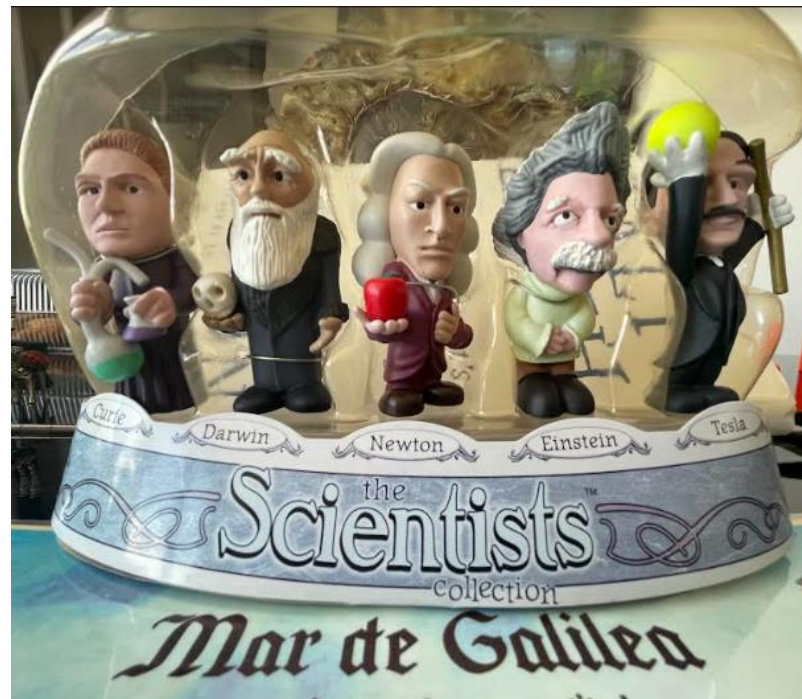


SCIENTIFIC AND STATISTICAL COMMITTEE
PRESENTATION OF MAY 1-5, 2023
182nd CFMC PUBLIC HYBRID MEETING
AUGUST 15-16, 2023

WHO ARE WE?



Members of the
Ecosystem-Based Fishery Management Technical Advisory Panel (EBFM TAP)

THE EBFM-TAP MEMBERS: MAY 2023
1. ALIDA ORTIZ
2. JUAN J. CRUZ MOTA
3. KEVIN McCARTHY
4. ORIAN TZADIK
5. SENNAI HABTES
6. STACY WILLIAMS
7. TARSILA SEARA
8. DR. EDWIN CRUZ-RIVERA

Members of the Scientific and Statistical Committee (SSC)

THE SSC MEMBERS: MAY 2023

1. JORGE R. GARCIA-SAIS
2. RICHARD APPELDOORN
3. JUAN J. CRUZ MOTTA
4. TODD GEDAMKE
5. ERIK H. WILLIAMS
6. MICHELLE SCHARER
7. VANCE VICENTE
8. WALTER KEITHLY
9. TARSILA SEARA
10. JASON COPE

WHERE ARE WE GOING?



Moving on: COMPLEX, but getting there

See! WE can get things done overcoming complexities!!

FOR EXAMPLE IBFMPs

“We have a Fishery Management Plan for Federal Waters of Puerto Rico, one for Saint Croix, and one for Saint Thomas and Saint John. And we are very excited that we have these plans in place. As you all know, these plans replace the spiny lobster FMP, the reef fish FMP, the Corals FMP, and the queen conch FMP. That final rule was effective on October 13th, 2022”.

NOW GETTING READY FOR AN EBFMP

SSC↔EBFMP TAP Joint Meeting: MAY 1, 2023

1. Sennai Habtes: New Fishery Ecosystem Plan (FEP) Draft Outline
2. Orian Tzadik: Technical Writing Consultants for FEP Development Outline

MISSION: “Promote ecosystem based approaches to ensure a healthy resilient and productive marine ecosystem and the fisheries resources dependent on such ecosystems within the context of the particularities of the fisheries resources”.

