

Status of Nassau Grouper in the USVI and Recommendations for Management



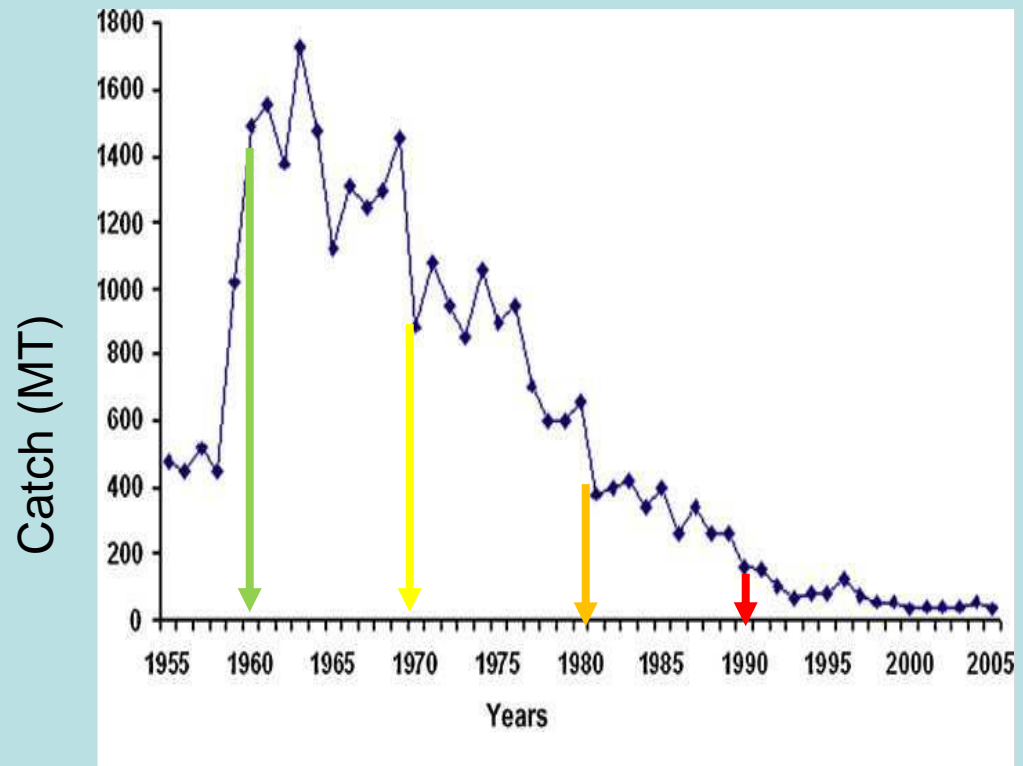
Richard S. Nemeth, PhD

**Center for Marine & Environmental Studies
University of the Virgin Islands**

**Caribbean Fisheries Management Council
December 2023, St. Thomas**

Nassau grouper (*Epinephelus striatus*)

- 1960's** • Nassau grouper regionally abundant
- 1970's** • Fishers target fish spawning aggregations
- 1980's** • Populations collapse
- 1990's** • Commercially extinct



(Claro et al. 2009)

Nassau grouper (*Epinephelus striatus*) **regional status** & **local management**

1980

- Populations overfished throughout range

1990

- 1990 Red Hind Bank seasonal closure (Dec – Feb)
- 1993 Federal Protection
- 1996 IUCN Red List = Threatened
- 1999 Marine Conservation District

2000

- 2003 IUCN Red List = Endangered
- **2004 Nassau FSA found in USVI !**
- 2005 Grammanik Bank seasonal closure (Feb – Apr)
- 2006 USVI Protection, Illegal to filet groupers at sea

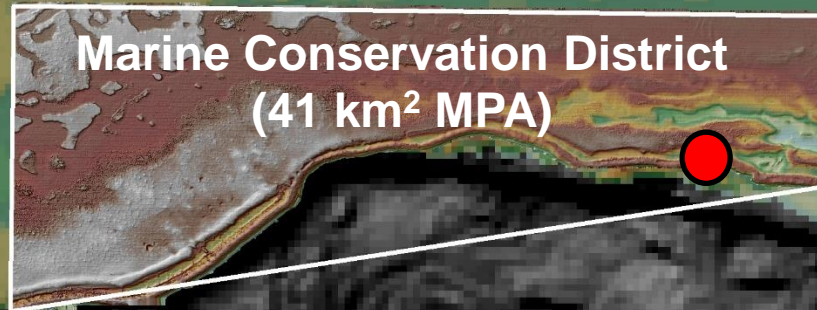
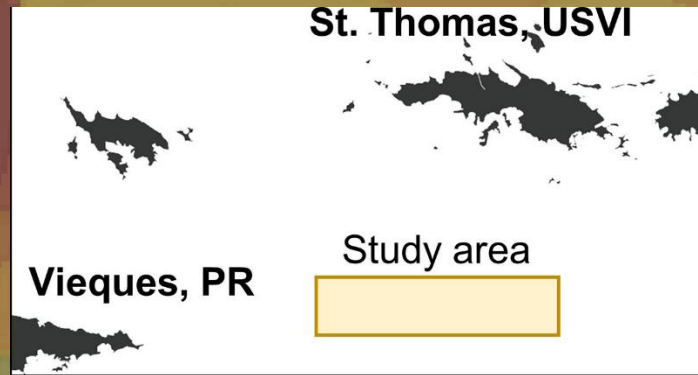
2010

- 2016 U.S. Endangered Species Act = Threatened
- 2018 IUCN Red List = Critically Endangered

2020



(Quasi) Ecosystem Based Fisheries Management



**Grammanik Bank
(1.5 km²)**

Research, Monitoring and Outreach

Public outreach and education campaigns

Citizen science program with fishers

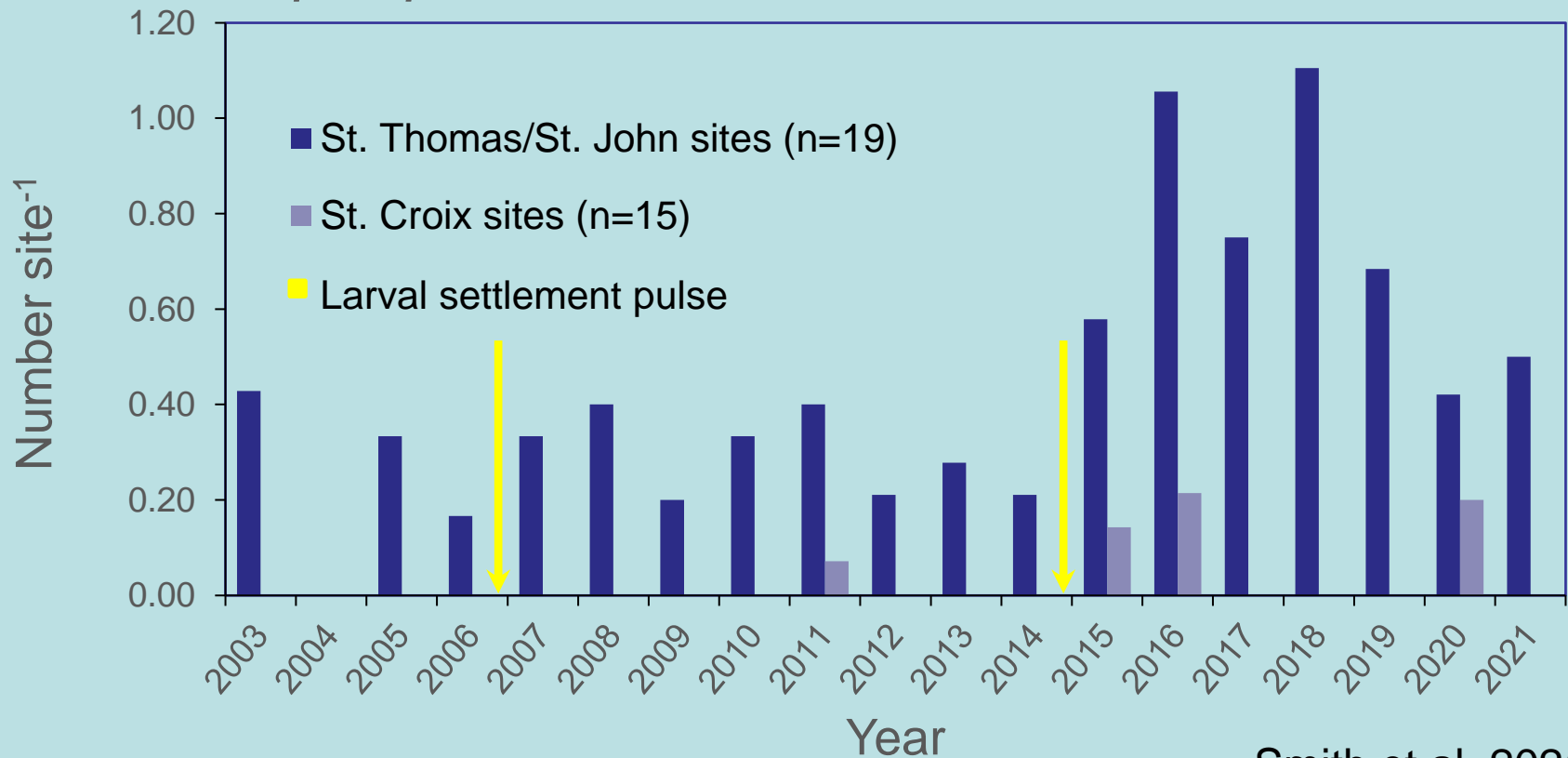
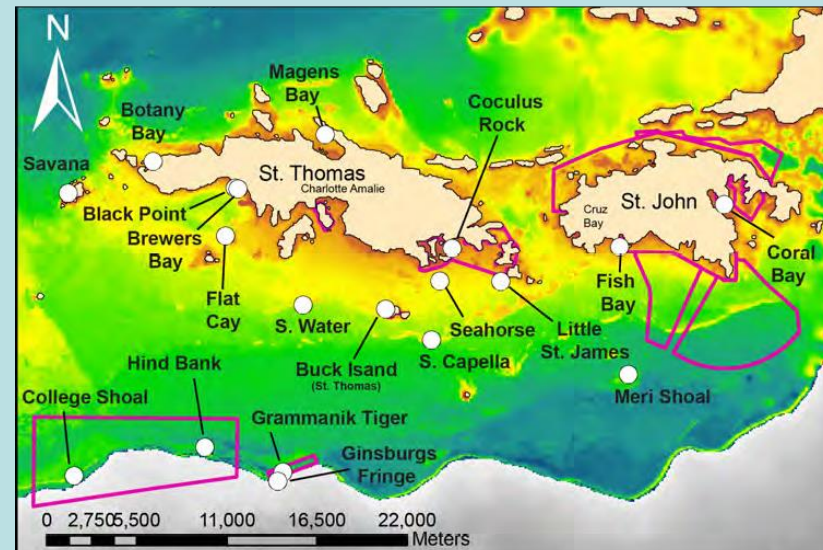
Territorial coral reef monitoring program (annual 2003-2023)

