



**NOAA
FISHERIES**

Caribbean Data Review for Stock Assessment

**Southeast Fisheries Science Center,
Sustainable Fisheries Division and
Fisheries Statistics Division**

Stephanie Martinez Rivera

Kim Johnson

Refik Orhun

Adyan Rios

Data requirements for stock assessment

Abundance

- FI surveys (Reef Visual Census)
- Catch rate from fishers (com logbook CPUE)

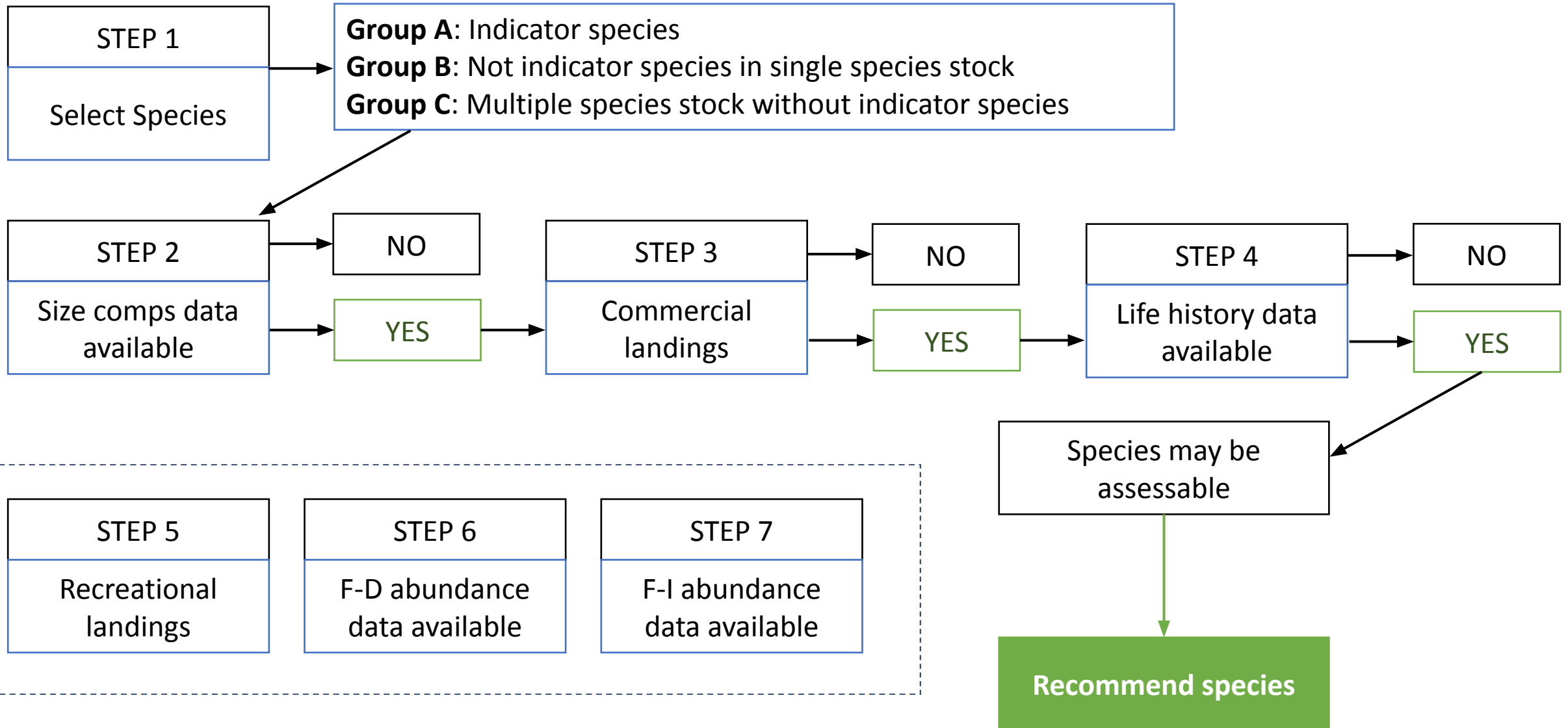
Biological

- Size composition (Trip Interview Program)
- Life history (maturity, age, and growth)

