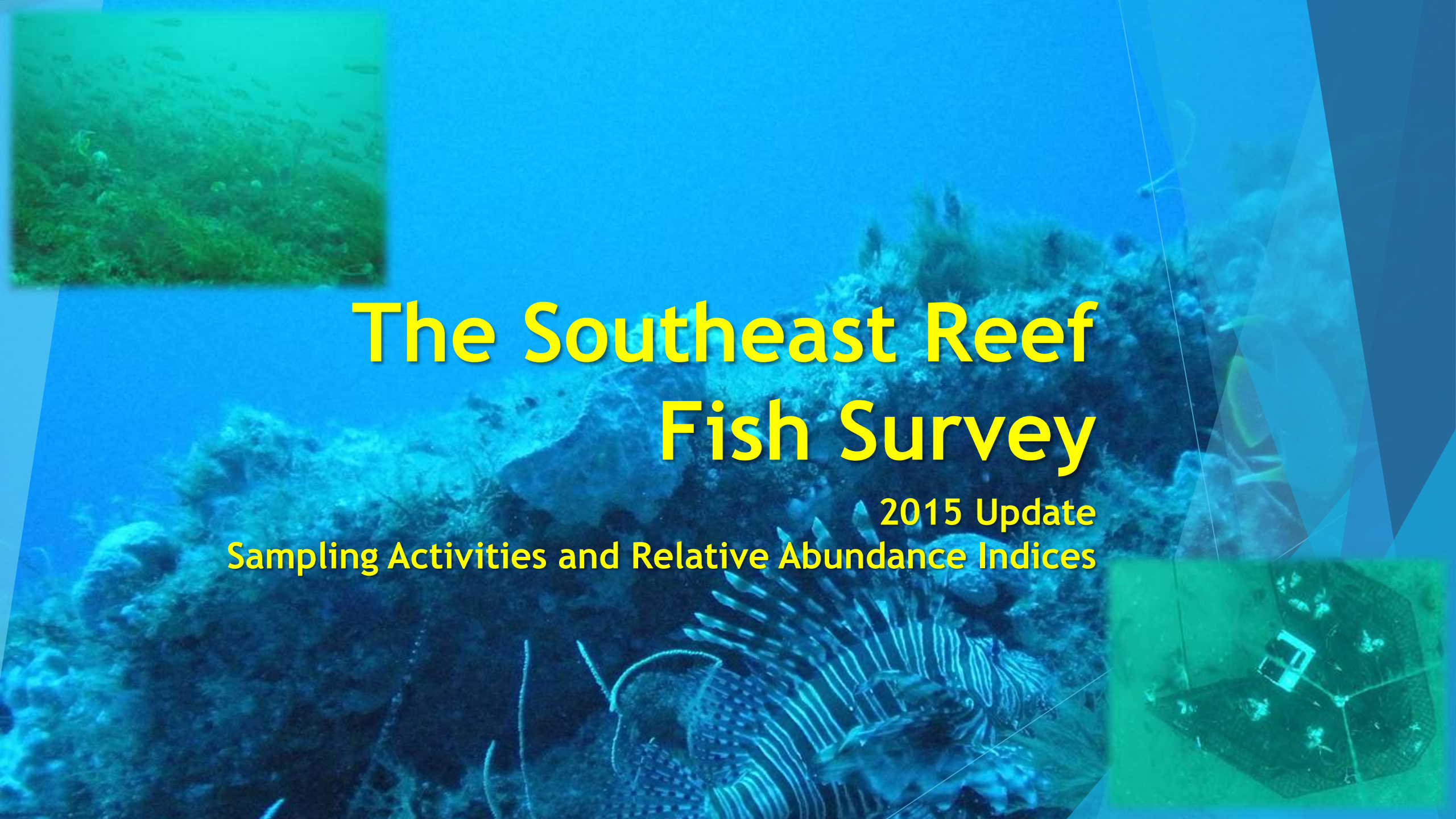




The Southeast Reef Fish Survey

2015 Update
Sampling Activities and Relative Abundance Indices



Southeast Reef Fish Survey (SERFS)

- ▶ MARMAP → established in 1972
 - ▶ Since 1978 → Reef fish sampling with (chevron) fish traps, bottom longlines, rod-&-reel, etc.
- ▶ SEAMAP-SA → established in 1986
 - ▶ Reef fish sampling since 2009
- ▶ SEFIS → established in 2010

Marine Resources Monitoring, Assessment & Prediction Program
Southeast Area Monitoring & Assessment Program (South Atlantic)
Southeast Fishery Independent Survey



Primary Fishing Gears

Chevron Trap



Long Bottom Longline

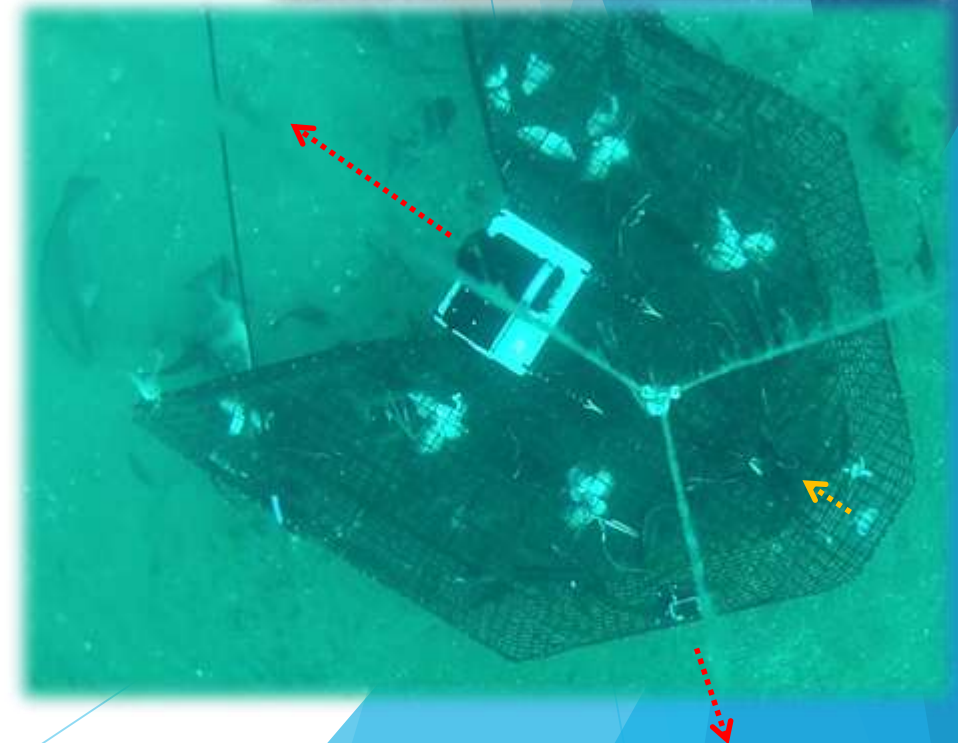
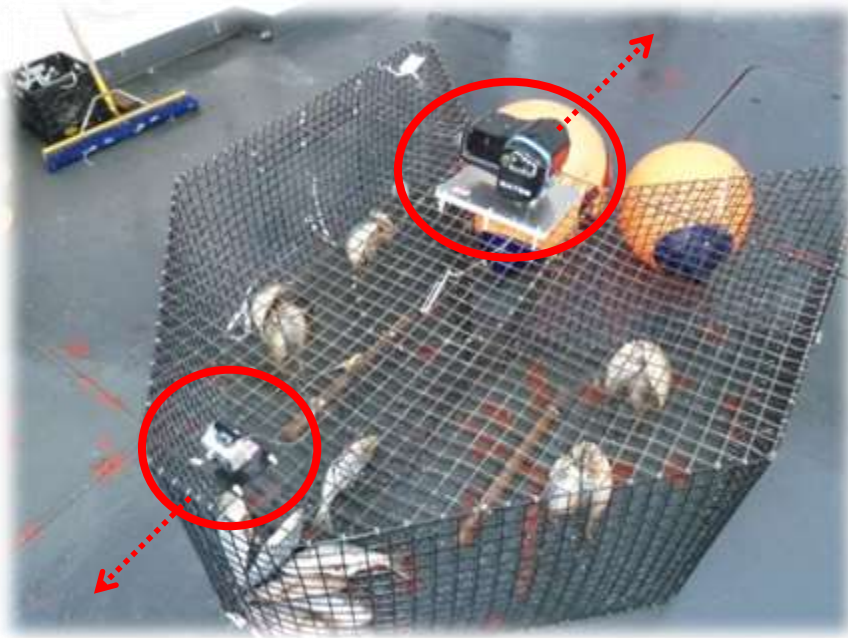


Short Bottom Longline



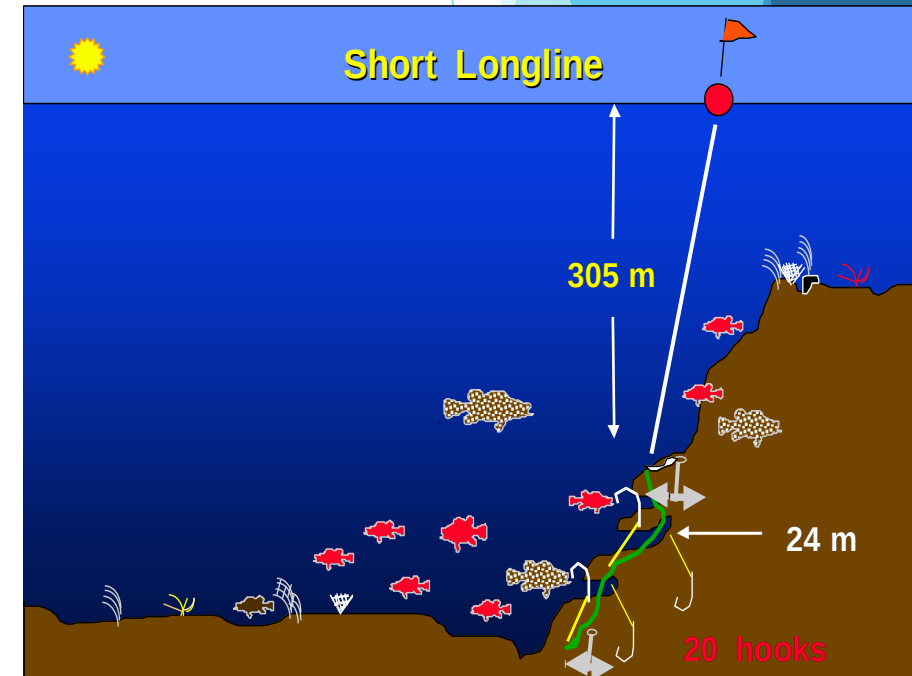
Chevron Trap

- ▶ Deployed from R/V *Palmetto*, R/V *Savannah* & NOAA Vessel *Pisces*
- ▶ Consistent and standardized use since 1990
- ▶ Deployed in depths to ≈ 110 m
- ▶ Soak time ≈ 90 minutes, baited with clupeids
- ▶ 1-3 video cameras on each trap



Short Bottom Longline

- ▶ Deployed from R/V *Palmetto*
- ▶ Target Species
 - ▶ Snowy grouper, jacks, tilefish, speckled hind
- ▶ Soak time $\approx$ 90 minutes, baited with whole squid