Grammanik Bank FSA monitoring program (annual 2004-2023)

Acoustic telemetry and passive acoustic research

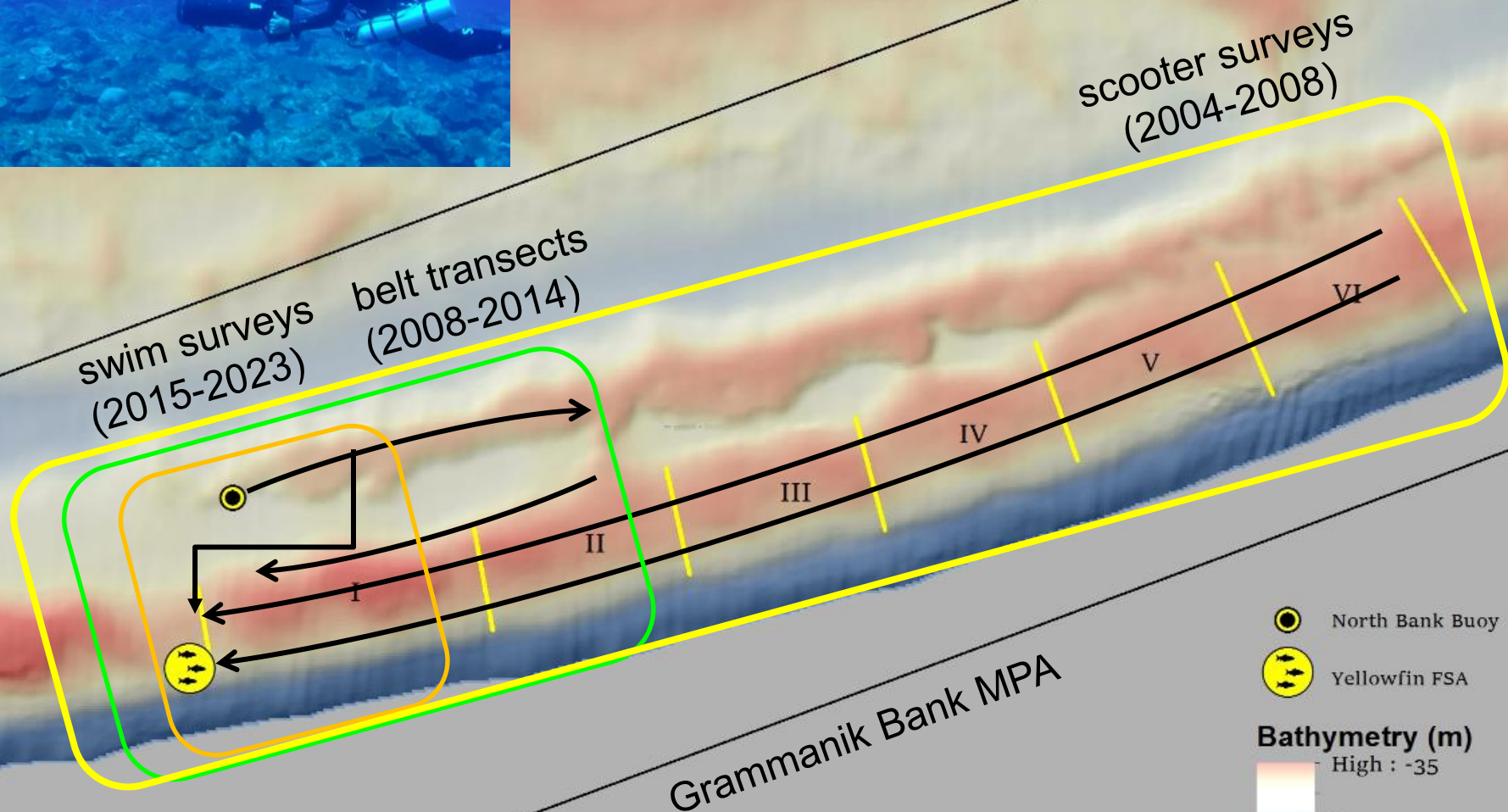
Territorial Coral Reef Monitoring Program (TCRMP)