Catch

- Commercial landings (logbook)
- Recreational landings

Strategy



Strategy

Group A: Indicator species

Group B: Not indicator species in single species stock

Group C: Multiple species stock without indicator species

Group A

St. Croix Grouper Unit 3

Coney and Graysby Groupers

Coney is the indicator

Group A

St. Croix Snapper Unit 1

Black, Blackfin, Silk, Vermilion Snappers

Blackfin and Silk are indicators

Group B

St. Thomas and St. John Snapper Unit 2

Queen Snapper

Single species unit

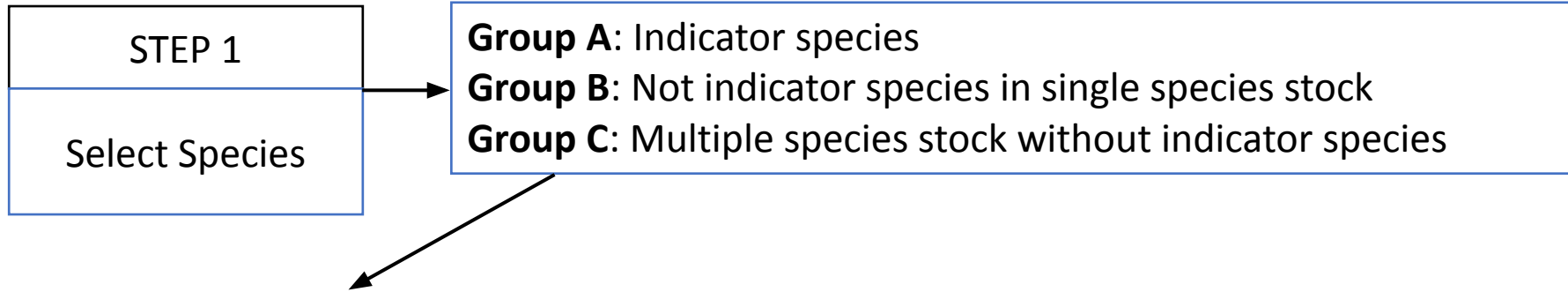
Group C

Puerto Rico Grouper Unit 4

Black, Red, Tiger, Yellowfin, Yellowmouth Grouper

No indicator

Strategy



Step 1: Puerto Rico

53 out of 65*

GROUP A	GROUP B	GROUP C	
INDICATOR SPECIES	SINGLE SPECIES STOCK	MULTIPLE SPECIES STOCK WITHOUT INDICATOR SPECIES	
DOLPHINFISH GROUPE, CONEY GROUPE, RED HIND SNAPPER, MUTTON SNAPPER, QUEEN SNAPPER, SILK TRIGGERFISH, QUEEN	NASSAU GROUPE GROUPE, GOLIATH JACK, CREVALLE POMPAÑO, AFRICAN RAINBOW RUNNER CONCH, QUEEN SNAPPER, LANE SNAPPER, YELLOWTAIL SNAPPER, CUBERA LOBSTERS, SPINY TRIPLETAIL WAHOO HOGFISH GRUNT, WHITE BARRACUDA, GREAT RAYS, MANTA STINGRAY, SOUTHERN RAY, SPOTTED EAGLE	ANGELFISH, QUEEN ANGELFISH, GRAY ANGELFISH, FRENCH GROUPE, RED GROUPE, BLACK GROUPE, YELLOWMOUTH GROUPE, YELLOWFIN GROUPE, TIGER GROUPE, YELLOWEDGE GROUPE, MISTY MACKEREL, KING MACKEREL, CERO PARROTFISH, BLUE PARROTFISH, MIDNIGHT PARROTFISH, RAINBOW	PARROTFISH, STRIPED PARROTFISH, PRINCESS PARROTFISH, QUEEN PARROTFISH, REDBAND PARROTFISH, REDTAIL PARROTFISH, STOPLIGHT SURGEONFISH, OCEAN SURGEONFISH, DOCTORFISH SURGEONFISH, BLUE TANG TUNNY, LITTLE TUNA, BLACKFIN WRASSE, SPANISH HOGFISH WRASSE, PUDDINGWIFE *Sea Cucumbers, Sea Urchins, Corals not included



Step 1: St. Thomas and St. John

29 out of 49

GROUP A	GROUP B	GROUP C
INDICATOR SPECIES	SINGLE SPECIES STOCK	MULTIPLE SPECIES STOCK WITHOUT INDICATOR SPECIES
ANGELFISH,GRAY GROUPE,RED HIND GRUNT,WHITE PARROTFISH,REDTAIL PARROTFISH,STOPLIGHT PORGY,SAUCEREYE SNAPPER,BLACKFIN SNAPPER,MUTTON SURGEONFISH,DOCTORFISH	DOLPHINFISH NASSAU GROUPE GROUPE,GOLIATH GRUNT,MARGATE BLUE RUNNER CONCH,QUEEN SNAPPER,QUEEN SNAPPER,YELLOWTAIL LOBSTERS,SPINY TRIGGERFISH,QUEEN WAHOO HOGFISH	GROUPE,RED GROUPE, BLACK GROUPE,YELLOWFIN GROUPE,TIGER GROUPE,YELLOWEDGE GROUPE,MISTY GROUPE,YELLOWMOUTH PARROTFISH, BLUE PARROTFISH,MIDNIGHT PARROTFISH,RAINBOW