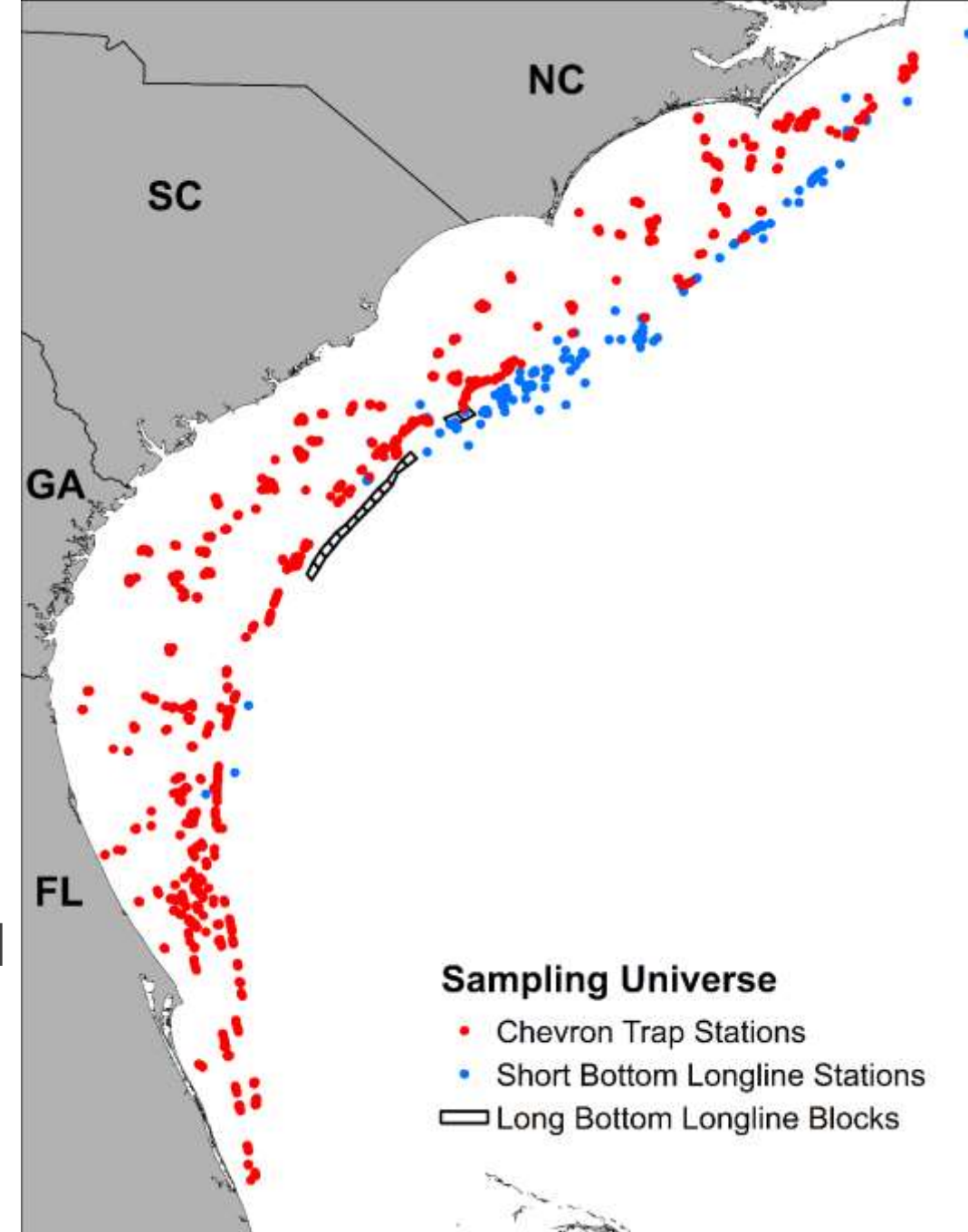
Long Bottom Longline

- ▶ Deployed in depths of $\approx 170 - 270$ m (550 - 900 ft) on mud bottom habitat
 - ▶ $\approx 60 - 80$ nm offshore
- ▶ Soak time ≈ 90 minutes, baited with whole squid
- ▶ Deployed off R/V *Lady Lisa*
- ▶ Target species: Golden Tilefish



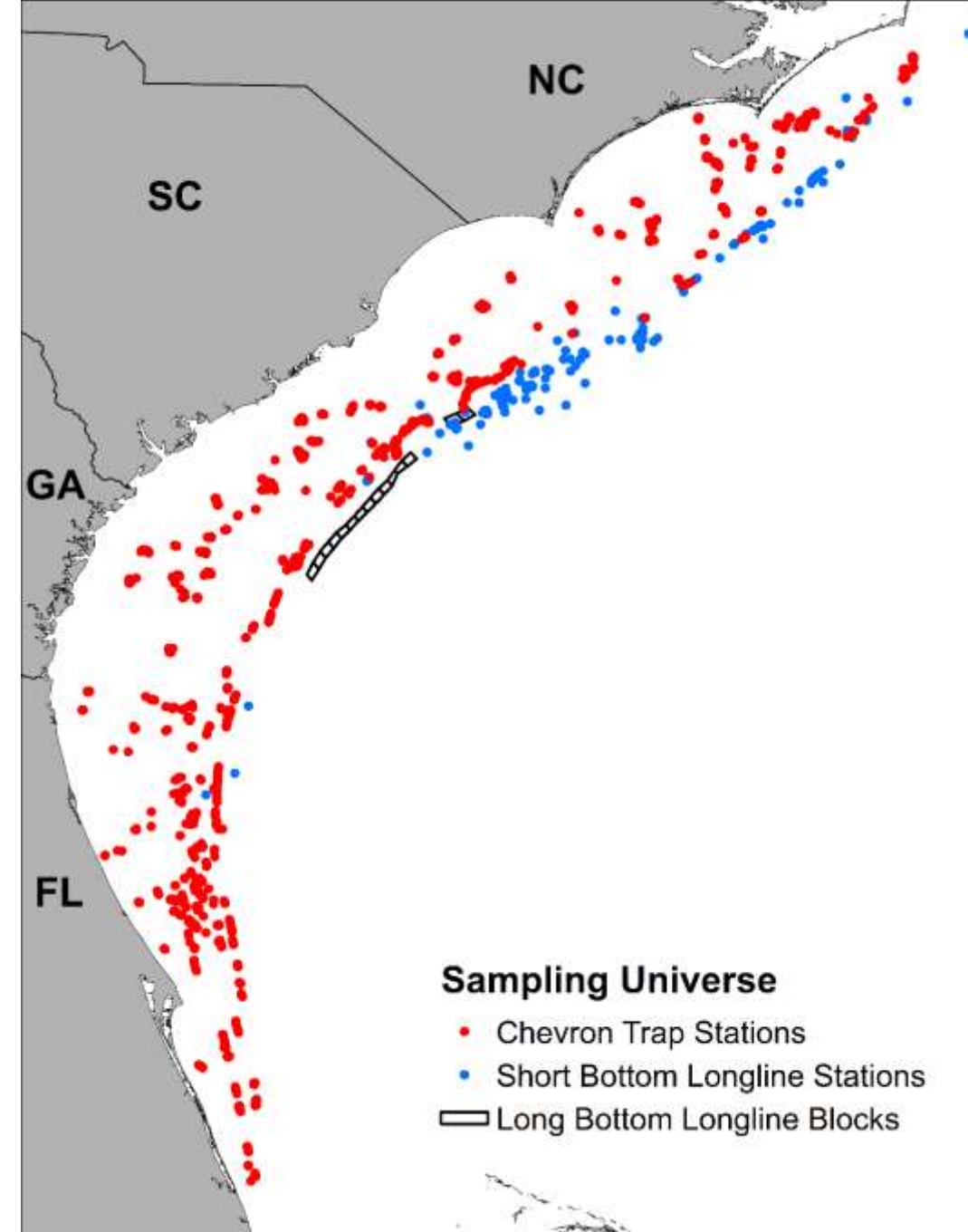
Sampling Universe

- ▶ Chevron Trap Universe
 - ▶ ≈4,000 sampling stations w/known live-bottom habitat
 - ▶ 1,500 - 2,000 stations randomly selected
 - ▶ Distance at least 200 m apart
- ▶ Short Bottom Longline Universe
 - ▶ ≈ 300 sampling stations w/ known live-bottom habitat
 - ▶ 100 - 150 randomly selected and sampled
- ▶ Long Bottom Longline Blocks
 - ▶ 15 blocks in “tilefish” habitat
 - ▶ Target min. 2 LBLL/block each year



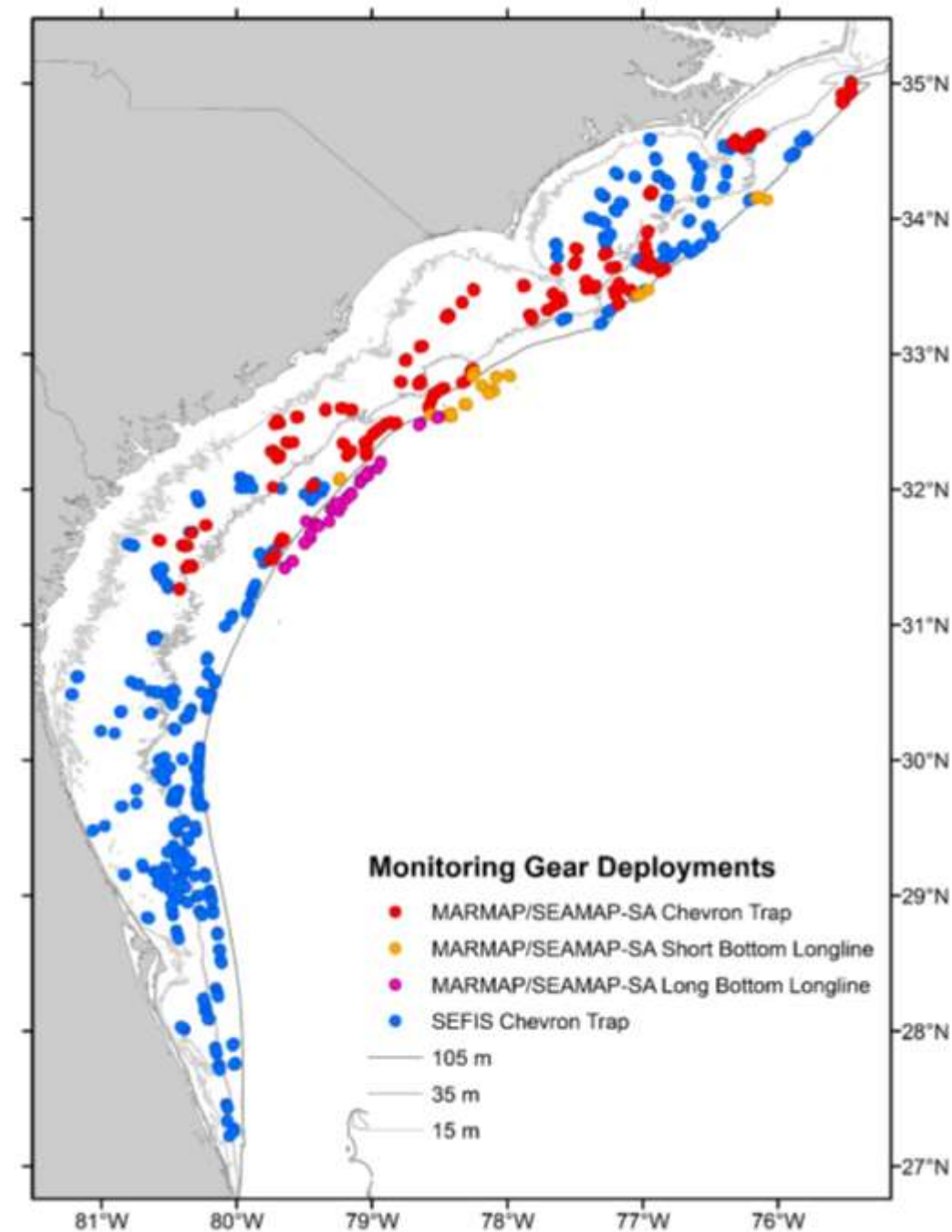
Sampling Design

- ▶ Programs Geographic Distribution
 - ▶ Chevron Traps
 - ▶ MARMAP/SEAMAP-SA
 - ▶ SEFIS
 - ▶ All Other Gears
 - ▶ MARMAP/SEAMAP-SA does all sampling
- ▶ Data Analysis
 - ▶ MARMAP/SEAMAP-SA:
 - ▶ Life history processing & analyses
 - ▶ SEFIS
 - ▶ Video processing & analyses
- ▶ Data - one combined database
 - ▶ Available: www.seamap.org



2015 Summary

- ▶ Chevron Traps - n = 1,523)
- ▶ Short Bottom Longline - n = 103
- ▶ Long Bottom Longline - n = 45
- ▶ Other Gears - n = 460
 - ▶ Includes CTD, Niskin Bottles, Rod-&-Reel, and other gears



The background of the slide is an underwater photograph showing a large, dense school of fish, likely a species of surgeonfish, swimming in a clear blue ocean. The fish are concentrated in the middle ground, moving towards the right. The seabed is visible as a sandy and rocky reef floor. On the right side of the image, there are several overlapping, semi-transparent blue geometric shapes, including triangles and polygons, which create a modern, abstract design element. The text "2015 Reef Fish Survey Catches" is overlaid on the left side of the image in a bold, yellow, sans-serif font.

