. Okay,
7 Tarsila. Go ahead.
8
9 **TARSILA SEARA:** That was it. I just had my hand up to say that,
10 that I was having hard time hearing you.
11
12 **VANCE P. VICENTE CERNUDA:** Okay. Thank you, Tarsila. Skyler?
13
14 **SKYLER ROSE SAGARESE:** Skyler Sagarese. Just following up on that,
15 splitting by island platforms versus doing an entire kind of area
16 wide model. I think that was good of the reviewers to point out,
17 but I think expecting Adyan and Kevin and his team to build such
18 a model in such a short amount of time and then be able to evaluate,
19 as Adyan mentioned yesterday, when you add all that into a single
20 model, there's a lot of complexity. How do you set up the stock
21 dynamics? It would be a big Puerto Rico based model because most
22 of the data comes from Puerto Rico. So, just to bring that up.
23
24 I'm hoping that with SEDAR 103, these are the kinds of questions
25 that we can talk about during there and say, "well, given how we
26 manage these complexes, what would be the most feasible and most
27 streamlined way for us to assess our stock so it can get used?"
28 So, I just wanted to bring that up, and I'm really looking forward
29 to 103 to kind of look at some of those questions. Because that
30 really wasn't in the term of reference. It was, specifically, build
31 a model for each island platform.
32
33 **VANCE P. VICENTE CERNUDA:** Thank you, Skyler. Anybody else, before
34 Adyan can continue?
35
36 **SKYLER ROSE SAGARESE:** Skyler Sagarese. Yeah. Sorry. I should have
37 followed up. Adyan, I did have another question.
38
39 When you estimate steepness in that model 35, what is the model
40 estimating? What's the value?
41
42 **ADYAN RÍOS:** Yes. It does go to 0.8, so I can verify that real
43 quick. So, it's 0.87.
44
45 **VANCE P. VICENTE CERNUDA:** Richard Appeldoorn.
46
47 **RICHARD APPELDOORN:** So, how did you come up with 0.87? I mean, I
48 share the reviewers concern about the steepness of 0.99. There's

1 nothing in their biology or in biophysical models that have been
2 run or what we know about dispersal from genetics that would
3 suggest this would be a species where all the recruitment would be
4 totally independent of whatever the spawning stock is. So, I would
5 be very uncomfortable with a 0.99. I'm just wondering where-- so
6 0.87 is better, just wondering where that came from.
7
8 **ADYAN RÍOS:** So that was, freely estimated. So, it was a freely
9 estimated parameter in model run rate. Yeah.
10
11 **RICHARD APPELDOORN:** Inside the model run?
12
13 **ADYAN RÍOS:** Yeah.
14
15 **RICHARD APPELDOORN:** Oh, okay.
16
17 **ADYAN RÍOS:** So, this is the relationship between spawners and
18 spawning and recruitment, and with 0.99 we're assuming that this
19 is a line. But this isn't saying that as your stock gets smaller,
20 you get lower recruitment. And this is the model that will have
21 the recruitment deviations only in those recent years, estimating
22 both the level of the dome and the steepness.
23
24 **VANCE P. VICENTE CERNUDA:** Richard, anything else?
25
26 **RICHARD APPELDOORN:** No. Now, could you show the first graph you
27 showed first? That went cut out by too quickly. Okay. And explain
28 that again.
29
30 **ADYAN RÍOS:** So, this is the stock recruit curve. So, this, like,
31 going down is basically saying, like, at a given spawning output.
32 So, when your stock is at a given size, how much recruitment you
33 would expect based on a curve. And then the recruitment deviations
34 are estimated off of that. So, this is the kind of underlying how
35 the model predicts annual recruitment based on that curve, unless
36 you have information that also informs what those deviations from
37 that curve are.
38
39 And so, in the more recent years, we have estimated recruitment
40 deviations. And this is a plot of what those deviations are. So,
41 the good years of recruitment compared to the base that is expected
42 at a given stock size.
43
44 **VANCE P. VICENTE CERNUDA:** Richard?
45
46 **RICHARD APPELDOORN:** Yes, I just wanted to comment that, thank you
47 for explaining to me that actually looks pretty good. Certainly
48 better than an open assumption. Thanks.

1
2 **VANCE P. VICENTE CERNUDA:** Okay. Thank you, Richard. Are there any
3 more questions for Adyan? If not, Adyan, can you continue?
4
5 **ADYAN RÍOS:** Yes. So, I think it comes back now time to kind of
6 determine the recommendations moving forward about, like how the
7 data were prepared, how the data were put into SS the extent of
8 the explorations understanding that there are, like, capacity
9 limitations on what can be done on the SEDAR calendar and
10 everything. So, I want to, again, just highlight-- I guess I wanted
11 to highlight some of the, like, reviewer comments. And so, Rich
12 already-- I had one on the screen earlier related to steepness. We
13 do have this model estimating.
14
15 We do have this== oh, shoot. Am I showing lobster?
16
17 **VANCE P. VICENTE CERNUDA:** Okay. Kevin McCarthy, please.
18
19 **KEVIN MCCARTHY:** That's the wrong one. Yeah. This is Kevin McCarthy.
20 Yeah. Adyan, I was just going to say, I think we're looking at
21 lobster there.
22
23 **ADYAN RÍOS:** Thank you. Okay. Let me pull up the right one. Nope.
24 Not it. Here we go. Uh-huh. Here we go. Wrong.
25
26 My brain was, like, so used to seeing it that I was like, "Yep.
27 This looks good."
28
29 Okay. So, here we're in the right place now. So, we were talking
30 about model 35 estimating H in that final selectivity. I would
31 come back to the reviewers' recommendation of wanting to also
32 explore uncertainty into other attributes. And so, I think it's
33 also very challenging to do a full uncertainty grid approach.
34
35 So, it's important to, kind of, in the model development process,
36 when we're determining what those key uncertainties would be, that
37 those would be conversations of a panel to inform what plausible
38 alternative values should be explored as sensitivity. So, the
39 approach that we took so far was just, kind of, "well, let's
40 explore some extremes to understand this model," but we didn't
41 have those conversations and those, I guess, alternate inputs.
42
43 Like, this is our main recommended input, but what is an alternate
44 recommended input that we care about testing the model sensitivity
45 to? I think that's another important consideration.
46
47 We also have the indices starting in this later year. We have the
48 indices starting in 2014. So, there's also-- we're not using the

1 information that's existing from before that time, and the
2 reviewers did kind of want us to use that. And I think that's going
3 to be true too for the U.S. Virgin Islands where our models start
4 in 2012. A strong recommendation from our reviewers was to have
5 conversations about hindcasting, having conversations about what
6 hypotheses we can entertain, for the periods of time before our
7 model starts, so that we can either, start the model further back
8 or come have stronger priors or understanding of what should be
9 happening in those first years of the model.

10
11 I also wanted to highlight the research recommendations section of
12 the respective CIE review documents. And I think one of those key
13 recommendations, too, relates to understanding where that
14 selectivity should be.

15
16 Let me see if there was another key section I wanted to highlight.
17 Yeah. This other paragraph right above is also very relevant,
18 because it talks about how all of the model's explored sensitivity,
19 but there's that tradeoff between fitting catch versus fitting the
20 surveys. And considering the estimation of growth, which is
21 something to do also cautiously when we don't have the growth data
22 in the model.

23
24 I think there was a few other key points that kind of despite the
25 efforts to explore additional sensitivity, we still are in this
26 situation of considering how might we further simplify the model
27 like Jason recommended yesterday by not using the length, the
28 commercial length data to inform the-- to not fit to those data
29 and only use those for the selectivities. That was one
30 recommendation. And then we also have the recommendations from the
31 CIE reviewers.

32
33 And so, this really just puts a lot of options on the table that
34 feel like really great advice and considerations for the future.
35 And so, whether we do that now and continue to attempt to work
36 with this model, as a recommendation from the SSC or recommend to
37 incorporate the lessons learned into 103 and really take some of
38 the weaknesses of where we ended up into the conversations that
39 need to happen in order to start to kind of reenter utilizing these
40 data with alternative methods, including the approach that Jason
41 included yesterday, which is referred to as the age structured
42 production model, which, yeah, aims to treat the stock more just
43 like a production model, but while accounting for age and using an
44 age structured model. But it's simplified in that it addresses the
45 concerns that we brought up about the commercial length data and
46 whether the model should try to fit to that.

47
48 One more key point there is also our time blocks and how they were

1 just, kind of, loosely informed by the data. And I think it's
2 really important to have conversations and have LEK data about
3 when those time blocks really need to be considered. Because I
4 explored multiple versions, like 3-, 4-, or 5-time blocks, which
5 adds a lot of complexity to the model. I ended up just keeping the
6 2-time blocks that we discussed. But I think that those should
7 really be driven by conversations about changes in how the fishery
8 was operating.

9
10 And so, those are other types of really important components of
11 information that I think could play into future development.

12
13 **VANCE P. VICENTE CERNUDA:** So, I understand that that's a question
14 on the floor. I don't have any comments. Maybe Richard, who has a
15 more in-depth knowledge of this matter can answer or partially
16 answer your request. Okay, Richard.

17
18 **RICHARD APPELDOORN:** So, probably not. I think what we have is what
19 we have. I think Adyan is right that there's more discussion and
20 more data that needs to be brought forth before really trying to
21 seek improvement on some of these issues. It's getting a little
22 bit beyond what they were tasked to do initially, relative to what
23 can be done in the future. So, if the general sense is kind of
24 orient some of these questions toward future research, that's where
25 I would go.

26
27 Skyler is probably the more knowledgeable person on the models,
28 maybe she can comment more.

29
30 **VANCE P. VICENTE CERNUDA:** Skyler.

31
32 **SKYLER ROSE SAGARESE:** Skyler Sagarese. So, I've been trying to
33 sit back and see what other SSC members have to say. I have just
34 recently joined this SSC, so I'm kind of catching up on this
35 process at the end of the-- you know, towards the end of the
36 process. I've seen a ton of work that was done in preparation
37 during actual SEDAR, but I've also seen all this work that Adyan
38 has done since the review workshop, which technically is
39 considered, what, post-SEDAR. But what I've seen with a lot of the
40 changes she'd made, like, for example, that simplified 15 model,
41 I think all of those changes were justified.

42
43 I think exploring some of the requests, like estimating growth, we
44 don't really have the data to trust what the model wants to
45 estimate for growth. I think some of those decisions you've used
46 the best available data that were put forth, for example, the life
47 history data. You know, I think you sat back and you thought about
48 it, like, looking at the recruitment deviation. So, I'm struggling

1 because I feel like you've gotten almost to the finish line, and
2 I could see some of these later models that you've presented,
3 whether it's the simplified 15, where maybe we don't necessarily
4 trust the recruitment deviation estimation or the model 33, 34,
5 35. So, I'm surprised the model estimates a reasonable steepness.
6
7 I'm pretty surprised with that. And I think when you fit and
8 estimated that NCRMP ending parameter for selectivity, it seemed
9 that you did get a better fit on those length composition data
10 that you put in. So, I'm not necessarily-- I don't necessarily
11 think we want to just punt this. I think that if we had a discussion
12 and maybe we're able to see diagnostics, if we picked a candidate
13 model, I don't necessarily think that it wouldn't be up to look at
14 providing management advice. But I can also recognize that I'm
15 here at the end of the process.
16
17 If there was a lot more concern, so you know, not to put Adyan and
18 Kevin on the spot, but I would ask them, do they think these models
19 are sufficient to provide management advice? Personally, I quite
20 haven't seen enough of the diagnostics and everything, the whole
21 picture, to a 100% jump behind one of them yet, but I don't
22 necessarily think that we're-- you know, I think a little more
23 could be done just to show us, and potentially we could set catch
24 from this model. That's just kind of my thoughts on this. Again,
25 I'm curious what other SSC members think on this.
26
27 **VANCE P. VICENTE CERNUDA:** Good. We're having some technical
28 problems. Hold on. Okay. Can you hear me?
29
30 Kevin McCarthy is online.
31
32 **KEVIN MCCARTHY:** I can hear you, Vance. This is Kevin. I took my
33 hand down because it sounded like Skyler wanted to chat with the
34 SSC, and I'm perfectly happy to wait, while that discussion takes
35 place.
36
37 **RICHARD APPELDOORN:** Vance, I don't know if you're calling on me.
38 I can't hear anything.
39
40 If others can hear me, I'll just go ahead with my comments.
41
42 **VANCE P. VICENTE CERNUDA:** Yes, Richard, go ahead please.
43
44 **RICHARD APPELDOORN:** Okay. Yes, my look at what we've seen is I'm
45 impressed by the amount of work that's been done, and I think, in
46 its totality, what's been done would represent the best we could
47 do at the moment. But we've certainly identified some things that
48 could be done in the future. But, I, like Skyler, I'm a little

1 question about whether we are there for management advice yet.
2
3 **VANCE P. VICENTE CERNUDA:** Elizabeth, please.
4
5 **ELIZABETH KADISON:** Hang on. I can't get-- oh, wait a minute. Yeah.
6 Thank you. I am not a modeler, and I feel completely overwhelmed
7 with this. But I have been through now a few of these meetings,
8 and I was there for the review workshop when Adyan presented these
9 to us. And there were actually hired guns. There were modelers
10 there at the table.
11
12 I'm just, I mean, the amount of work that's gone into this is just
13 unbelievable. And, Adyan has just done everything possible to
14 modify, to rerun these things and make things work. I mean, the
15 diagnostics for the original models were shown at those meetings
16 and they weren't great. The consensus was that the original models
17 and even the ones that were modified while we were all there were
18 not really ready for management.
19
20 I kind of feel like what's going on now is that we're still sort
21 of in the same boat. A lot of work, a lot of improvements. But,
22 whether you want to take a model that just doesn't actually seem
23 like it has enough good data input to work really well, to use
24 that for management, I don't think it's ready or I don't think
25 that it should be done.
26
27 **VANCE P. VICENTE CERNUDA:** Yes. Thank you very much, Elizabeth. Any
28 further, any other comment on this topic? Hold on. J.J., please
29 come in.
30
31 **JUAN J. CRUZ-MOTTA:** Yes. Hi, Skyler. Just in general, so because
32 you're starting with the SSC, you know my general position is, in
33 general when we do this stock assessment, which is the way we have
34 always been doing, my position has always been that we should be
35 managing ensemble of species instead of one species at a time. So,
36 based on that principle and recognizing the amazing work that the
37 Fisheries Science Center is doing, I tend not to go into the needy-
38 greedy and start criticizing the different runs and the different
39 shortcomings and let the discussion go among the people that
40 actually understand the needy-greedy of these models. Thank you.
41
42 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, J.J. I have a comment.
43 I think at this point, we pretty much agree with the conclusions
44 of the review committee. I can't remember what specifically-- what
45 specific research recommendations were made, but I believe that
46 they're not going to be any different from the ones that we've
47 been thinking about.
48

1 So, if somebody can start writing down a motion or a conclusion
2 that the SSC believes that the-- hold on. --that the assessment
3 does represent the best available science. I think that we agree
4 with that, the best available science. I think that there seems to
5 be a general agreement. The results presented in the stock assembly
6 reports, at present, cannot be useful for providing management
7 advice unless the following research recommendations become
8 implemented, or something like that.
9
10 So, if you could-- if anybody-- Richard, can you help me write
11 something up like that and put it on the screen so we can make, a
12 decision or vote, please? Richard?
13
14 **RICHARD APPELDOORN:** So, just to simplify things, take the one for
15 lobster, the first motion and substitute, SEDAR 84 Yellowtail and
16 the wording would be the same. Yeah. Something like that.
17
18 **VANCE P. VICENTE CERNUDA:** Yes. So, let's-- Richard, are you writing
19 something down or you just wanting to bring up-- Okay. We have
20 motion number 4. *The SSC considered the assessment of SEDAR 84*
21 *U.S. Yellowtail Snapper for Puerto Rico to represent the best*
22 *available science.*
23
24 This is a motion by Richard Appeldoorn. It needs to be second. Any
25 second? Skyler?
26
27 **SKYLER ROSE SAGARESE:** Skyler Sagarese. Yeah. I second that motion.
28
29 **VANCE P. VICENTE CERNUDA:** Okay. So, the motion has been seconded
30 by Skyler Sagarese. Any further discussion on this before we go
31 for a vote? There seems to be any. So, let's begin with the voting
32 process.
33
34 Let me read it once again. This will be motion number 4. "The SSC
35 considers the assessment for SEDAR 84, U.S. Yellowtail Snapper for
36 Puerto Rico to represent the best available science." Yeah,
37 Tarsila?
38
39 **TARSILA SEARA:** Tarsila Seara, I believe yes.
40
41 **VANCE P. VICENTE CERNUDA:** Kadison, Elizabeth?
42
43 **ELIZABETH KADISON:** Yes. Yes.
44
45 **VANCE P. VICENTE CERNUDA:** Okay. Richard Appeldoorn?
46
47 **RICHARD APPELDOORN:** Yes. Appeldoorn, yes.
48

1 **VANCE P. VICENTE CERNUDA:** Reni García. Reni? Jorge García, can you
2 hear me? Okay. Reni?
3
4 **JORGE R. GARCÍA-SAIS:** Ahora. I abstain. I abstain.
5
6 **VANCE P. VICENTE CERNUDA:** Thank you. Keithly, Walter?
7
8 **WALTER KEITHLY:** I will abstain.
9
10 **VANCE P. VICENTE CERNUDA:** J.J. Cruz? J.J.?
11
12 **JUAN J. CRUZ-MOTTA:** Thank you. I was unable to unmute. I will
13 abstain as well. Thank you.
14
15 **VANCE P. VICENTE CERNUDA:** ¿Que dijo?
16
17 **JUAN J. CRUZ-MOTTA:** Abstain.
18
19 **VANCE P. VICENTE CERNUDA:** Okay. Todd Gedamke? He's excused. Okay.
20 Skyler Sagarese?
21
22 **SKYLER ROSE SAGARESE:** Skyler Sagarese, yes.
23
24 **VANCE P. VICENTE CERNUDA:** Jason is excused. Vance Vicente, I say
25 yes.
26
27 Okay, so there are 5 yes, 3 abstain, and there's 3 absentees. So,
28 with majority, the motion, "The SSC considers the assessment for
29 SEDAR 84 U.S. Yellowtail Snapper for Puerto Rico to represent the
30 best available science." *The motion moves.*
31
32 Yes. Like I suggested, I believe that the review committee listed
33 a series of research recommendations. I don't have them with me
34 right now, if any of you have them, have these recommendations, we
35 would like to see it.
36
37 Maybe Adyan has them, we can see because they're, I believe, that
38 they're going to be very similar, and they'll both concur. But I
39 don't know. I will have to look at the list. Kevin?
40
41 **KEVIN MCCARTHY:** Yes. Thank you, Mr. Chair. Kevin McCarthy. So, I
42 don't have the list right at hand, Vance.
43
44 But what I would say is, as a suggestion to the SSC while you're
45 deliberating any sort of research recommendations for this, the
46 ones that are going to come out of-- I think I'm right about this.
47 The ones that are going to come out of the CIE review, which are
48 valid, of course, but they're really going to be aimed at this