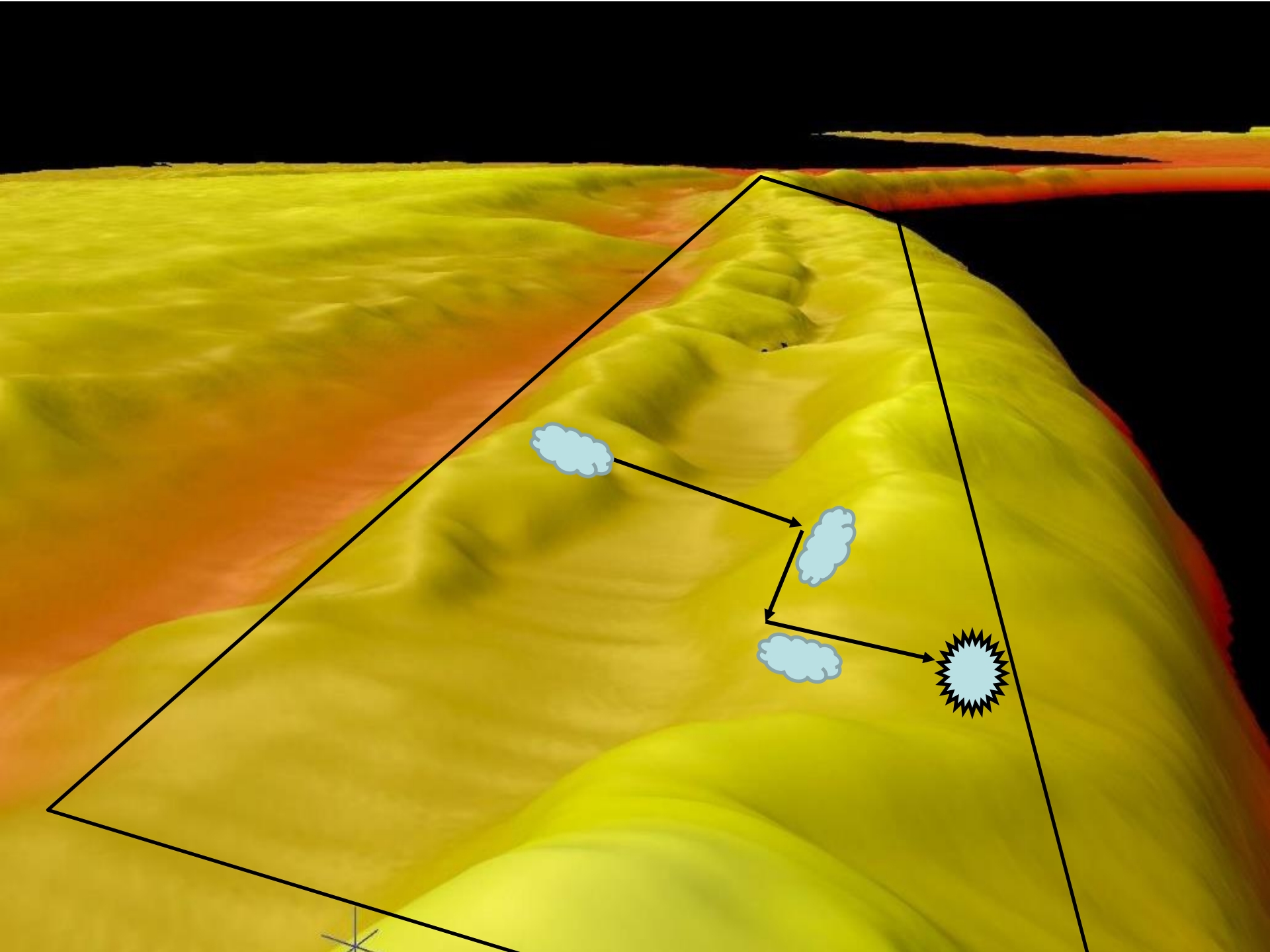
Nassau grouper *Epinephelus striatus*



Smith et al. 2021

Grammanik Bank Fish Spawning Aggregation Monitoring





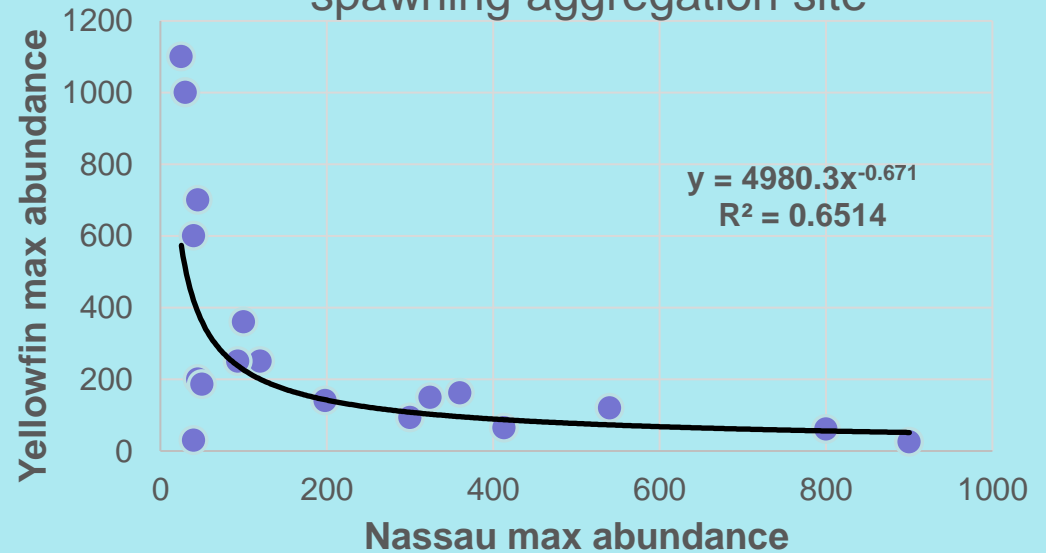
Grammanik Bank FSA monitoring

2008

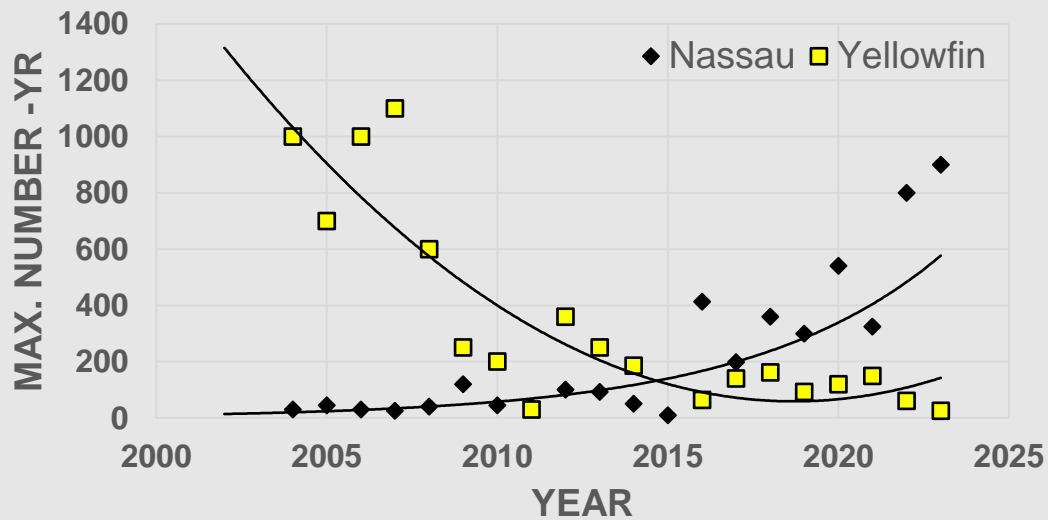




Grouper max. annual abundance at spawning aggregation site

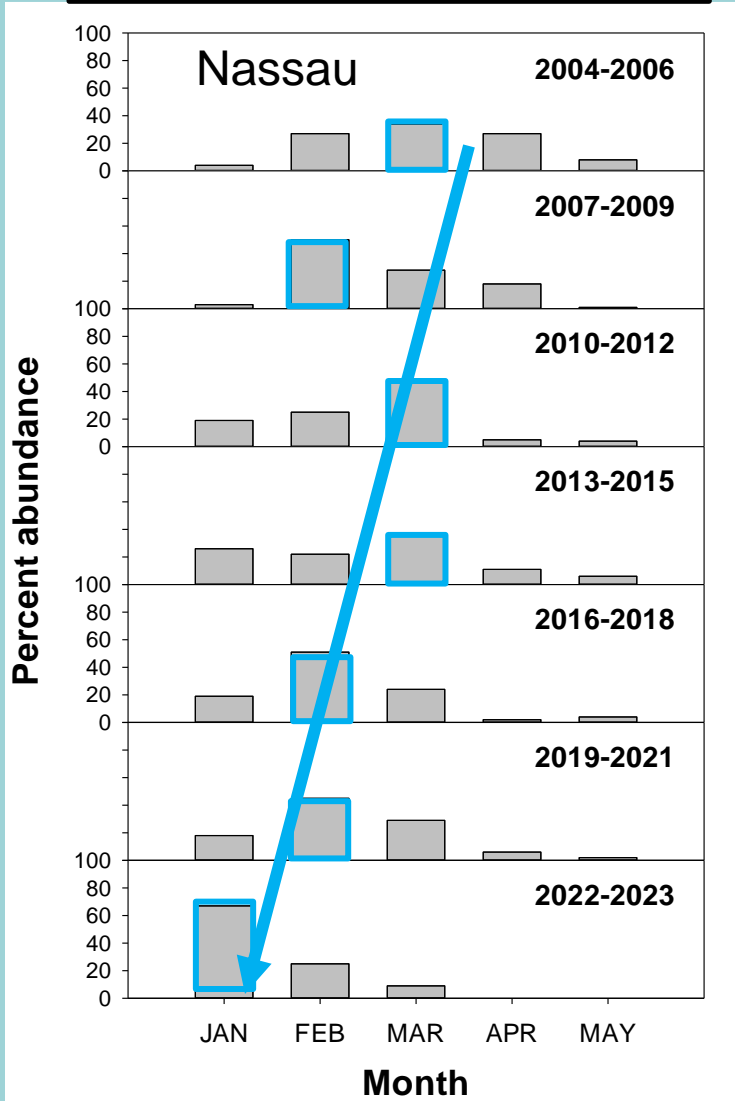
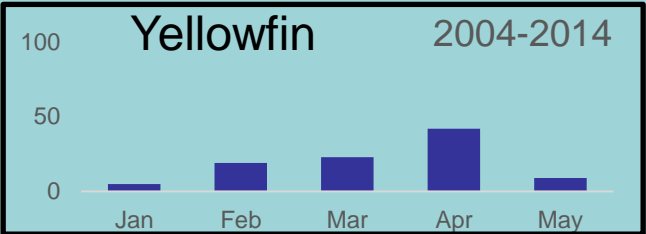
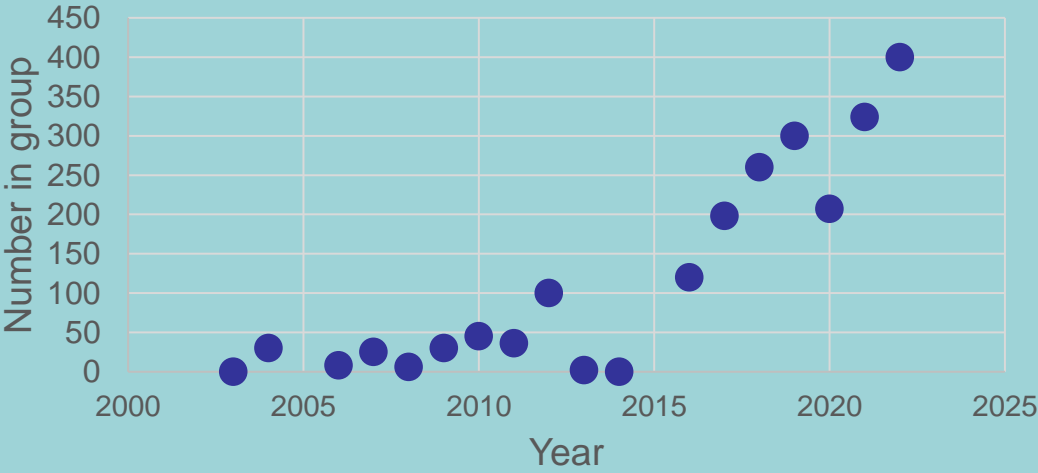


