



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

R/V *Palmetto*



R/V *Savannah*



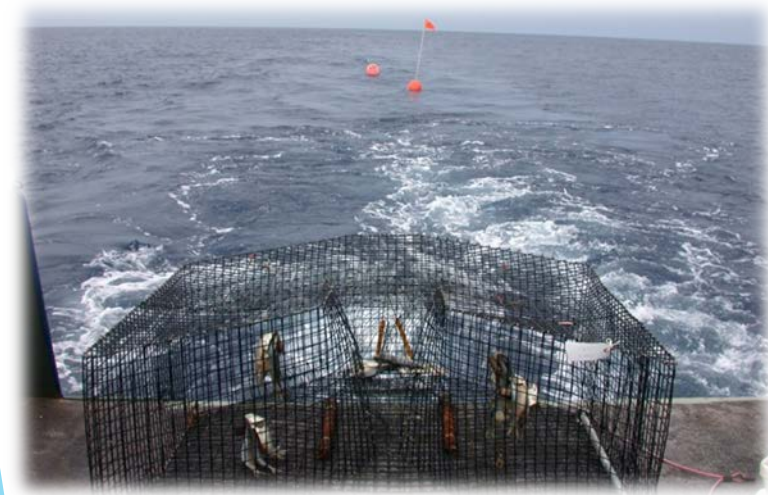
NOAA Vessel *Pisces*



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