DEFINITION: NOC: Ecosystem-Based Management (EBM) is an integrated approach to resource management that considers the entire ecosystem, including humans, and the elements that are integral to ecosystem functions. EBM is informed by science to conserve and protect our cultural and natural heritage by sustaining diverse, productive, resilient ecosystems and the services they provide, thereby promoting the long-term health, security, and well-being of our Nation.

TOPICS : Lenfest Loop... framework request (SSC) ...Ecosystem Optimum Yield...Optimum Social Goal...New memberships...status of conceptual model... finalize approve outline... Strategic and Operational Objectives + many others topics discussed.

SSC←→EBFMP TAP Joint Meeting: MAY 2, 2023

1. Sarah Gaichas: Using Ecosystem Information in the Stock Assessment and Advice Process -Mid Atlantic FMC Partners
2. Juan J. Cruz-Motta: Progress Towards Informing an Ecosystem-Based Approach for Fisheries Management in the Caribbean
3. Adyan Ríos: Ecosystem Status Report: Ecosystem Indicators – Southeast Fishery Science Center (SEFSC)
4. Tauna Rankin: Risk Assessment Update – NOAA Fisheries Office of Habitat Conservation
5. María López-Mercer, Sarah Stephenson: Island-Based Fishery Management Plans Update – María López-Mercer, Sarah Stephenson, Southeast Regional Office (SERO)
6. Juan J. Cruz-Motta: SEAMAP Caribbean Gold Copy Update
7. Martha Prada/Juan J. Cruz-Motta: General Public Use and Accessibility of SEAMAP Caribbean Gold Copy
8. Martha Prada: CFMC Geographic Information System (GIS) Platform Update
9. Tarsila Seara: Community Social Vulnerability Indicators Efforts in the Caribbean
10. Kevin McCarthy: SEFSC Data Triage Work
11. Rachel Eckley: Developing a Strategic Plan for Fisheries Stock Assessment in the US Caribbean Region — Caribbean Fisheries Branch of the SEFSC

TOPICS: Inform/define Uncertainty... Species and Sector level risk elements... Ecosystem Overfishing Indicators... No reliable abundance indices... Natural mortality rate is not known... **ECOLOGICAL RISK ASSESSMENT...** Performance Metrics & Reference Points... Adaptive Management Approach... ecosystem Indicators... Reliable Abundance Indices... Natural mortality rate? + many other topic discussed (e.g. pelagic/reefoid fish definitions (e.g. Rainbow Runner).

SSC: MAY 3-5, 2023

1. Overview of SSC's Research Priorities Work to date, Continuation of Research Priorities.

SEDAR 80 USVI Queen Triggerfish – Adyan Rios, SEFSC Caribbean Fisheries Branch

2. Continuation on SEDAR 80 USVI Queen Triggerfish – Adyan Rios, SEFSC Caribbean Fisheries Branch.

3. Spiny Lobster Terms of Reference – Kevin McCarthy, SEFSC Caribbean Fisheries Branch, SEDAR 84 volunteers, SEDAR Research priorities.

4. MAY 3-5, 2023: EBFM TAP Meeting (EBFM TAP ↔ SSC)

5. MAY 5, 2023: SSC: -Finalize Scientific and Statistical Committee Research Priorities with RANKING: 1=lower priority, 2 = middle priority, 3=higher priority

IMPROVE LANDING DATA

Ranking: 1 (lower) 2 (medium) 3 (high)

- Based on PR Port Landings Study, for PR develop statistics-based methods to
 - improve port sampling
 - improve expansion factor estimation and application
 - improve collection of length composition data
- Do the above for USVI upon completion of the USVI Port Sampling Study
- Improve landings data collection via digital tools
- Evaluate digital formats for reporting and validate vs paper reporting