GROUPE CHANGE IN ABUNDANCE



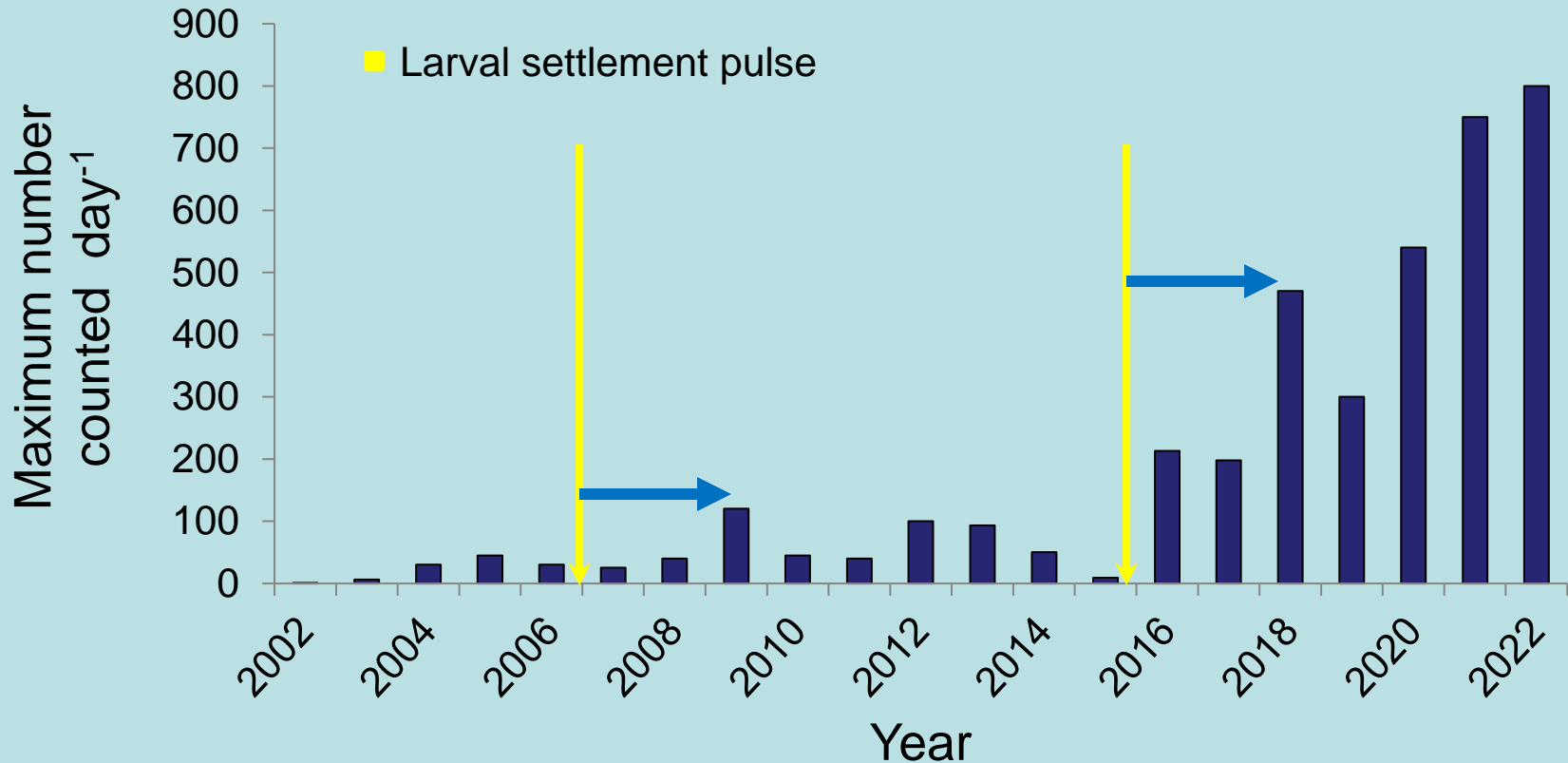


Nassau Grouper
max group size
(point count)

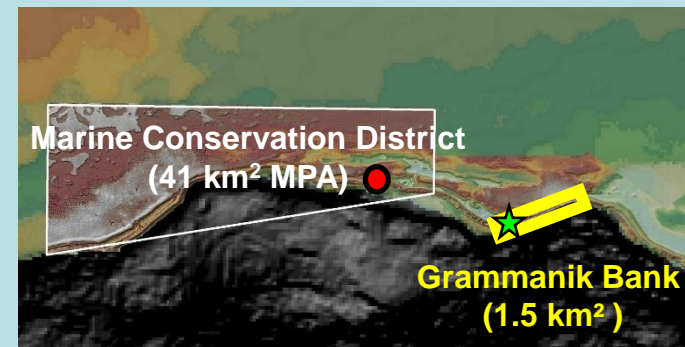


Grammanik Bank spawning aggregation site

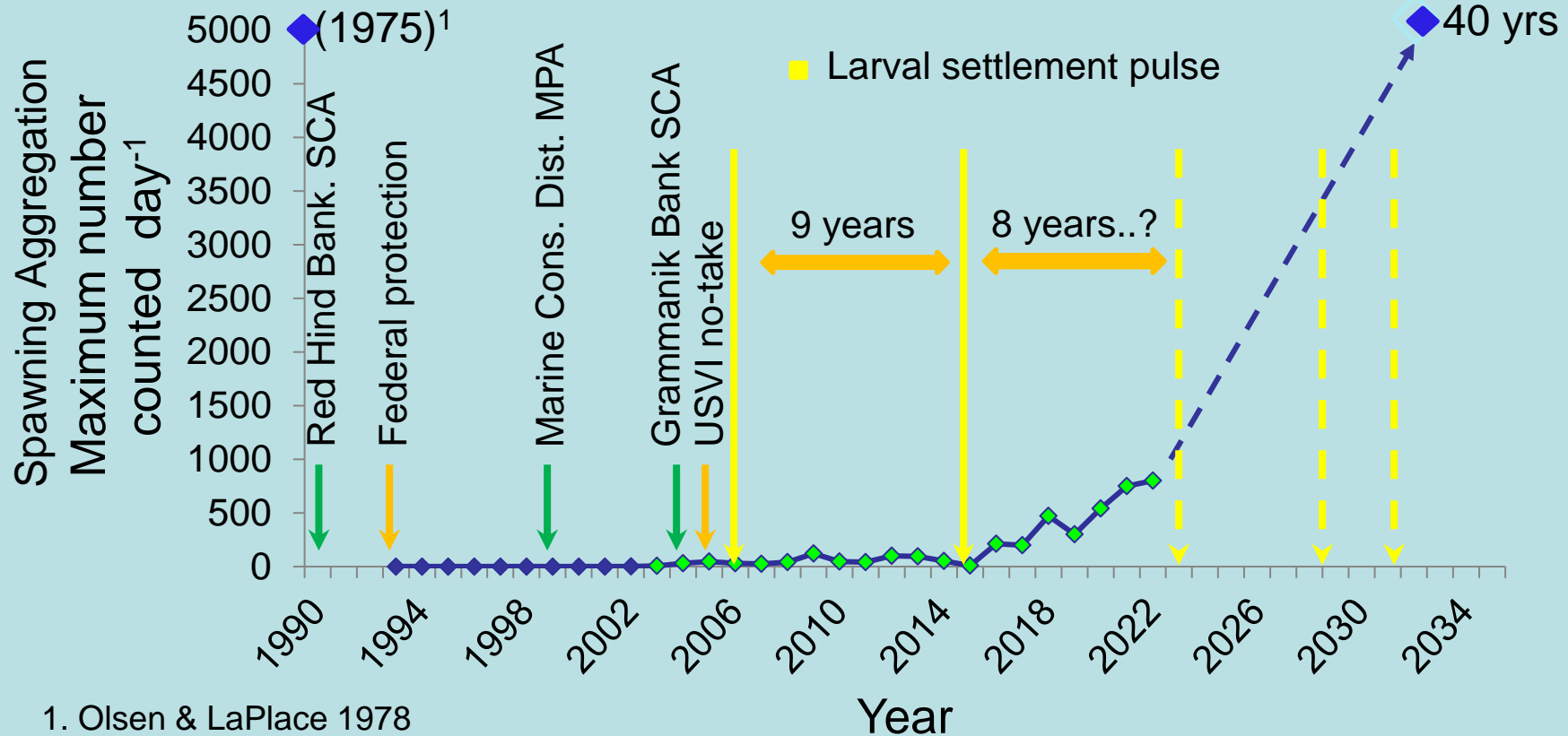
Nassau grouper (*E. striatus*)