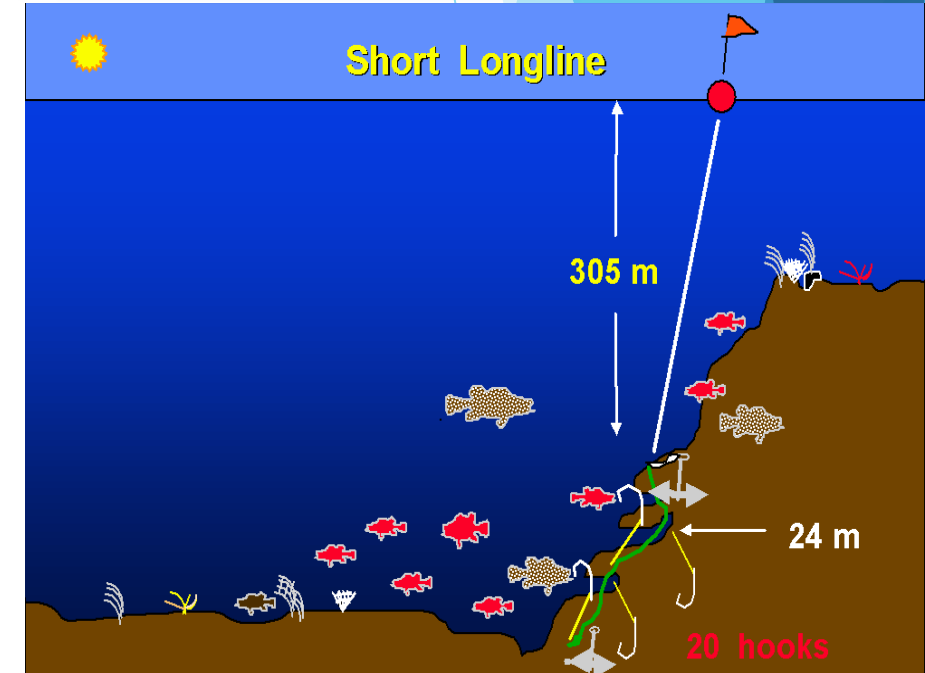
Chevron Trap

- ▶ 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



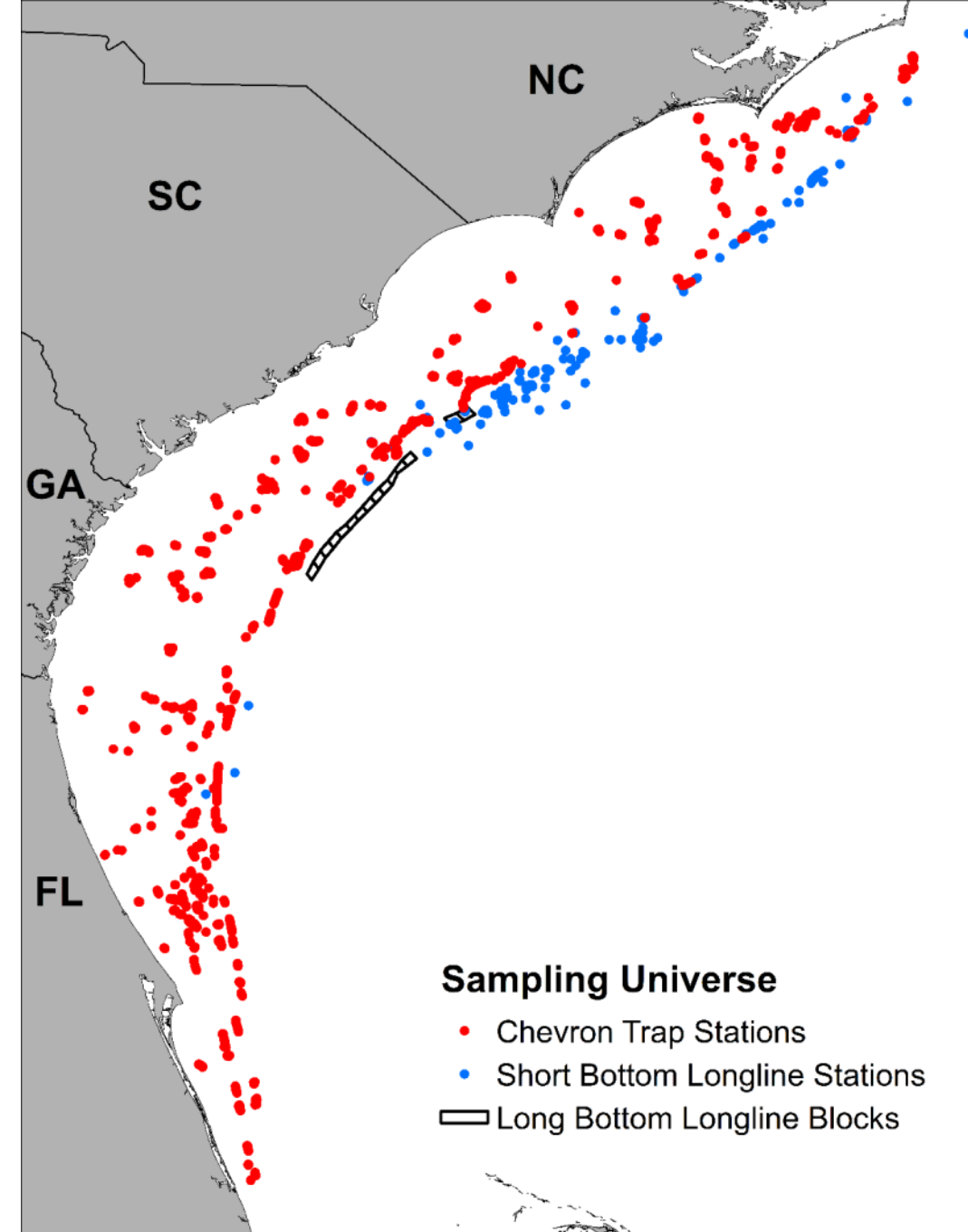
Long Bottom Longline

- ▶ 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