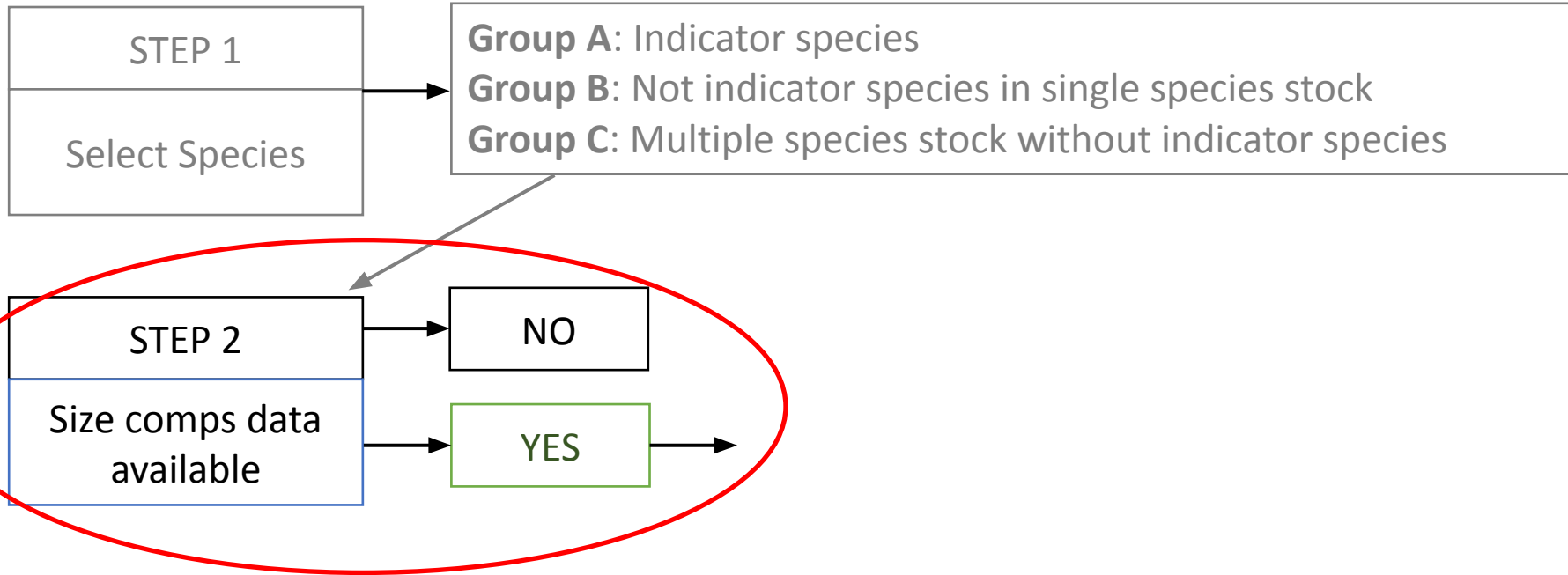
Step 1: St. Croix

33 out of 45

GROUP A	GROUP B	GROUP C	
INDICATOR SPECIES	SINGLE SPECIES STOCK	MULTIPLE SPECIES STOCK WITHOUT INDICATOR SPECIES	
GROUPE,CONE GROUPE,RED HIND PARROTFISH,REDTAIL PARROTFISH,STOPLIGHT SNAPPER,BLACKFIN SNAPPER,SILK	DOLPHINFISH NASSAU GROUPE GROUPE,GOLIATH CONCH,QUEEN SNAPPER,QUEEN SNAPPER,MUTTON SCHOOLMASTER SNAPPER,YELLOWTAIL LOBSTERS,SPINY TRIGGERFISH,QUEEN WAHOO	ANGELFISH,QUEEN ANGELFISH,GRAY ANGELFISH,FRENCH GROUPE,RED GROUPE, BLACK GROUPE,YELLOWFIN GROUPE,TIGER GRUNT,WHITE GRUNT,BLUESTRIPE PARROTFISH,MIDNIGHT	PARROTFISH, BLUE PARROTFISH,RAINBOW SNAPPER,GRAY SNAPPER,LANE SQUIRRELFISH SQUIRRELFISH, LONGSPINE SURGEONFISH,OCEAN SURGEONFISH,DOCTORFISH SURGEONFISH,BLUE TANG



Strategy



Step 2: Size composition samples

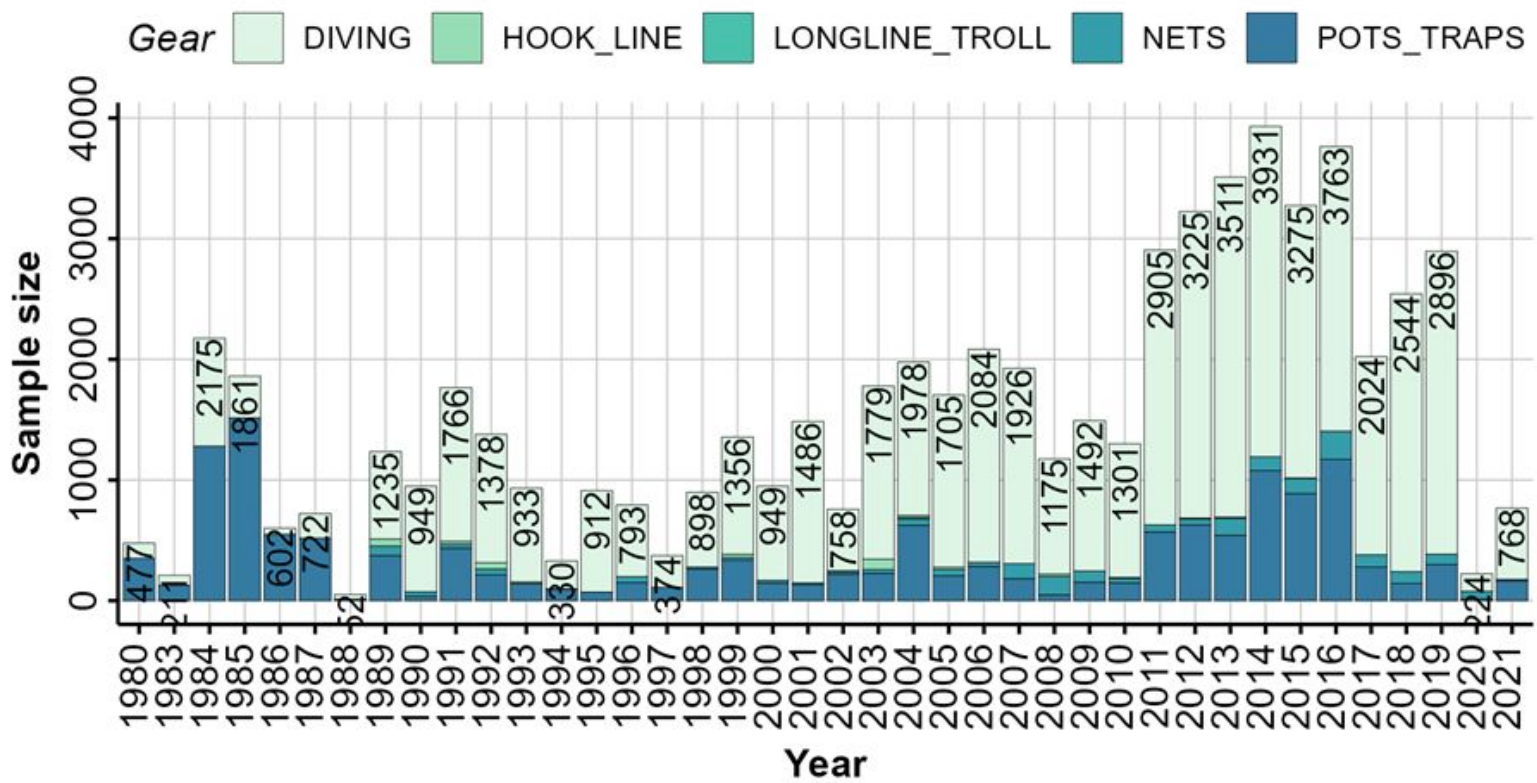
Factors considered:

- Sample size
 - Distribution of samples over time (e.g., historic samples prior to 2000)
- Number of years
 - The length of the dataset
- Most recent year of data
- Missing years especially in the last five years
- Size range
- Gear specific data and patterns of gear usage (changes in selectivity)

Step 2: Size composition samples

LOBSTERS, SPINY

N= 62723



Number of species with sufficient size composition data

Puerto Rico

14 out of 51

St. Thomas and St. John

12 out of 29

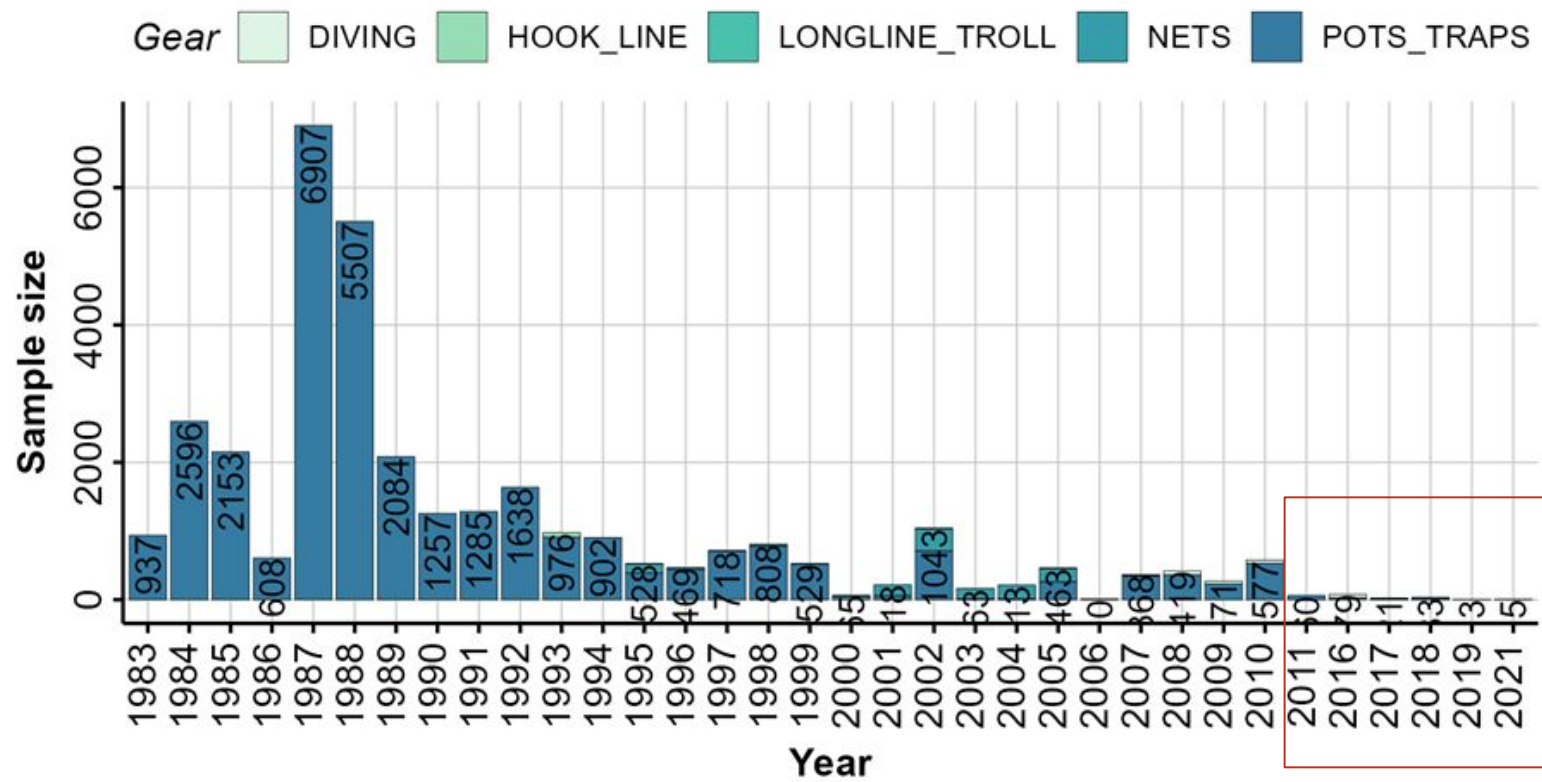
St. Croix

4 out of 33

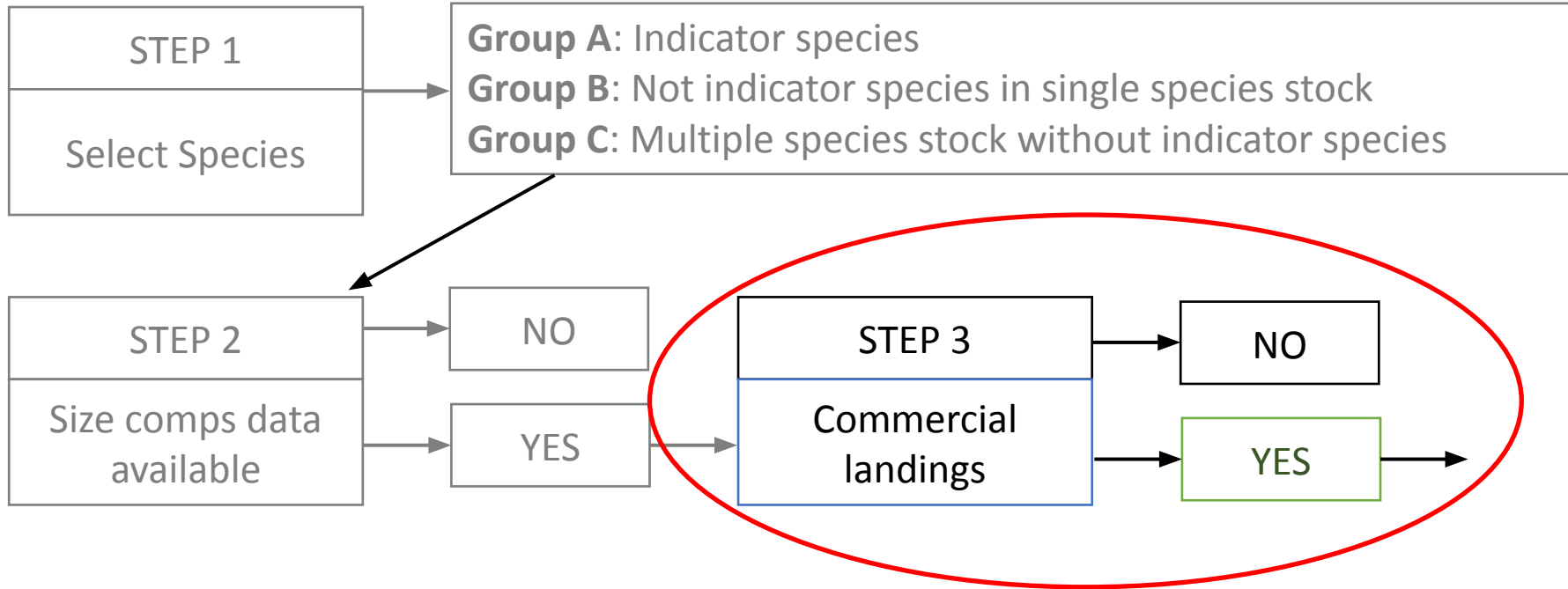
Step 2: Size composition samples

SURGEONFISH, BLUE TANG

N= 33913



Strategy

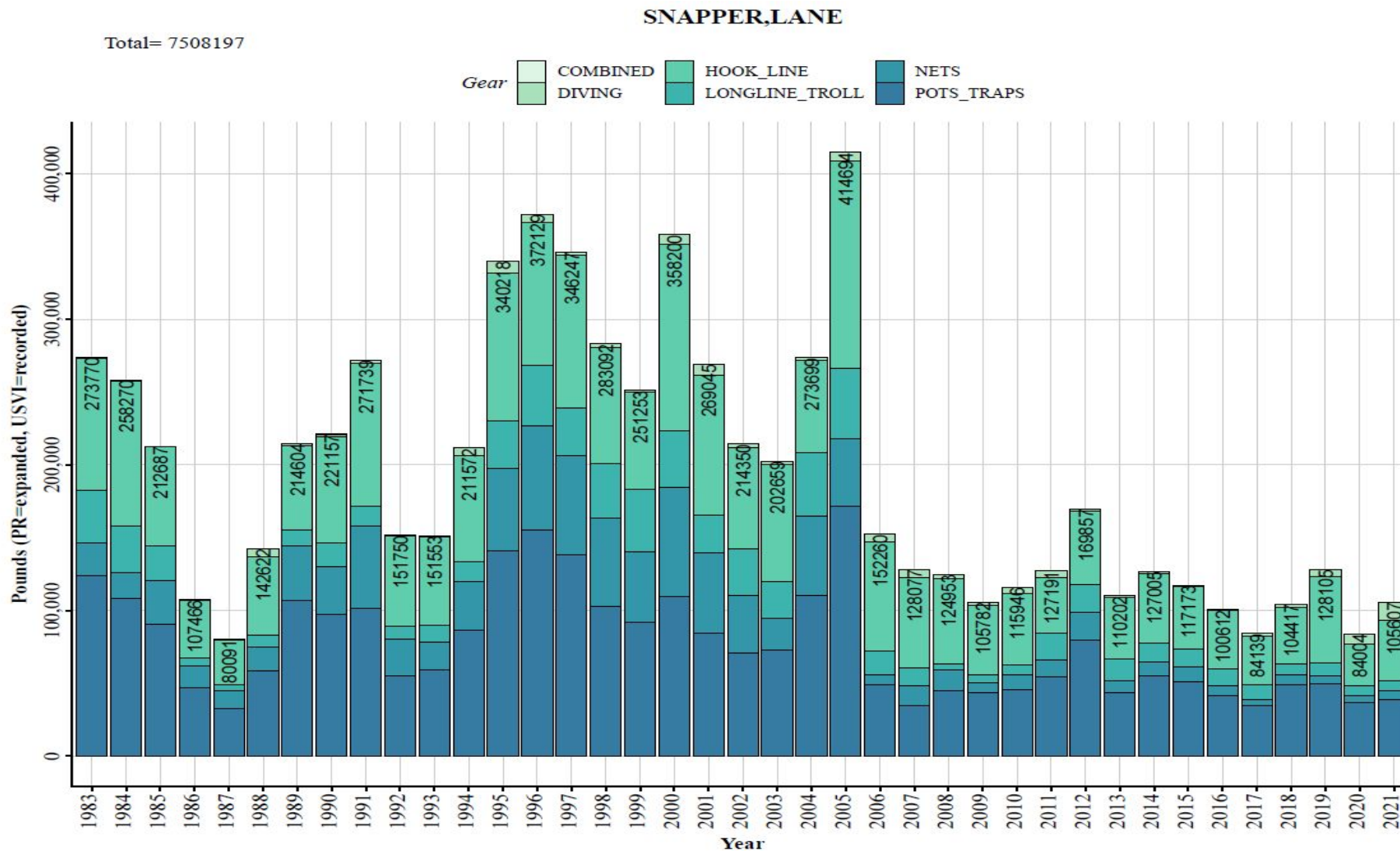


Step 3: Commercial Landings

Factors considered:

- Distribution of landings by species over time (species not on the form)
- Number of years
 - The length of the dataset
- Most recent year of data
- Missing years especially in the last five years