2015 Reef Fish Survey Catches

Scientific Name	Common Name	Chevron	Short Bottom Longline	Long Bottom Longline	Rod-&-Reel	Total
<i>Haemulon aurolineatum</i>	Tomtate	15,398	2015 Top 20 Species		3	15,901
<i>Centropristis striata</i>	Black Sea Bass	14,330			14	14,344
<i>Stenotomus sp.</i>	Scup & Longspine Porgy	2,240				2,240
<i>Rhomboplites aurorubens</i>	Vermilion Snapper	2,211			15	2,226
<i>Pagrus pagrus</i>	Red Porgy	2,015		7		2,022
<i>Haemulon plumierii</i>	White Grunt	1,300			13	1,313
<i>Balistes capriscus</i>	Gray Triggerfish	1,204			1	1,205
<i>Lutjanus campechanus</i>	Red Snapper	942			22	964
<i>Centropristis ocyurus</i>	Bank Sea Bass	768				768
<i>Diplodus holbrookii</i>	Spottail Pinfish	676				364
<i>Diplectrum formosum</i>	Sand Perch	364				139
<i>Lagodon rhomboides</i>	Pinfish	139				125
<i>Hyporthodus niveatus</i>	Snowy Grouper	19	103	2	1	123
<i>Calamus nodosus</i>	Knobbed Porgy	123				85
<i>Mycteroperca phenax</i>	Scamp	72	12		1	69
<i>Orthopristis chrysoptera</i>	Pigfish	69				44
<i>Seriola rivoliana</i>	Almaco Jack	43	1			43
<i>Stephanolepis hispidus</i>	Planehead Filefish	43				35
<i>Caulolatilus microps</i>	Blueline Tilefish	12	18	5		35
<i>Helicolenus dactylopterus</i>	Blackbelly Rosefish		15	12	8	34

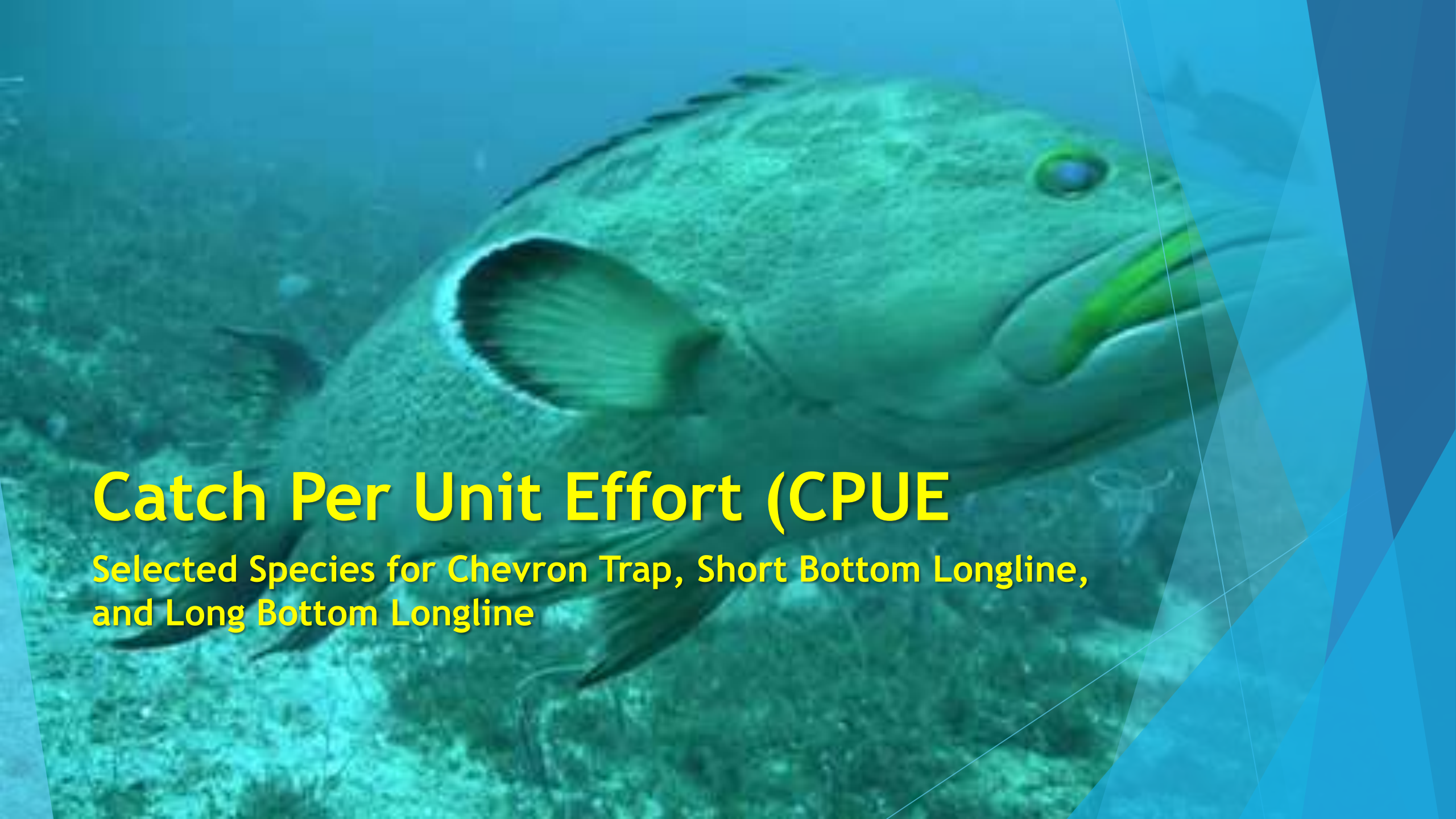
Scientific Name	Common Name	Chevron	Short Bottom Longline	Long Bottom Longline	Rod-&-Reel	Total
<i>Haemulon aurolineatum</i>	Tomtate	15,398	Commercial & Recreational Importance		3	15,901
<i>Centropristis striata</i>	Black Sea Bass	14,330			14	14,344
<i>Stenotomus sp.</i>	Scup & Longspine Porgy	2,240				2,240
<i>Rhomboplites aurorubens</i>	Vermilion Snapper	2,211			15	2,226
<i>Pagrus pagrus</i>	Red Porgy	2,015		7		2,022
<i>Haemulon plumierii</i>	White Grunt	1,300			13	1,313
<i>Balistes capriscus</i>	Gray Triggerfish	1,204			1	1,205
<i>Lutjanus campechanus</i>	Red Snapper	942			22	964
<i>Centropristis ocyurus</i>	Bank Sea Bass	768				768
<i>Diplodus holbrookii</i>	Spottail Pinfish	676				364
<i>Diplectrum formosum</i>	Sand Perch	364				139
<i>Lagodon rhomboides</i>	Pinfish	139				125
<i>Hyporthodus niveatus</i>	Snowy Grouper	19	103	2	1	123
<i>Calamus nodosus</i>	Knobbed Porgy	123				85
<i>Mycteroperca phenax</i>	Scamp	72	12		1	69
<i>Orthopristis chrysoptera</i>	Pigfish	69				44
<i>Seriola rivoliana</i>	Almaco Jack	43	1			43
<i>Stephanolepis hispidus</i>	Planehead Filefish	43				35
<i>Caulolatilus microps</i>	Blueline Tilefish	12	18	5		35
<i>Helicolenus dactylopterus</i>	Blackbelly Rosefish		15	12	8	34

An underwater photograph of a coral reef. In the foreground, a large, silvery fish with a textured, scale-like pattern is swimming towards the right. The reef is covered in green and brown coral. In the background, another smaller fish is visible swimming towards the left. The water is clear and blue. On the right side of the image, there are several overlapping, semi-transparent blue geometric shapes (triangles and polygons) that create a modern, abstract design element.

2015 Reef Fish Survey Life History Samples

Scientific Name	Common Name	# Fish	%
<i>Centropristis striata</i>	Black Sea Bass	2,821	25.32
<i>Rhomboplites aurorubens</i>	Vermilion Snapper	2,108	18.92
<i>Pagrus pagrus</i>	Red Porgy	2,003	17.98
<i>Haemulon plumierii</i>	White Grunt	1,265	11.35
<i>Balistes capriscus</i>	Gray Triggerfish	1,182	10.61
<i>Lutjanus campechanus</i>	Red Snapper	964	8.65
<i>Hyporthodus niveatus</i>	Snowy Grouper	125	1.12
<i>Calamus nodosus</i>	Knobbed Porgy	120	1.08
<i>Mycteroperca phenax</i>	Scamp	85	0.76
<i>Caulolatilus microps</i>	Blueline Tilefish	35	0.31
<i>Epinephelus morio</i>	Red Grouper	32	0.29
<i>Mycteroperca microlepis</i>	Gag	24	0.22
<i>Lopholatilus chamaeleonticeps</i>	Golden Tilefish	20	0.18
<i>Seriola dumerili</i>	Greater Amberjack	20	0.18

- Pterois* sp. (Lionfish)
- Rank = 23rd
 - N = 14 (all via chevron traps)



Catch Per Unit Effort (CPUE)

Selected Species for Chevron Trap, Short Bottom Longline,
and Long Bottom Longline

Overview of CPUE

▶ Gears

- ▶ Chevron trap (1990*-2015), short bottom longline (1996-2015), and long bottom longline (1996-2015)

▶ Stations

- ▶ Used species' specific depth ranges

▶ Response (CPUE unit)

- ▶
$$\frac{\text{Catch}}{\text{Trap} \times \text{hr}}$$

▶ Method

- ▶ Delta-GLM standardized
- ▶ Index normalized to long term average
- ▶ Error bars are $\pm 95\%$ CI



Caveats

- ▶ Summary overview, not an update of stock status
- ▶ Constraints, stratification, units, and models for CPUE may be different from those used in (SEDAR) stock assessments
- ▶ Many species have not been assessed or updated through SEDAR process and not all trends in analyses have been discussed in SEDAR framework

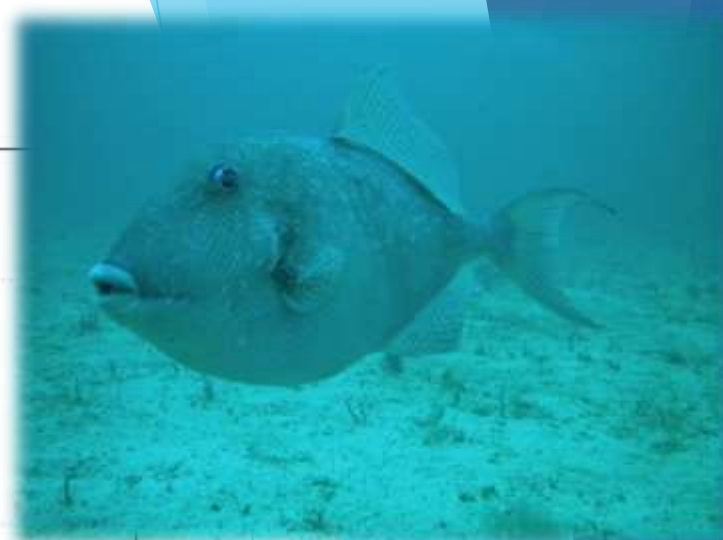
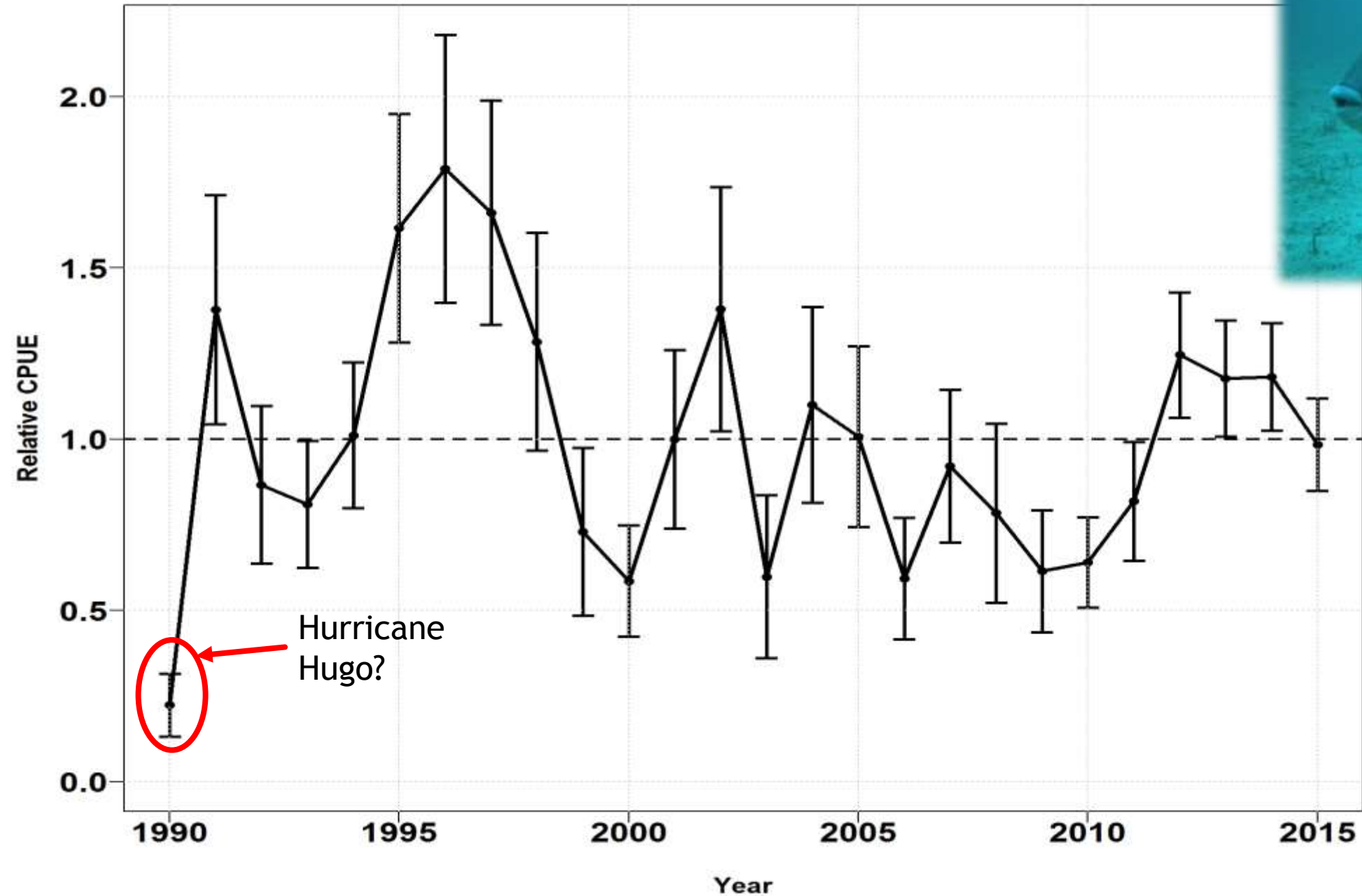