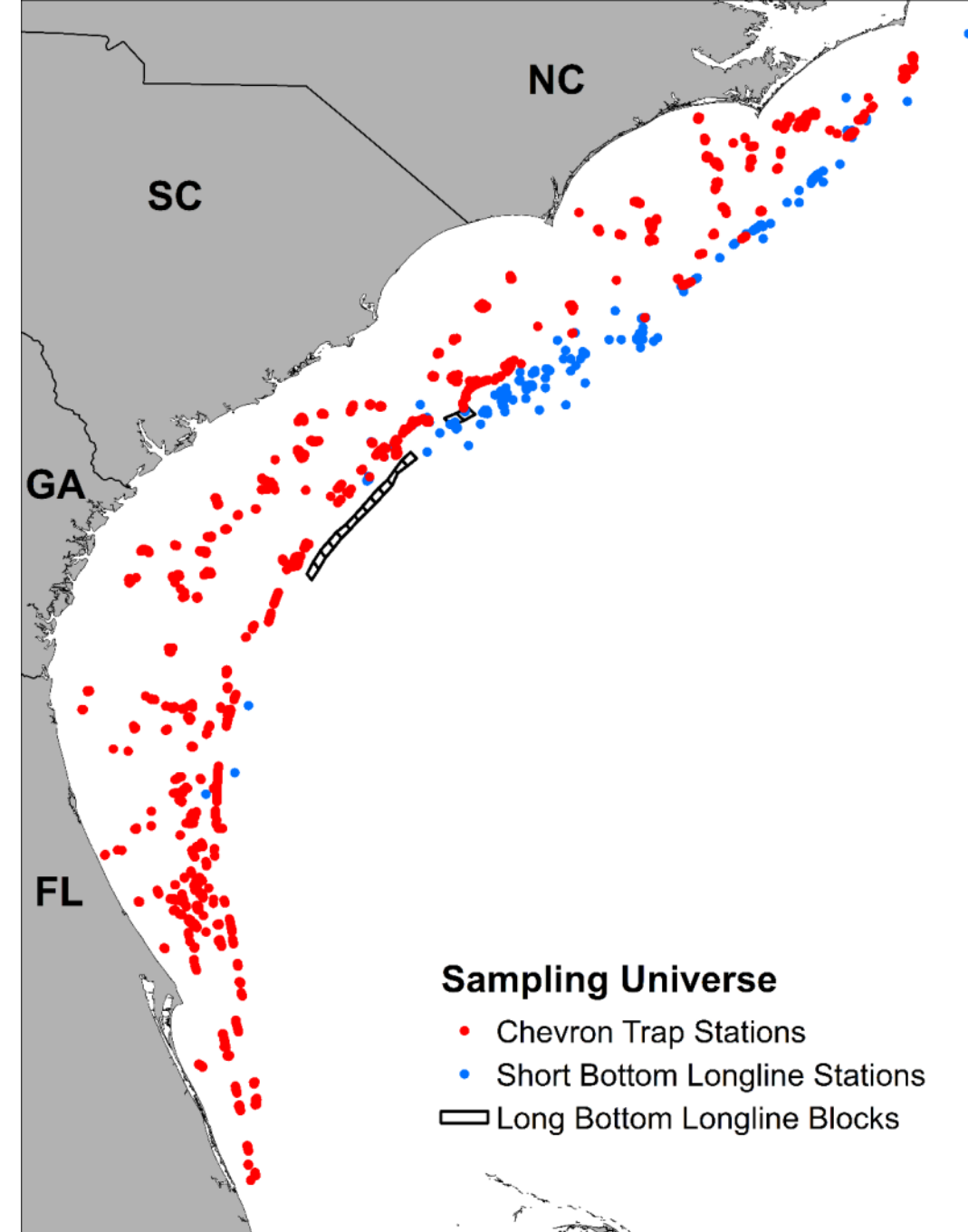
Sampling Universe

- ▶ 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 annually
- ▶ Long Bottom Longline Blocks
 - ▶ 15 blocks in “tilefish” habitat
 - ▶ Target min. 2 LBLL/block each year