- Landings by gear and patterns of gear usage
 - Generational change from trap fishery to dive fishery

Step 3: Commercial Landings



Number of species with sufficient commercial landings

Puerto Rico

12 out of 14

St. Thomas and St. John

11 out of 12

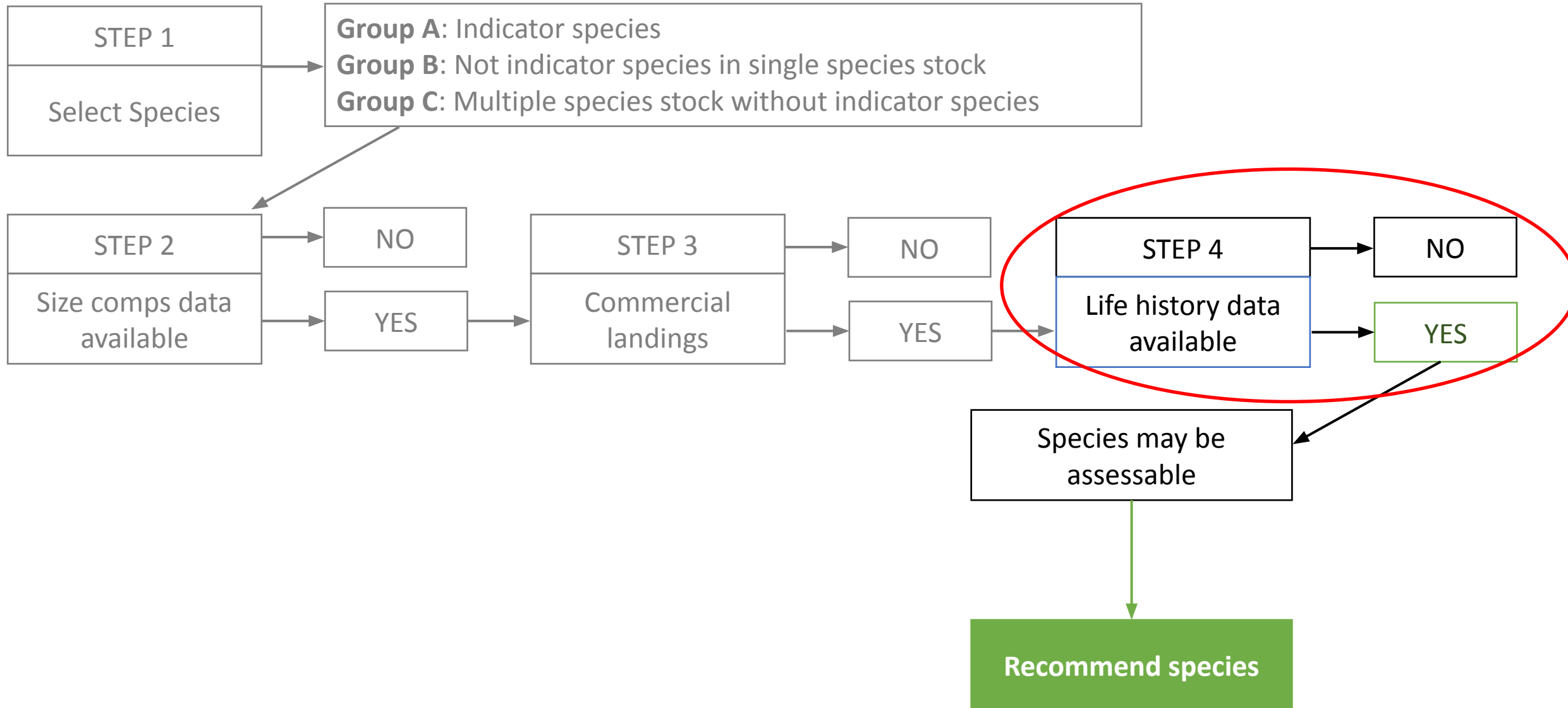
St. Croix

4 out of 4

Step 3: Commercial Landings

An example of an insufficient landings time series can't be shown because the data are confidential