1 kind of stock assessment model. Right? They're going to be--
2 they're responding to what was presented to them last summer.
3
4 And so, those are all valid recommendations, but I would also
5 suggest that in light of the SEDAR 103 process, which is really
6 considering a much broader range of options, the SSC might consider
7 that as well. You know, what is the better way to do this?
8 Certainly, the CIE focused on this kind of SS 3 modeling approach,
9 but there may be some other ways. I know that J.J., for one, has
10 some other ways of doing this. So, there could be some other
11 broader array of recommendations that aren't limited to what other
12 kind of model we might run.
13
14 Now that doesn't mean you couldn't say, "Well, okay. Let's not try
15 this kind of stage structured model. Let's do something simpler,
16 or let's do something that involves more species aggregations or
17 something. It's entirely up to you, obviously. But what I'm getting
18 at is, you could consider a broader array of possibilities for how
19 to provide management advice for Puerto Rico yellowtail snapper
20 that are not limited to the kind of modeling environment we are
21 currently using.
22
23 That's it. Thank you.
24
25 **VANCE P. VICENTE CERNUDA:** No. I agree. I agree. To prepare as a
26 recommendation by the SSC to look at this issue, stock assessment
27 for Puerto Rico in a more holistic way and to include the questions
28 as part of the SEDAR 103, which is looking for alternative ways of
29 doing it, of making an assessment. But I'm not ready to write that
30 up.
31
32 So, Kevin, I'm going to ask you to please, please write down a
33 holistic recommendation, research recommendation that will cover
34 different possibilities of making stock assessments for the
35 yellowtail snapper, Puerto Rico. Can you do that?
36
37 **KEVIN MCCARTHY:** This is Kevin. I'm not really comfortable writing
38 motions for the SSC, Vance. I would have done it a couple years
39 ago when I was on the SSC, but I feel like that's a bad look when
40 the Science Center is writing motions for the for the SSC.
41
42 Now, clearly, you all get to vote for it and change it and all of
43 that. I also think it's a difficult one in the sense that what
44 we're going to need, what the panel for SEDAR 103 is going to need
45 are very specific recommendations.
46
47 Now, whether this is the time you want to do that is up to you, of
48 course, but I think it would require some very specific

1 recommendations that could be tested. And I certainly wouldn't
2 want to speak for the SSC on what they think might make for good
3 alternatives and whether or not you want to tackle that here. That
4 might take some thinking and some consideration that maybe beyond
5 the scope of this meeting, but that's up to you, of course.
6
7 But I think that needs-- those kinds of things are going to require
8 some conversations among the SSC because I think they do need to
9 be very specific if they're going to be actionable in SEDAR 103.
10
11 **VANCE P. VICENTE CERNUDA:** Thank you. That's a very good point. Can
12 we have Kate Zamboni?
13
14 **KATHERINE M. ZAMBONI:** Thank you, Mr. Chair. Kate Zamboni for the
15 record. Just on the screen, it says "it moves," "the motion moves."
16 It passes, and it might just be clearer if the record reflect that
17 the motion passed.
18
19 Thanks. No. You don't have to change what the motion says. Below
20 where you have the count of the votes, says "motion moves," "motion
21 passes." Yep.
22
23 **VANCE P. VICENTE CERNUDA:** Can you can you repeat, please, Kate?
24 Okay. ¿Ah? ¿Ya? ¿Qué así?
25
26 ¿Motion passes? ¿Qué? ¿Y qué pasa? Ah, okay. Walter Keithley.
27
28 **WALTER KEITHLY:** Mr. Chairman, while our Council attorney is with
29 us, this may be an appropriate time to ask the question. I agree
30 with J.J. I'd like to do a stock assessment. I think it makes sense
31 to conduct a stock assessment on an ensemble of species. But is
32 that permitted under the current reauthorization of the Magnuson
33 Act, I guess?
34
35 **VANCE P. VICENTE CERNUDA:** J.J.
36
37 **JUAN J. CRUZ-MOTTA:** Okay. This is a nonlegal expert opinion. And
38 after several discussions with the group of people at NOAA doing
39 EBFM research I believe, yes. I believe and it is my understanding
40 that what the legislation says is that we need to have reference
41 points. And if that's the case, we can have alternative reference
42 points for ensembles, rather than a reference point for a single
43 species such as ACL, ABC, etcetera. Thank you.
44
45 But the legal advice will be appreciated for this question.
46
47 **VANCE P. VICENTE CERNUDA:** Walter?
48

1 **WALTER KEITHLY:** I'm sorry, Mr. Chairman. I forgot to take my hand
2 down, but I will make a comment. I will follow-up. If this is
3 permitted, I would recommend looking at ensembles of species for
4 consideration in a stock assessment that would take some time, I'm
5 sure. It would take quite a bit of expertise to do so. But I do
6 believe that is the best way to proceed in the future. Thank you.
7
8 **VANCE P. VICENTE CERNUDA:** Yeah, thank you, Walter. Kate Zamboni?
9
10 **KATHERINE M. ZAMBONI:** Zamboni. Yeah. Thank you, Mr. Chair. Kate
11 Zamboni, I guess you can't just unmute yourself. So, that was the
12 whole point of the instructions at the beginning.
13
14 Yes. I agree with J.J. I think I think it can be done. How are the
15 outputs actually used to determine the reference points? I can't
16 answer that right now, but I think the SSC could look at an
17 ensemble. I don't think there's anything in the law that would
18 prevent that.
19
20 **VANCE P. VICENTE CERNUDA:** Thank you, Kate. Kevin McCarthy.
21
22 **KEVIN MCCARTHY:** Thank you, Mr. Chair. Kevin McCarthy. So, a couple
23 of comments. One is, of course, this is very much on the table for
24 SEDAR 103, this kind of ensemble approach. So, yeah, I think that
25 everybody's in agreement that there are alternative ways and maybe
26 better ways to do things in the region. I don't disagree at all.
27
28 I'm happy to do something that is the right fit and the right size
29 of analysis that provides management advice to the Council. It
30 doesn't matter to me what that looks like as long as it's doable
31 and it's something we can enact in the near future, not in some
32 far-off distant future that we don't have the data for at this
33 time. So, I think that actionable things that we can move forward
34 with sooner rather than later, I'm all for it.
35
36 The other thing I would say is the Pacific Islands have that kind
37 of approach. They have an ensemble of species that they do pretty
38 straightforward production models as I understand it. I could be
39 wrong on this, but pretty straightforward analyses that cover a
40 lot of species in one series of analyses. There are some caveats
41 with that, of course. Nothing is the magic answer in all cases.
42 And that's one of the reasons why we've invited some Pacific
43 Islands colleagues to be involved in SEDAR 103.
44
45 In fact, in a couple of months, I think maybe in June, they're
46 going to be presenting, at one of the SEDAR 103 webinars, their
47 approaches. They'll talk about their data and data challenges.
48 They have a lot of the same concerns that we have in the Caribbean,

1 and they'll be presenting their approach and their analyses and
2 critically how they use those data to inform management and the
3 results of those analyses to inform management. So, I'm all for
4 it. And I think-- and it's very much on the table for SEDAR 103.

5
6 Thanks.

7
8 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Kevin. Reni Garcia.

9
10 **JORGE R. GARCÍA-SAIS:** Yes. Thanks, Vance. What I wanted to say
11 was that I have strong reservations for considering yellowtail
12 snapper into a group of species for assessment. The reason is that
13 the fishery for yellowtail snapper is very highly specific, you
14 know. Nowadays, the largest fishery effort on yellowtail snapper
15 is fishing at night with lights, and it's just for yellowtail
16 snapper.

17
18 So, the full dynamics of the fishery of yellowtail snapper is
19 associated with that species and not with a group of species. Like,
20 for example, what you would do for parrotfish which used to be
21 taken on fish traps and nets. Or even other species that are taken
22 into groups. The fishing effort for Yellowtail snapper is very
23 specific for that species.

24
25 I abstain from the motion because I still believe that there's a
26 lot of things going on that are determining the status of the
27 yellowtail snapper fisheries and other species as well. I've said
28 this many times and I've been very hesitant to favor or any kind
29 of best available science for fishery of any of these species
30 without a good measurement of effort.

31
32 That effort is a key aspect, I mean, it is a key aspect of the
33 entire fishery because this effort is changing, is changing year
34 to year. You know, we're looking at a reduction in the fisheries,
35 we're looking at a change of the, at least in Puerto Rico, of
36 fishermen that used to fish a whole variety of fishes, including
37 yellowtail snappers, moving into deepwater snappers because
38 they're paid a much higher price. You know, all these things are
39 really important in this kind of assessment, you know.

40
41 And then we are going into a model that is highly sophisticated,
42 that would fit data that we don't have, you know. And in the case
43 of yellowtail snapper, the killer on top of everything is that the
44 yellowtail snapper is a species that is highly aggregated, its
45 distribution is highly aggregated. So, it's very likely that if
46 you have small sample sizes like we have you are going to enter
47 into the burden and the uncertainty of patchy species
48 distributions, you know. And that brings huge uncertainty.

1
2 I believe, from my standpoint, I am not a modeler, but I believe
3 from my past experiences in these meetings is that we are looking
4 at a relatively small sample sizes of data that are infected by
5 high variability associated with the patchy distribution of these
6 species and other snappers as well, you know.
7
8 So, that's my take, you know. I've said it so many times that I
9 don't even have sometimes the initiative to say it again, but I
10 believe that if we don't have strong data on catch per unit effort
11 for these species, we need to have an index, a socioeconomic index
12 that would suggest or be used, or could be used as a proxy of
13 effort for these species. Otherwise, we are actually looking at
14 data, a supermodel that is working at 10% of its capabilities
15 because of the nature of the data that we are inputting.
16
17 So, that's my take and I'm sorry if I'm out of the park here.
18
19 **VANCE P. VICENTE CERNUDA:** No, you're not, Reni. Thanks a lot. I
20 agree with you 100% that this yellowtail snapper in Puerto Rico,
21 the fishery, is very species specific. I agree because I have been
22 with fisher out there, and they're very specifically pursuing that
23 fish specifically, not anything else. So, I agree with you about
24 that.
25
26 On the other hand, the models are using the information that is
27 available. Well, not available, but best available. There's other
28 data that is not available that is good. But I agree then that
29 maybe using the SEDAR 103 goals is going to be helping us a lot in
30 this, like providing recent catch per unit effort and everything.
31 That will be very, very helpful.
32
33 But thank you. No, you were not out of place. You were very good.
34 We have. J.J., please.
35
36 **JUAN J. CRUZ-MOTTA:** Thank you. I would like to second Reni's
37 request, position, opinion, that we actually need a lot of CPUE
38 effort estimations. I believe the Science Center has started doing
39 something on that regard. I don't know if by writing it down-- and
40 we have said this in other assessments, in other forums, but I
41 don't know if writing it down here will make their life easier,
42 the Science Center's, to get further funding for that purpose.
43 That's, one thing.
44
45 The second is, Reni, let's suppose when you fish for yellowtail,
46 also for deepwater snapper, let's suppose for sake of argument
47 that you are only catching that species. There is no bycatch, at
48 all. Let's suppose. Even if that's the case, that your highly

1 targeted fishery gets only yellowtail snapper, it doesn't mean
2 that in reality these animals don't live in ensembles. And in order
3 to manage yellowtail, we need to understand that ensemble. So, the
4 ensemble idea is not because you fish them together. Of course,
5 that's very important, especially for trap, as you mentioned.

6
7 But independently of that, we also need to understand how these
8 animals operate in nature, which are in groups, in ensembles, with
9 highly correlated structures. So, when I refer to managing
10 ensemble, I'm saying managing the species as it happens to be in
11 nature, which is in groups, in ensembles. Thank you.

12
13 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, J.J. Before we go back
14 to Walter, the more I see the need for the SSC to develop a research
15 recommendation that will comprise all of what we've been talking
16 about, which will be emphasizing alternative methods, alternative
17 stock assessment methods, including increased effort in
18 determining catch per unit effort and all these words. Just a
19 general recommendation by the SSC that states that we certainly
20 need more information, even though the information available was
21 the one that was used. But we need more information, specially
22 looking at alternative ways of assessing the stock of the
23 yellowtail snapper in Puerto Rico or something like that.

24
25 If somebody can start writing up something like that before the
26 end of the meeting and offer it as a motion that the SSC recommends
27 the following, which should comprise what we have been discussing
28 this afternoon. Then we have Walter and then Adyan.

29
30 **WALTER KEITHLY:** Thank you, Mr. Chairman. Again, I should just put
31 my hand down because J.J. expressed my thoughts pretty well. I
32 think that, yeah, I don't disagree with many that yellowtail may
33 be a targeted species, but you still have these ensembles of
34 species in a given carrying capacity. And that, to me, is the
35 primary reason for trying to do a stock assessment at the ensemble
36 level rather than at the individual species level. Thank you.

37
38 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Walter. Adyan Ríos?

39
40 **ADYAN RÍOS:** Thank you, Vance. I also wanted to highlight the
41 information that we have from fishery-independent surveys. So, the
42 Coral Reef Monitoring Program, the one that we looked at in this
43 model, does have data through 2025. However, this was only looking
44 at through 2024. It's on slide 21 of the yellowtail Puerto Rico
45 model. It's a survey that's doing the same sampling design every
46 year, and it's picking up an increase in yellowtail snapper. And
47 it particularly sees small yellowtail snappers. So, I think there's
48 also a lot of support and need for continuing these data in order

1 to have that as a resource of fishery independent information as
2 well.

3
4 **VANCE P. VICENTE CERNUDA:** Yes, thank you, Adyan. Reni García.
5

6 **JORGE R. GARCÍA-SAIS:** Oh, yeah. Thank you again. I just wanted to
7 comment because you mentioned about those research projects that
8 should be a priority and I believe that since we badly need data
9 on catch per unit effort, I think that we should start thinking or
10 putting more emphasis in the roles that fishermen and that
11 commercial fishermen may take in terms of-- they run the research
12 projects for us. You know, they're providing us the data because
13 we don't want scientists fishing or affecting the stocks by
14 increasing fishing effort. Whereas the fishermen are already--
15 that's their job, they're already doing it. They can provide a lot
16 of information that we have, for a very long time, in need of, you
17 know. Right now, the information that we get from annual catch is
18 just not enough, you know. The information is good but it's not
19 good enough, you know.

20
21 If we would have more scientifically directed information from
22 their work in the field, because essentially, they work like
23 scientists, you know. They work just like us, you know. We write
24 papers and get funded by proposals and do our management stuff
25 based on our information, and they sell their catch. But
26 essentially, they are doing our fieldwork. When they're in the
27 field they're actually developing research information.

28
29 So, I believe that if we could have fishermen transcend more into
30 the science field at least for this particular purpose of bringing
31 up capture per unit effort data, that would be a step forward. I
32 would patronize that. I would support that. I mean we'll have to
33 talk about it a lot and plan it well. I think that they're the
34 only ones that can do it, you know.

35
36 Because I mean any scientist can go and do maybe a year or 2 or 3,
37 but we need to do this on-- we need to make a projection on long
38 term for this kind of thing. We would have done it 10 years ago,
39 now the story would have been much different. Since we, at least
40 from my experience, we're so skeptic from going into social science
41 indices to evaluate our fishery when there's nothing else, you
42 know. I mean, I don't know why the years keep going by and keep
43 going by and we do not integrate social science indices of fishery
44 of demand into our assessments.

45
46 So, I am really skeptical to follow-up on these pathways of really
47 high-end models when we don't have the best data to run them. And
48 that's my take. Thank you.

1
2 **VANCE P. VICENTE CERNUDA:** Yes. Thanks again, Reni Garcia. We have
3 Walter Keithly and then Skyler Sagarese. Come in Walter?
4
5 **WALTER KEITHLY:** Thank you, Mr. Chairman. Just real quickly. Adyan
6 probably has better memory than I do. I did look at SEDAR 46, to
7 get ready for this meeting as I recall they had a catch per unit
8 effort index for yellowtail snapper for Puerto Rico in it. And,
9 again, Adyan may want to explain why she considers that it is
10 inappropriate to use it now. I don't like using an index from
11 fishery-dependent data, but Adyan may want to weigh in on that a
12 little bit more. And if I'm correct there was an index specified
13 in SEDAR 46.
14
15 **VANCE P. VICENTE CERNUDA:** Thank you, Walter. We have Skyler, then
16 J.J., then Adyan, Tarsila. Come in, Skyler, please.
17
18 **SKYLER ROSE SAGARESE:** Yes. Skyler Sagarese. So, Walter, perfect
19 timing. I was actually the co-lead for SEDAR 46, 10 years ago. At
20 the time, we did have a nominal index for yellowtail snapper.
21
22 We came, we presented an index-based method where we would have
23 adjusted catch advice, based on that trend in that index. And
24 ultimately the SSC decided not to use it because of the concerns
25 that it wasn't a standardized index. So, I just wanted to add that
26 background for SEDAR 46.
27
28 But I do want to just highlight, it might be worth tabling some of
29 this discussion till after we see the rest of SEDAR 84, because I
30 think I'm really excited for SEDAR 103. I think a lot of these,
31 what we're talking about now really are bigger picture
32 recommendations, what we want to see in the next assessment and
33 for the future.
34
35 I think rather than trying to jam what we have into a specific
36 assessment type, for example, SEDAR 46, we wanted to use DLM tool.
37 We looked at index based, length based, data limited approaches.
38 We tried it. It didn't work ultimately. Adyan, more recently, tried
39 stock synthesis and took what you had available. So, I think if,
40 as the SSC, if we could focus on a bigger picture, like, for
41 example, data.
42
43 I wasn't aware that the TIP data, there was a lot of concern during
44 the process that they weren't representative. So, to me, a clear
45 role of SEDAR 103 is to say, for the TIP data, is this a common
46 problem for everything? So, does this mean we do not have fishery
47 dependent length composition data for any of the species that we
48 feel are representative? Or for example, talking about, now that

1 we have an approach to standardize the fishery dependent data to
2 develop an index of abundance, could this be done for more stocks
3 or as a complex, instead of doing specific species? Could you
4 develop an index for, say, one of the snapper units? So I think
5 bigger picture, like, we've had these assessments.