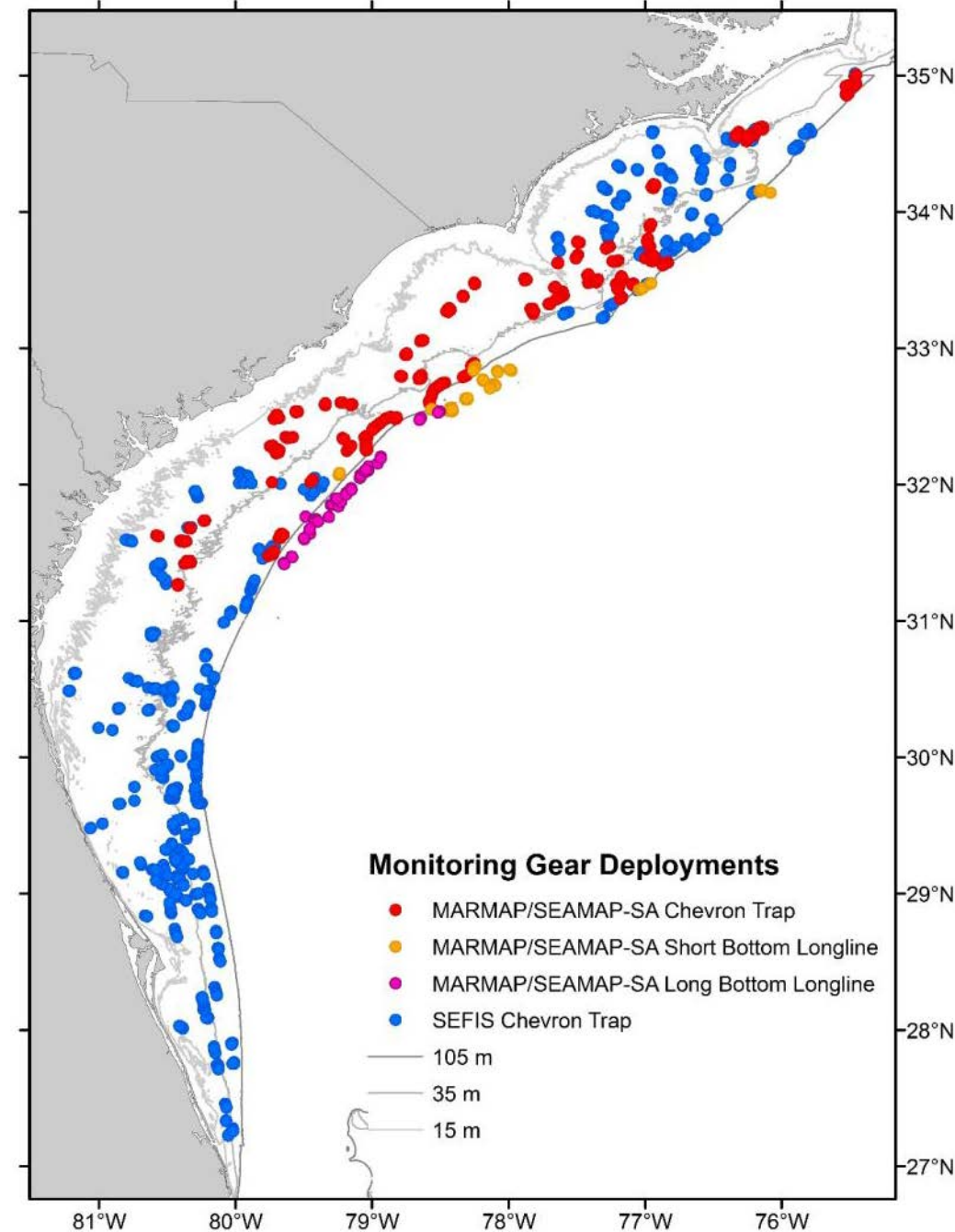
Sampling Design

- ▶ 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






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				2,022
<i>Haemulon plumierii</i>	White Grunt	1,300	7		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