Strategy



Step 4: Life history

Factors considered:

- Species-specific score developed by Stevens et al. (2019)

Puerto Rico

8 out of 12

St. Thomas and St. John

8 out of 11

St. Croix

3 out of 4

LH	Criterion
0	Missing life history information for length-age, weight-length or maturity
1	Complete set of life history parameters: length-age, weight-length and maturity
2	Conditions for LH = 1; parameters for both length-age and maturity developed from the most robust biological and statistical methodologies (Figure 2, hierarchy level 2a); and weight-length sample size ≥ 30 (hierarchy level 4)
3	Conditions for LH = 2 and $L_{\max}$ of length-age study $> 90\%$ of TIP L_{99} (Figure 4)

Results: Puerto Rico

Species with sufficient data for a stock assessment.

Scientific Name	Common Name	Stock Unit	Description
<i>Coryphaena hippurus</i>	DOLPHINFISH	Dolphinfish	indicator
<i>Epinephelus guttatus</i>	GROUPER,RED HIND	Grouper 6	indicator
<i>Lutjanus synagris</i>	SNAPPER,LANE	Snapper 3	single
<i>Lutjanus analis</i>	SNAPPER,MUTTON	Snapper 4	indicator
<i>Ocyurus chrysurus</i> (SEDAR 84)	SNAPPER,YELLOWTAIL	Snapper 5	single
<i>Panulirus argus</i> (SEDAR 57, S57U, S91)	LOBSTERS,SPINY	Spiny Lobster	single
<i>Balistes vetula</i> (SEDAR 80)	TRIGGERFISH,QUEEN	Triggerfish	indicator
<i>Lachnolaimus maximus</i> (2025)	HOGFISH	Wrasses 1	single

Results: St. Thomas and St. John

Species with sufficient data for a stock assessment.

Scientific Name	Common Name	Stock Unit	Description
<i>Epinephelus guttatus</i> (2025?)	GROUPE,RED HIND	Grouper 3	indicator
<i>Sparisoma chrysotermum</i>	PARROTFISH,REDTAIL	Parrotfish 2	indicator
<i>Sparisoma viride</i>	PARROTFISH,STOPLIGHT	Parrotfish 2	indicator
<i>Lutjanus buccanella</i>	SNAPPER,BLACKFIN	Snapper 1	indicator
<i>Ocyurus chrysurus</i> (SEDAR 84)	SNAPPER,YELLOWTAIL	Snapper 4	single
<i>Panulirus argus</i> (SEDAR 57, S57U, S91)	LOBSTERS,SPINY	Spiny Lobster	single
<i>Acanthurus chirurgus</i>	SURGEONFISH,DOCTORFISH	Surgeonfish	indicator
<i>Balistes vetula</i> (SEDAR 80)	TRIGGERFISH,QUEEN	Triggerfish	single

Results: St. Croix

Species with sufficient data for a stock assessment.

Scientific Name	Common Name	Stock Unit	Description
<i>Sparisoma viride</i> (SEDAR 84)	PARROTFISH,STOPLIGHT	Parrotfish 2	indicator
<i>Panulirus argus</i> (SEDAR 57, S57U, S91)	LOBSTERS,SPINY	Spiny Lobster	single
<i>Balistes vetula</i> (SEDAR 80)	TRIGGERFISH,QUEEN	Triggerfish	single

Puerto Rico

Flagged for additional data examination

Scientific Name	Common Name	Stock Unit	Description
<i>Mycteroperca bonaci</i>	GROUPER, BLACK	Grouper 4	multiple
<i>Cephalopholis fulva</i>	GROUPER, CONEY	Grouper 3	indicator
<i>Comberomorus cavalla</i>	MACKEREL, KING	Mackerel	multiple
<i>Elagatis bipinnulata</i>	RAINBOW RUNNER	Jacks 3	single
<i>Thunnus atlanticus</i>	TUNA, BLACKFIN	Tunas	multiple
<i>Haemulon plumieri</i>	GRUNT, WHITE	Grunts	single