COLLECTION OF BIOLOGICAL DATA FOR LIFE HISTORY /POPULATION PARAMETERS

Ranking: 1 (lower) 2 (medium) **3 (high)**

- Improve biological data collection via digital tools
- Timely prioritization of collection by species (using e.g., IBFMPs, SEDAR)
 - Review and formalize stock prioritization process

EFFORT ESTIMATION

Ranking: 1 (lower) 2 (medium) 3 (high)

- Develop alternate methods for estimating efforts

PREPARE FOR (h)(2) FLEXIBILITIES

Ranking: 1 (lower) 2 (medium) 3 (high)

- Simulations to test alternate ACLs for (h) (2) flexibility
- How to incorporate uncertainty into defining ABCs from OFLs
- Collect life history information

MONITORING AND SURVEYS

Ranking: 1 (lower) 2 (medium) 3 (high)

- Monitoring program of the fish populations in closed fishing areas
- Cooperative fisheries-based surveys
- Train and delegate to fishers' fisheries monitoring activities

SOCIO-ECONOMIC DATA FOR MANAGEMENT

Ranking: 1 (lower) 2 (medium) 3 + (high)

- Periodic systematic collection of data to provide a baseline and comparative basis for social impact assessments
- Research to assess and integrate Local Ecological Knowledge into decision-making.
- Determine the economic values of fisheries that can be used in assessing benefits and costs of alternative management measures

EBFM (MAPPING)

Ranking: 1 (lower) 2 (medium) 3 (high) ???

- Develop habitat maps from existing NOS multibeam/lidar data

EBFM (ASSESSING REGULATORY IMPACTS)

Ranking: 1 (lower) 2 (medium) 3 (high)

- Evaluate effectiveness and impacts of closed areas
- To evaluate the closed season relative to the spawning seasons
- Review of status of spawning aggregations within those closed fishing areas

STATUS OF SPECIES

- Status of the species subject to **seasonally closed areas** to protect spawning aggregations **3**
- Status of species subject to **seasonal closures** in the EEZ only and in the EEZ and territorial waters (queen conch, deepwater snapper, mutton snapper and lane snapper, grouper unit 4 – yellowfin grouper, tiger grouper etc.). **3**

SSC PROPOSED RESEARCH TOPICS:
UNDERSTANDING/IMPLEMENTING US CARIBBEAN FISHERIES REGULATIONS
PLATE 9

STATUS OF SPECIES

- Status of species within the **no take areas** such as the Hind Bank MCD – no take area in the EEZ, and within the state waters such as the monuments in the **USVI**: St. Thomas and St. Croix, EEMP in St. Croix, **PUERTO RICO**: the NE Corridor, Tres Palmas, Luis Peña Marine Reserve, Condado Lagoon Reserve, Isla Verde Marine Reserve, and others. **3**
- Status of the fish populations subject to year-round harvest prohibitions (i.e., Nassau grouper) in the US Caribbean. **1**
- Status of the parrotfish species for which harvest is prohibited in the EEZ only (midnight parrotfish, blue parrotfish, rainbow parrotfish). **1**
- Status of the Queen Conch (*Lobatus gigas*) population, a prohibited species in the EEZ of the subzones of St. Thomas/St. John and Puerto Rico. **3**

SHIFTS IN FISHING PRACTICES

- Shifts in fishing practices owing to implementation of regulations, e.g. gear changes from nets and traps to divers, change in fishing effort, escape vents.
- Gear changes result in changes to the species caught, the relative numbers of these species, size selectivity of the species being targeted and our ability to manage. Also, shifts in fishing grounds.... **1**