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An underwater photograph of a coral reef. In the foreground, a large, silvery-grey fish with a textured, scale-like pattern is swimming towards the right. In the background, a smaller, similar fish is visible. The reef is covered in green and brown coral and algae. The water is a clear, light 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)

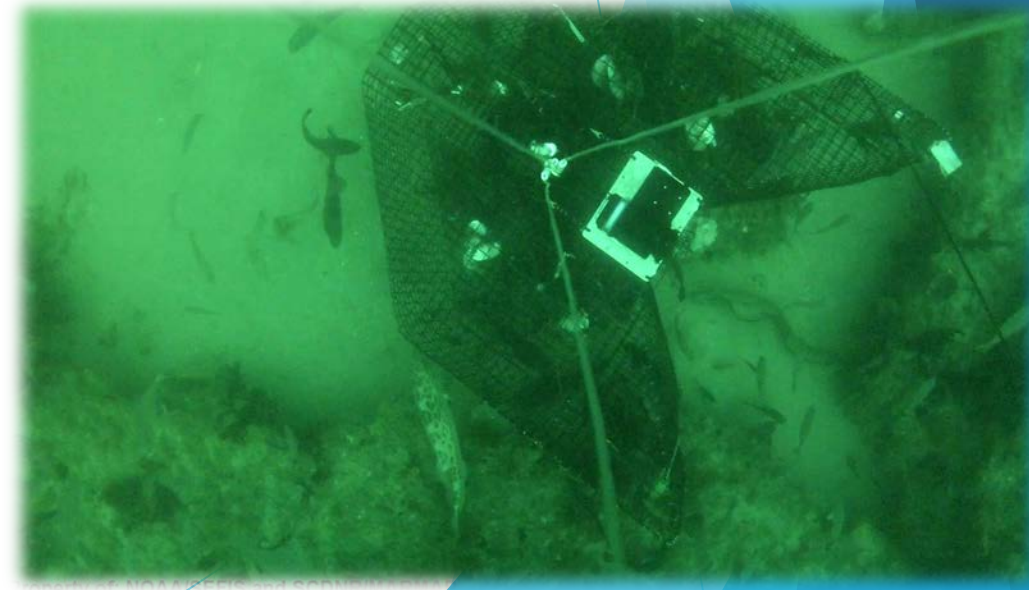


Catch Per Unit Effort (CPUE)

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)
 - ▶ $\frac{Catch}{Trap*hr}$
- ▶ Method
 - ▶ Delta-GLM standardized
 - ▶ Index normalized to long term average
 - ▶ Error bars are \pm 95% CI