St. Thomas and St. John

Flagged for additional data examination

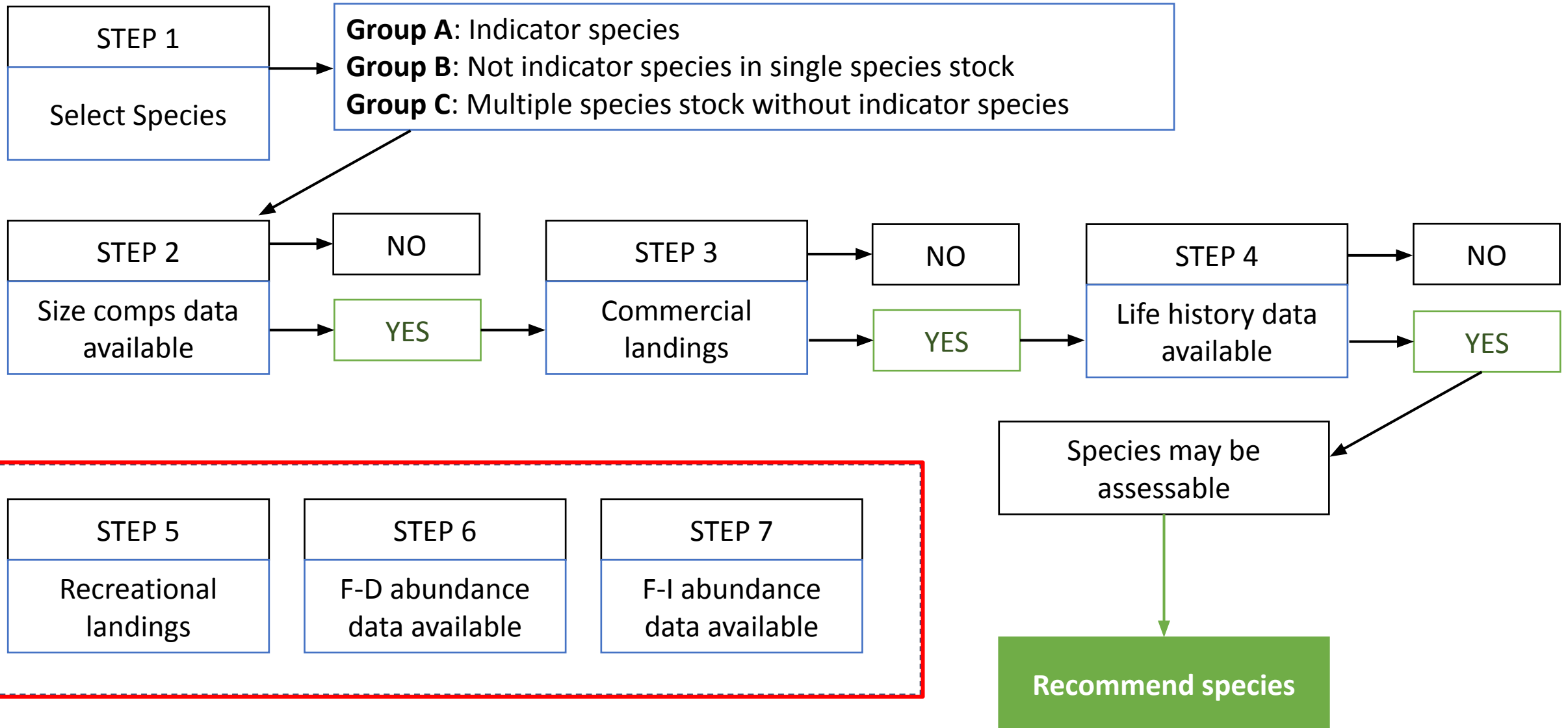
Scientific Name	Common Name	Stock Unit	Description
<i>Haemulon album</i>	GRUNT,MARGATE	Grunts 2	single
<i>Lachnolaimus maximus</i>	HOGFISH	Wrasses	single
<i>Lutjanus analis</i>	SNAPPER,MUTTON	Snapper 3	indicator
<i>Haemulon plumieri</i>	GRUNT,WHITE	Grunts 1	indicator

St. Croix

Flagged for additional data examination

Scientific Name	Common Name	Stock Unit	Description
<i>Epinephelus guttatus</i> (2025?)	GROUPER,RED HIND	Grouper 4	indicator
<i>Coryphaena hippurus</i>	DOLPHINFISH	Dolphin	single
<i>Cephalopholis fulva</i>	GROUPER,CONEY	Grouper 3	indicator
<i>Sparisoma chrysopteron</i>	PARROTFISH,REDTAIL	Parrotfish 2	indicator
<i>Lutjanus buccanella</i>	SNAPPER,BLACKFIN	Snapper 1	indicator
<i>Ocyurus chrysurus</i>	SNAPPER,YELLOWTAIL	Snapper 6	single
<i>Acanthurus coeruleus</i>	SURGEONFISH,BLUE TANG	Surgeonfish	multiple
<i>Acanthurus chirurgus</i>	SURGEONFISH,DOCTORFISH	Surgeonfish	multiple
<i>Haemulon plumieri</i>	GRUNT,WHITE	Grunts	multiple

Strategy



Future work/Research needs

Focus on increased sampling of lengths

This will increase the number of species with sufficient data for stock assessment

Focus on life history studies

Continue data review – abundance indices

Develop recreational landings data collection programs

Continue development of new commercial landings estimation surveys

EBFM components

Recommended species for 2025 SEDAR

Capacity for only two species – only two assessment biologists*

Puerto Rico – Hogfish has already been recommended

US Virgin Islands – recommend Red Hind; indicator species in STT/STJ and STX

St. Croix low number of size composition samples will present some modeling challenges and abundance indices are critical

St. Thomas and St. John have more numerous size composition samples

Acknowledgements

- Many data reviews in the SEDAR process; e.g., 4, 46, and special workshop
- Fishery independent survey workshop
- Skyler Sagarese's work on species prioritization
- Adyan Rios began this most recent data review

SEDAR 84

- Participation from SSC, Council, fishers, USVI DFW and PR DNER



Electronic logbook data update

DNER, Shellcatch, ACCSP, and SEFSC

Atlantic Coastal Cooperative Statistics Program – will warehouse the data