Overview of Selected Species

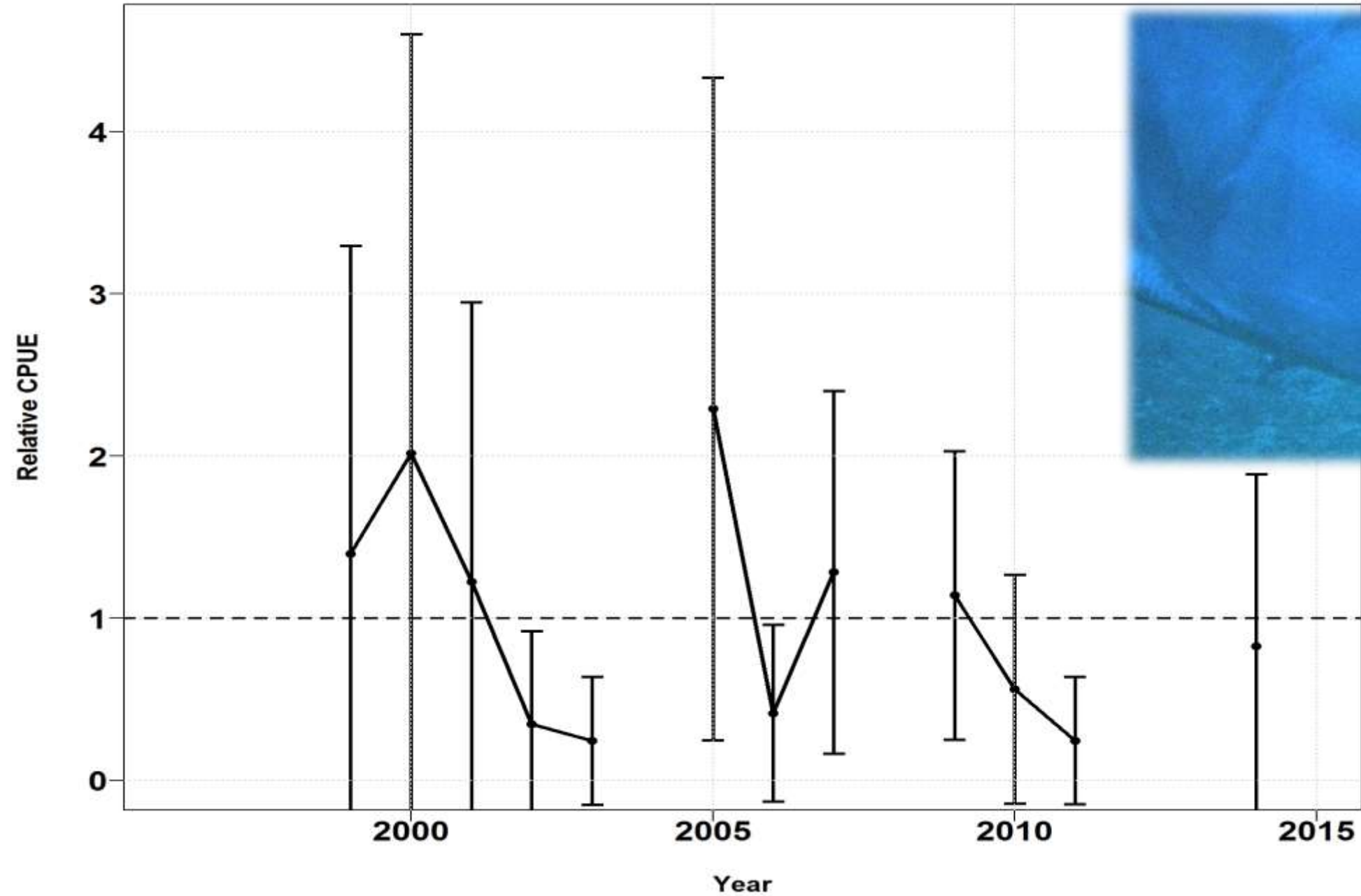
- ▶ Species in blue - routine life history sampling
- ▶ Species in green - currently no routine life history sampling



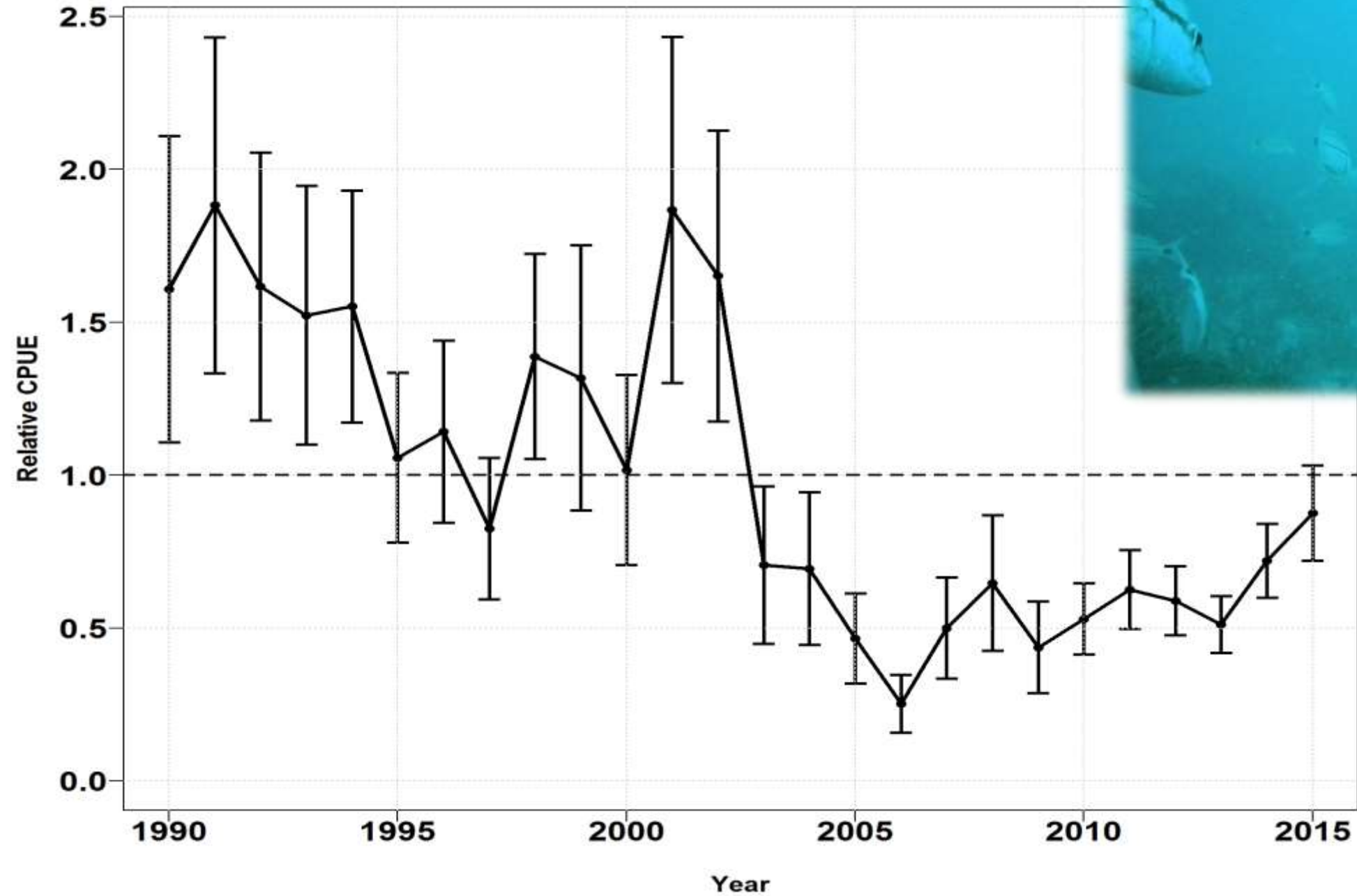
Gray Triggerfish - Chevron Trap



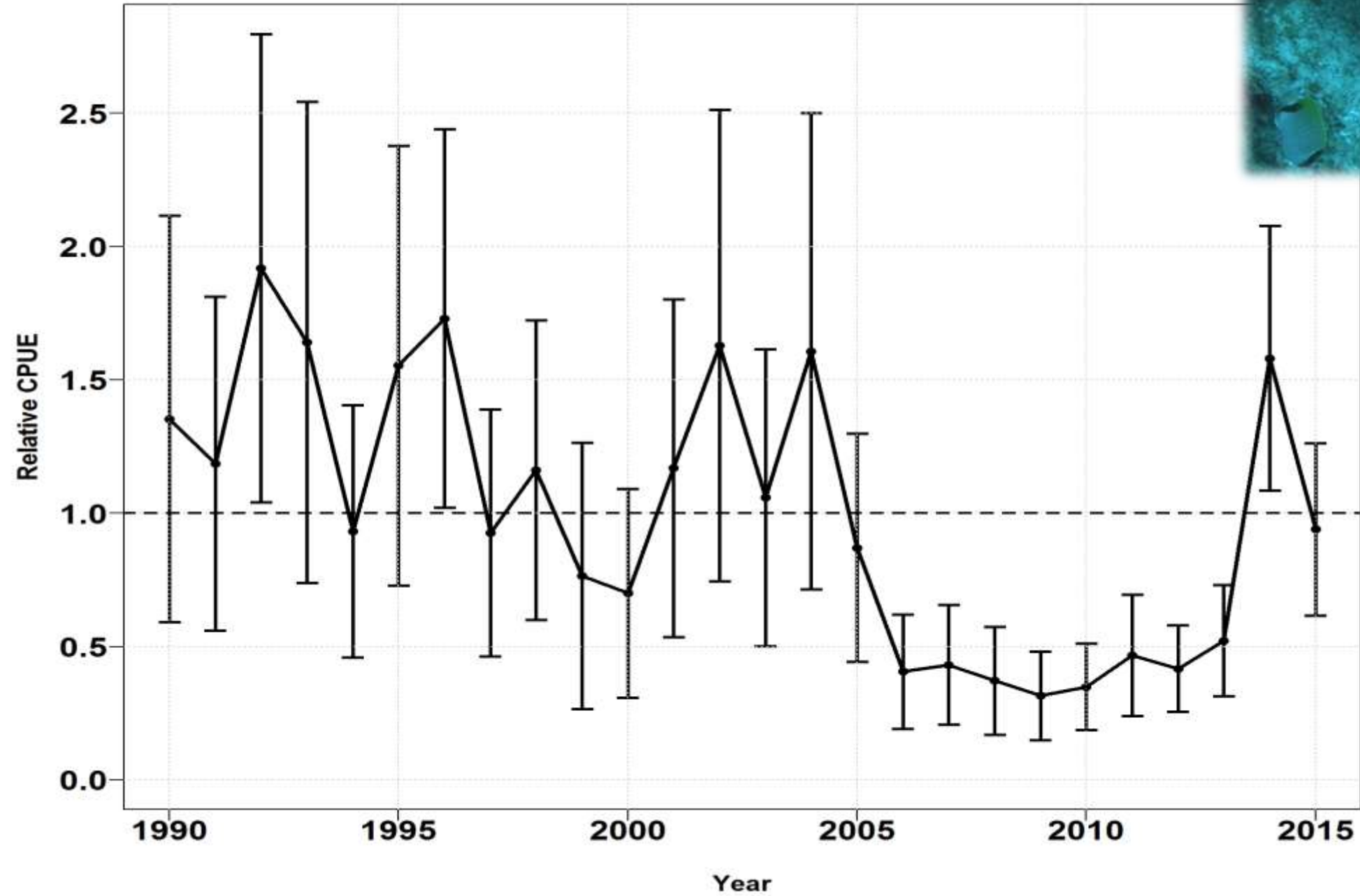
Greater Amberjack - Short Bottom Longline