Nassau grouper (*E. striatus*) Management & population recovery



1993 Recovery time: 20 - 40 yrs², 15 - 70 yrs³ 2033

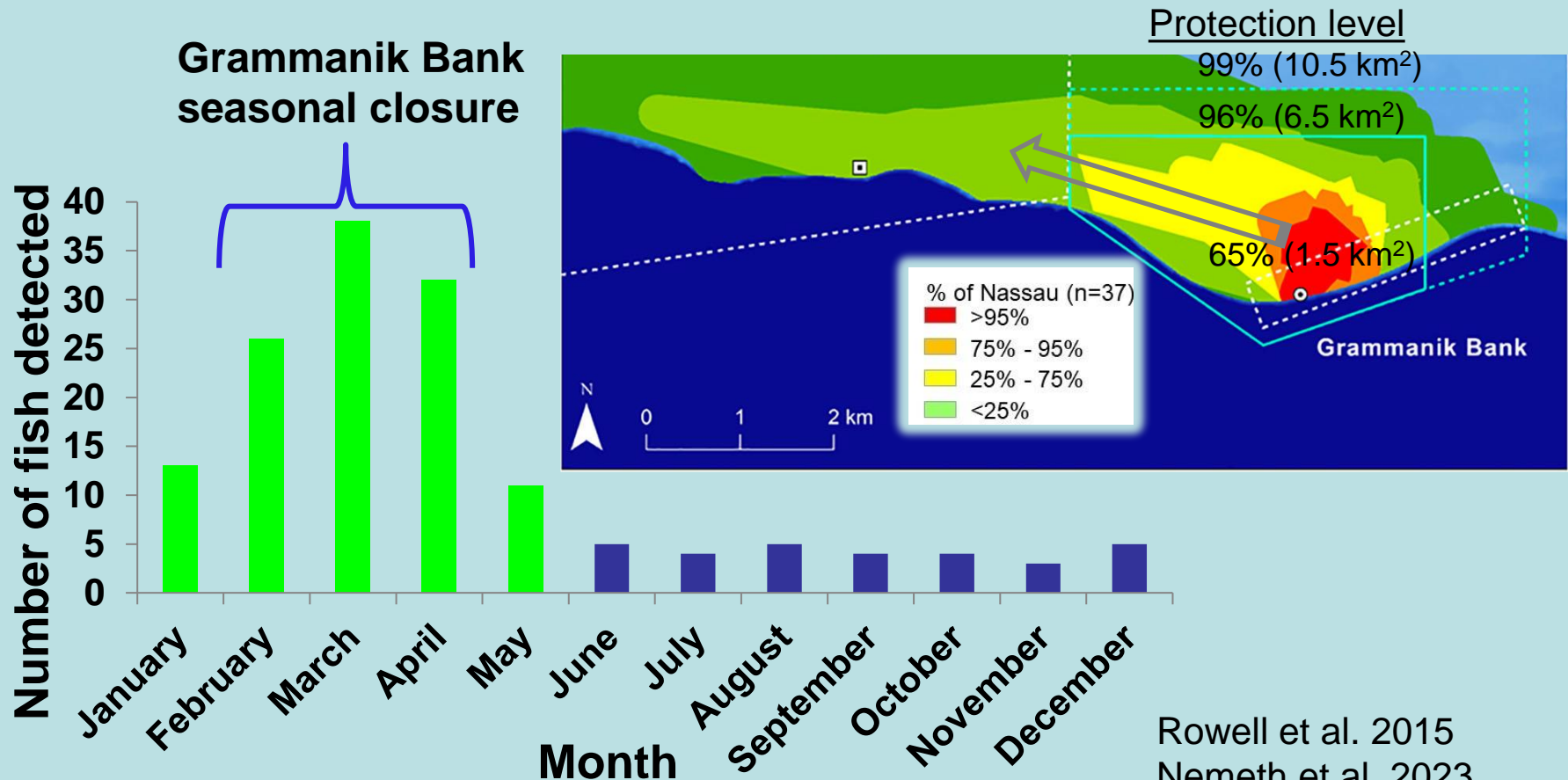


1. Olsen & LaPlace 1978
2. Legault and Eklund 1998
3. Porch & Scott 2001

Acoustic telemetry and Passive Acoustics

Precautionary Recommendations:

- Closed season: extend from 3 to 5 months
- Closed area: increase from 1.5 km² to 6.5 km²



Greatest risk to Nassau grouper in USVI?

- By-catch around Grammanik Bank spawning aggregation site
- Fishing mortality by uninformed recreational fishers
- Deliberate poaching by commercial & recreational fishers

Priority Management Actions:

- Re-evaluate spatial & temporal boundaries
- Expand outreach for recreational fishers
- Improve enforcement of existing regulations
- Support annual monitoring at FSA (i.e. TCRMP)
- Identify potential life history bottlenecks

Juvenile Nassau in
Halophila stipulacea



Green 2017

Regional:

- 2017 Western Central Atlantic Fisheries Commission (WECAFC) recommended protection of all Nassau grouper FSAs & no export

Acknowledgements:

- Financial support: VI-EPSCoR, Lana Vento Charitable Trust, USVI DPNR, Puerto Rico Sea Grant, NOAA, USGS, The Ocean Conservancy
- Field support: Jason Quetel, Bryan Legare, Steven Hitt, Kristen Maize, Rob Brewer, Leslie Henderson, Bo Green, Kenny Turbe and many other technical divers.
- Special thanks to fishers who shared data and want to bring back the Nassau



FAC questions regarding Nassau grouper

- What was the total landing recorded from the area referred to as the alleyway?
- How many fishers recorded landings from the alleyway?
- How traps were recorded in the alleyway and at what month of the year ?
- What data is there to substantiate that the Nassau grouper solely travel to and from the closed areas during the spawning season via the alleyway?
- Increase funding for outreach and supplies focusing increasing the survival rate of incidental capture. This would include instructions on “how to deflate a swim bladder”.
- Information on whether there have been any new spawning aggregations discovered inside or outside of the existing closed areas. If there are new areas, have they been studied?