6
7 We've tried to get something out of it by piecing what we could
8 together. But I think we really want to start from the beginning
9 and say, "Here are the data pieces. We've got the fishery
10 independent NCRMP data." You know, "how useful could these be?"
11 And then once we know what pieces of data we trust, long term
12 spatially covering more of the area, once we know what we can work
13 with, I think then we can approach this and say, "okay, what
14 assessment platform do we want to" or "can we?" "What's feasible?"

15
16 So just some background there. But I think a lot of this will be
17 relevant for the other stocks we still have to discuss.

18
19 **VANCE P. VICENTE CERNUDA:** Yes. Thank you. J.J.?

20
21 **JUAN J. CRUZ-MOTTA:** Thank you. Thank you. I'm going to be brief
22 because I see Tarsila has raised her hand, and perhaps we're going
23 in the same direction. So, I just want to say two brief things.

24
25 First of all, reading the message of Kevin on the chat. I wanted
26 to mention that the Science Center already has a couple of projects
27 going into the cooperative direction. Also, to mention that
28 several-- And I would say those have a strong biological component.
29 On top of that, I know of several proposals that have been put
30 forward to measure effort using fishers knowledge and developing
31 this system in which the, given that is run, developed and run by
32 fishermen, then it can be sustained over time, but mostly
33 concentrating on the socioeconomic part.

34
35 And even though, and this is my opinion, I'd say my personal
36 opinion. Even though I feel like we talk and we say it and the
37 word socioeconomic comes to the table once and again, I feel that
38 proportionally proposals related to socioeconomics are underfunded
39 or less funded in relation to proposals that are still collecting,
40 very important, I'm not saying it's not, biological information.
41 Thank you very much.

42
43 **VANCE P. VICENTE CERNUDA:** Adyan Rios, please.

44
45 **ADYAN RÍOS:** Thank you. Skyler already addressed SEDAR 46 question
46 when I raised my hand, but I did also want to revisit her suggestion
47 about, the-- Well, I'll leave it to you all, just waiting for the
48 remaining presentations and similar situations that we have for

1 the other models.
2
3 **VANCE P. VICENTE CERNUDA:** Okay. Thank you. Tarsila?
4
5 **TARSILA SEARA:** Yes. Thank you. This is Tarsila. Yeah. I mean,
6 well said, J.J. I think you raised a really important point and
7 similar to what I was going to say.
8
9 I also wanted to say, of course, Reni, I agree with everything you
10 said. But I also wanted to emphasize that I think that there are
11 a lot of efforts in the right direction. I think you know, SEDAR
12 103 is a good example of that. I think the Science Center is
13 putting some effort into really trying to answer these questions
14 and try to sort of move us in that direction.
15
16 And I also just wanted to say this is not an issue that is exclusive
17 to the Caribbean. This is something that we're seeing developing
18 in all other regions. I'll say from my experience as the Social
19 Sciences Branch Chief in the Northeast Fishery Science Center, in
20 many ways, we're actually taking more steps, in the Caribbean than
21 we are in a much data and resource richer region. I think that is
22 important to acknowledge.
23
24 But similarly to what J.J. said, I think it can be frustrating
25 when-- it seems like we all agree this is an important direction
26 to go. But when rubber meets the road, when it comes to funding,
27 when it comes to actually putting a lot of these research projects
28 into practice, there are a lot of challenges particularly regarding
29 support and funding for those types of research. So, I just wanted
30 to acknowledge that for the record. Thank you.
31
32 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Tarsila. Walter Keithly.
33
34 **WALTER KEITHLY:** Thank you, Mr. Chairman. I could get into this
35 socioeconomic discussion, having been involved in it for 40 plus
36 years now. But I think I'll leave that aside and just say that I
37 agree totally with what Skyler said a few minutes ago, especially
38 in terms of looking at that TIP data to see if it is representative
39 of the recorded catch data.
40
41 Again, it was at the last meeting, SSC meeting, I mentioned that
42 it's the first and highest recommendation of one of the previous
43 SEDARs, but it's yet to be done. So, I think it's on that we take
44 steps to ensure the quality of the data before moving on to just
45 running additional models. Thank you.
46
47 **VANCE P. VICENTE CERNUDA:** Yes, thank you, Walter. Yeah. Adyan, do
48 you have anything else to add?

1
2 **ADYAN RÍOS:** No, Vance. Thank you.
3
4 **VANCE P. VICENTE CERNUDA:** Por eso. Yes. Before we conclude, on the
5 Puerto Rico yellowtail snapper and going to the Virgin Islands
6 yellowtail snapper, needs to write down a motion that should sound
7 like this. Okay? It should sound like, the SSC finds that the
8 results presented in the stock assessment reports are not at
9 present useful for providing management advice and developing
10 fishing level recommendations for the Councils until presently
11 produced data, such as the one being gathered by SEDAR 103 and
12 other information that will become available in the future becomes
13 analyzed, integrated, and implemented, or something like that.
14
15 So, I need help. Can anybody volunteer to write something up?
16 Maybe, Richard, can I rely on you again? Okay, Richard.
17
18 **RICHARD APPELDOORN:** I'd be willing to, is this what's on the-- I
19 would take the first part of that until the word "until," and I'd
20 delete that, the rest of it, and that would be my motion. Just as
21 simple as not ready yet. We're going to make separate
22 recommendations for future activities and I think that would stay
23 separate.
24
25 **LIAJAY RIVERA GARCÍA:** Richard, this is Liajay. Does it read better?
26 Can you hear me?
27
28 **RICHARD APPELDOORN:** I'm reading it. It reads fine.
29
30 **LIAJAY RIVERA GARCÍA:** Thank you.
31
32 **VANCE P. VICENTE CERNUDA:** So, motion number 5, the motion presented
33 by, Richard Appeldoorn, reads the following. *"The SSC finds that*
34 *the results presented in the SEDAR 84 U.S. Yellowtail Snapper for*
35 *Puerto Rico are not at present useful for providing management*
36 *advice and developing fishing level recommendations for the*
37 *Council.*" This motion needs to be seconded. Reni?
38
39 **JORGE R. GARCÍA-SAIS:** I second it.
40
41 **VANCE P. VICENTE CERNUDA:** Thank you. Seconded by Reinaldo García.
42 Think we had plenty of discussions on this, but if anybody wants
43 to add any other items related to this motion, the floor is open.
44 ¿Quién? Reni García.
45
46 **JORGE R. GARCÍA-SAIS:** Ah, okay. I think I just left my raised
47 hand. But let me let me give you something else that I do agree
48 with the participants that argue that our TIP data is highly useful

1 and should have more prominence in our analysis and I agree with
2 that completely. I believe that at present that TIP data is pure
3 gold in this kind of assessment and I wish we had much more of it
4 than what we have available at present, you know.

5
6 At least it provides particularly relevant information on fishing
7 effort and length distributions and upper species and that is
8 precious information for us. I wish we had much more of it, you
9 know. So, I just wanted to add that I agree with that 100%.

10
11 **VANCE P. VICENTE CERNUDA:** Yes. I agree what you just said is what
12 I recommended earlier, that all this discussion or the data that
13 we have so far is not sufficient, should be rounded up by a as a
14 research recommendation. So, if anybody can start preparing a
15 research recommendation which is holistic enough that would
16 incorporate all the issues that have been brought on the discussion
17 of this issue.

18
19 **JORGE R. GARCÍA-SAIS:** Vance, I think that I still have a open
20 microphone here. I think that what we should emphasize, I mean, my
21 perspective, is the fact that we cannot keep relying on annual
22 catch as a proxy for MSY, you know. I think that we've been-- well,
23 how many years is it going to be now? More than 10 years? 12? 14?
24 I don't know, 15 years with the same kind of problem, dragging the
25 problem forever and ever. You know, we don't have catch per unit
26 effort data, so, well, so we use proxies for the annual catch.
27 Then, the annual catch of Puerto Rico doesn't mean anything; we
28 have to put expansion factors to it, you know.

29
30 Look, what kind of uncertainty do you think that brings? You know?
31 I mean, it's a miracle if any model even runs on it, you know?

32
33 So, I insist that we have to do something to gather reliable
34 capture per effort data, you know. We cannot, I mean it's really
35 not real that we can keep doing this kind of assessment without
36 capture per unit effort data, you know. I don't know. At least I
37 am not a modeler. I don't know how-- I just remember my friend
38 Jorge Cabello, que en paz descansa, he always told me, "Reni,
39 models are as good as the information you put in them," you know.

40
41 And from what I have seen we have some constraints on the
42 information that we can input into these models, you know. And we
43 should really transcend our limitations of making fishery
44 assessment based on proxies and information that are misleading
45 and that are just full of uncertainty, you know. And my
46 reservations in all this, you know.

47
48 I really would like to be able to say that everything looks fine,

1 but for me, from my perspective, it doesn't, you know. So, thank
2 you.
3
4 **VANCE P. VICENTE CERNUDA:** Yes. Thank you. Thank you, Reni. I think
5 that we all agree so far. But I think we have to wrap up this
6 motion 5 and go to voting, and maybe we can add another slide where
7 we can make a general recommendation, research or non-research
8 recommendation on how the SSC feels with regards to the stock
9 assessment for the Puerto Rico yellowtail snapper.
10
11 Okay? But I think that we have to go now and vote for motion number
12 5, which reads "The SSC finds that the results presented in the
13 SEDAR 84 U.S. Yellowtail Snapper for Puerto Rico are not, at
14 present, useful for providing management advice, and developing
15 fishing level recommendations for the Council." So, the floor is
16 open for voting. Tarsila Seara?
17
18 **TARSILA SEARA:** Yes. Tarsila. Yes.
19
20 **VANCE P. VICENTE CERNUDA:** Elizabeth Kadison?
21
22 **ELIZABETH KADISON:** Elizabeth Kadison, yes.
23
24 **VANCE P. VICENTE CERNUDA:** Richard Appeldoorn? Richard?
25
26 **RICHARD APPELDOORN:** Yeah. I was waiting to be unmuted. I vote yes,
27 Appeldoorn.
28
29 **VANCE P. VICENTE CERNUDA:** Reni García.
30
31 **JORGE R. GARCÍA-SAIS:** Waiting to be unmuted?.
32
33 **VANCE P. VICENTE CERNUDA:** Reni García.
34
35 **JORGE R. GARCÍA-SAIS:** Yes, yes.
36
37 **VANCE P. VICENTE CERNUDA:** Walter Keithly.
38
39 **WALTER KEITHLY:** Since I abstained on the previous motion, I'm not
40 sure it makes sense to do anything on this motion, so I will
41 abstain on it.
42
43 **VANCE P. VICENTE CERNUDA:** Okay. Thank you. Okay. J.J?
44
45 **JUAN J. CRUZ-MOTTA:** Yes.
46
47 **VANCE P. VICENTE CERNUDA:** Sagarese, Skyler?
48

1 **SKYLER ROSE SAGARESE:** Skyler Sagarese, yes.
2
3 **VANCE P. VICENTE CERNUDA:** And lastly, Vance Vicente, yes.
4
5 So, we have 7 yes, one abstain, and 3 absentees. So, *motion number*
6 *5 carries.*
7
8 Before moving into the yellowtail snapper, U.S. Virgin Islands,
9 does the committee want to prepare a general overall
10 recommendation? It doesn't have to be a research recommendation
11 that would incorporate all of the issues and these issues that we
12 discussed during this stock assessment analysis? Or shall we just
13 continue to the Virgin Islands? Yellowtail snapper, Virgin
14 Islands. If I don't hear anything, we will move too, specifically,
15 to Richard?
16
17 **RICHARD APPELDOORN:** Yeah. From previous commentary, I think we
18 will be facing similar questions, on the same species for the
19 Virgin Islands, and it would be beneficial just to wait till we do
20 that and then do a joint recommendation. That's how I understood.
21
22 **VANCE P. VICENTE CERNUDA:** I agree. Yes. I agree with you. So, let's
23 continue. It's 02:35. So, we will now initiate and complete the
24 final review on SEDAR 84 U.S. Caribbean Yellowtail Snappers Saint
25 Thomas/ Saint John for approval/disapproval of the stock
26 assessment report, recommended OFL, ABC, and develop and list the
27 research recommendations. So, Adyan Ríos, whenever you're ready,
28 you may commence your presentation.
29
30 **SEDAR 84 CARIBBEAN YELLOWTAIL SNAPPER ST. THOMAS/ST. JOHN:**
31 **FINAL REVIEW-ADYAN RÍOS, CARIBBEAN BRANCH SEFSC, NOAA FISHERIES**
32
33 **ADYAN RÍOS:** Thank you, Vance. Okay. So, let's get started.
34
35 Just with some background, I've got some information about the
36 current management, which is similar to Puerto Rico with the
37 island-based management plan effective in October 2022. We have
38 the yellowtail snapper unit 4 with the 88,952 pounds ACL and
39 information about that there.
40
41 We have federal management history here. So, the 8-inches
42 implemented in 1986, 12-inches in 1989, and so forth, similar to
43 what we saw for Puerto Rico. The same assessment history is
44 included here because, these assessments looked at the Caribbean
45 stock. So, we had the 1992 Appeldoorn et al., which used a length
46 frequency analysis, and the SEDAR 8, which attempted to look at
47 CPUE trends and length frequency data.
48

1 And we also have spoken a little bit about SEDAR 46. It was
2 ultimately not used for management. Again, we brought up those
3 concerns and considerations of the nominal CPUE that was not
4 standardized. That is shown here. Okay. We'll go forward talking
5 about our data and our methods.

6
7 So, similar to the Puerto Rico model, we have landings, length
8 composition from the commercial fleet. We have the length
9 compositions from the survey, as well as the index of abundance
10 from the National Coral Reef Monitoring Program. And then we also
11 had life history information from samples from the U.S. Caribbean.

12
13 Okay, so here are some summaries from the data workshop. So, to
14 use the life history data made available, to only start the model
15 in 2012. Prior to 2012, the landings were not species specific.
16 Consider bias on the information. So, just kind of acknowledging
17 that we do have uncertainty in our data. Look into the individual
18 outliers and the trip reports. And then, group gears based on the
19 comparisons and analyses that are done with the TIP data. And
20 lastly here, assume commercial discards are negligible, just like
21 we did for Puerto Rico.

22
23 Their recommendation was to use the TIP data with the corresponding
24 years of the species-specific landings data and to also use the
25 NCRMP data from 2012 to 2022, and to not consider fishery-dependent
26 information for indices of abundance. So, again, that
27 recommendation concerns with that might affect how the index might
28 need additional effort or information and context to become a
29 standardized index that is meant to track the abundance in the
30 water.

31
32 Following the data workshop, the landings and outliers were
33 investigated and retained as valid trips. The panel recommended a
34 single combined commercial fleet configuration, similar to what we
35 saw for Puerto Rico. But now it is-- let's see, yes. No, that is
36 correct. Similar to what we saw for Puerto Rico. Again, this
37 information about the modeling approach is also the same. So, we
38 have stock synthesis, SPR, and the tools for working with stock
39 synthesis to develop reports and to develop diagnostics. This
40 progression of the assessment method is also the same as what we
41 saw yesterday.

42
43 So, initiating the model and without the survey data and then
44 incorporating that in, and then also, eventually, estimating
45 recruitment deviations. That brings us to a summary of the models
46 that were developed during the assessment report and then during
47 the review workshop. And then, I did want to highlight that these
48 explorations were guided by the experts, the Center of Independent

1 Experts. That's what CIE stands for. And so, these models in the
2 bottom table were based on their recommendations that we explored
3 during the review workshop. But again, this provides a context of
4 all the runs that were presented in the various reports. And also,
5 the additional context that following the review workshop, the
6 focus of our effort was to be kind of exclusively on the Puerto
7 Rico model because of that long time series, longer time series.
8 This model starts in 2012, so the uncertainty in the start year is
9 amplified, and it's a relatively short time series.

10
11 So, I'm going to go into just a quick summary, and then I was
12 recommending so just kind of the takeaway message and some of the
13 key results that came out of those models that we looked at during
14 the review workshop, and then kind of show you all the data
15 components that went into the process.

16
17 But here I wanted to kind of note some key statements from the
18 addendum about how, like, these models had additional work done on
19 them, but they still remained preliminary. So, the ones that ended
20 up in that stock assessment report addendum.

21
22 These models are kind of steps towards improving and better
23 understanding, but I just wanted to highlight that, where we ended
24 up in the process, and kind of stopped investing our time, kind of
25 furthering this along. And so, that's what we spent that time
26 looking at the Puerto Rico model and then as well as the
27 prioritized lobster sensitivities.

28
29 This is from the CIE report. So, they found that SS incorporated
30 the data, but the data were not robust enough. So, like, they
31 comment on that short time series. And so, we see also a conflict
32 in the data fitting the catch, the length, and the indices. And
33 they made some explicit research recommendations, and I can pull
34 those up after we get through these two presentations to kind of
35 revisit what priorities the CIE reviewers thought were very
36 important to move forward.

37
38 But briefly here, they recommended further data collection,
39 consideration of alternative modeling approaches, and integration
40 of historical information. And I think that relates to some of the
41 data that existed earlier, but needs to be kind of thoughtfully
42 included, and especially, like, a longer time series of catch. How
43 do we get to a longer time series of catch when we don't explicitly
44 have the species-specific data? But perhaps there are some analyses
45 or conversations we could have to understand plausible historical
46 information.