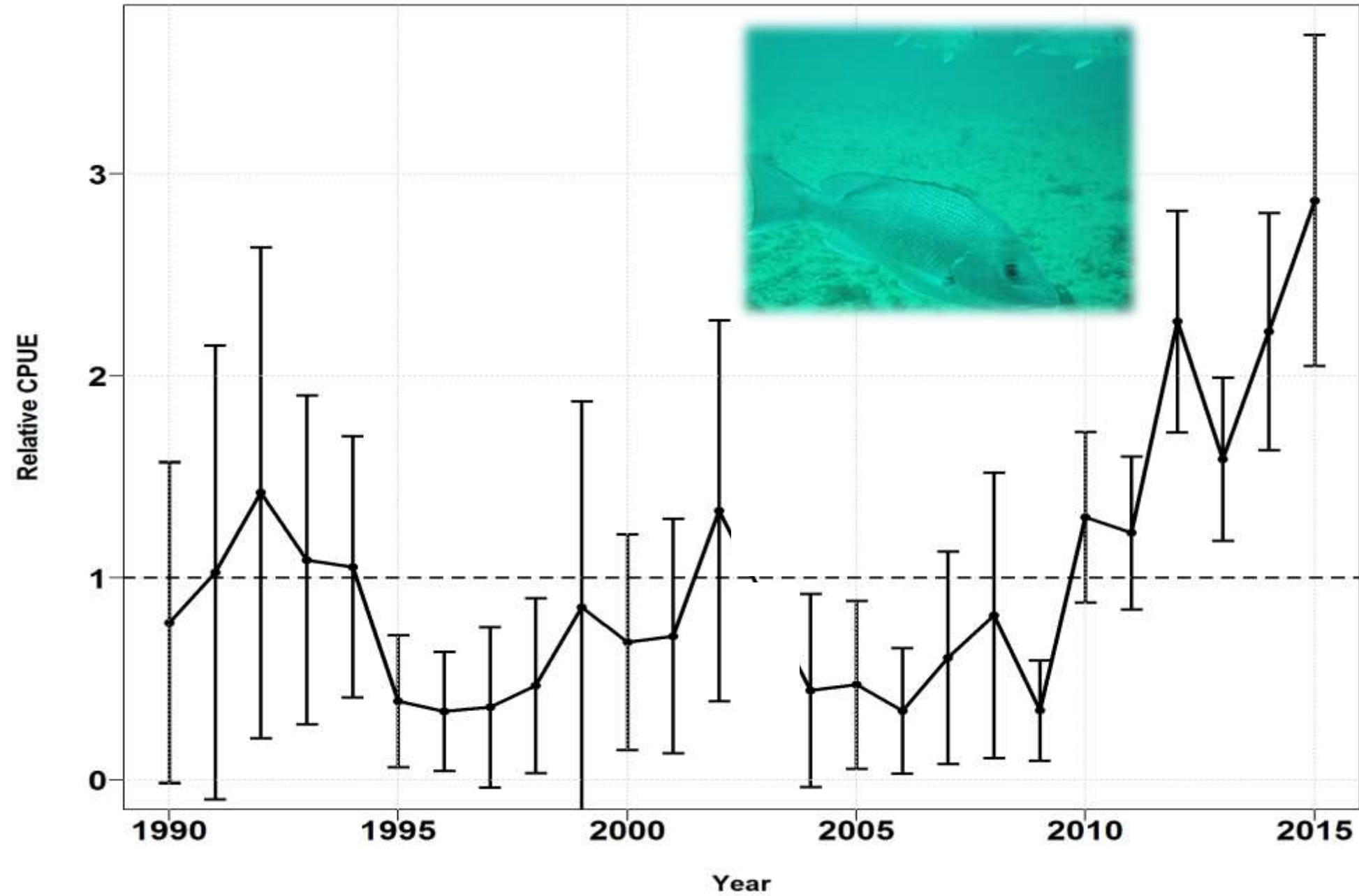
Tomtate - Chevron Trap



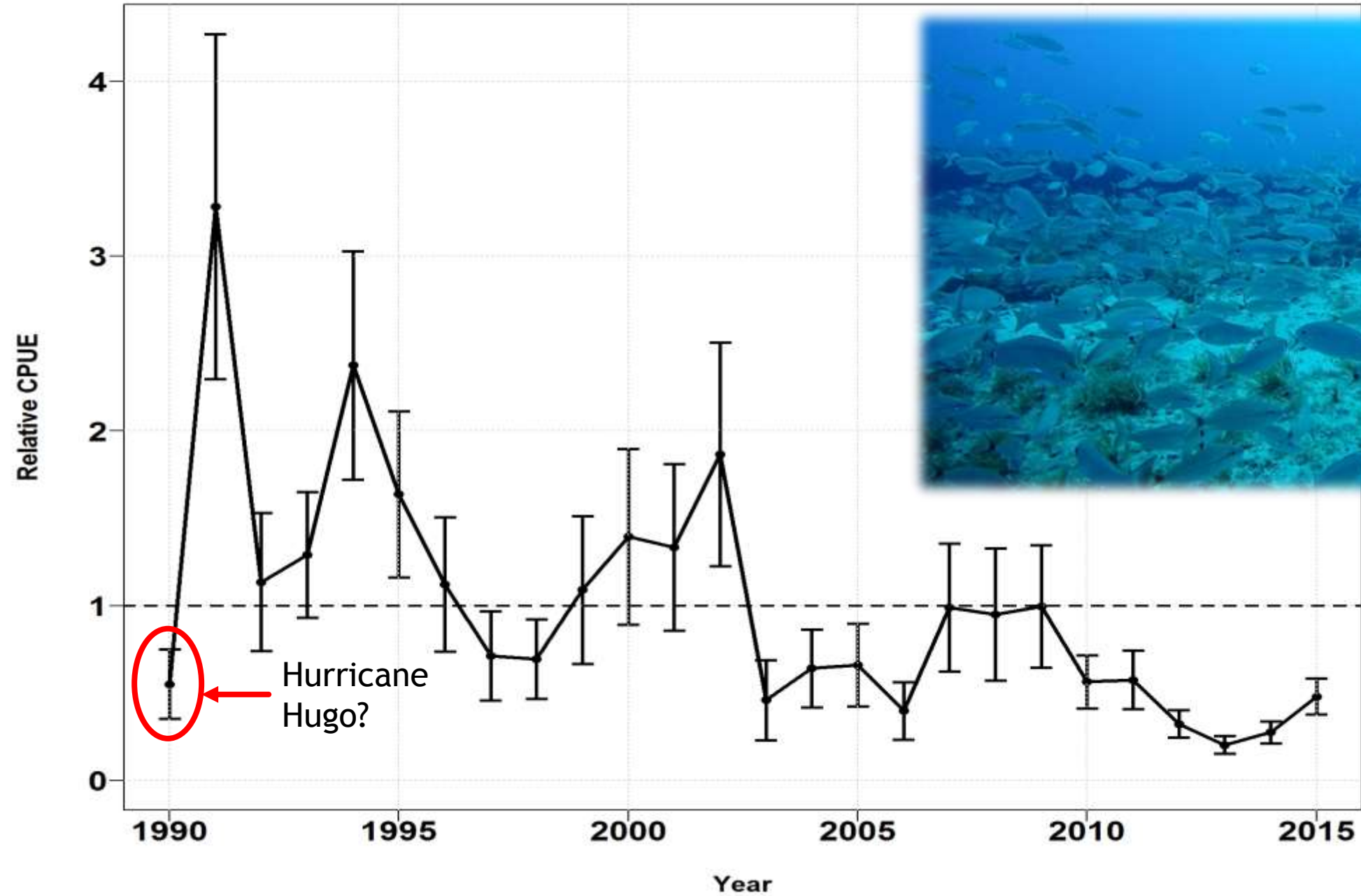
White Grunt - Chevron Trap



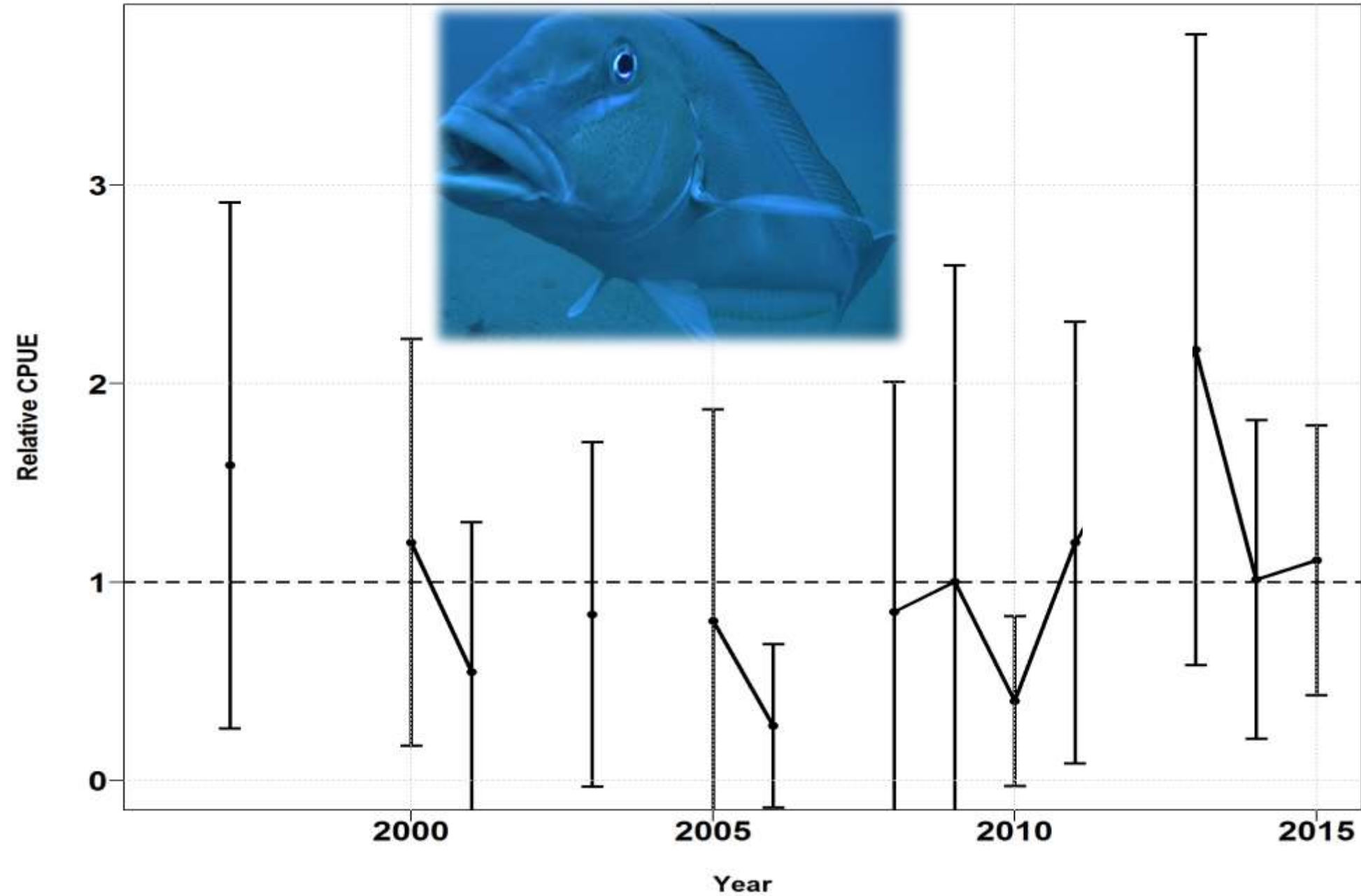
Red Snapper - Chevron Trap



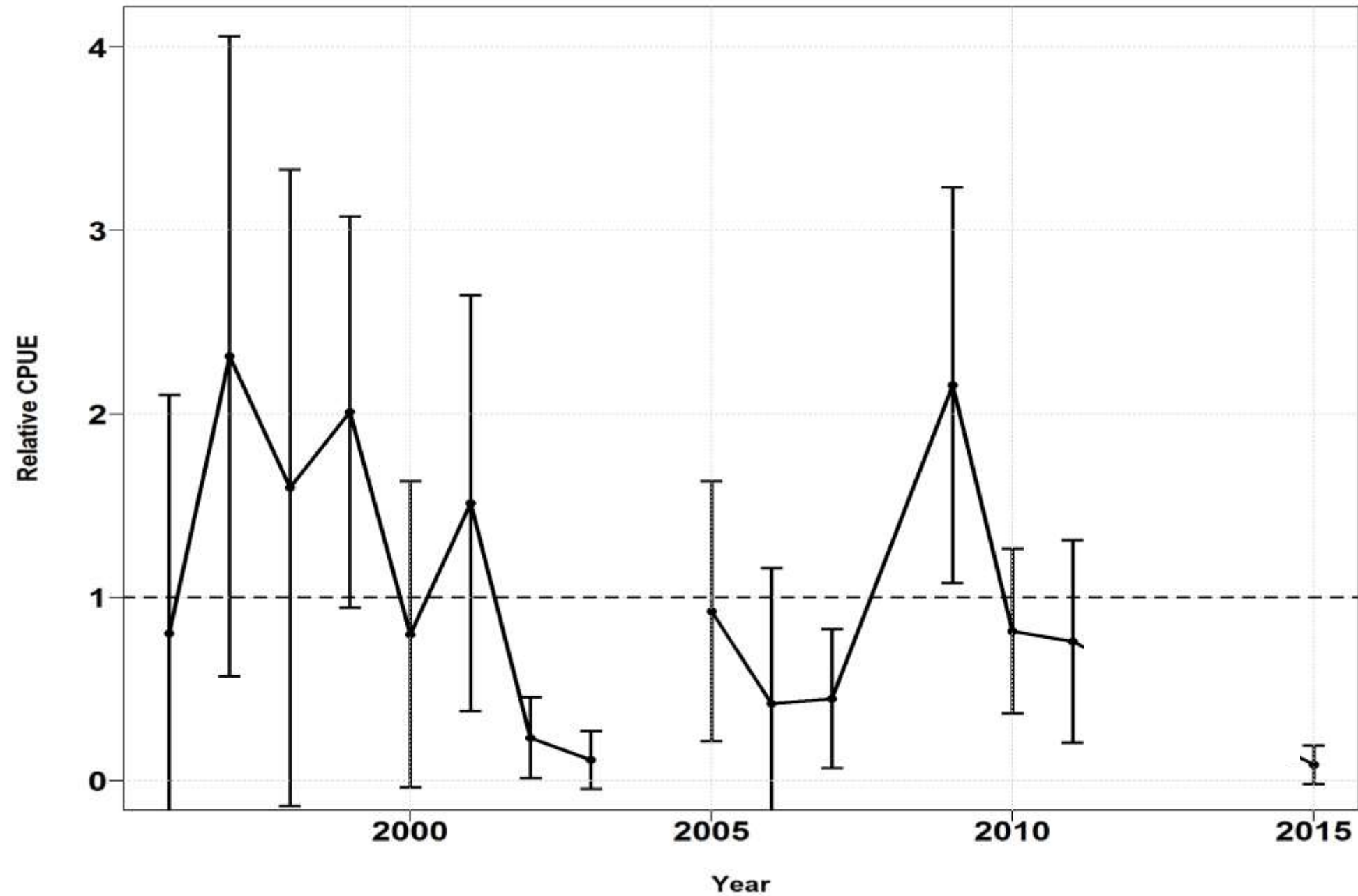
Vermilion Snapper - Chevron Trap



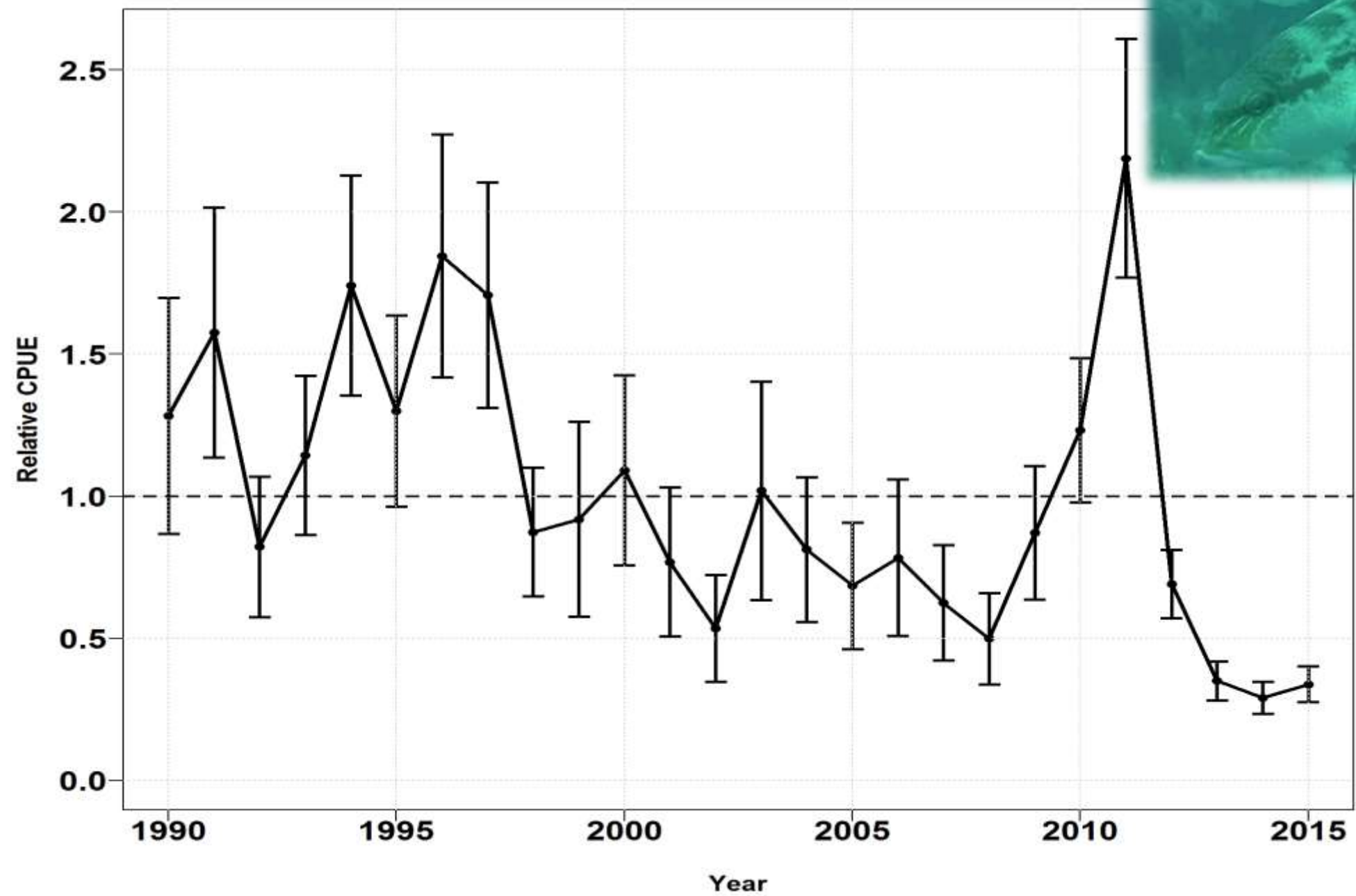
BlueLine Tilefish - Short Bottom Longline