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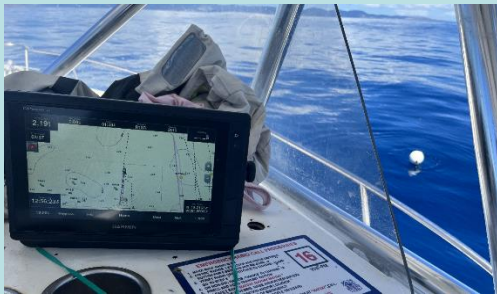
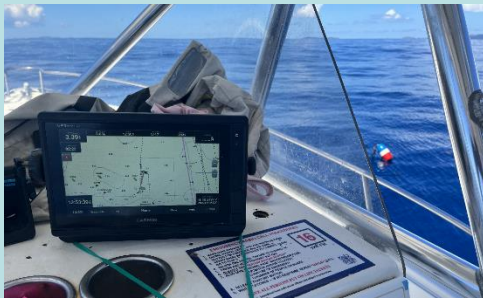
FAC questions regarding Nassau grouper

- **How traps were recorded in the alleyway and at what month of the year**

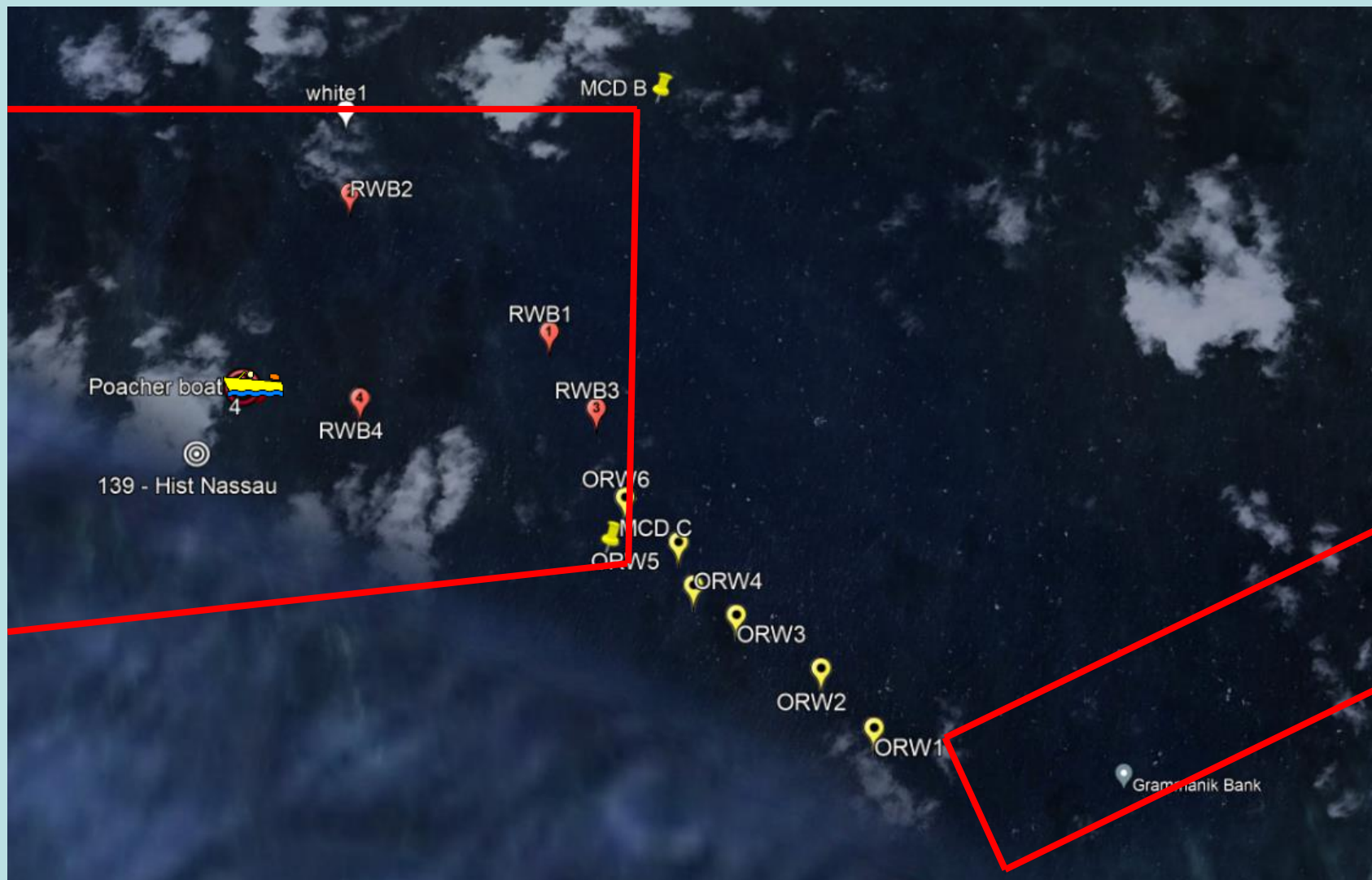
Data from March 2023 showing GPS points of fish trap lines inside the MCD and in the alley way between MCD and GB.

We also dove on several traps and recorded Nassau and yellowfin grouper and other species in these traps.

Traps & vessels in MCD – March 2023



Reported to Alex Terrero – NOAA Fisheries



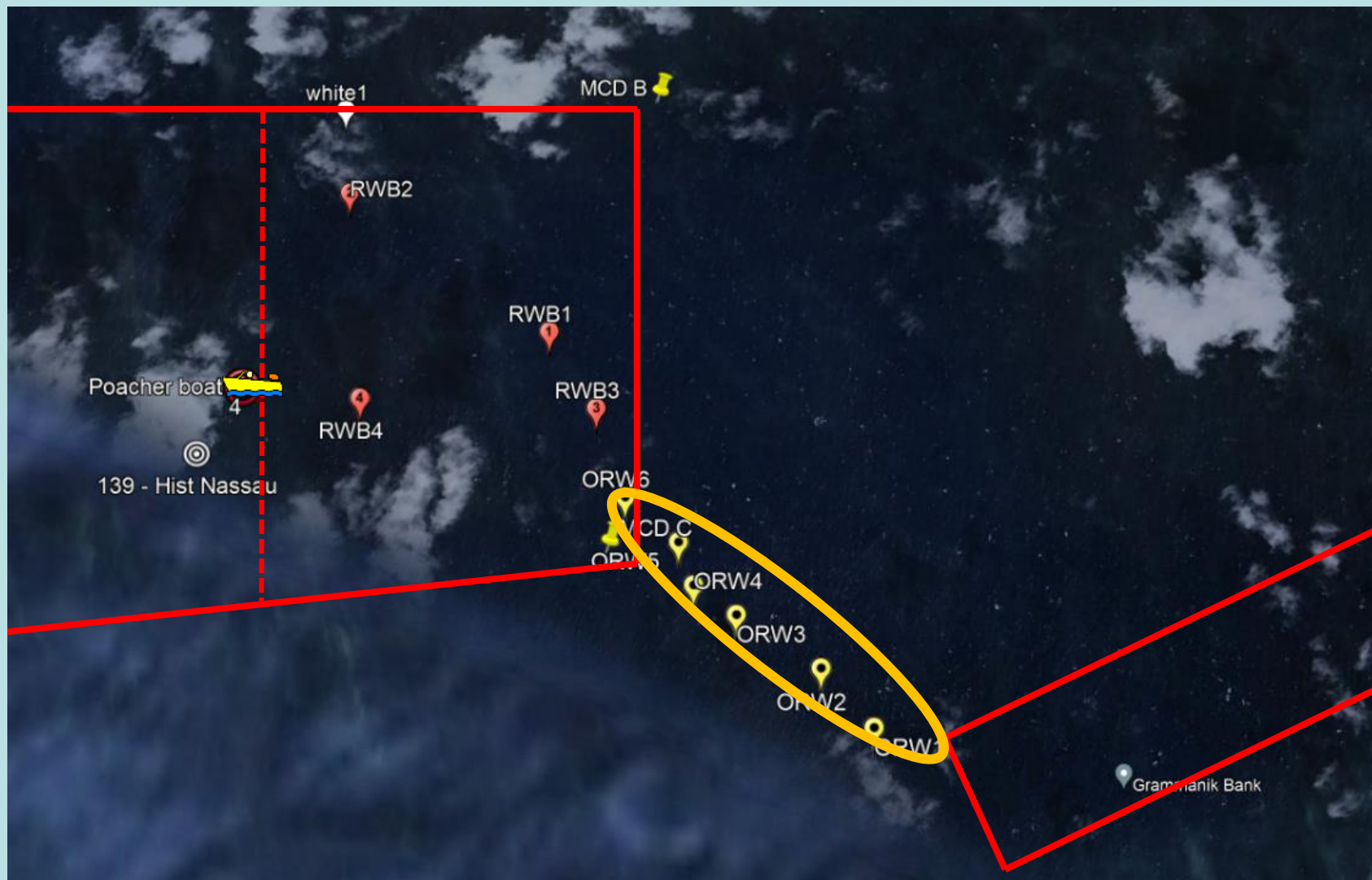
March 2023				March 2023		
Trap Line 1	RWB2	MCD		Trap line 2	RWB4	MCD
Trap #	species	number of fish		Trap #	species	number of fish
Trap 1	Red hind	3		Trap 1	Nassau grouper	1
	Queen trigger	1			Yellowfin grouper	1
	Hogfish	1				
	Blue tang	1		Trap 2	Queen triggerfish	2
					Blue tang	1
Trap 2	Nassau grouper	1			Hogfish	1
	Queen trigger	1			Lionfish	1
	banded butterflyfish	1				
	Blue tang	2		Trap 3	Banded butterflyfish	1
					Lobster	3
Trap 3	Blue striped grunt	1			Squirreelfish	1
	Mahogany snapper	1				
	Yellowtail snpper	2		Trap 4	Queen triggerfish	1
	Pork fish	1			Blue tang	1
					Banded butterflyfish	1
Trap 4	French angelfish	1				
	Orange spotted filefish	2		Trap 5	Queen triggerfish	1
	Banded butterflyfish	1			Queen angelfish	4
	Parrotfish	3			Blue tang	4
	Total fish	23			White grunt	3
	Average fish/trap	5.8			Ocean surgeon	1
					Reef butterflyfish	2
					Yellowtail snapper	1
					Red hind	1
				Trap 6	Queen triggerfish	3
					Ocean surgeonfish	1
					Squirreelfish	1
				Trap 7	Queen triggerfish	1
					Total Fish	38
					Average fish/trap	5.4