47
48 So, that brings us to the model for, like, the furthest developed

1 model. Well, I guess I can go back and also talk a little bit about
2 what the reviewers recommended.
3
4 So, first, we did a little bit of the same cleanup that we did
5 for-- or same modifications that we did for Puerto Rico. So,
6 simplifying to a single sex model, allowing estimation of annual
7 Fs, increasing the uncertainty around the catch, and correcting
8 the units of that catch standard error. And then, the next ones
9 kind of looked into how sensitive is the model to-- or the
10 potential for estimating growth, as well as the maximum age, a
11 lower maximum age. And we also looked at those considerations of
12 combining models, but that was not, kind of, further pursued at
13 this time.
14
15 And so, that brings us to the RW1 model that I have in this
16 presentation, just kind of highlighting the growth that was used,
17 the fit to the catch and to the indices. And so, we see that we
18 have indices. We have two indices, the NCRMP as well as the Deep
19 Coral Reef Monitoring Program. And so, it's great to have that
20 information, but we don't have a model that's really fitting well
21 to that information.
22
23 Similar to Puerto Rico, we have dome shaped selectivity, and we
24 saw that the Deep NCRMP was observing larger individuals than the
25 shallower survey. So, that's also very useful information to
26 continue collecting as we move forward. But at this time, the
27 model, with its short time-- well, relatively short time series
28 and the parameters being estimated, namely the initial equilibrium
29 catch, here the recruitment deviations were also being estimated,
30 and the model was robust to key decisions similar to the ones that
31 we discussed yesterday, but they were not further explored.
32
33 And so, that just brings me to, kind of, where I wanted to get as
34 far as the explanation as to where we ended with this model. And
35 then, I just wanted to provide a background on the data that went
36 in. And so, I'll talk about that now and the way the model was set
37 up. This will be relatively quick because it's very similar to the
38 model that we've already reviewed for Puerto Rico. So, the same
39 tool, the same structure, shorter time series, and then the same
40 types of diagnostics.
41
42 Here's the time series of landings. So, we have a little over
43 30,000 pounds, going down to a little under 20,000 pounds in our
44 time series of 10 years. And then, here we have the time series
45 when we think about all of the snappers, with yellowtail snapper
46 being this darkest purple in the time period where it's species-
47 specific but not having a breakdown of what those landings were
48 when it comes to all snappers in the period before. So, that's

1 just another limitation of why the start year was 2012, but also
2 important to know that, like, well, what might we be able to
3 incorporate or interpret about what was happening before 2012 might
4 be an important consideration and improvement to the data that we
5 analyze and try and understand. Because right now we're just
6 working with 10 years of data, on a species that we've got living
7 to be 26.

8
9 Here we have information on the number of trips. So, we're not
10 really factoring in the CPUE data, but we do have this presented
11 to just kind of give an idea that there are probably important
12 dynamics of CPUE, but that requires the standardization in order
13 to be able to reflect that what we're seeing from CPUE is
14 reflective of changes in the stock and not changes in how they're
15 fished or how they're targeted or how good people are at catching
16 them.

17
18 Here we have the information breakdown of the landings but by gear
19 group. And so, that just shows you the collective, you know,
20 everything was collected into one gear group for the handline. So,
21 that was just considered the one fleet. But we do have other types
22 of gears that catch smaller percentages of the total.

23
24 Next, we'll look at the sample sizes for the TIP data. So, 85% of
25 TIP length data for the yellowtail snapper came from handlines,
26 and that's used in the model for the commercial fleet. It's
27 important to note that just-- and this was true for the last model,
28 but I don't think we went into detail on this one. There are
29 multiple lengths for trips, and to account for that we're using
30 the number of trips as, like, the metric of saying which years
31 have more information. So, we're not saying, like, a year with
32 more samples-- well, tends to correlate, but the way that we kind
33 of understand what's a good year or a year with a lot of information
34 or fewer information in the model, we provide the number of sample
35 trips at that time series, the number of sample trips per year.

36
37 Here we have the information of where those data came from. And
38 so, recall that our model is really going from 2012 to 2022. And,
39 prior to that, we do have information. We do have length samples,
40 sporadically, but we're not using the information prior to 2012.
41 And also, in the information that we have after 2012, there are a
42 few years with relatively more samples and then some gaps as well.

43
44 So, I think the TIP data also needs to be sustained, right? And I
45 know there's a lot of work in evaluating the design of how that's
46 collected and how that can be optimized. I think that's important
47 to consider as well so that we continue to have port sampling
48 length data from the removals that we see realized by the fishery.

1
2 Here we have the time series just showing you what-- so since we're
3 not using the data prior to 2012, how does the data from 2012 on
4 compare to the entire data? And so that's just showing you that
5 it's very similar. We don't really see, like, a big shift in the
6 distribution of the recent data being different from the data
7 overall.
8
9 And then just for the more recent data, we do have just a breakdown
10 of what gears those data represent and how those distributions are
11 slightly different based on the gear with the kind of, handlines
12 and the rod and reel capturing slightly larger on average fish
13 than what they see in the yellowtail snapper that are caught in
14 traps. The majority, by far, of these samples, you see, like, the
15 sample sizes here hit 100, 700, and then 7,000.
16
17 Lastly, we have the National Coral Reef Monitor Program. And so,
18 we discussed this for Puerto Rico, and we talked about the
19 incorporation of that into the model. And then there's 3 years of
20 an additional deep survey, down to 60 meters. Those years are 2020
21 to 2022. And it's really useful to have that difference between
22 the two surveys being able to compare the size distributions going
23 on in the same years between the two different habitats.
24
25 Here we have the, like, context of how far back these data go, but
26 how our model only starts in 2012. So, again, another limitation
27 of data that was not incorporated based on the decisions of
28 structuring the model and all that. And then we alluded to the
29 research recommendations of trying to start and use like a longer
30 time series or potentially using other methods that may not require
31 as much information in order to be able to fit to the data and
32 determine what was happening at that 2012 start year. And so, we
33 have this broken down by the depth as well as the type of habitat
34 and then where they saw more of the yellowtail snapper.
35
36 And just another way of pointing out that this survey looks at all
37 of the habitat in the depth range. And so, it does this stratified
38 approach of allocating effort to these different habitats in order
39 to come up with density estimates that become the index of
40 abundance that we're able to use to infer what's happening to the
41 stock in the water.
42
43 And then, here is that information for the deep survey. On the
44 right here, we have the index that we have for yellowtail snapper,
45 fishery-independent information from the NCRMP in that solid line
46 going further back. And then where we're using was 2012 forward,
47 as well as the Deep NCRMP, which is 2020, 2021, 2022. And this
48 also shows the number of sites, and the number of yellowtail

1 snappers that they saw.
2
3 Lastly, we have life history information based on 1,554 samples,
4 collected from 2013 to 2023, and specifically in the U.S.
5 Caribbean. This information was provided by the working papers
6 that are on the SEDAR website. And we also have, kind of, some
7 keynotes here that they didn't see, kind of, like, sexual
8 dimorphism and they reported their maximum length and their maximum
9 age. Same information we discussed yesterday about sexual maturity
10 and growth.
11
12 I think we're coming to the end here, just the same table that we
13 saw yesterday. A little bit more information about maturity.
14 Considerations about natural mortality that we talked about in the
15 report, but we just kept the maximum age above 26.
16
17 And so, yeah, so I just wanted to, again, present the information
18 that went into the models, tell you the story about how those
19 models were developed, provide kind of some context about where we
20 ended up. And those are the slides that I have for the Saint
21 Thomas/Saint John Yellowtail Snapper. But I do have, again, like,
22 all the runs. I also have the reports open to help me along if
23 there's any questions or specific requests to see something in
24 particular.
25
26 **VANCE P. VICENTE CERNUDA:** Any questions? The floor is open for
27 questions. Richard Appeldoorn?
28
29 **RICHARD APPELDOORN:** So, I just have one question and that had to
30 do with the assumption of no discards, which I think is probably
31 reasonable for Puerto Rico, but in a demand based fishery in the
32 Virgin Islands, I would think, if there isn't a demand for that
33 species or that size of individual or something, it's going to go
34 back. That's kind of what one is led to believe in a demand made
35 fishery. Otherwise, it would be, "oh, I just don't go fish for
36 those species and I don't catch them if there isn't a demand." So,
37 I'm just wondering whether that assumption was really looked at
38 for the Virgin Islands.
39
40 **ADYAN RÍOS:** Thank you, Rich. That's really important. And I think
41 it's something to consider for all species in the region, because
42 another factor that plays into that is if they're also targeting
43 a specific size, then you would use a different selectivity. So,
44 it affects both what we refer to as the retention and the discard
45 mortality or the targeting, as well as what you would kind of
46 understand as for the specific sizes being targeted.
47
48 I think that we may not have discussed it further specifically to

1 the Virgin Islands. I'm trying to recall back to the data workshop,
2 but just that any individuals that would be caught that were
3 undersized, I guess, would be the main concern would be released.
4 And so, let me double check something here. But, yeah, so does
5 any-- let me see. I think that's an important consideration to
6 note and to consider as we kind of have-- even though we're looking
7 at the same species, there's a different dynamic to the fishery.
8
9 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Adyan. Adyan, I have a
10 question. How is the recreational data for the yellowtail snapper
11 fisheries being recorded, or reported, in the Saint Thomas/Saint
12 John area?
13
14 **ADYAN RÍOS:** I will defer that. I believe it is in progress. Kevin?
15 Yeah.
16
17 **VANCE P. VICENTE CERNUDA:** Kevin?
18
19 **KEVIN MCCARTHY:** Yeah. Thank you, Vance. Kevin McCarthy. Yeah. So,
20 as I think everybody knows, there hasn't been consistent
21 recreational fishing reported. I think there have been a number of
22 short-term projects there.
23
24 I think DFW is working on, and I don't know where this stands, but
25 they were working on voluntary reporting. But in recent years,
26 we've been, we being the Science Center has been working with DFW
27 to develop a survey, a port sampling survey that is still in the
28 works. We're still doing some preliminary kinds of things. So, we
29 don't have recreational catch data going into this model, because
30 the data aren't available.
31
32 **VANCE P. VICENTE CERNUDA:** Okay. Thank you, Richard, very much.
33 Sennai, can you come in?
34
35 **SENNAI HABTES:** Yes, I'm here. Thanks, Vance. Sennai Habtes for the
36 record. Just to address both points first to Rich's regarding
37 discards.
38
39 So, the commercial catch reports do have the opportunity for the
40 fishers to list discards. It's also a question asked in the TIP
41 surveys. We don't see much reported regarding yellowtail snapper.
42 The fishery itself is somewhat smaller. It's a limited number of
43 fishers that are regularly targeting yellowtail, and it's similar--
44
45 (Part of Dr. Habtes' comments are inaudible on the audio
46 recording.)
47
48 Julian Magras has attested to are highly selective because they

1 are demand based.
2
3 The fishers know what they're targeting, the size, and they mainly
4 go after these fish, yellowtail in particular, on the full moon.
5 So, it is somewhat selective. Am I saying there are no discards?
6 No. But I would say it's probably a highly small amount and really
7 selective amount based on the way that they fish and a small number
8 of trips based on the number of fishers comparably. Has that always
9 been the case? I can't say, but in the last 4 to 5 years, which
10 comprise a larger part of the data set that's what we would see.
11
12 In terms of recreational fishing, in past it's been collected using
13 a jot form survey. It's very small numbers that are being reported,
14 and the data is based on self-reported, and we aren't sure of the
15 uncertainty in it. We're moving to a harvest reporting tool that
16 will be part of the recreational fishing licensing platform that
17 we've recently launched. That's still in development. It will be
18 mandatory for for-hire fleets, but will still be voluntary for
19 other recreational.
20
21 In addition, as Kevin mentioned, we're working towards the
22 development of TIP like Creole and interview surveys that will be
23 done in the territory that we've been doing effort reporting
24 associated with that to get them started. And we hope to have that
25 moving into fruition towards the end of the year, the beginning of
26 next year.
27
28 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Sennai. Now we have
29 Richard Appeldoorn and then Walter Keithly.
30
31 **RICHARD APPELDOORN:** Thank you, Vance. This is a question for Adyan.
32 Just in general, and this thing applies for Puerto Rico, just how
33 much of an impact does not having an estimate of recreational
34 harvest have on what the outputs might be. Since we're not
35 accepting it for management, it's just a general kind of question.
36 But I'll point out that I tried to estimate recreational landings
37 up until 2022. And, for Yellowtail, I was getting, that the
38 recreational catch was somewhere between 24 and 30% of the
39 commercial catch.
40
41 That was estimated in a very different way than your approach. And
42 it's based on the MRIP stuff, which if you're familiar with that,
43 their results are considered confident for about three species off
44 the top of my head. So, there's a lot of variability in there, and
45 that's why I didn't bother to bring it up in the Puerto Rico sense.
46 But does it really have a major impact if we're missing part of
47 that catch?
48

1 **ADYAN RÍOS:** Thank you, Rich. So, this has come up for all of our
2 assessments that lack that information, as well as spiny lobster
3 comes to mind as well. What we kind of are assuming is that if the
4 ratio that you mentioned, so that 20 or 30%, has stayed the same
5 over time, then it's effectively just a matter of units of what
6 we're putting into the model. And so, we might be off of the scale,
7 but we're remaining within the same units when we're looking at
8 total commercial catch compared to the total commercial catch
9 potential.
10
11 I think that was also, kind of, when we corrected the model
12 yesterday, when I showed that of how it affects the scale, when
13 you're not accounting for a component like that, it does affect
14 the scale, but you're kind of scaling what the model's predicting
15 your OFL and your MSY based on the catches you did tell it about.
16 And so, if there's a different scale, it will retain the same
17 trends and provide a different scale of allowable catch.
18
19 However, if the trend that is recreational catch is not the same,
20 so if recreational catch like doubled and went to 50% or 60% in
21 some years and then back to being a small component on other years,
22 then that would be affecting your trends of your fishing mortality
23 in a way that would not be being captured accurately by these
24 models.
25
26 **VANCE P. VICENTE CERNUDA:** Thank you, Adyan. We have Walter.
27
28 **WALTER KEITHLY:** I lowered my hand, Mr. Chairman. Everything's been
29 covered that I was thinking about. Thank you.
30
31 **VANCE P. VICENTE CERNUDA:** Okay. I'll give Adyan a 15-minute break.
32 Come back at 03:15. Or at 03:20. I'm sorry. At 03:20.
33
34 (Whereupon, a brief recess was taken.)
35
36 **VANCE P. VICENTE CERNUDA:** Well, hello. Good afternoon. Welcome
37 back to the afternoon session of the last day of our 2026 SSC
38 meeting.
39
40 I think that Adyan has completed her presentation, and the floor
41 is open for any discussions on her presentation. So, anybody that
42 needs to ask a question, please do. Walter?
43
44 **WALTER KEITHLY:** Thank you, Mr. Chairman. It doesn't look like
45 Grac-- oh, there's Graciela. She might be able to help me. I
46 lowered my hand previously, but I'm going to bring it up anyway
47 now, on two issues. With respect to the discards, if I'm not
48 mistaken, I may be, it may just be for Puerto Rico. MRAG did a

1 study some years ago, looking at discards. Again, it is relatively
2 old now, but maybe of some value. I just don't remember if it was
3 just Puerto Rico or it include the Virgin Islands.

4
5 The second point, Richard just asked about the recreational catch.
6 The impact of recreational catch will have on dock assessments. I
7 brought this question up several times in the past. I know if
8 Puerto Rico assumes 7.8%, which was reasonable based on MRIP data
9 and all, or MERFs data I guess it was at the time. But if I
10 understand you, Richard, you figured it was 20 to 30% for the
11 Virgin Islands?

12
13 **VANCE P. VICENTE CERNUDA:** Richard, can you answer?

14
15 **RICHARD APPELDOORN:** Yeah. That was for Puerto Rico, not the Virgin
16 Islands. And it used a very different method than what Adyan was
17 using. And it is based on very reasonable but unknown assumptions,
18 etcetera, etcetera. So that's the number that came out. That
19 doesn't mean I put a lot of weight on it, but it does kind of show
20 how much uncertainty we have in what's going on.

21
22 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Richard. Walter?

23
24 **WALTER KEITHLY:** Follow-up question. Does anybody have any idea
25 whether you would expect the recreational yellowtail snapper
26 harvest catch to be larger in the Virgin Islands than in Puerto
27 Rico or less than. And I understand they may not have the answer,
28 but I'd be-- let me put it this way. If there is significant
29 recreational catch, it would indeed impact your stock assessment
30 results unless there's a high correlation between-- unless it's a
31 scaler of the commercial catch. Let's put it that way. Thank you.

32
33 **VANCE P. VICENTE CERNUDA:** Okay. Adyan, can you respond to that?

34
35 **ADYAN RÍOS:** So, I don't know whether there's more or less, in
36 comparison, in the Virgin Islands for recreational catch of
37 yellowtail snapper or if the recreational fishery operates very
38 differently or targets the same sizes. So, this is a key
39 uncertainty of information that can affect the models. And so, I
40 think that it is important to highlight the importance of
41 collecting those data and having that information.

42
43 We've made the assumption of no recreational fishing, and so
44 that's-- or of that not being captured, right? So the total is
45 just being reflective of commercial catch. So, that is something
46 that is a caveat of the methodology. But if the majority of the
47 catch and how we manage the species can be compatible, then I think
48 that's an assumption that we've had to make in some instances, for

1 example, with spiny lobster. And there might be justifications for
2 species where we might not want to be okay with that same
3 assumption.

4
5 **VANCE P. VICENTE CERNUDA:** Yep. Thank you, Adyan. We have next
6 Skyler.

7
8 **SKYLER ROSE SAGARESE:** Yes, Skyler Sagarese. Just to highlight. I
9 think this kind of issue is not unique just to the stock on this
10 island platform. So, this is the kind of information, thinking
11 bigger picture for SEDAR 103. There might not be a lot of
12 quantitative data to look at discards and discard mortality, but
13 here is where local ecological knowledge from fishermen and who've
14 been participating in these fisheries for decades can kind of feed
15 in and give us at least some sort of picture that we could be
16 considering with the assessment.