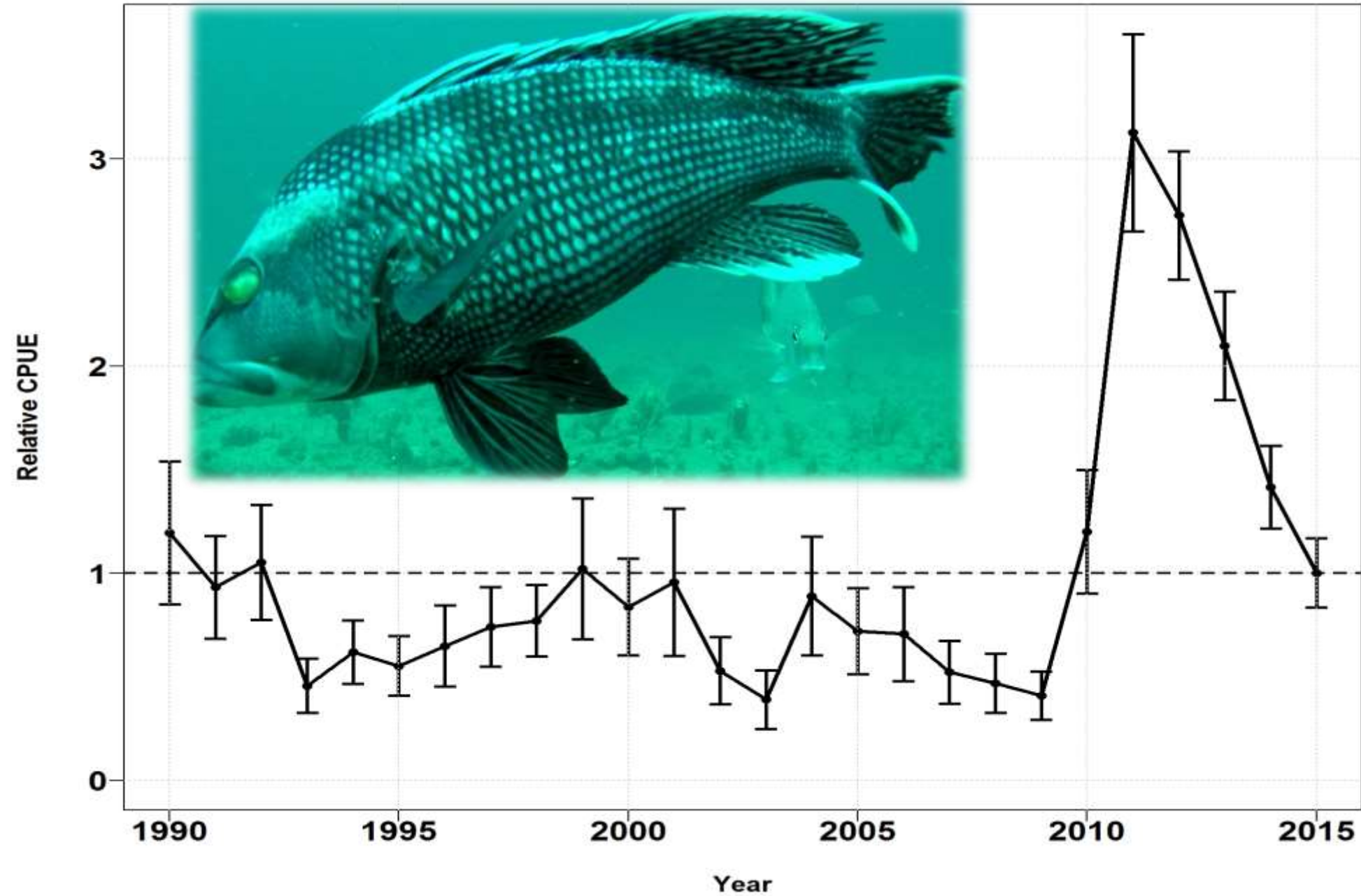
Golden Tilefish - Long Bottom Longline



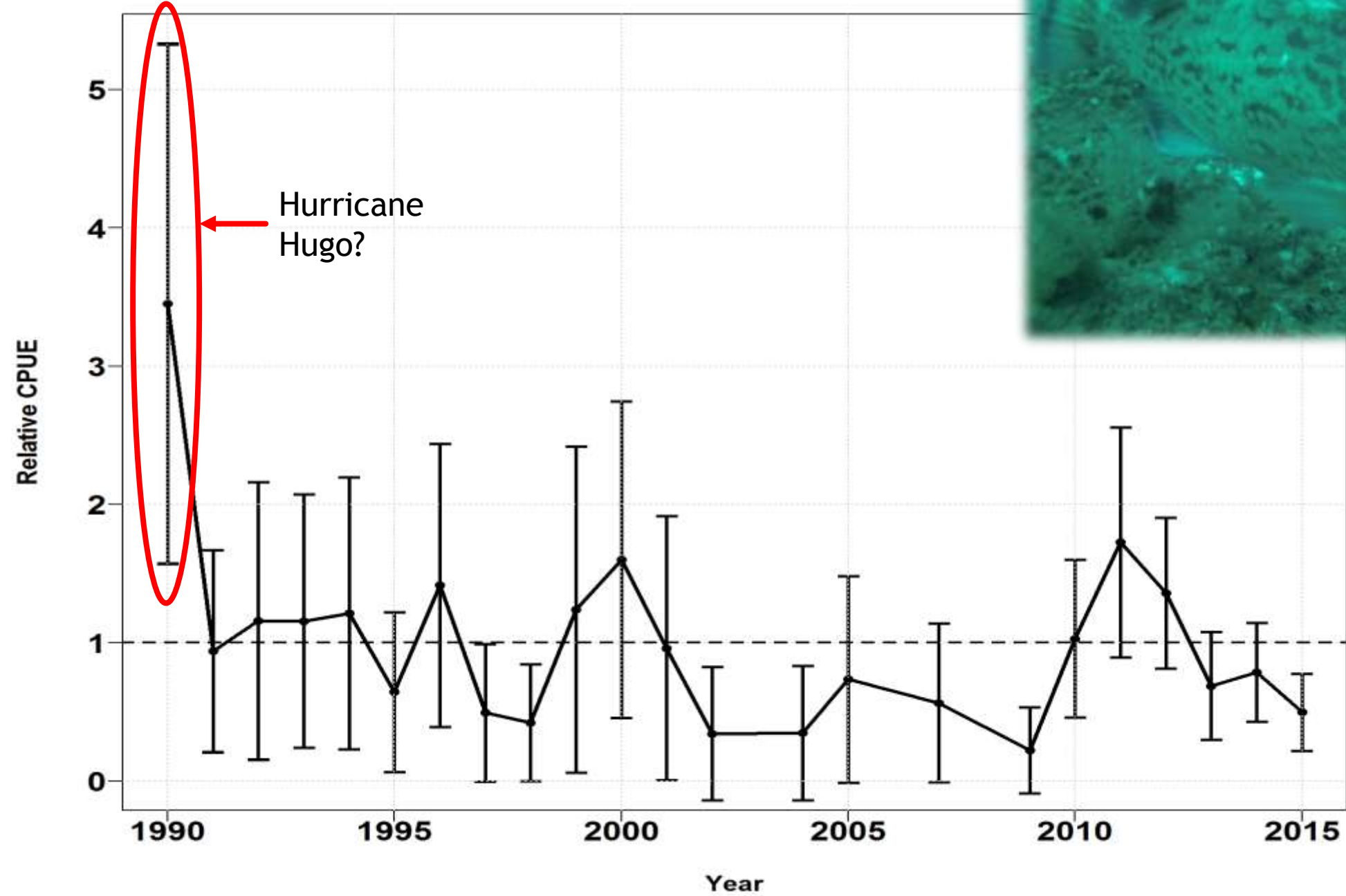
Bank Sea Bass - Chevron Trap



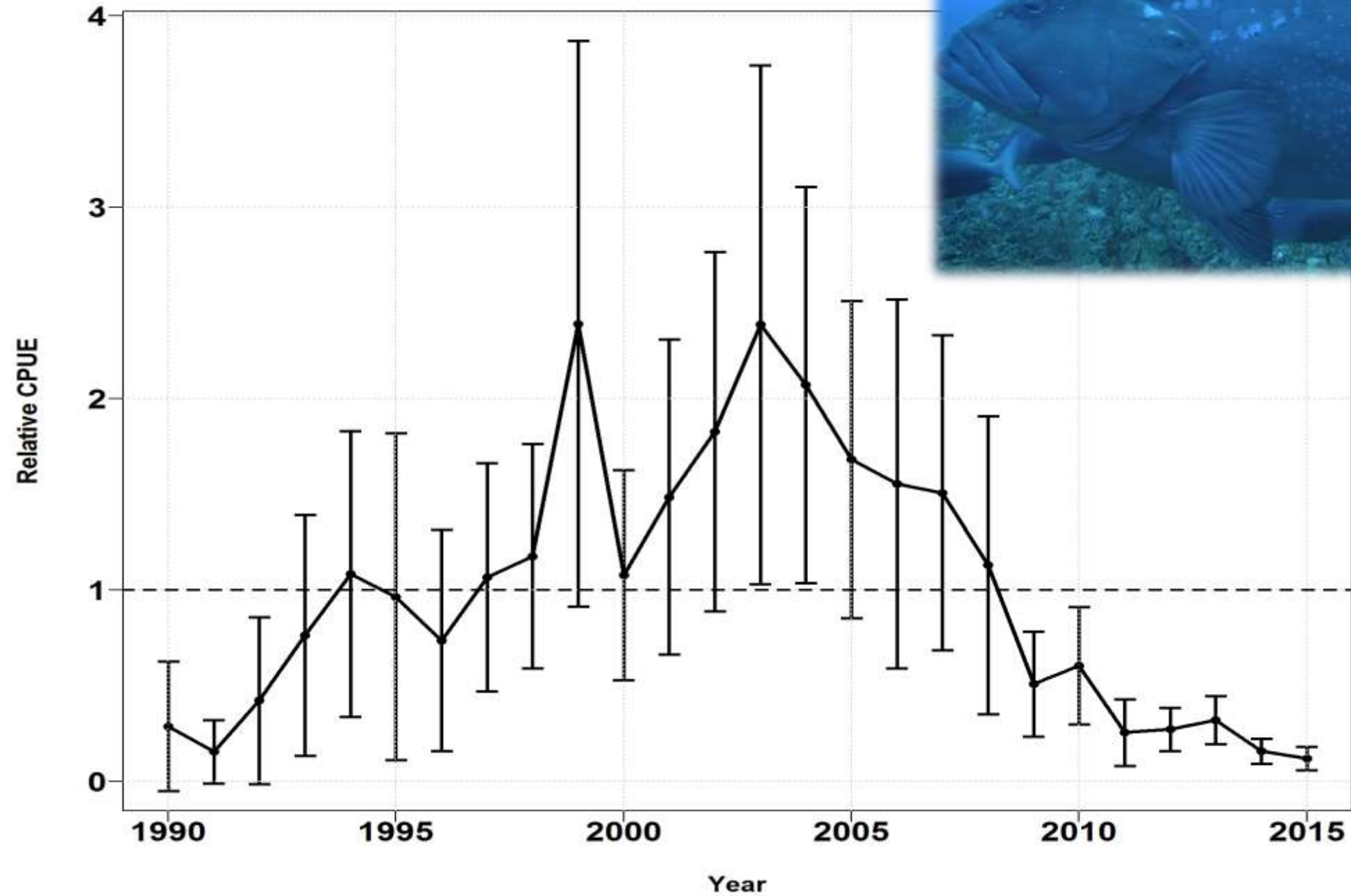
Black Sea Bass - Chevron Trap



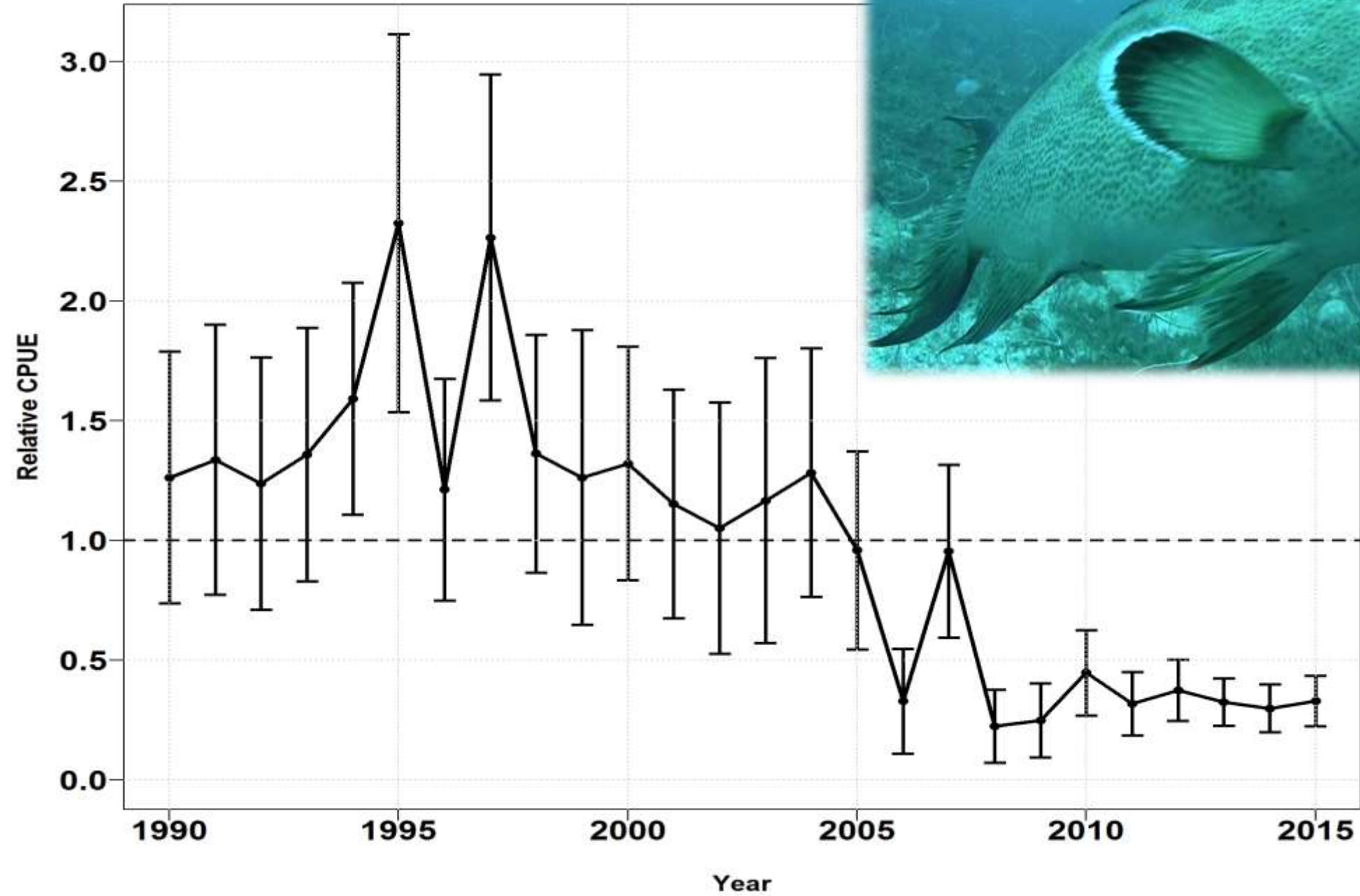
Gag - Chevron Trap



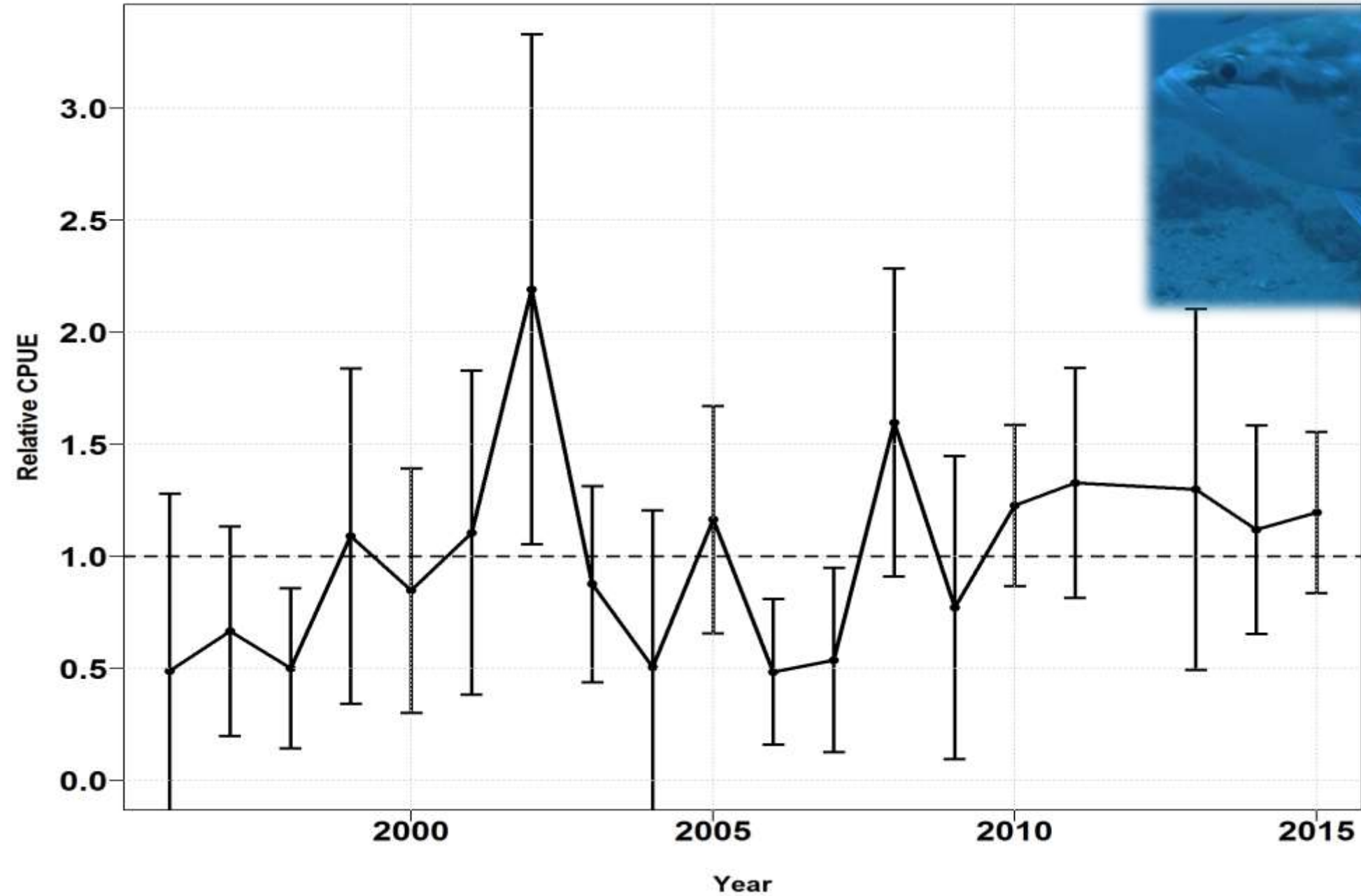
Red Grouper - Chevron Trap



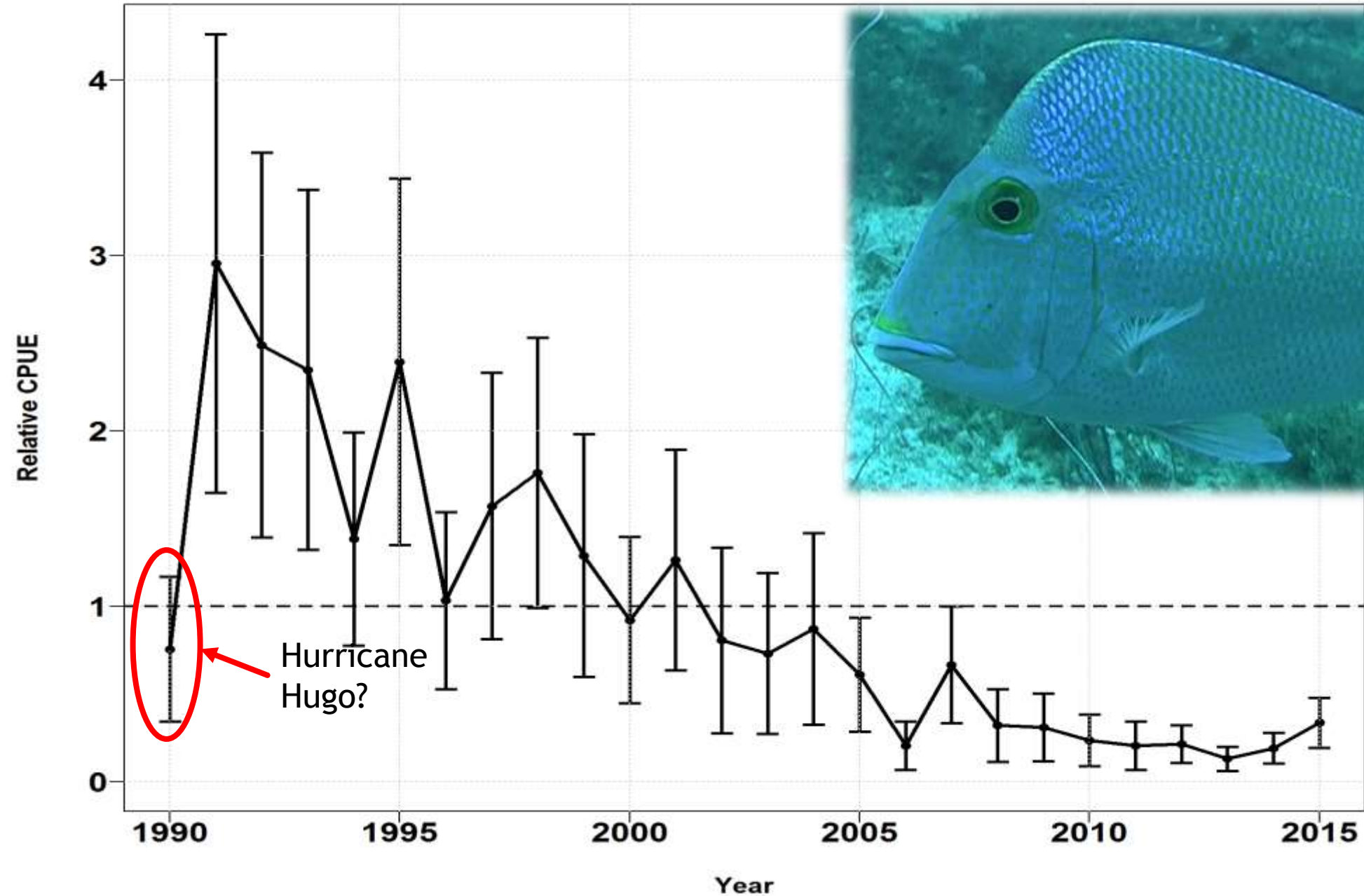
Scamp - Chevron Trap



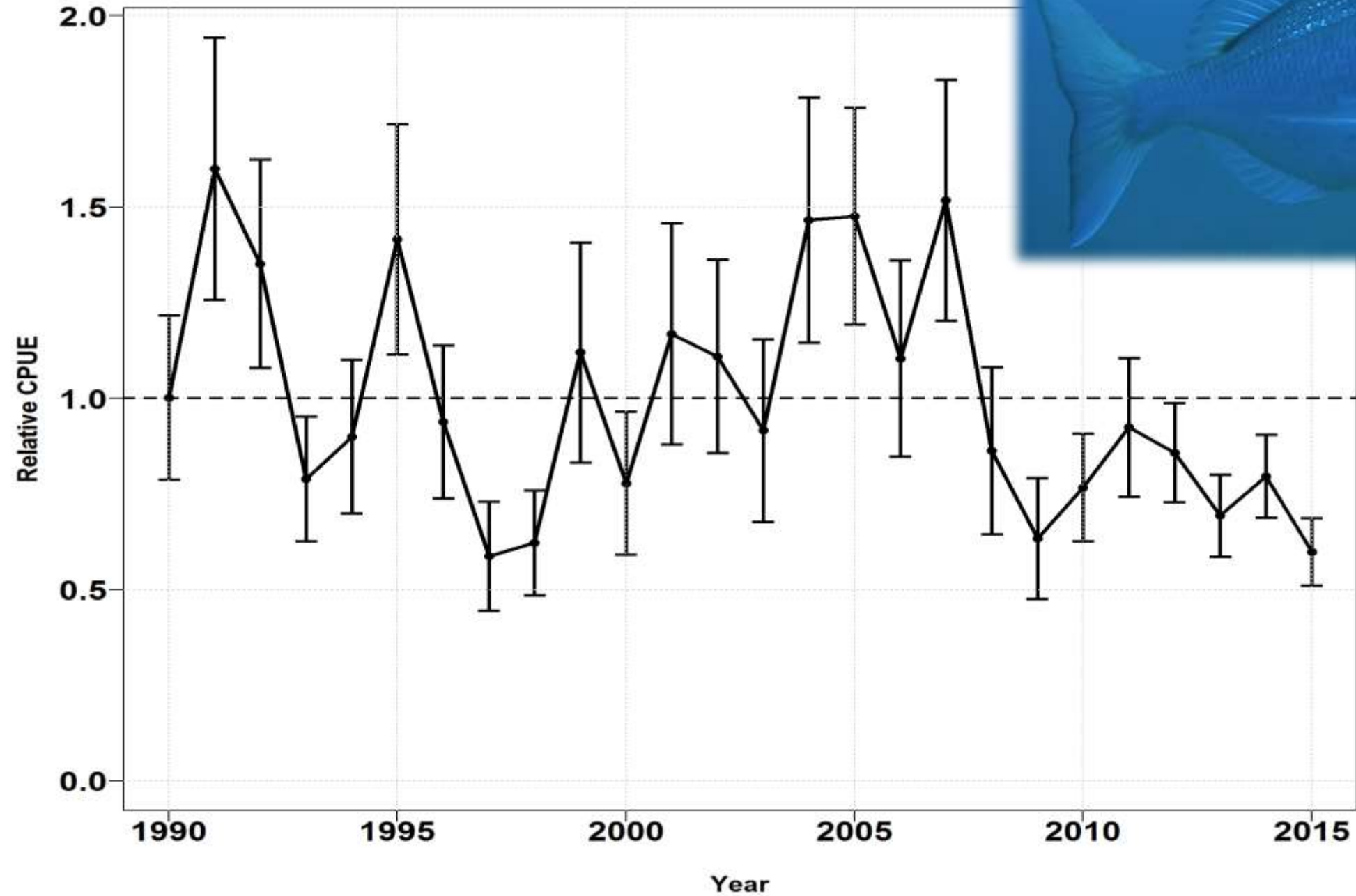
Snowy Grouper - Short Bottom Longline



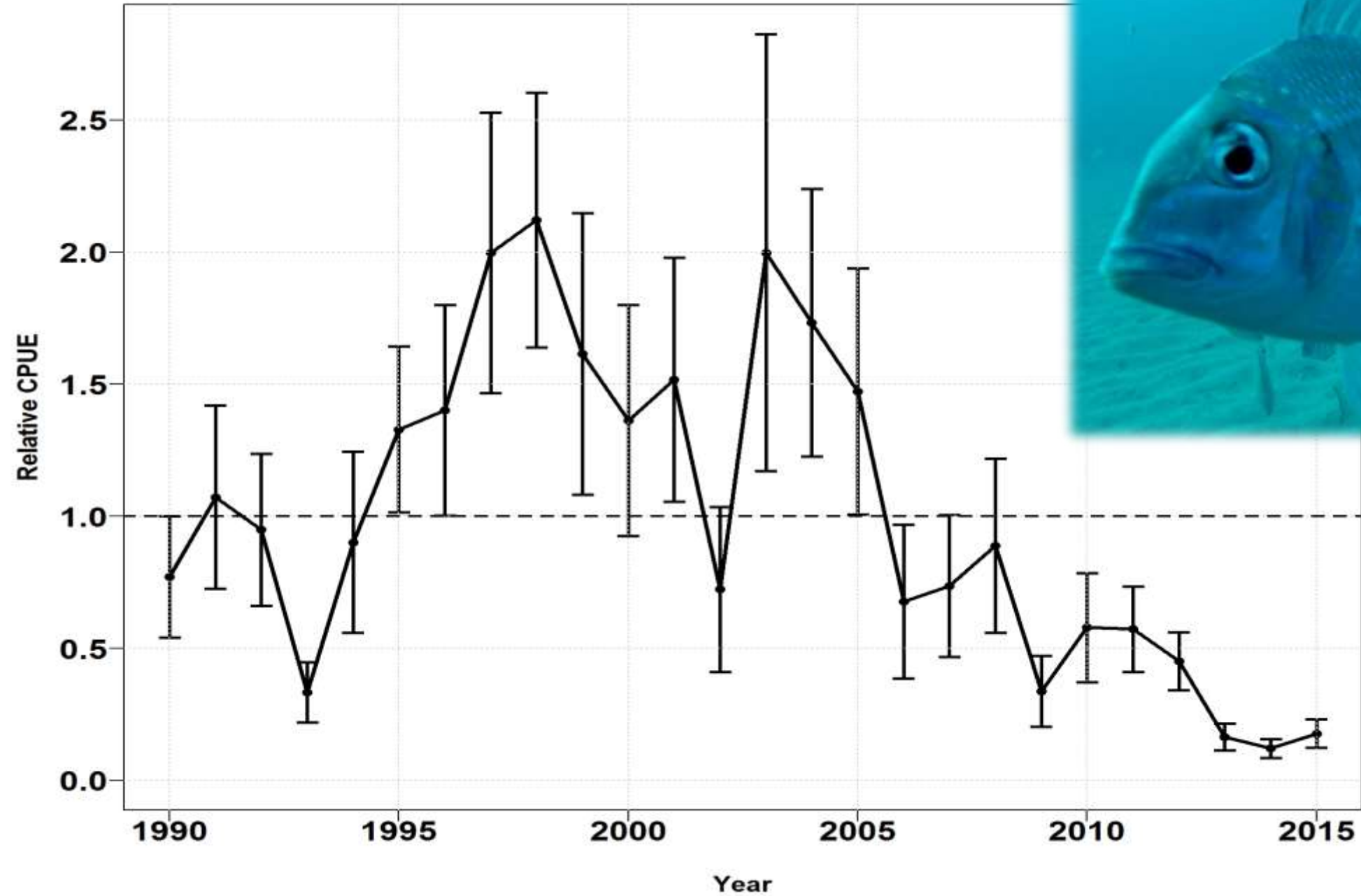
Knobbed Porgy - Chevron Trap



Red Porgy - Chevron Trap



Stenotomus sp. - Chevron Trap