FAC questions regarding Nassau grouper

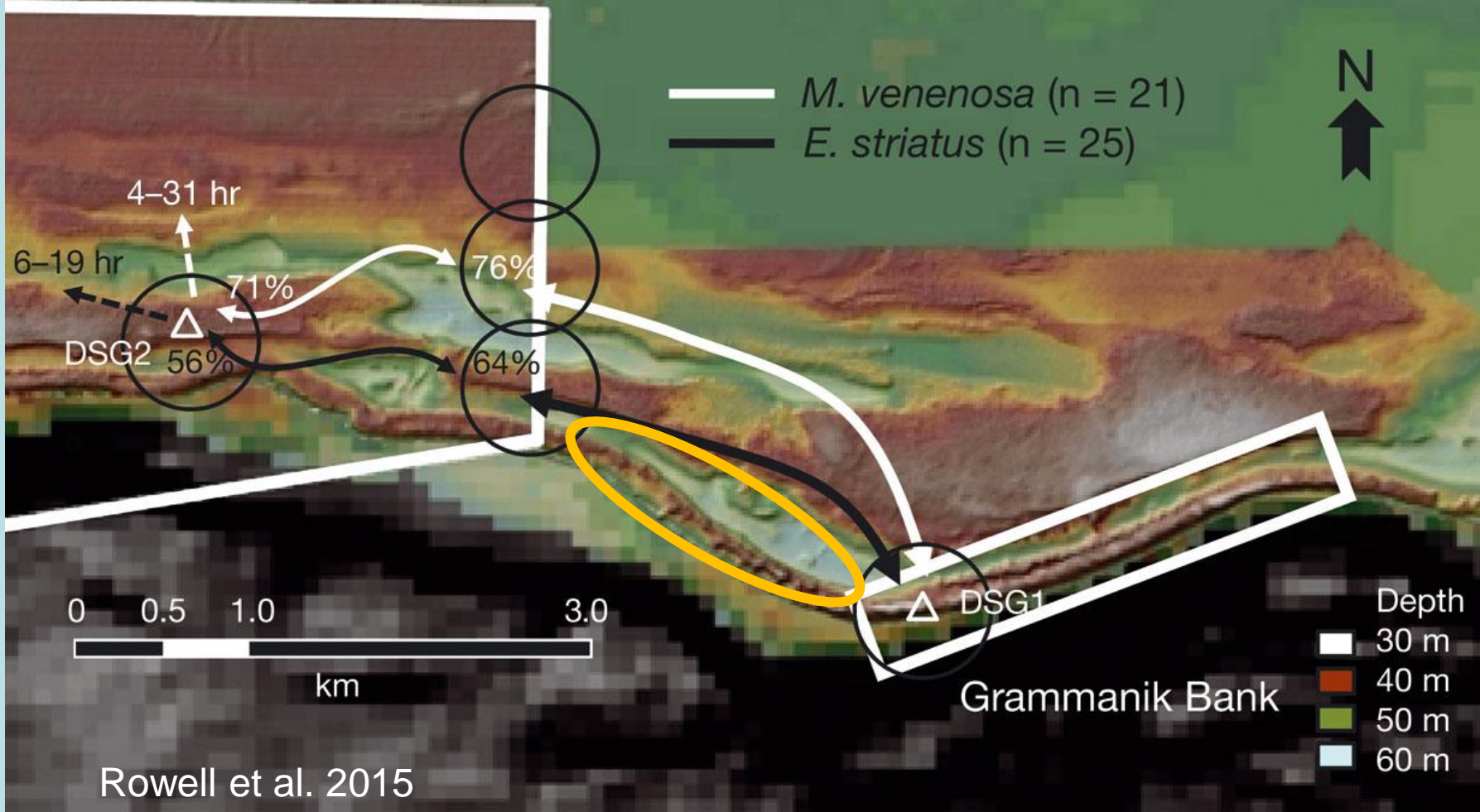
- **What data is there to substantiate that the Nassau grouper solely travel to and from the closed areas during the spawning season via the alleyway**

Nemeth et al 2023, and Rowell et al. 2015 show that 65% of tagged Nassau and 76% of yellowfin grouper use this alleyway between MCD and GB.

Also both papers show that Nassau are also spawning in January fairly consistently and in May if the full moon occurs in late April



Marine Conservation District



Rowell et al. 2015

FAC questions regarding Nassau grouper

- **Increase funding for outreach and supplies focusing increasing the survival rate of incidental capture. This would include instructions on “how to deflate a swim bladder”.**

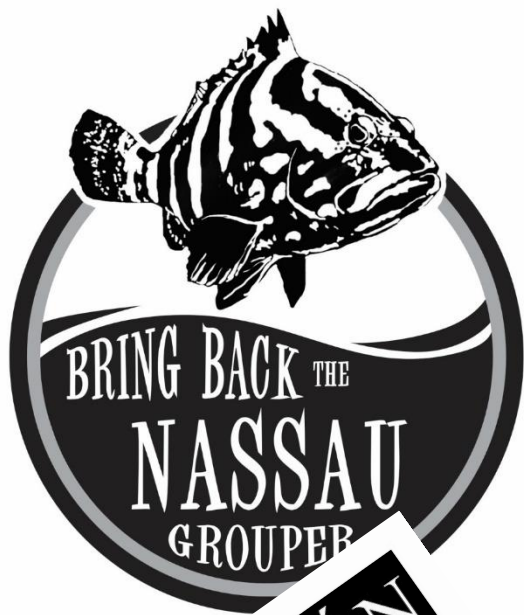
Outreach campaigns were done in 2006 to 2010 when Grammanik Bank was first established and large number of juvenile Nassau showed up around St. Thomas and St. John.

This included posters and flyers at public outreach events

Distribution of fisher science kits that included

- Notebook
- Pencil
- Tape measure
- Large bore hypodermic needle for venting fish air bladder
- Barbless hook and weight for sending fish to bottom to recompress air bladder

Outreach Conservation Campaign



ENDANGERED SPECIES NASSAU GROUPE



At one time Nassau groupers were very common in the USVI. Fishing has made them rare and endangered.

Federal regulations make it illegal to spear, catch and keep Nassau grouper in Federal and Territorial waters.

If you catch this fish, please let it go so it can grow to maturity and reproduce.

Scientists are conducting studies on the abundance and distribution of this species in order to help the Virgin Islands rebuild Nassau grouper populations for fishing. Please contact the **V.I. Marine Advisory Service** when you catch or see a Nassau grouper and tell them where you found this fish.

Call 340-693-1672

Attention Fisherman

If you catch this fish please release it!



This is a Nassau grouper (*Epinephelus striatus*).

The Nassau grouper was overfished in the 1970's and 1980's and the number of adult Nassau grouper in the Virgin Islands is very low. The Virgin Islands is trying to rebuild Nassau grouper populations. It is illegal to catch and keep this fish in BOTH Federal and Territorial waters. If you catch this fish while fishing, please let it go so it can grow to maturity and reproduce. This will allow new generations of young fish to repopulate the coral reefs around the Virgin Islands and make it available for fishing once again.

The University of the Virgin Islands are currently conducting a study on the movement patterns of this species. We are tagging Nassau grouper at St. Thomas and in Lameshure Bay St. John. If you catch a Nassau grouper, please tag it with the tag number and then release the fish. Please send an e-mail to memeth@uvi.edu for your cooperation.

Attention



At one time Nassau groupers were very common in the USVI. Fishing has made them rare and endangered.

Federal regulations make it illegal to spear, catch and keep Nassau grouper in Federal and Territorial waters.

If you catch this fish, please let it go so it can grow to maturity and reproduce.

Call 693-1392

The Virgin Islands is trying to rebuild Nassau grouper populations by conducting studies on the abundance and distribution of this species and they need your help! Please contact the **V.I. Marine Advisory Service** when you catch or see a Nassau grouper and tell them where you found this fish.



PLEASE DON'T SHOOT THIS FISH!