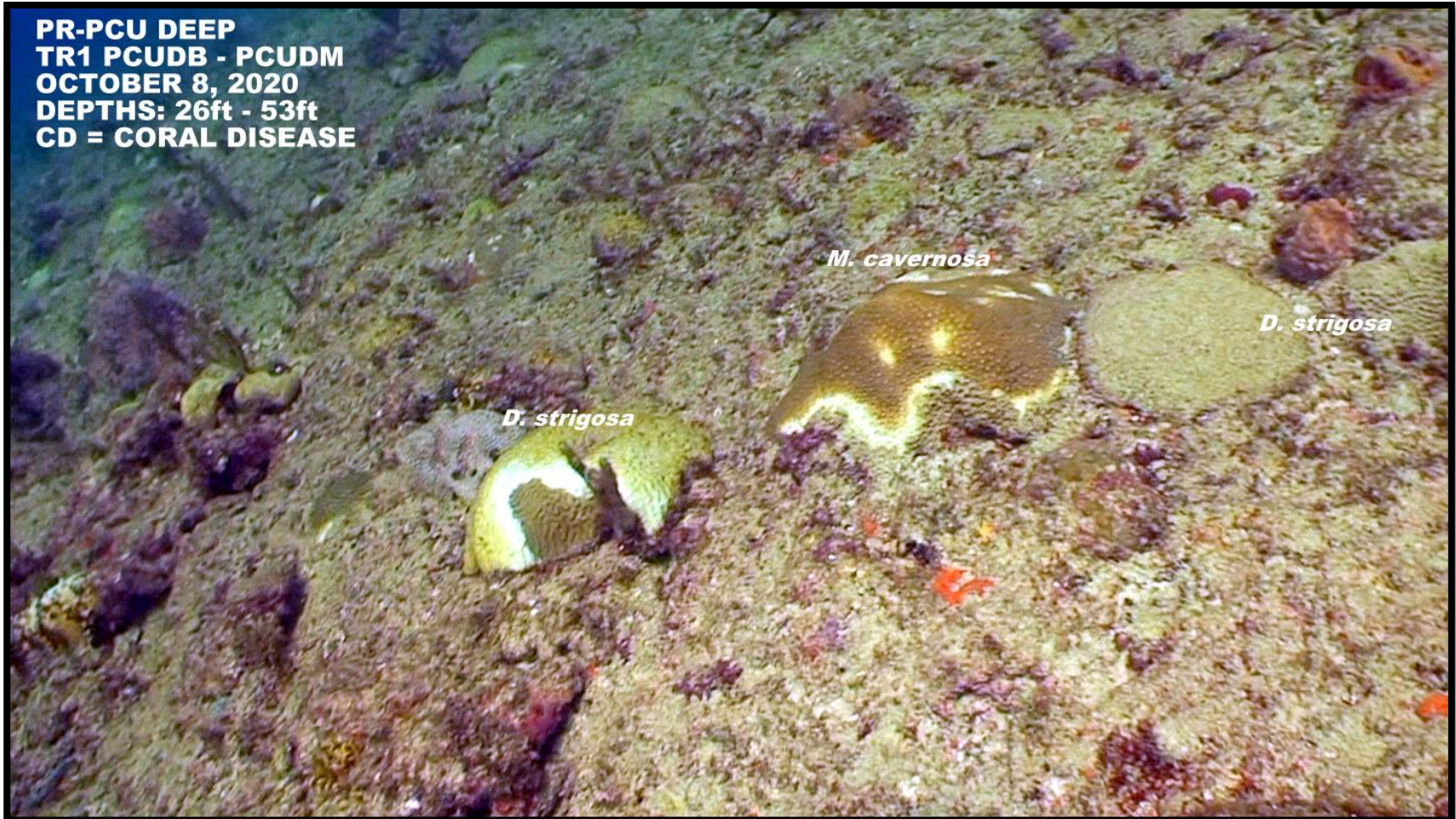
SSC PROPOSED RESEARCH TOPICS:
UNDERSTANDING/IMPLEMENTING US CARIBBEAN FISHERIES REGULATIONS
PLATE 11