An underwater photograph of a coral reef. In the foreground, a large, dark-colored fish with a prominent white eye and a pattern of small white spots on its body is visible. Above it, a large, dark fish with a white patch on its side is swimming. To the right, several smaller, yellow and white striped fish are swimming. The background shows a dense coral reef with many small fish swimming around. The overall scene is set in clear blue water.

2016 Reef Fish Monitoring

2016 Reef Fish Monitoring

- ▶ Sampling Season
 - ▶ May 3rd - October 14th
- ▶ Activities
 - ▶ SERFS
 - ▶ Three monitoring vessels: R/V *Palmetto*, R/V *Savannah* & NOAA Vessel *Pisces*
 - ▶ Chevron traps with 2 video cameras and CTD
 - ▶ Hook-&-Line (diet studies), DNA sampling, others
 - ▶ MARMAP/SEAMAP-SA
 - ▶ Short bottom longline and long bottom longline sampling (e.g., snowy grouper, blueline tilefish, & golden tilefish)





Acknowledgements:

Wally Bublely,
Tracey Smart

MARMAP/SEAMAP-SA/SEFIS
Staff & Students

Research Vessel Crews



A dramatic seascape at sunset or sunrise. The sun is low on the horizon, creating a bright glow and reflecting on the water. The sky is filled with scattered clouds. In the foreground, the dark, choppy water of the sea is visible, with white foam from the ship's wake. On the right side, a metal crane arm extends from the ship, with a heavy chain hanging from it. The overall mood is contemplative and mysterious.

Questions???