17
18 There are ways we can configure recreational landings in the stock
19 assessment, but we really-- the decisions really need to be based
20 on some kind of information. And I think in this case, I'm hoping
21 that the local ecological knowledge would really help kind of hone-
22 in on some hy-- at least hypotheses of what has been happening for
23 all the stocks and all the islands as needed.

24
25 **VANCE P. VICENTE CERNUDA:** Thank you, Skyler.

26
27 **GRACIELA GARCÍA-MOLINER:** So, Walter, in answering your question,
28 there was a discard study by MRAG in Saint Thomas, a pilot work in
29 2006. I was looking very quickly through the report, trying to
30 figure out if there was any information on the yellowtail snapper.
31 There is some information on the on the yellowtail snapper but it
32 represents a very small amount of discards. So, they did that for
33 Puerto Rico, for Saint Thomas, and for Saint Croix. But just the
34 pilot. There was no follow-up.

35
36 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Graciela. Any other
37 comments or questions for Adyan? Okay. Well, if not, we have to
38 bring up the-- to reiterate the last two motions that we had for
39 Puerto Rico, but changing to the U.S. Virgin Islands.

40
41 Yes. Skyler. Sorry.

42
43 **SKYLER ROSE SAGARESE:** Skyler Sagarese. Mr. Chair, I've drafted
44 one that-- can I paste it into the motions to try to meet both of
45 those requirements?

46
47 **VANCE P. VICENTE CERNUDA:** Yes.

48

1 **SKYLER ROSE SAGARESE:** Okay. Thank you.
2
3 **VANCE P. VICENTE CERNUDA:** Yeah. Julian, come in. We're going to
4 read your comments.
5
6 Okay. Go ahead.
7
8 **LIAJAY RIVERA GARCÍA:** So, Mr. Chair, I'll read Julian's message.
9 It says, Okay. So, Julian said, "The number is very small for
10 recreational yellowtail fishing in U.S.V.I." Discards. No, no, it
11 doesn't say that.
12
13 Can you tell me the number of what, specifically, in the message?
14
15 It says, "Tell them the number is very small for recreational
16 yellowtail fishing in U.S.V.I."
17
18 **VANCE P. VICENTE CERNUDA:** Thank you, Julian, wherever you are. So,
19 I will read motion number 6 prepared by Skyler Sagarese. Motion
20 number 6 reads, "*The SSC considers the assessment of SEDAR 84 U.S.*
21 *Caribbean Yellowtail Snapper for Saint Thomas and Saint John to*
22 *represent the best available science. However, given the*
23 *uncertainties noted during the review workshop, the results are*
24 *not useful for providing management advice and developing fishing*
25 *level recommendations for the Council at this time.*" that
26 integrates the two into one motion. So, thank you.
27
28 So, let's go for discussion. Any discussion on motion number 6?
29 Motion by Skyler Sagarese? Richard? Richard and then Walter
30 Keithly.
31
32 **RICHARD APPELDOORN:** I just want to second the motion.
33
34 **VANCE P. VICENTE CERNUDA:** Motion has been seconded by Richard
35 Appeldoorn. Walter?
36
37 **WALTER KEITHLY:** Thank you, Mr. Chairman. I was actually going the
38 opposite direction. I was going to ask if we could break this into
39 two separate motions because some of the SSC members may not agree
40 with the first part of the motion, but would agree with the second
41 part of the motion. Thank you.
42
43 **VANCE P. VICENTE CERNUDA:** Sí. Separada, sí lo sé. Okay. So, I guess
44 that you're right. So, we'll have to-- we'll split it again like
45 we did before.
46
47 Is that what you want here Walter?
48

1 **WALTER KEITHLY:** Well, that's what I would recommend.
2
3 **VANCE P. VICENTE CERNUDA:** Okay. So, let's split it in half just
4 the way we wrote it before, and we'll read it again. So, this will
5 be-- so, motion number 6 would then read, "The SSC considers the
6 assessment for SEDAR 84 U.S. Caribbean Yellowtail Snapper for Saint
7 Thomas and Saint John to represent the best available science."
8 That's motion by Skyler Sagarese. It was second by Richard
9 Appeldoorn. Walter?
10
11 **WALTER KEITHLY:** Yes. Well, what is your question, Mr. Chairman?
12
13 **VANCE P. VICENTE CERNUDA:** Hold on. Hold on a second. Yes. Give us
14 a few minutes. We have some technical problems we need to solve.
15 Hold on.
16
17 Yes. Please, look at the screen, Skyler. Do you agree in separating
18 the two motions just like we did for the yellowtail snapper for
19 Puerto Rico?
20
21 **SKYLER ROSE SAGARESE:** Skyler Sagarese, yes. I do.
22
23 **VANCE P. VICENTE CERNUDA:** Okay. Thank you. So, then we'll do it
24 separately because, like, Walter said some may say "yes" on the
25 first one and "no" on the second one, and it's better to keep them
26 separated. But thank you. And Richard is second. I mean, he
27 seconded this motion.
28
29 So, we have motion number 6, motion by Skyler Sagarese, seconded
30 by Richard Appeldoorn. "The SSC considers the assessment for SEDAR
31 84, U.S. Caribbean Yellowtail Snapper for Saint Thomas and Saint
32 John to represent the best available science. Any further
33 discussions on this? Okay. No.
34
35 And then we proceed with the voting process. I will read-- hold
36 on. Okay. Okay. Tarsila I'm sorry.
37
38 Tarsila Seara?
39
40 **TARSILA SEARA:** Hi. Yes. I vote yes.
41
42 **VANCE P. VICENTE CERNUDA:** Elizabeth Kadison?
43
44 **ELIZABETH KADISON:** Absolutely. Yes.
45
46 **VANCE P. VICENTE CERNUDA:** Richard Appeldoorn?
47
48 **RICHARD APPELDOORN:** Yes.

1
2 **VANCE P. VICENTE CERNUDA:** Richard Appeldoorn? Yes. Okay. Sorry.
3 Reni García?
4
5 **JORGE R. GARCÍA-SAIS:** Yes.
6
7 **VANCE P. VICENTE CERNUDA:** Walter Keithly? Abstain.
8
9 **WALTER KEITHLY:** No, because of the TIP data not being thoroughly
10 analyzed.
11
12 **VANCE P. VICENTE CERNUDA:** Okay. So, Walter Keithly, no. Cruz, J.J.?
13
14 **JUAN J. CRUZ-MOTTA:** Even though it contradicts my previous vote,
15 I say yes.
16
17 **VANCE P. VICENTE CERNUDA:** Okay. No. Okay. Ah, J.J. Cruz said yes?
18 Okay.
19
20 **JUAN J. CRUZ-MOTTA:** Yes.
21
22 **VANCE P. VICENTE CERNUDA:** Skyler Sagarese?
23
24 **SKYLER ROSE SAGARESE:** Skyler Sagarese. Yes.
25
26 **VANCE P. VICENTE CERNUDA:** And Vance Vicente, yes. So, the results
27 of the voting are 7 voted, "yes," one "no," and there are 3
28 absentees. *So, motion number 6 is accepted. Moves on.*
29
30 Now we'll see this, the second motion, motion number 7.
31
32 **LIAJAY RIVERA GARCÍA:** Hi, Skyler. This is Liajay for the record.
33 Does it read as you presented previously?
34
35 **SKYLER ROSE SAGARESE:** Yes. The only thing is I added that,
36 basically, why we're saying it's not useful. That we're leaning
37 on. Let me try it--
38
39 **VANCE P. VICENTE CERNUDA:** Skyler, couldn't hear you. We could not
40 hear you. Can you repeat, please?
41
42 **SKYLER ROSE SAGARESE:** Yes. So, my suggestion would be "Given the
43 uncertainties noted during the review workshop," and then I would
44 say "the SSC finds that the results presented are not at present
45 useful." I-- yeah. Because at least that provides why we say it's
46 not useful, that those uncertainties still exist.
47
48 **VANCE P. VICENTE CERNUDA:** Hello? Then the motion is by you, and

1 then it will be a second by Richard Appeldoorn? Yeah, Richard, do
2 you second it? Richard?
3
4 **RICHARD APPELDOORN:** Yeah. I've said twice now that I second it.
5
6 **VANCE P. VICENTE CERNUDA:** We couldn't hear it. Ahí. Escríbelo. Voy
7 a leerlo.
8
9 Okay. Motion number 7 reads, "*Given the uncertainties noted during
10 the review workshop, the SSC finds that the results presented in
11 the SEDAR 84 U.S. Yellowtail Snapper for Saint Thomas/Saint John
12 are not at present useful for providing management advice and
13 developing fishing level recommendations for the Council.*"
14
15 This motion was submitted by Skyler Sagarese and seconded by
16 Richard Appeldoorn. Any discussions? I hear no further
17 discussions, so please begin the voting process.
18
19 Okay. Tarsila Seara?
20
21 **TARSILA SEARA:** I vote yes.
22
23 **VANCE P. VICENTE CERNUDA:** Elizabeth Kadison.
24
25 **ELIZABETH KADISON:** Yes.
26
27 **VANCE P. VICENTE CERNUDA:** Richard Appeldoorn? Richard Appeldoorn?
28
29 **RICHARD APPELDOORN:** Yes, again.
30
31 **VANCE P. VICENTE CERNUDA:** Yes, bueno. Reni García?
32
33 **JORGE R. GARCÍA-SAIS:** Yes.
34
35 **VANCE P. VICENTE CERNUDA:** Thank you. Walter Keithly?
36
37 **WALTER KEITHLY:** Yes.
38
39 **VANCE P. VICENTE CERNUDA:** Wow. J.J. Cruz?
40
41 **JUAN J. CRUZ-MOTTA:** Yes.
42
43 **VANCE P. VICENTE CERNUDA:** Skyler Sagarese?
44
45 **SKYLER ROSE SAGARESE:** Yes.
46
47 **VANCE P. VICENTE CERNUDA:** Vance Vicente? Yes. So, we have-- todos
48 "yes," ¿verdad? So, we have a unanimous decision. 8 "yes." Please

1 note that there are three members that are absent. So, therefore,
2 *the motion moves.*

3
4 Walter?

5
6 **WALTER KEITHLY:** Thank you, Mr. Chairman. I just wanted to put on
7 the record. I voted no on the first motion, not because of anything
8 that Adyan had done. I found that very competent. But, again, going
9 back to the last SSC meeting, I made the point that we really have
10 to look at this TIP data in detail to see if it is representative
11 of the catch given that it is used quite a bit in these assessments.

12
13 Thank you.

14
15 **VANCE P. VICENTE CERNUDA:** Okay. Thank you. I think we can note
16 that once we complete SEDAR 84, we'll make the research
17 recommendations or any general comment that the SSC wants to make
18 to the Council on SEDAR 84. So, I suggest that we move on to the
19 next topic, which is the stoplight parrotfish. Let me see.

20
21 Oops. My computer went off. Hold on. Okay. Yes.

22
23 Okay. So, then if Adyan Ríos is ready, we'll initiate and complete
24 the final review on SEDAR 84 Caribbean stoplight parrotfish Saint
25 Croix for approval/disapproval of the stock assessment report
26 recommended or recommended OFL or ABC, and develop and list the
27 research recommendations. And Adyan Ríos will be the presenter.
28 So, Adyan, when you're ready, we're ready.

29
30 **SEDAR 84 CARIBBEAN STOPLIGHT PARROTFISH ST. CROIX: FINAL**
31 **REVIEW-ADYAN RÍOS, CARIBBEAN BRANCH SOUTHEAST FISHERIES SCIENCE**
32 **CENTER (SEFSC), NOAA FISHERIES**
33

34 **ADYAN RÍOS:** Thank you, Vance. All right. We have a similar
35 structured presentation for U.S. Virgin Islands, Caribbean
36 Stoplight Parrotfish. And just starting with the current
37 management, also having the fishery-- the island-specific fishery
38 management plans in 2022. And then it's part of Parrotfish Unit 2,
39 which has a limit of 72,365 pounds.

40
41 There are two indicators in this stock unit, so I think I'll cover
42 that on the next slide. Those indicators reflect how the unit is
43 managed. So, if the ACL of those two indicators exceeds this ACL
44 for that unit, then it closes for all, for the entire stock
45 complex.

46
47 Then, here's just for context what those stock complexes are. So,
48 I was referring to parrotfish 2, which is where the stoplight

1 parrotfish is, with redfin also as an indicator species. And then
2 we also have princess, queen, redband, redtail, and striped
3 parrotfish. The scope of the SEDAR 84 for Saint Croix was just for
4 stoplight parrotfish.

5
6 There's another parrotfish complex, that's parrotfish 1, which
7 doesn't have an ACL because it's been prohibited since 2012. And
8 that includes the blue, the midnight, and the rainbow.

9
10 We had a ban on gillnets and trammel nets in 2005 in federal
11 waters. We have the ban of the blue, midnight and rainbow
12 parrotfish in 2012. The implementation of an ACL for all parrotfish
13 in 2012 as well, for those that are not prohibited. As well as a
14 9-inch size limit in 2013. As far as management history for the
15 U.S. Virgin Islands, there was a buy-back of gillnets and trammel
16 nets in 2008.

17
18 For assessment history, this species was also looked at in SEDAR
19 46, but as we discussed earlier, it was not used for management.
20 At the time, there were only 3 years of species-specific landings
21 data.

22
23 So, for data and methods, that's what we'll discuss next. We'll
24 follow kind of like the same structure as our last presentation.
25 We've got landings, length compositions from the commercial fleet.
26 And then, we have life compositions and an index of abundance from
27 the fishery-independent survey. And we have life history
28 information from samples from the region.

29
30 These are the recommendations that came out of the data workshop.
31 So, to use the light tissue data; start commercial landings data
32 in 2012; to identify and flag outliers; utilize the various diving
33 gears to establish a dive gear group; to assume that discards are
34 negligible; to use the TIP length data from 2012 to 2022; to use
35 the survey data, the National Coral Reef Monitoring Program data
36 from 2012 to 2022; to not use fishery-dependent information as an
37 index of abundance.

38
39 After the data workshop, the life history working paper was
40 finalized and the assessment panel accepted landing outliers as
41 valid trips. So, the structuring and the model development approach
42 is similar with the exception that this model also takes into
43 consideration the biology of the sex change that we have for
44 stoplight parrotfish. But again, we use stock synthesis and the
45 same practices and approaches.

46
47 Again, beginning with structuring the models, factoring in the
48 biology, the hermaphroditism, the continuous recruitment, and the

1 increased catch uncertainty. And then, also adding in the indices
2 for the index, investigating whether to use the composite, so the
3 pooled composition data versus the annual, specific annual length
4 compositions and also investigating the ability to estimate
5 recruitment deviations.

6
7 So, this, again, just describes how the models were structured,
8 one area, one fleet, one survey. And then, the sensitivities and
9 the diagnostics developed during the stock assessment process that
10 are included in the stock assessment report. And this table
11 summarizes the steps going into the model that were included in
12 the report, and then the ones that were refined at the review
13 workshop.

14
15 Again, refined in a similar way where we also simplified the model,
16 those annual Fs. And instead of treating hermaphroditism as sex
17 change from-- I always get it mixed up, from one sex becoming the
18 other, we accounted for that in a single sex model by reducing
19 fecundity. So, as this transition, it changes their fecundity as
20 they become male.

21
22 That brings us to this slide. This slide is the same as we saw for
23 the previous presentation. Just noting that that's the work that
24 was accomplished under the timeframe of the review workshop. And
25 subsequently, these models were not further developed. And then
26 again, the CIE highlighted important attributes like the short
27 timeframe and the information that's available, but not being used,
28 right? We know there's longer time series of TIP. I'll show you
29 more, we'll dive a little bit deeper into the data on the
30 subsequent slides, but I wanted to just kind of emphasize the
31 parallel situation for Saint Croix parrotfish.

32
33 I wanted to just, kind of, provide some visuals of the model that
34 was developed at the review workshop. And so, we were looking into
35 the different selectivities as well. So, here we're looking at a
36 selectivity for NCRMP that sees all sizes as opposed to the dome.
37 That was a discussion based on the habitat of this species being
38 more similar to the habitats encountered in the survey and the
39 depths.

40
41 And then, we also have the fit to the catch. And again, like, the
42 model being very sensitive, and then that's described further in
43 the report to that initial year. How do we allow the model to
44 estimate equilibrium catches in that start year of the model? Then
45 here in the bottom right of this left panel, we have the index,
46 and we see that the model's not fitting the index very well. It
47 is, however, fitting the length data of the survey. So, that's
48 what we see in the top right. We see that the average size went

1 down in 2015 compared to other years of this survey. Okay.
2
3 So, I just wanted to kind of-- that's what I consider the furthest
4 developed model included in that addendum in the report, which
5 shows that it still has potential, but also work to do and
6 assumptions to further consider, like, that start year and what we
7 can do with other important assumptions like steepness and growth.
8
9 So, that brings us to taking a look at the landings and that short
10 time series. Again, 10 years, I guess 11. So, we go from 2012 to
11 2022, and we have, that's 40,000 down to a little bit under 20.
12 So, we are seeing a decline in landings that goes under 10,000
13 pounds and then picks back up. And that decline happened between
14 2017 and 2018, but it came back to kind of the same level
15 afterwards.
16
17 Similar to the presentation we saw earlier today, we've got
18 species-specific information that starts in the middle of 2011.
19 And so, the species-specific data for the full year starts in 2012.
20 And we've got a stoplight in this teal color. It goes like this
21 darkest color, then it goes to this blue, then we get to this more
22 blue color, and then we get to that teal color, with the biggest
23 one here where my mouse is. But we don't know the composition prior
24 to 2012. But we do know that there were substantial landings
25 overall of all parrotfish.
26
27 Here's information about the number of trips. And so, when we see
28 that decline in the landings that we saw from 2018 and 2019, we
29 also see a corresponding decline in the effort. And then, we have
30 the information by gear groups here where we have the scuba gear
31 group, which has the most landings. And then, all the other gear
32 groups that were not part of that have some increase in 2015 and
33 2016, 2017, and a little bit in recent years. But the majority of
34 the landings comes from the scuba gear.
35
36 Next, looking at the length composition data. 98% of the length is
37 from that diving gear. However, that's only 66 trips in that entire
38 time period. So, that's only 66 trips and 1000 length measurements
39 over all of those years. And so, that was incorporated into the
40 model. But, again, like, the model takes into account which years
41 have more information by knowing how many trips were sampled each
42 year. And that's why it was a consideration also to pull this data
43 to only inform selectivity. Well, that was also part of the model
44 development and considerations because of some years having low or
45 no samples.
46
47 So, here we see the relative amount of samples, like, the
48 proportion of total samples that we have for Saint Croix stoplight

1 parrotfish. Prior to our start year in 2012, there's quite a bit
2 of samples that came from the pots and traps to the fishing pots.
3 And then afterwards, most of the samples come from diving, but
4 they're not being sampled every year. So, that is something to
5 recommend that that data would be very important for the type of
6 model that we're using in order to try and fit to the selectivities
7 and understand the size and dynamics of the fishery capturing
8 stoplight parrotfish in Saint Croix.