STATUS OF SPECIES

- Status of the yellowtail snapper (*Ocyurus chrysurus*) populations – EEZ size limit is 12"TL; Puerto Rico has a size limit of 10.5"FL; there is no size limit in the USVI. **1**
- Status of queen conch population in St. Croix given the current management regime, which allows harvest of queen conch in the St. Croix EEZ (Lang Bank). **2**
- Status of the spiny lobster and queen conch populations, both have catch restrictions, but there is no information on the compliance of the recreational sector. **2**

NOTE: Recreational bag limits for all fish were imposed for federal waters in 2011. **3**

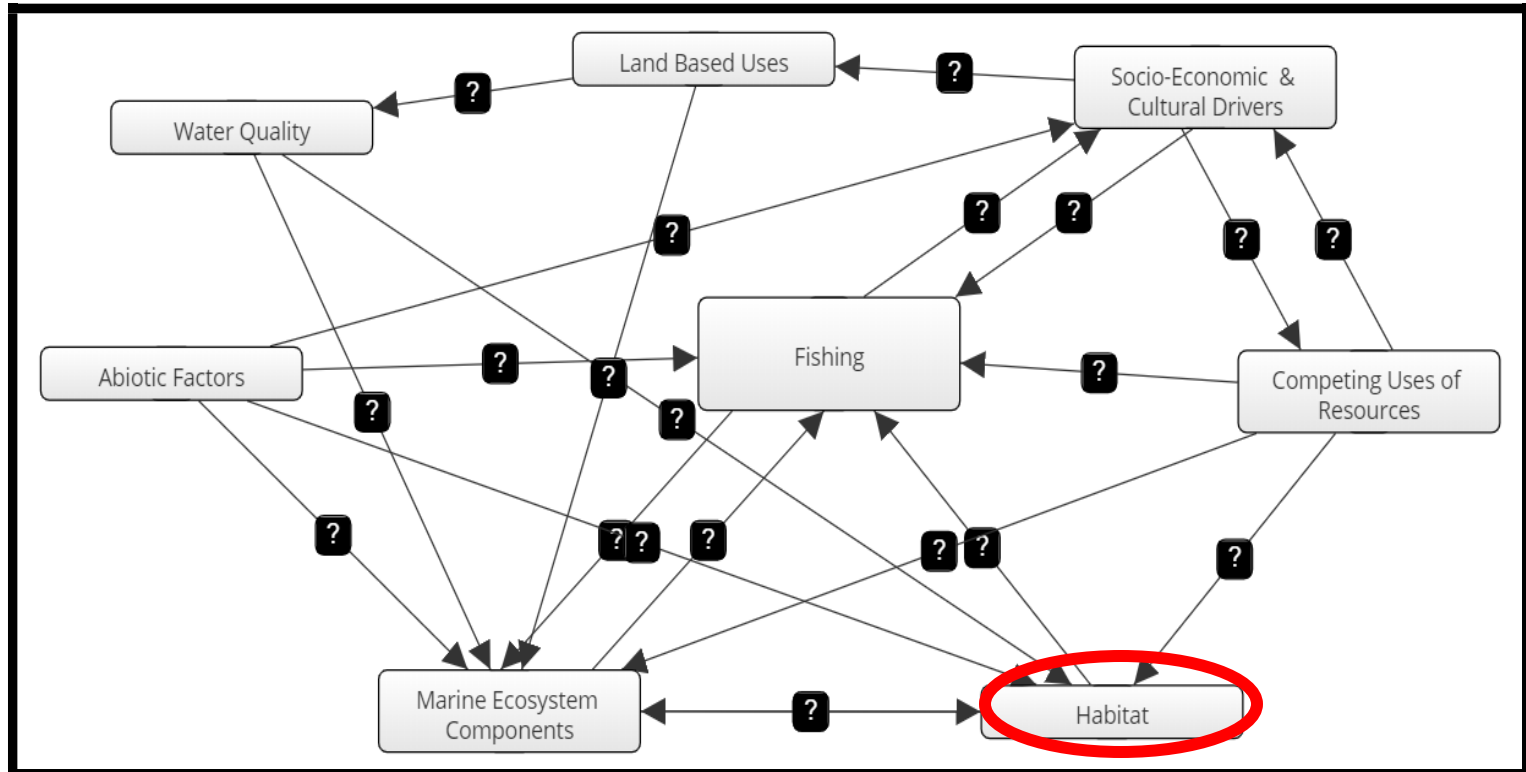
END OF PRESENTATION



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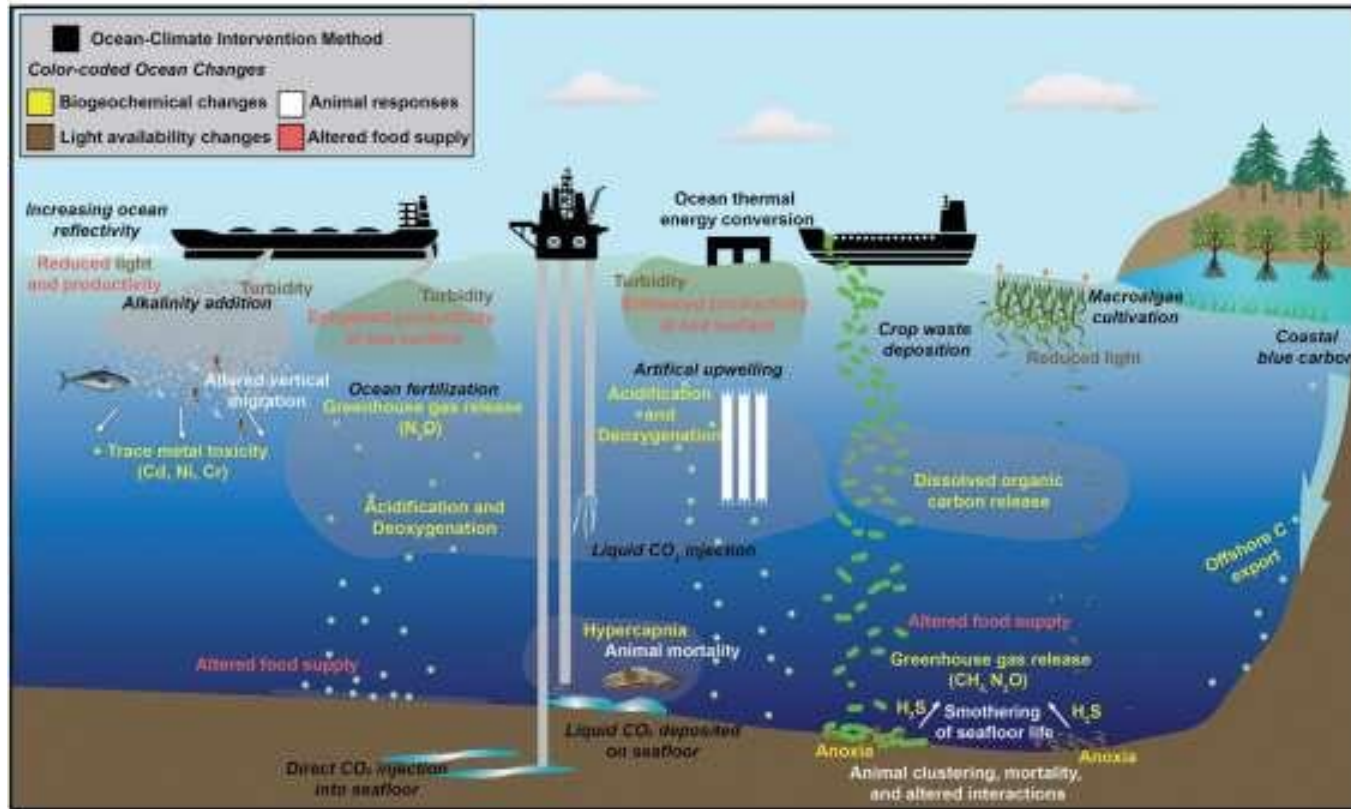
ECOSYSTEM COMPONENTS