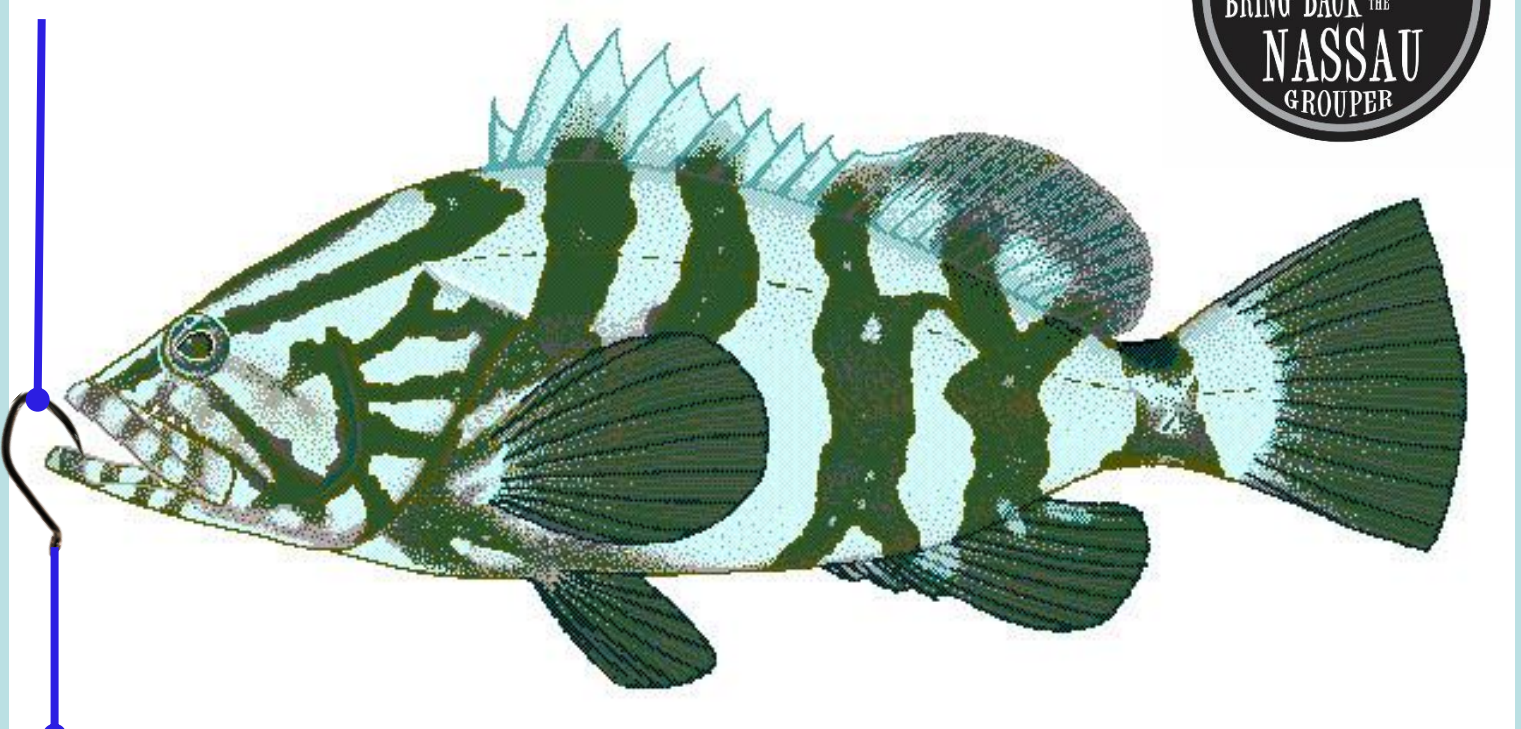
ATENCIÓN



Es ilegal capturar y mantener el pescado Nassau, tanto como en las aguas territoriales, como en las aguas federales. Si al pescar, usted captura a este pez, por favor, libérralo para que pueda madurar. La población de las islas de las Virgenes está trabajando para restaurar las poblaciones de Nassau para poder volver a pescarlas.

Los científicos están llevando a cabo estudios sobre la abundancia y distribución de esta especie y se necesita la ayuda de ustedes! En el caso de que usted capture o vea de pascarse en contacto con el **V.I. Marine Advisory Service** y decíles dónde encontró este pez.

Citizen Science: commercial & recreational fishers & dive community



Fisher science kits

- Notebook & pencil
- Tape measure
- Venting needle with instructions
- Remote release line with barbless hook & weight

Data collected

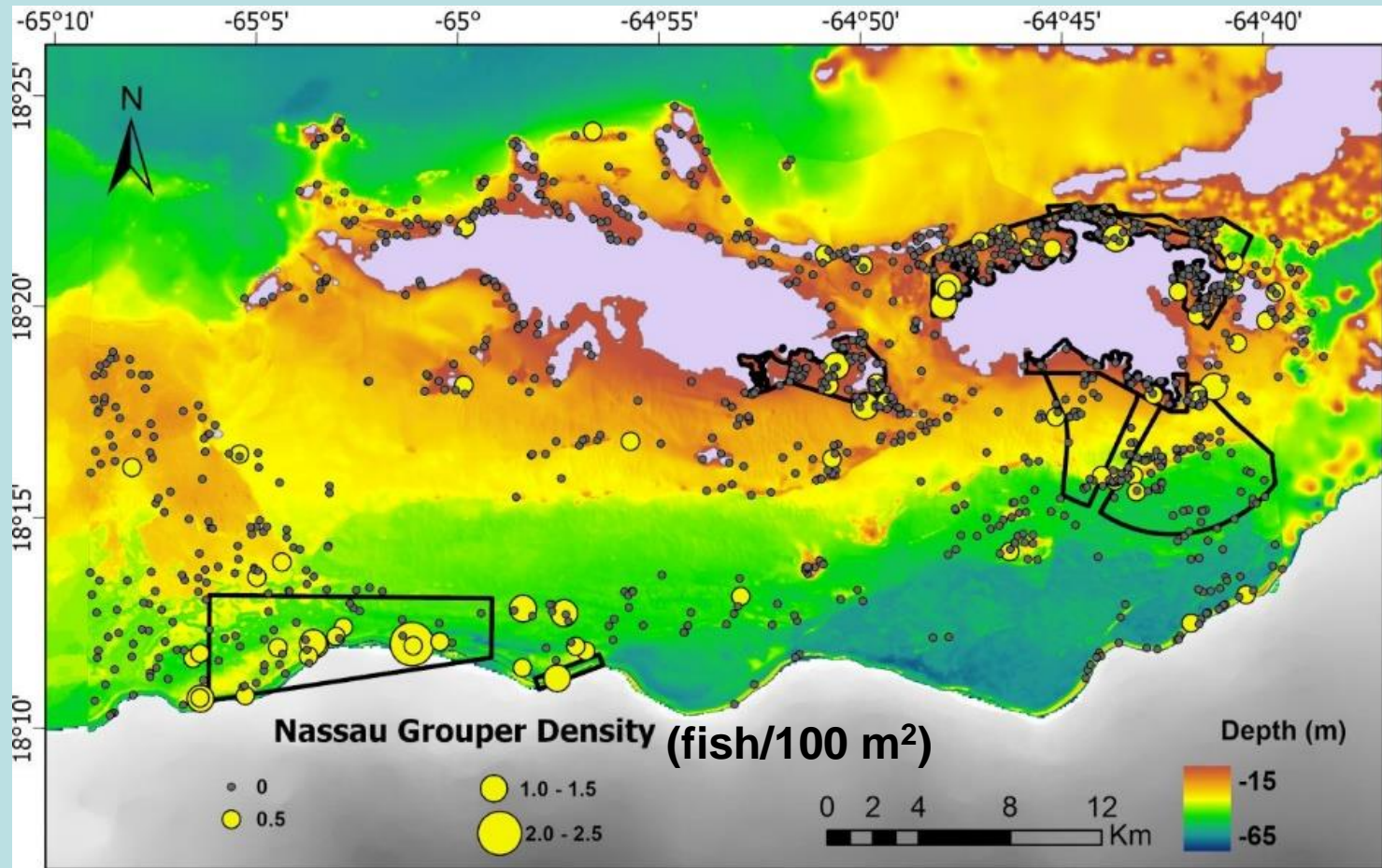
- Fish length
- Number caught
- Location
- Divers reported sightings

FAC questions regarding Nassau grouper

- **Information on whether there have been any new spawning aggregations discovered inside or outside of the existing closed areas. If there are new areas, have they been studied.**

No new spawning sites have been found. We have monitored the historic Nassau grouper bank and have not seen more than a dozen Nassau during the spawning season. If we get accurate coordinates from fishers for this site, we can do additional searching.

There is also anecdotal information of an active Nassau spawning aggregation on the drop north of St. Thomas, which would need funding to evaluate)



NCRMP & DCRMP surveys 2017-2021 Image credit: Tyler Smith
Estimated population size in 2021 = 134,167