9
10 As far as comparing the data during 2012 to the data prior to 2012,
11 we do see that we don't really see like a shift in the average
12 size. So, this is comparing the data that we use compared to all
13 of the available data. And we see that there's not a shift that
14 kind of states that like, "oh, something drastic is different in
15 the recent period." I guess there are a little bit fewer large
16 fish here, but then it flips over here. So, I guess, this is also
17 sensitive to sample size. So, I won't read too much into it, but
18 it is a useful plot that helps us kind of determine how and see
19 whether there are any major shifts in the average size or in the
20 distribution of sizes.

21
22 Next, we go to the fishery-independent survey. We have information
23 about this survey having been regionally restricted. So, only being
24 in a certain part of the island from 2001 to 2011 and then going
25 island wide and also changing in its methodology. But in the years
26 that we used in the model, like, everything is consistent. So,
27 that was the 2012 forward.

28
29 We also have multiple lengths per guide. So, similar to what we
30 talked about, how the model weighs the individual years of
31 information for the commercial length data by the amount of trips
32 that were sampled; the model also weighs the relative years, the
33 information, the length compositions by size, by year, based on
34 the number of dives each year, the number of sites. And so, that's
35 shown here. You see that we've got 262, 239, 181, 314, and 148
36 dives in that period of time that we are using this data and quite
37 a lot of stoplight parrotfish, too. So, the number of total lengths
38 that were reported by the divers.

39
40 This shows the breakdown of where those fish were observed. And
41 also, at what depths. And this information all gets factored into
42 developing the index, which is an estimate of density. And here we
43 have that information. And then if you remember that the model
44 starts in 2012, so what it's using is this-- it's not using this
45 entire time series because when the fishery logbook becomes
46 species-specific, as well as when they have adopted their current
47 methodology. The data previously are calibrated, but there's
48 additional uncertainty that gets factored in when you're

1 calibrating data from the different survey types.
2
3 That's good to do because you are, kind of, converting to the same
4 units. And so, I think it's important to also reconsider and think
5 about what we might be able to do with this data prior to 2012 so
6 that we're not working with such a short time series. And I think
7 it's also important to continue to collect these data.
8
9 For life history information, there were 1,800 samples from 2013
10 to 2023 from across the U.S. Caribbean. We do have sexual
11 dimorphism reported. And then, we'll take a look at the length age
12 curve on our next slide. We have a maximum age of 433 millimeters
13 and the oldest aged fish of 20 years.
14
15 And then, we also had information about maturity and reproductive
16 phases, so that the females and males are spawning capable year-
17 round. Not all females transition. So, some females stay female
18 all time. And that the majority of fish less than three, were
19 female. Between four to fifteen, there were similar proportions of
20 males and females.
21
22 Here is the length/age relationship. So, the growth fit with von
23 Bertalanffy growth. And we've got L Infinity. I don't have it. I
24 think I don't have it on this slide, but I can look it up really
25 quick. So, around 30 a little higher, 300 millimeters. And then
26 very few individuals were above 35, I think it was reported in the
27 last slide. Let's see. "Very few females greater than 35
28 centimeters," like, 351 millimeters. So, that's represented by the
29 x's. The x's are the males. But they did report that the largest
30 individual observed was still female and the oldest individuals
31 were also female.
32
33 So, that creates like a very interesting, but also complicated way
34 to incorporate this into SS because the maturity function that we
35 were initially using, sorry, the hermaphroditism is just a function
36 of the probability of changing sex at a given age. And so, that
37 was also, I think, improved when we went to the single sex model
38 where you can, kind of, take this observation or this reality that
39 we're seeing of there being females that never change, and factor
40 that in a little bit more fine-tuned. So, I think that was an
41 improvement in that approach of the review workshop development.
42
43 Yeah, so here is the size limit. So, the L infinity that was used
44 with the fork length and the fixed T naught. So, 33.2 centimeters.
45 On models that we use, I have to use centimeters. So, it's just
46 where my mind's up.
47
48 A little bit about the CVs, just showing those and how the growth

1 was reflected in the SS model. A little bit about maturity and
2 hermaphroditism. So, we have the information about when they
3 mature, so at an age of about 1.6, and when they transition on
4 average at 4.5, and the associated lengths in millimeters.
5
6 Here's information about fecundity. Wait, sorry, no. Oh, the
7 distribution by age. So, these are the individual ages, and these
8 are the individual lengths. And so, we do see that sexual
9 dimorphism here shown by the males being skewed to the right. So,
10 we've got red being females, gray being transition, and blue being
11 males. However, we do see some females at some of the largest ages.
12 You also see what we discussed earlier in the bullet point of when
13 the majority-- when we see the most frequency of fish begin
14 transitioning, the gray bars.
15
16 So, this is a table that just shows different sources of
17 information for natural mortality, but we use the maximum age from
18 the recent SEDAR. Maximum age of 20 corresponding to a 0.27
19 estimate of M.
20
21 So, that just brings us to some of the kind of summary and
22 discussion points that we had at the review workshop. Just that we
23 developed the models in a stepwise approach, increasing complexity
24 and taking into account each decision of incorporating information
25 or refining the model. The outcomes are similar to the last
26 assessments in that natural mortality and initial patch are very
27 important parameters and components of the dynamics of the model
28 that are influential.
29
30 We also have a short time series and coarse length bins in some
31 years. So, there's the data in 2012 and 2015 use 5-centimeter bins.
32 And so, the survey data went to one centimeter collecting,
33 estimating the size of fish based on the centimeter instead of
34 rounding. They did that more recently, and so there's a period of
35 time where we have coarse length bins versus very specific bins,
36 which is important when we're trying to predict recruitment with
37 the observation of the small fish that we see in the diver survey.
38 And so, factoring that into the model also makes that a bit of a
39 limitation for seeing those individual sizes.
40
41 And then we were estimating recruitment deviations and that those
42 were informed by the fishery-independent data, but that the model
43 still remained in this preliminary state of having been
44 investigated and developed thoughtfully but still having highly
45 influential uncertainties. I think that was preliminary models.
46 So, I'm not going to talk a little bit about that.
47
48 Assessment research recommendations. I think I just wanted to get

1 to-- let's see if I have anything else from the review workshop.
2 No.
3
4 Okay, so yeah, so there's some of the research recommendations
5 that are in the stock assessment report from the assessment process
6 and from the data workshop process. But I think what we wanted to
7 also revisit today was those from the CIE review. And so, we do
8 have those, a section of-- let's see. I have it open somewhere.
9
10 I guess while I look for the research recommendations from the CIE
11 review, I'll just check in and see if there are any questions.
12 Yeah, I'm not seeing any.
13
14 I'll just point out that on page 151 of the stoplight parrotfish,
15 I think, this is in all three reports because they've got them
16 kind of stacked. But we do have the research, the CIE research
17 recommendations for the different species. I think something to
18 try in the future with SS is to incorporate the length and age
19 data and allow SS to estimate growth. I think that's going to be
20 something to consider in the future. Increase the time series for
21 all key data streams. You consider alternative approaches.
22
23 So, this is related to modeling approaches. I believe that right
24 before this there are also research recommendations for data. Quite
25 a few short-term and long-term. Short-term or hindcasting, so
26 making better use of the data prior to 2012. Investigating
27 alternative mortality and growth. Investigating potential for CPUE
28 or considering bycatch or whether the species is opportunistically
29 targeted. Investigating connectivity and how that has implications
30 for informing steepness.
31
32 Then some long-term ones. Like, ensuring that sample sizes include
33 small and large fish. Maintain and expand commercial monitoring
34 programs. Concerns about, or recommendations to include more
35 spatial and temporal coverage of the surveys, of the diver surveys,
36 and to incorporate recreational fishery data. So, those are the
37 ones for stoplight parrotfish in Saint Croix. And then the report
38 also has the CIE review summary for yellowtail snapper in Saint
39 Thomas/Saint John and Puerto Rico, as well as the research
40 recommendations related to assessment methodology in the next
41 section.
42
43 So, these assessment reports are on the SEDAR website, and this
44 chapter is in all of them. So, this is the response that the report
45 has for Term of Reference 5.
46
47 That's all that I have. So, I'm just hanging tight to know about
48 any questions or any considerations that we need to discuss before,

1 that we're able to discuss today.

2
3 **QUESTION/COMMENTS**
4

5 **VANCE P. VICENTE CERNUDA:** Okay. So, the floor is open for
6 discussions and questions. So, anybody come in? Raise your hand.
7 Again, we're getting no questions.
8

9 No, nothing back from the members, from the public. So, let's see.
10 Hold on. Richard Appeldoorn?
11

12 **RICHARD APPELDOORN:** I don't have any questions, other than are we
13 even in a position to say whether this is the best available
14 science approach? I think it's too data limited. And, given that,
15 hopefully something might come out of SEDAR 103. But I'm not even
16 sure we can make a recommendation at this point whether this is
17 the best available-- whether this represents the best available
18 science. It's good science, but I think they did the best job they
19 could with the available information, but I'm not sure it's the
20 only approach, and that's kind of where I'm stuck.
21

22 **VANCE P. VICENTE CERNUDA:** Yeah. I agree, Richard. Let's write down
23 the motions regarding-- hold on. Walter?
24

25 **WALTER KEITHLY:** Yes. Thank you, Mr. Chairman. Adyan, you showed a
26 graph of total parrotfish landings starting at the beginning, then
27 in 2012 you broke it down to individual species when the data
28 became available. I don't think-- yeah.
29

30 Do you have that information for trips by any chance? I'm just
31 kind of wondering about it just the way it coincides so closely,
32 the reduction in parrotfish landings of these specific species
33 with the disaggregation of parrotfish. That just leads me to wonder
34 whether fishermen simply are not filling it out like they used to.
35

36 That's why I was wondering whether the trips would show the same
37 pattern.
38

39 **ADYAN RÍOS:** Yeah. I don't have that easily available. Those data
40 do exist to tell us how many trips were taken in the years prior
41 to 2012, but the time series that made it into our reports was
42 from 2012 on.
43

44 **WALTER KEITHLY:** As a follow-up, do they have an unclassified
45 parrotfish category in the logbooks?
46

47 **ADYAN RÍOS:** Let's see. I don't believe-- is anyone from the Virgin
48 Islands able to answer that about whether there's an unspecified

1 parrotfish still on the logbooks or whether it's all species-
2 specific?

3
4 **VANCE P. VICENTE CERNUDA:** I don't hear any answer for that, but I
5 do remember, Reni Garcia pointing out in one of our previous
6 meetings regarding the stoplight parrotfish that there might be
7 some taxonomic issues. This species is not very easily identifiable
8 from other smaller parrotfish. So, that might create a higher
9 degree of uncertainty. Reni, can you expand on this, please? Reni
10 García?

11
12 Ah, Okay. Elizabeth, please.

13
14 **ELIZABETH KADISON:** Yes. I think the uncertainty may be a little
15 higher because what I found is, for one thing, and some of the
16 commercial guys could speak on this, but the local names for
17 parrotfish are different than the common names that we use. I have
18 found that-- and I'm not saying-- probably on Saint Croix where
19 these guys are specifically targeting parrotfish they probably
20 know, but I've had to, collecting parrotfish for like Virginia,
21 explained to fishermen that the terminal male and the female were
22 the same species, like they thought they were different species.
23 So, I think there may be a little bit of ambiguity here and
24 uncertainty in identifying species in some of those catches.

25
26 **VANCE P. VICENTE CERNUDA:** Yes. Thank you. That's what I thought we
27 discussed in one of our previous SSC meetings. I was a little bit
28 concerned before regarding the Lmax because most of the samples
29 are done in shallow water, especially for the commercial catch.
30 But I do have information that the larger males do go into deeper
31 water, down to 90 feet, 100 feet and, well, sometimes they're not
32 taken into account.

33
34 But looking at NCRMP data, they have collected samples at deeper
35 depths, between 30, what, and 60 meters, something like that. And
36 this has probably been taken into account, but that is that the
37 larger fishes are in deeper water. We have a next. Walter Keithly.

38
39 **WALTER KEITHLY:** Thank you, Mr. Chairman. Again, I want to go back
40 to the question that I asked a few minutes ago and got sidestepped
41 on another issue there. I just would strongly recommend that Adyan
42 check to make sure that there's not an unclassified category of
43 parrotfish. Now, I've made that mistake myself, and it can be
44 embarrassing. So, just double check because, again, just the way
45 those landings dropped so sharply just about the time that they
46 started separating out the species just raises a red flag to me.

47
48 Thank you, Mr. Chairman.

1
2 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Walter. Kevin McCarthy?
3
4 **KEVIN MCCARTHY:** Yeah. Thank you, Mr. Chair. Was just typing in
5 the chat that-- this is Kevin McCarthy. Walter, I've got that
6 answer to your question. So, I'm looking at the reporting forms
7 from Saint Croix since they switched over. So, basically, the 2012
8 forward, there is not an unclassified or just a snapper entry that
9 you can make-- that's on the form. What they could do as fishers
10 is they could write in. There's always the option to write in.
11 There's a couple of spaces at the bottom of the forms where you
12 could just write in parrotfish.
13
14 It's not showing up, and as far as I can tell, it's kind of tough
15 with these colors, but it looks like that really dark color that
16 is parrotfishes for the first half of this, with all the high bars,
17 I don't see that again, I don't think, since 2012. So it could be
18 that if they don't know what it is, they don't report it. It could
19 be because we do have a big drop in the number of just the overall
20 landings of parrotfish. Now whether that's driven by reporting or
21 something else, who knows?
22
23 But I don't think that there's an option for-- there's not on the
24 form a clear option for reporting parrotfishes. However, again,
25 there's that write in option or the, just, "I don't know what this
26 is. I know it's a parrotfish. I don't see parrotfishes on the form.
27 So, I'm not reporting."
28
29 I'm not saying anybody's doing that, but there are a variety of
30 options that people could take. But checking a box that says
31 parrotfish is not an option. It's not on the form.
32
33 **WALTER KEITHLY:** Thank you.
34
35 **VANCE P. VICENTE CERNUDA:** Thank you, Kevin. Richard?
36
37 **RICHARD APPELDOORN:** The drop is really occurring in 2010. So,
38 that's before the forms go into effect. It does coincide with the
39 imposition of ACLs, if I recall correctly. And we have had issues
40 before in Saint Croix, with respect to conch, about whether there
41 was deliberate underreporting, and I'm not saying anyone's doing
42 that. But if you're a conspiracy theorist, that's one thing to
43 consider.
44
45 The other question I had is when did the gillnet ban, go into
46 effect? Does that lead to a big drop in landings?
47
48 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Richard. Any further

1 questions or discussions for Adyan? Yeah. Richard, you want to
2 make the motion to include the information.
3
4 **RICHARD APPELDOORN:** No. I'm not ready for that.
5
6 **VANCE P. VICENTE CERNUDA:** Okay. But, yeah, we're going to be
7 putting the two motions on the screen regarding the quality of the
8 data and its usefulness for fishery management advice, fisheries
9 advice. So, hold on.
10
11 So, we have motion 8 number, in the screen. It hasn't been,
12 proposed by anybody yet, so we'll be waiting. But we'll read it.
13 "The SSC considers the assessment for SEDAR 84 U.S. stoplight
14 parrotfish for Saint Croix to represent the best available science.
15
16 Skyler?
17
18 **SKYLER ROSE SAGARESE:** Yes. Skyler Sagarese. I don't want to-- Just
19 a comment first. Before, I'm thinking, I heard some concerns that
20 this may not represent the best available science, but I'm just
21 sitting here thinking, how else could we have assessed this stock?
22
23 Because in this case, we had clear data limitations. The length
24 composition data is so sparse in the most recent years, so we
25 really couldn't have used the data limited method just looking at
26 lengths. The index of abundance. I think this is something moving
27 forward with 103. We should really be careful and critical of using
28 that NCRMP data and the DCRMP. I think they're really-- there's a
29 lot of promise there.
30
31 But I'm just thinking how-- I think what Adyan put together here,
32 I'm not sure anyone could have done a better job given all the
33 limitations as well as the expectation to be using a more advanced
34 assessment model. And I know she built it consecutively. So, I'm
35 struggling.
36
37 To me, this is the best attempt. I think spiny or spotlight
38 parrotfish was always going to be a challenge, and it was chosen
39 for that very reason to try to break these methods. But I really
40 think Adyan tried the best she could.
41
42 I just wanted to add my perspective on that.
43
44 **VANCE P. VICENTE CERNUDA:** Reni García.
45
46 **JORGE R. GARCÍA-SAIS:** Yes. I want to make a comment regarding the
47 length distribution data for parrotfish associated with the NCRMP
48 surveys. The area of survey, which is a radius of 7 meters, is too

1 large to actually provide an accurate assessment of the amount of
2 small recruitment size parrotfishes within that cylinder. The area
3 where a small parrotfish swims, within that radius, is a small
4 portion of the cylinder. So, if you are doing the survey in the
5 center, you're likely to see the small parrotfish recruitment. I'm
6 talking about one to 5-centimeters parrotfishes within your
7 immediate area, perhaps the first 2, 3 meters.