SSC PROPOSED RESEARCH TOPICS: UNDERSTANDING/IMPLEMENTING US CARIBBEAN FISHERIES REGULATIONS

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Ocean-based climate interventions (OBCIs)



- TO: Miguel Rolón, Executive Director, CFMC FROM: Julie A. Neer, SEDAR Coordinator DATE: 20 April 2023 RE: Approval request for SEDAR 91, U.S. Caribbean Spiny Lobster Terms of Reference Enclosed are draft Terms of Reference for the SEDAR 91 Caribbean Spiny Lobster benchmark assessment. These Terms of Reference have been produced in consultation with the SEFSC. Please review this information, modify if necessary, and approve according to CFMC SEDAR procedures. I would appreciate it if these Terms of Reference could be included for discussion at your earliest convenience. Please inform me of the results of your consideration by August 2023.

Ocean Floor Biological Diversity

More than 235,000 animal species, many not obvious, are known to live in the ocean of which 98% , live on the ocean floor: the benthos (over which we FISH, surf, swim, snorkel, dive, or navigate).

Thurman H.V. and E.A. Burton. 2001. Introductory Oceanography. Upper Saddle River, N.J. : Prentice Hall. 554pp.

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from the population (while ignoring ageing error). A rule of thumb used in the past to estimate M was $M = 3/t_{max}$ (Eqn T1.2.1a; e.g., [Rugolo et al., 1998](#)) that derives from the formula $M = -\ln(p)/t_{max}$ (Eqn T1.2.1), where $p = 0.05$ is the proportion of fish that survive to age of t_{max} or older assuming constant M with age. Intuitively, t_{max} (and p) should represent an age at which senescence leads to high M and therefore relatively few older individuals. However, $p = 0.05$ is an arbitrary value. The appropriate value for p will depend on several factors including the sampling design, sample size, and the relative timing of the onset of senescence.

[Hoenig \(1983\)](#) developed a non-linear empirical t_{max} -based estimator using a log-space regression of M on maximum age for 84 unexploited or lightly exploited stocks (Eqn T2.2.2a). [Then et al. \(2015\)](#) revisited this non-linear approach (Eqn T2.2.2.b) and another using non-linear least squares (Eqn T2.2.2.c) with an updated and [Page 3 of 19](#) set. [Hewitt and Hoenig \(2005\)](#) found an inverse relationship for M that

- The role of the Chair is to direct discussion of the Committee, ensuring that the objectives of the meeting can be met, and that the Committee effectively fulfills its responsibility in consideration of the items on the agenda. This involves ensuring that you are well briefed about each agenda item and that:
 - decisions are taken, recorded, and carried out
 - the organization's policies are applied
 - there is full participation
 - the agenda is followed
 - there are time limits for the meeting as a whole and for agenda items
- Productive meetings require the contribution of all members of the Management Committee, working as a team and taking joint responsibility for ensuring that issues are given due consideration and decisions taken.

National Ocean Council/THE WHITE HOUSE: Ecosystem-Based Management

- **Definition NOC: Ecosystem-Based Management (EBM)** is an integrated approach to resource management that considers the entire ecosystem, including humans, and the elements that are integral to ecosystem functions. EBM is informed by science to conserve and protect our cultural and natural heritage by sustaining diverse, productive, resilient ecosystems and the services they provide, thereby promoting the long-term health, security, and well-being of our Nation.
- **Example: The National Estuary Program (NEP).** This is a place based partnership effort that uses a voluntary, collaborative approach to address protection and restoration priorities in 28 diverse estuarine watersheds. NEPs identify local estuarine watershed priorities, develop long-term management plans, and implement short-term actions to improve water quality and living resources in their watersheds.