8
9 But aside from that, 4, 5, 6, 7, 8-- 7 meters, it's not possible.
10 It's not possible to provide an adequate quantitative assessment
11 of the size distribution of parrotfishes across the entire range.
12 And the sizes that are going to be underrepresented are going to
13 be small sizes. Perhaps nobody has done a careful analysis of this,
14 but having done the NCRMP surveys for many years, and doing the
15 transect that-- I go through the entire transect, I can see the
16 distribution of fish across the entire transect. It's very
17 different, you know.

18
19 So, I don't know. What I'm trying to say is that the actual size
20 distribution of parrotfish across the entire range from recruits
21 to full adults is not adequately represented by this method. It
22 has limitations. The worse the visibility, the more that difference
23 becomes evident. So, if you are working in a place that has a
24 limited visibility or even if it's 7-meter because that's the
25 minimum visibility that you can have to make the survey. They tell
26 you if the visibility is under 7-meters, don't do it. Most people
27 end up doing it anyway.

28
29 I'll tell you it's almost impossible to see 2, 3-centimeter
30 parrotfish 7-meters from your point. Okay? So quantitatively the
31 relative composition of small fish relative to the big fishes
32 decreases as you go out of your-- as you increase your distance
33 from your center towards the 7 meters. That's my take.

34
35 So, every method has its own limitations and its advantages and
36 that is one of the disadvantages that I've seen on the NCRMP
37 methodology compared to, for example, transect, belt transect
38 methodology. Thank you.

39
40 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Reni. That's a valid
41 point. We have now J.J.

42
43 **JUAN J. CRUZ-MOTTA:** Thank you. I just want to go back to Skyler's
44 comment and just say that precisely that comment was the comment
45 that made me change my mind on the way I voted for the yellowtail
46 in Puerto Rico, which I abstained, and then for Saint Thomas, I
47 say, "yes." I totally agree with Skyler. I mean, like, with what
48 the Science Center and Adyan has that's the best--

1
2 **VANCE P. VICENTE CERNUDA:** J.J. we cannot hear you. Can you speak
3 up?
4
5 **JUAN J. CRUZ-MOTTA:** Yeah. I'm speaking. Hello? Hello?
6
7 **VANCE P. VICENTE CERNUDA:** Oh, you are, but very lightly.
8
9 **JUAN J. CRUZ-MOTTA:** Ah, okay. Okay. What about now?
10
11 **VANCE P. VICENTE CERNUDA:** That's better. Go ahead.
12
13 **JUAN J. CRUZ-MOTTA:** Yeah. I have full-- okay. Anyhow, I was saying
14 that the comment that Skyler made before, it was the comment that
15 made me-- I mean, that's the logic that made me change my vote
16 from the Puerto Rico Yellowtail assessment to the Saint Thomas
17 yellowtail assessment. I totally agree with that view. The Science
18 Center, Adyan that's the best she was able to pull up given the
19 data that was available.
20
21 Now, I have a question about the SEDAR process. Is it possible to
22 stop the SEDAR process at any stage? For example, these limitations
23 about the data were clear from the very beginning when we had the
24 data workshop, but still, we went ahead with the SEDAR. Is it
25 possible for the data workshop, or is it possible for the people,
26 for that panel to say, "hey, guys, this is what we have. This is
27 the data we have. We do believe we cannot run an assessment with
28 this. So, we recommend we stop the process right now." Thank you.
29
30 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, J.J. Elizabeth?
31
32 **ELIZABETH KADISON:** Yeah. I agree pretty much with what Skyler
33 said. I mean, I think that we're data limited, and Adyan did a
34 great job with this. However, there is one data set that I'm not
35 sure why it's not included here and that is the Territorial Coral
36 Reef Monitoring Program, the TCRMP, which is territorial, and we
37 do have fixed sites that we sample every year on Saint Croix and
38 Saint Thomas and Saint John and those are belt transects. We use
39 belt transects.
40
41 Having done both, the NCRMP surveys and the TCRMP, the territorial
42 surveys, I agree that belt transects do capture those newly
43 recruited little, tiny stuff like parrotfish. So, maybe this is
44 something that can be brought up in SEDAR 103, to incorporate those
45 other independent-fisheries datasets into these models. But that
46 data does exist. We've been doing those surveys since 2002. We
47 have a really long dataset on Saint Croix. Thank you.
48

1 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Kevin.
2

3 **KEVIN MCCARTHY:** Yep. Thank you, Vance. Kevin McCarthy. A couple
4 of things. I'll respond to Elizabeth as well as J.J. So, J.J., I
5 think we could make this SEDAR process more nimble and responsive
6 to those kinds of concerns if we get it written up in terms of
7 reference in a way that-- I mean, this is my perspective. I don't
8 know what SEDAR would have to say about this. But in my mind, if
9 we're going to revamp the way we do business, let's also revamp
10 the process that is SEDAR because no matter what we do, we're going
11 to have some kind of review process, whether it's SEDAR, which is
12 likely to continue to be even though we may do different kinds of
13 analyses.
14

15 Let's think about how we write into, and we obviously would have
16 to talk to SEDAR about this, write into the terms of reference
17 that under X circumstances we can stop the process because the
18 data are insufficient to carry on with the assessment and it would
19 just be a waste of money. So, I'm all for that. My travel budget
20 is as limited as anybody. So, if we don't have to spend money on
21 something that is not going to result in a result, then I'm all
22 for it.
23

24 On the other hand, SEDAR 103 is looking for alternatives to these
25 kinds of species and data limitations because a data limitation
26 for a state structured stock assessment may be very different than
27 some sort of data limited approach or some kind of species grouping
28 approach, that kind of thing. So, maybe we'll be able to solve
29 some of those concerns with SEDAR 103, well, that remains to be
30 seen.
31

32 And then as far as the TCRMP and those other kinds of surveys.
33 This is a process that we could improve with SEDAR as well because
34 the data call goes out and if we don't know about it and no 1,
35 knows who to ask, I think we're better at that than we were a few
36 years ago through a number of collaborative working groups. We're
37 more aware of the available data in the region. But I think in
38 this case, when the data call went out, SEDAR staff and others may
39 not have been aware of some of those fishery independent surveys
40 as important as they are. And so, it was either requested-- or
41 sorry, it was either not requested, or people were unaware of it.
42 I think that's how we ended up not having it.
43

44 The other side of that is we have asked people for data and
45 everybody's busy. It's not a lot of people's jobs to be involved
46 in SEDAR. So, they don't have time, or the dataset is-- we're aware
47 of it, but there's no one at the workshop to represent it. So,
48 that makes it very difficult to incorporate those data when you

1 don't understand them. I'm not making excuses. This is just the
2 reality of the way the process works.

3
4 So, I think there are two ways that we should improve the SEDAR
5 process at the same time we're trying to improve the way we provide
6 management advice and the way the Council is aware of how to use
7 that maybe that new manage device. I'm trying to sweep a lot of
8 things into the SEDAR 103 tent and the process itself. The SEDAR
9 process itself is one of those. I think we can improve how we
10 engage with people to get the right data in the house. And as J.J.
11 was saying, if we're just up against severe data limitations and
12 it does not look promising, there ought to be a way to put on the
13 brakes.

14
15 Thanks.

16
17 **VANCE P. VICENTE CERNUDA:** Yeah. Kevin, I'm going to interrupt a
18 little bit here. We're getting out of focus. This discussion about
19 SEDAR, framework, template, how it can be changed through the terms
20 of reference. I mean, even in the last SEDAR meeting that I
21 participated in, even the external committee, they suggested that
22 they may-- to consider different methods other than SEDAR.

23
24 But I think we are already in the SEDAR process. SEDAR 84, U.S.
25 Stoplight Parrotfish for Saint Croix. We need to complete this,
26 and this is a topic that may be discussed, just not in this meeting.
27 Thank you. Richard?

28
29 **RICHARD APPELDOORN:** I'm going to second the motion.

30
31 **VANCE P. VICENTE CERNUDA:** Okay. So, Richard, second motion number
32 8. Again, I will read it. *"The SSC considers the assessment for*
33 *SEDAR 84 U.S. Stoplight Parrotfish for Saint Croix to represent*
34 *the best available sciences."*

35
36 We already, I think, had the discussions. I think we are ready to
37 go through the voting process. So, we'll start the voting process.
38 First, we'll have Tarsila Seara. Tarsila?

39
40 **SKYLER ROSE SAGARESE:** Hi. I vote yes. Emphasis on "available."

41
42 **VANCE P. VICENTE CERNUDA:** Okay. Yes, you said? Okay. Elizabeth
43 Kadison?

44
45 **ELIZABETH KADISON:** Yes.

46
47 **VANCE P. VICENTE CERNUDA:** Richard Appeldoorn?
48

1 RICHARD APPELDOORN: Appeldoorn, yes.
2
3 VANCE P. VICENTE CERNUDA: Reni García?
4
5 JORGE R. GARCÍA-SAIS: Yes.
6
7 VANCE P. VICENTE CERNUDA: Walter Keithly?
8
9 WALTER KEITHLY: I will abstain.
10
11 VANCE P. VICENTE CERNUDA: I knew it. J.J.?
12
13 JUAN J. CRUZ-MOTTA: Yes.
14
15 VANCE P. VICENTE CERNUDA: Sagarese? Skyler Sagarese?
16
17 SKYLER ROSE SAGARESE: Yes. Yes. Skyler Sagarese. Yes.
18
19 VANCE P. VICENTE CERNUDA: And Vance Vicente, yes. So, the result
20 is we have motion number 8. We have 7 "yes," one 1 abstention. And
21 remember that we have 3 members, SSC members, who are absent. So,
22 that is the majority. *So, motion number 8 carries.*
23
24 Again, I'll read motion number 9 as it is stated on the screen,
25 and then we need to have somebody make the motion and then second
26 it. But I will read the motion first. *"The SSC finds that the*
27 *results presented in the SEDAR 84 U.S. Stoplight Parrotfish for*
28 *Saint Croix are not at present useful for providing management*
29 *advice and developing fishing levels recommendations for the*
30 *Council.* Anybody wants to approve that motion or present that
31 motion?
32
33 RICHARD APPELDOORN: Well, moved.
34
35 VANCE P. VICENTE CERNUDA: Hello? Okay. Thank you, Richard. So, the
36 motion has been moved by Richard Appeldoorn. Any second?
37
38 Elizabeth?
39
40 ELIZABETH KADISON: I second the motion.
41
42 VANCE P. VICENTE CERNUDA: Thank you, Elizabeth. So, we're ready
43 for the voting process. Let's begin.
44
45 TARSILA SEARA: Are we ready?
46
47 VANCE P. VICENTE CERNUDA: Hello. Yes. Can you hear me?
48

1 **TARSILA SEARA:** I can hear you now.
2
3 **VANCE P. VICENTE CERNUDA:** Okay.
4
5 **TARSILA SEARA:** Are we voting?
6
7 **VANCE P. VICENTE CERNUDA:** Yes. We're voting.
8
9 **TARSILA SEARA:** Okay. So, this is Tarsila. I vote yes.
10
11 **VANCE P. VICENTE CERNUDA:** Sorry about that. Hold on. Okay.
12
13 **ELIZABETH KADISON:** Elizabeth Kadison, yes.
14
15 **RICHARD APPELDOORN:** Richard Appeldoorn, yes.
16
17 **JORGE R. GARCÍA-SAIS:** ¿Me están pregando a mí? Hello, estas
18 entrecortado, soy yo. Estas entrecortado.
19
20 Reni García, Yes.
21
22 **VANCE P. VICENTE CERNUDA:** Walter Keithly.
23
24 **WALTER KEITHLY:** I will abstain, again.
25
26 **VANCE P. VICENTE CERNUDA:** Okay. J.J.
27
28 **JUAN J. CRUZ-MOTTA:** Yes.
29
30 **VANCE P. VICENTE CERNUDA:** Skyler Sagarese?
31
32 **SKYLER ROSE SAGARESE:** Skyler Sagarese, yes.
33
34 **VANCE P. VICENTE CERNUDA:** So, one abstention. Therefore, and 7
35 "yes." *So, motion number 9 carries.*
36
37 Skyler, can we see the recommendation, the new recommendations of
38 2022?
39
40 **SSC FINAL RECOMMENDATIONS FOR SEDAR 84 YELLOWTAIL SNAPPER PR**
41
42 **SKYLER ROSE SAGARESE:** Yes. Skyler Sagarese, I just want to mention
43 that I started drafting these before I captured the discussions
44 that we've had, but please add to it, edit it. I just tried to
45 kind of highlight some of the things that have been brought up.
46 Mr. Chair, do you want me to read them, or do you want to give
47 people some time to edit, add, remove? I can read them, and then
48 people can maybe think about--

1
2 **VANCE P. VICENTE CERNUDA:** No, it's okay. I can read them if you--
3
4 **SKYLER ROSE SAGARESE:** Okay. Perfect. Yes. Go ahead, Mr. Chair.
5
6 **VANCE P. VICENTE CERNUDA:** Okay. SSC recommendations for SEDAR 84
7 Yellowtail Snapper, Puerto Rico. The recommendations are, one,
8 continued evaluation of life history parameters for this stock.
9 Two, evaluate stock connectivity to determine whether local
10 recruitment contributes to the stock or if recruits are primarily
11 obtained from surrounding areas. Number three, consider simpler
12 assessment implementations such as an age-structure production
13 model. This could be beneficial in situations where the
14 representativeness of the TIP length composition is questionable,
15 which was noted for the yellowtail snapper in Puerto Rico. Number
16 four, increased data collection for recreational landing. Five,
17 investigate whether landings time series can be extended back in
18 time with either available data or local ecological knowledge. So,
19 I have read the recommendations. Any comments or suggestion? J.J.?
20
21 **JUAN J. CRUZ-MOTTA:** Yes. I would say that not only for this one,
22 for all the stocks or all the recommendations to include what Reni
23 suggested about initiating or increasing research into effort.
24 Thank you.
25
26 **VANCE P. VICENTE CERNUDA:** ¿Lo oíste bien? Yeah. We could not hear
27 you well, J.J.
28
29 **JUAN J. CRUZ-MOTTA:** Ah, because I wasn't unmuted. Sorry.
30
31 **VANCE P. VICENTE CERNUDA:** Okay. Say it slowly. Say it slowly so
32 that Liajay will be able to write it
33
34 **JUAN J. CRUZ-MOTTA:** Investigate fishing effort. That is it.
35
36 **LIAJAY RIVERA GARCÍA:** Thank you, J.J. We couldn't hear it.
37
38 **VANCE P. VICENTE CERNUDA:** Tarsila?
39
40 **TARSILA SEARA:** Yes. I was just going to suggest, either to include
41 in some of the recommendations or to make a recommendation to
42 increase or to-- I am try to think of the wording, but to have
43 more cooperative research efforts to collect some of the data that
44 we need. That will be some of the data that's already mentioned
45 here. So, I don't know if you want to just have a catch all sort
46 of increase cooperative research efforts to collect data mentioned
47 or data needs or something like that. Somebody help me, please.
48

1 **VANCE P. VICENTE CERNUDA:** Okay. See if you like it, "increased
2 cooperative research effort to collect data that has been mentioned
3 in the meeting." "Mentioned." Just leave it "mentioned."
4 Elizabeth?
5
6 **ELIZABETH KADISON:** I would say to continue fisheries independent
7 data collection and to increase or to, yeah, to increase fisheries-
8 independent data collected deeper, deeper than 30 meters.
9
10 **LIAJAY RIVERA GARCÍA:** Sorry, Elizabeth. Is this another
11 recommendation? Because I'm writing on the numbers-- on
12 recommendation number 7.
13
14 **ELIZABETH KADISON:** No. This is number 8. This is fisheries-
15 independent data.
16
17 **LIAJAY RIVERA GARCÍA:** And, again, for all the SSC members, this
18 document is available for you so you can enter it straight into
19 the document and write. But for now, I can provide the typing.
20 Increase?
21
22 **ELIZABETH KADISON:** Okay. So, yeah, fisheries-independent sampling
23 in deepwater, deeper than 30 meters.
24
25 **VANCE P. VICENTE CERNUDA:** Richard?
26
27 **RICHARD APPELDOORN:** Yeah. Maybe Tarsila could help on this. This
28 is a new one. Initiate a sustained data collection effort for local
29 knowledge to inform assessments.
30
31 **VANCE P. VICENTE CERNUDA:** Initiate a sustained data collection
32 effort. "Initiate" not "initiated." Okay. Can you repeat it,
33 Richard?
34
35 She's writing it down now. "Initiate a sustained"
36
37 **RICHARD APPELDOORN:** Initiate a sustained data collection program-
38
39 **VANCE P. VICENTE CERNUDA:** "Data collection program."
40
41 **RICHARD APPELDOORN:** --for local knowledge--
42
43 **VANCE P. VICENTE CERNUDA:** "For local knowledge."
44
45 **RICHARD APPELDOORN:** --to inform assessments.
46
47 **VANCE P. VICENTE CERNUDA:** Didn't hear you.
48

1 **RICHARD APPELDOORN:** Well, they did.
2
3 **VANCE P. VICENTE CERNUDA:** We can't--
4
5 **LIAJAY RIVERA GARCÍA:** Richard, we can't hear you.
6
7 **VANCE P. VICENTE CERNUDA:** We cannot hear you.
8
9 **RICHARD APPELDOORN:** You have the right writing. That's correct.
10 Take out the question mark. Put in a period. There you go.
11
12 Tarsila, would you like to make that better?
13
14 **TARSILA SEARA:** No, I think this looks good. I would just say local
15 ecological knowledge for consistency.
16
17 **VANCE P. VICENTE CERNUDA:** Local ecological knowledge. Ecological
18 knowledge. Tarsila?
19
20 **TARSILA SEARA:** Yes. one suggestion. I think just on number 9.
21 Yes, I think it's-- oh, actually, you know what? Never mind because
22 we're talking specifically about the assessment. So, I'm sorry.
23 I'll lower my hand.
24
25 **VANCE P. VICENTE CERNUDA:** Okay, Richard.
26
27 **RICHARD APPELDOORN:** So, I did not want to limit to the word
28 ecological because I think the same type of data collection program
29 could get information that might be pertinent to say effort
30 calculations, which is not exactly ecological. But I understand
31 that LEK is the standard acronym that's used, so I could go either
32 way.
33
34 **VANCE P. VICENTE CERNUDA:** We didn't hear you clearly, but you mean
35 to eliminate "ecological" and just leave it "for local knowledge
36 to inform assessment"?
37
38 **RICHARD APPELDOORN:** First of all, assessments, plural. And what I
39 was saying is that I'll go ahead and agree with Tarsila's inclusion
40 of "ecological" because that's kind of the way it's always stated,
41 but I think we're looking to collect more than just ecological
42 knowledge.
43
44 **VANCE P. VICENTE CERNUDA:** Okay. That's right. I think we can
45 eliminate ecological knowledge. I mean, "ecological." Just to keep
46 it local so that it is ample enough to collect other kind of
47 information or socioeconomic information.
48

1 Walter?
2
3 **WALTER KEITHLY:** Thank you, Mr. Chairman. I didn't want to get
4 involved in this, but I will. I would just recommend deleting "to
5 informed assessments." There's only a number of reasons to get
6 that e-- any type of knowledge. I don't know exactly what you meant
7 by "ecological knowledge" but goes beyond informing assessments.
8 And it may be just as important rather than to inform, to put in
9 the assessment, to verify or solidify the assessment after it's
10 done. Thank you.
11
12 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Walter. Tarsila?
13
14 **TARSILA SEARA:** Yes. Just to follow-up on Walter's comment because
15 this is the-- that's the reason why I raised my hand before and
16 gave up. So, I guess I have a question. Are we specifically talking
17 here, these recommendations are specific to the assessment, or are
18 these recommendations general research recommendations?
19
20 Because I stopped myself because I was going to say something
21 similar to what Walter said, but then I realized, I think we're
22 making recommendations to improve the assessment. And I just want
23 to make sure that that's correct.
24
25 **VANCE P. VICENTE CERNUDA:** Richard, can you answer that?
26
27 **RICHARD APPELDOORN:** Yeah, I put that in because I thought we had
28 to be specific to the assessments, but I would put this under every
29 list of data collections we need. To answer Walter's comment, the
30 things he talked about, to me, constitute informing assessments,
31 whether it's before or after the fact. And I'll accept "ecological"
32 if we're talking about human ecology.
33
34 So, I would put the assessments in there. I'm fine with it not
35 being in there because we just desperately need this kind of
36 information and there's-- we scream about it every year and there's
37 been no movement to try and get a sustained data collection effort
38 that can bring this kind of stuff into play.
39
40 **VANCE P. VICENTE CERNUDA:** Yeah, thank you Richard. We have now
41 Tarsila and then Walter.
42
43 **TARSILA SEARA:** Yes, thank you. I forgot to mention this to clarify
44 before. So, under local ecological knowledge, we're not just
45 talking about natural biological environmental data. Richard is
46 correct. The term encompasses the ecosystem, including humans and
47 human activities as an integral part of the ecosystem.
48

1 So, local ecological knowledge encompasses more than just
2 biological or environmental data, just to make that clear.

3
4 **VANCE P. VICENTE CERNUDA:** Yes. Thank you, Tarsila. I agree. Walter?

5
6 **WALTER KEITHLY:** I'll pass, Mr. Chairman. We've gone beyond the
7 time limit as it is. I'm happy with either way, any way you put
8 that number 9.

9
10 **VANCE P. VICENTE CERNUDA:** Okay. Thank you, Walter. Are there any
11 other research recommendations or any further comments? So,
12 Skyler, we go to your SSC recommendation for SEDAR 84 Yellowtail
13 Snapper Saint Thomas/Saint John. It's being displayed on the
14 screen.

15
16 You want me to read them? Or would you like to read them?

17
18 **SSC RECOMMENDATIONS FOR SEDAR 84 YELLOWTAIL SNAPPER STT/STJ**

19
20 **SKYLER ROSE SAGARESE:** Skyler Sagarese. go ahead, Mr. Chair. A lot
21 of it's similar from what we talked about, but there might be, I
22 think, one specific one about discarding that we didn't really
23 touch on. But we did specifically touch on for this, but please
24 read them.

25
26 **VANCE P. VICENTE CERNUDA:** Okay. Well, I'll read them quickly then.
27 Continuous evaluation of-- number one, continued evaluation of
28 life history parameters for this stock. Two, evaluate stock
29 connectivity to determine whether local recruitment contributes to
30 the stock or if records are primarily obtained from surrounding
31 areas. Three, increase data collection for recreational landings.
32 Four, investigate whether landings time series can be extended
33 back in with either available data or local ecological knowledge.
34 Five, increase data collection for determining discards for both
35 commercial and recreational fisheries, and consider alternative
36 approaches using local ecological knowledge as needed.

37
38 That sounds great.

39
40 **SSC RECOMMENDATIONS FOR SEDAR 84 STOPLIGHT PARROTFISH STX**

41
42 **VANCE P. VICENTE CERNUDA:** Yes, Skyler. This is, your
43 recommendations for the Saint Croix stoplight parrotfish.

44
45 One, "continued" debe de ser "continue," elimina la "d." Continue
46 evaluation of live history parameters for this stock. Increase
47 data collection for recreational landing. Investigate whether
48 landing time series can be extended back in time with either

1 available data or local ecological knowledge. Those are very
2 pertinent. ¿Qué más? Do you want to say any additions, Skyler?
3
4 **SKYLER ROSE SAGARESE:** There might have been-- maybe there's one
5 worth adding about-- I think Reni mentioned the utility of the
6 NCRMP survey for this species. I thought that was interesting to
7 hear. I wonder if, like, reevaluate the utility of the NCRMP and
8 DCRMP surveys. If that was just specific for this stock, that might
9 be a good one to include. The NCRMP, sorry, and DCRMP. The deep
10 CRMP and DCRMP.
11
12 But, please, someone else more familiar with the ins and outs of
13 those data streams, please rework.
14
15 **VANCE P. VICENTE CERNUDA:** Yes, Elizabeth.
16
17 **ELIZABETH KADISON:** Yes, Skyler. DCRMP has never been used on Saint
18 Croix because it's a survey method that's used in water from 30
19 meters to 60 meters, and there's just not a lot of shelf on the
20 Saint Croix platform that is that depth range. Most of it is less
21 than 30 meters and then it drops off to 2,000 meters. So, DCRMP
22 has never been considered a viable fisheries-independent survey
23 method for Saint Croix the way it has been for Saint Thomas where
24 we tried it for 3 years and it was really, I believe, successful.
25
26 So, I think DCRMP is something that could be used in Saint
27 Thomas/Saint John, and Puerto Rico, but it's not really used on
28 Saint Croix for stoplight parrotfish.
29
30 **VANCE P. VICENTE CERNUDA:** Okay. Thank you. Yes, Skyler.
31
32 **ELIZABETH KADISON:** So, you could take DCRMP out of that and just
33 use NCRMP.
34
35 **VANCE P. VICENTE CERNUDA:** Reni?
36
37 **JORGE R. GARCÍA-SAIS:** Yes. No. I wanted to say that there is quite
38 a bit of area in the 30 to 50 meters at Lang Bank, Saint Croix.
39 We've done we've done baseline surveys there, and there's quite a
40 quite a bit of data associated with that. There are several benthic
41 habitats that are within that 30-to-50-meter range and even deeper
42 because there's a coral reef there that goes down to more than 60
43 meters.
44
45 So, at least for the part of, or the section of Lang Bank, the
46 easternmost coast of Saint Croix, there is quite a bit of sea floor
47 in the 30-to-50-meter.
48

1 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Reni. We have Richard?
2
3 **JORGE R. GARCÍA-SAIS:** But at least our surveys are indicative
4 that there is quite a bit of benthic habitat within that depth
5 range.
6
7 **VANCE P. VICENTE CERNUDA:** Thank you. Richard?
8
9 **RICHARD APPELDOORN:** Yeah. Two things. What was mentioned was in
10 fact the TCRMP. So, that should be put back into that statement
11 four, or recommendation four, NCRMP and TCRMP.
12
13 And I would like to see, both, for this and for the previous set-
14 - not "D0," "T" as in Thomas.
15
16 **ELIZABETH KADISON:** Territorial.
17
18 **RICHARD APPELDOORN:** Yes.
19
20 I'd like the statements on local ecological knowledge copied into
21 this one and the previous one. And the previous one.
22
23 Nope, going too far. No, no, no, no. That is not what I'm saying.
24 Now, back one page. Right there. Put in statement 9 from the one
25 above; the that you just copied. The lower one, copy it there.
26 Thank you.
27
28 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Richard. We have
29 Tarsila.
30
31 **TARSILA SEARA:** Yes. I just wanted to suggest that we copy and
32 paste the statement about cooperative research into these
33 recommendations as well.
34
35 **VANCE P. VICENTE CERNUDA:** Walter?
36
37 **WALTER KEITHLY:** Thanks, Mr. Kevin. Look. I'm sorry, everybody, but
38 I have to leave. I just got a call, said my tax returns are ready,
39 and I'm headed out to town tomorrow for weeks. So, I need to go
40 pick them up. I just want to let everybody know. Thanks for the
41 meeting. Bye-bye.
42
43 **VANCE P. VICENTE CERNUDA:** Okay. Bye. Richard?
44
45 **RICHARD APPELDOORN:** Unless anybody else has comments, I'd like to
46 move that the slate of recommendations that we have be approved by
47 the SSC.
48

1 **VANCE P. VICENTE CERNUDA:** Okay. Okay. Let us write it down. Hold
2 on. If you can repeat it, that's good.
3
4 **RICHARD APPELDOORN:** So, this would, I guess, go on top of that
5 list. The SSC recommends the following-- I don't what you would
6 call them-- the following improvements the initiated. Someone can
7 help with the wording on that.
8
9 **GRACIELA GARCÍA-MOLINER:** But is it all of the recommendations that
10 we just worked on or--
11
12 **RICHARD APPELDOORN:** Yes.
13
14 **GRACIELA GARCÍA-MOLINER:** Okay.
15
16 **RICHARD APPELDOORN:** One vote takes care of everything.
17
18 **GRACIELA GARCÍA-MOLINER:** Right. Thanks.
19
20 **RICHARD APPELDOORN:** So, *the SSC makes the following*
21 *recommendations related to SEDAR 91 and 84.*
22
23 So, the SSC makes the following recommendations. That will work.
24
25 **VANCE P. VICENTE CERNUDA:** Okay. We need somebody to second motion
26 number 10, which reads, "The SSC makes the following
27 recommendations related to SEDAR 91 and SEDAR 84." Richard?
28
29 **RICHARD APPELDOORN:** Yeah. I want to add something. The SSC endorses
30 the recommendations made-- no, this would be in the very beginning.
31 The SSC-- no, after "SSC." yes, good. --Endorses the
32 recommendations made by the data and review committee panels. Is
33 that correct?
34
35 And make the additional-- and also makes the following
36 recommendations. Just delete, don't keep writing the same thing
37 twice. Oh, is it the data panel or the data committee, review
38 committee, review panel? Which is the right word there?
39
40 **VANCE P. VICENTE CERNUDA:** I think it was the review panel.
41
42 **RICHARD APPELDOORN:** Okay.
43
44 **VANCE P. VICENTE CERNUDA:** No problem. Reni García?
45
46 **JORGE R. GARCÍA-SAIS:** Second the motion.
47
48 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Reni. So, I guess that

1 we had enough discussions, so we'll go through the voting process.
2
3 **ELIZABETH KADISON:** Elizabeth Kadison, yes.
4
5 **RICHARD APPELDOORN:** Rich Appeldoorn, yes.
6
7 **TARSILA SEARA:** Tarsila, yes.
8
9 **JORGE R. GARCÍA-SAIS:** Reni García, yes.
10
11 **JUAN J. CRUZ-MOTTA:** J.J. Cruz, yes.
12
13 **SKYLER ROSE SAGARESE:** Skyler Sagarese, yes.
14
15 **VANCE P. VICENTE CERNUDA:** And Vance Vicente, yes. Thank you all.
16 Okay. So, for this motion there were 7 "yes," 4 absent. *The motion*
17 *carries on.*
18
19 Okay. Thanks for the efforts and discussions on SEDAR 91 and SEDAR
20 84. Now, we are moving to SEDAR 103. As I previously mentioned,
21 SEDAR 103 is headed towards providing development and application
22 of alternate stock assessment methods for the Caribbean Island-
23 Based FMP species. So, we have Liajay giving us a brief update on
24 what has happened in the last months regarding SEDAR 103. So, I
25 leave the floor to Liajay Rivera. Thank you.
26
27 **SEDAR 103 UPDATE-LIAJAY RIVERA GARCÍA, CFMC**
28
29 **LIAJAY RIVERA GARCÍA:** Thank you, Mr. Chair, and thank you
30 everybody. Can people hear me clearly in Zoom? Okay. Kevin, can
31 you hear me well? Okay. Good.
32
33 So, again, thank you, Mr. Chair, and thank you to all the people
34 that have stayed and endured the meeting. So, today I'm going to
35 do a small recap of what was presented at the last SSC meeting
36 provided by Kevin, which were first of the presented terms of
37 reference for method development and the method applications. You
38 can find them on the SEDAR webpage.
39
40 He also presented what was previewed by SEDAR 103 participants and
41 provided a tentative schedule that was expected to start in fall
42 of 2025. So, I'm going to be providing status updates of what has
43 happened so far. So, allow me a second so I can present the next
44 presentation. Okay.
45
46 All right. So, now a brief summary what was new about SEDAR. It
47 is about reviewing and recommend options for alternative
48 assessment approaches to better inform management of U.S.

1 Caribbean federally managed species. It's important for the
2 approaches likely to differ among species and species groups. The
3 goal of is to have analytical approaches recommended for most
4 federally managed species in The U.S. Caribbean.

5
6 Now, as I said, it was expected to start in late 2025, but due to
7 the government shutdown, we delayed it and started with the scoping
8 webinars in January 2026. Another main highlight that I wanted to
9 point out today is that the in-person workshop will be happening
10 on August 17th through the 21st in Miami, Florida. The details are
11 to be provided later.

12
13 So, here is the SEDAR 103 schedule for the data webinars only.
14 These are the five webinars that we have. We are done with the
15 first three, I would say. The data scoping webinar, the first data
16 webinar and the second. The next one, which will be on April 29th,
17 will be next, followed by the rest.

18
19 We wanted to highlight that these webinars have already discussed
20 the scope of work, the reference documents. The data webinars have
21 been very, very well attended. I would say, yes. And so, we are
22 anticipating, as Kevin said, the continuation of the fishery-
23 independent data sources, ecosystem, related life history data
24 review, morphometrics database. That will be the next webinar.

25
26 So, said that, once the data webinars are done-- I'm sorry, before
27 that, these are the SEDAR 103 datasets presented today. This refers
28 to data webinar one and data webinar two. The data webinar one
29 included managed history, data triage, MRIP, Puerto Rico DRNA
30 recreational port sampling, reporting history. I could go down the
31 list, but this is already available in the folder. You can read it
32 there and I'll make it available online, so I don't have to keep
33 on reading.

34
35 Now, once all the data webinars are done, we're going to proceed
36 with the methods. Here we have the In-Person Methods Development
37 Workshop within the schedule highlighted in yellow. It will be
38 starting in July and running until November. The dates are yet to
39 be determined. We need to send polls, and we are not there yet for
40 these ones. We are very far from this ahead.

41
42 For the next year, we will proceed with the assessment application
43 webinars. Also to be determined. We will also have an in-person
44 review expected for spring 2027. And that, of course, is subject
45 to changes. So, keep an eye on that.

46
47 What else? Here we have the SEDAR web page, if you would like to
48 access the reference documents presented, the working papers, the

1 terms of reference, and the project schedule.
2
3 So, this is a very brief summary. But again, if you have more
4 questions about it, let me know. Thank you. And Kevin, you can
5 also chime in if you think I missed something.
6
7 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Liajay. Any questions
8 for Liajay regarding the SEDAR 103 page scheduling?
9
10 **LIAJAY RIVERA GARCÍA:** So, one last thing. We'll be contacting the
11 members for the following in-person workshop in Miami. So, just be
12 aware.
13
14 **NEXT MEETING**
15
16 **VANCE P. VICENTE CERNUDA:** So, regarding the next SSC meetings,
17 [inaudible] you can think about it in the meantime, and then we
18 can communicate by email if you want any further ideas. But for
19 the next Council meeting, I will be giving a summary of these last
20 3 days' meeting, which, thanks to all of you, have been very
21 productive. I thank all of you for your effort and time. So, I
22 think this is it. I think we are ready to adjourn.
23
24 And, again, thank you very much. Are there any comments before I
25 close down?
26
27 Kevin?
28
29 **KEVIN MCCARTHY:** Yeah. Thanks, Vance. Kevin McCarthy. I just want
30 to thank the committee, and thanks for all your hard work and
31 attention and your great input with suggestions and
32 recommendations. I really appreciate you getting through four
33 stock assessments in the course of three afternoons; it's a lot of
34 work and I really appreciate your efforts. Thanks very much. And
35 thanks all to everybody else who joined and had comments and input
36 as well. Have a great weekend, everybody.
37
38 **VANCE P. VICENTE CERNUDA:** Thank you. You're very much welcome.
39 Richard?
40
41 **RICHARD APPELDOORN:** Yeah, I wanted to thank, in particular, Adyan
42 for all those presentations. I thought, in particular, the first
43 one, Puerto Rico's spiny lobster, I think was the best presentation
44 she's ever given. I really appreciated it. The others might have
45 been just as well, but then I started having my brain too full of
46 stuff. So, it suffered a little on my part.
47
48 But I really want to appreciate Adyan's efforts in presenting all
49 this stuff and, of course, all the work that's gone into it.

1
2 **VANCE P. VICENTE CERNUDA:** Yeah. Thank you, Richard. And I also
3 want to-- this meeting could have not taken place without the help
4 of Liajay Rivera, Kiara, and, like always, Graciela Garcia-
5 Moliner, and the Council in general. So, I really want to
6 specifically thank you and Alberto for taping all the information
7 and keeping all the telecommunications going on despite the hacking
8 event. So, thank you all, and have a good weekend.
9
10 (Whereupon, the meeting adjourned on April 10th, 2026.)