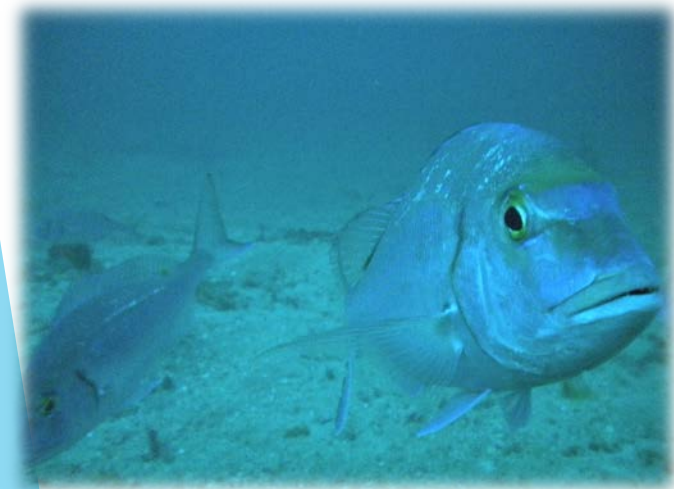
Caveats

- ▶ 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

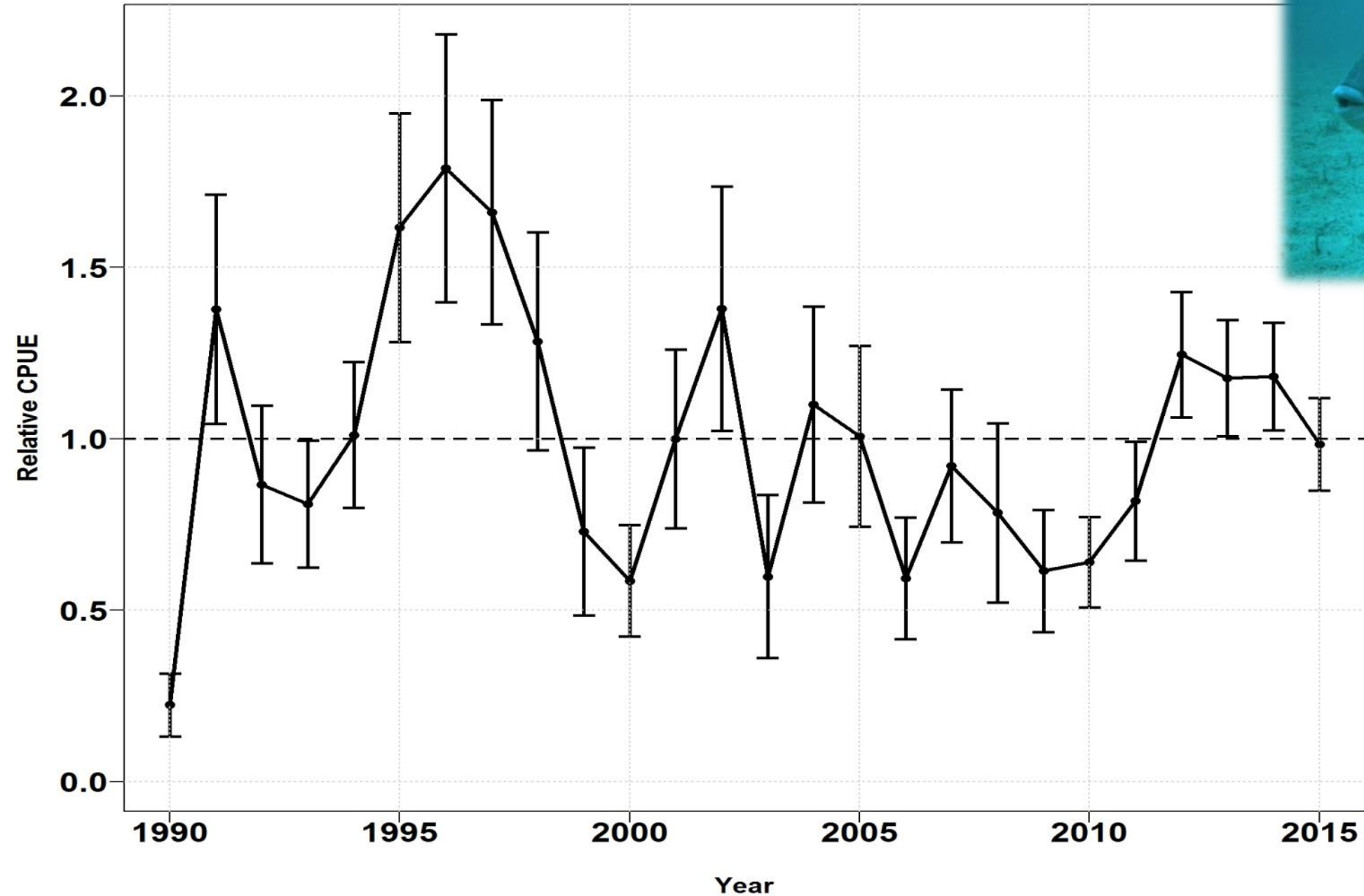


Overview of Selected Species

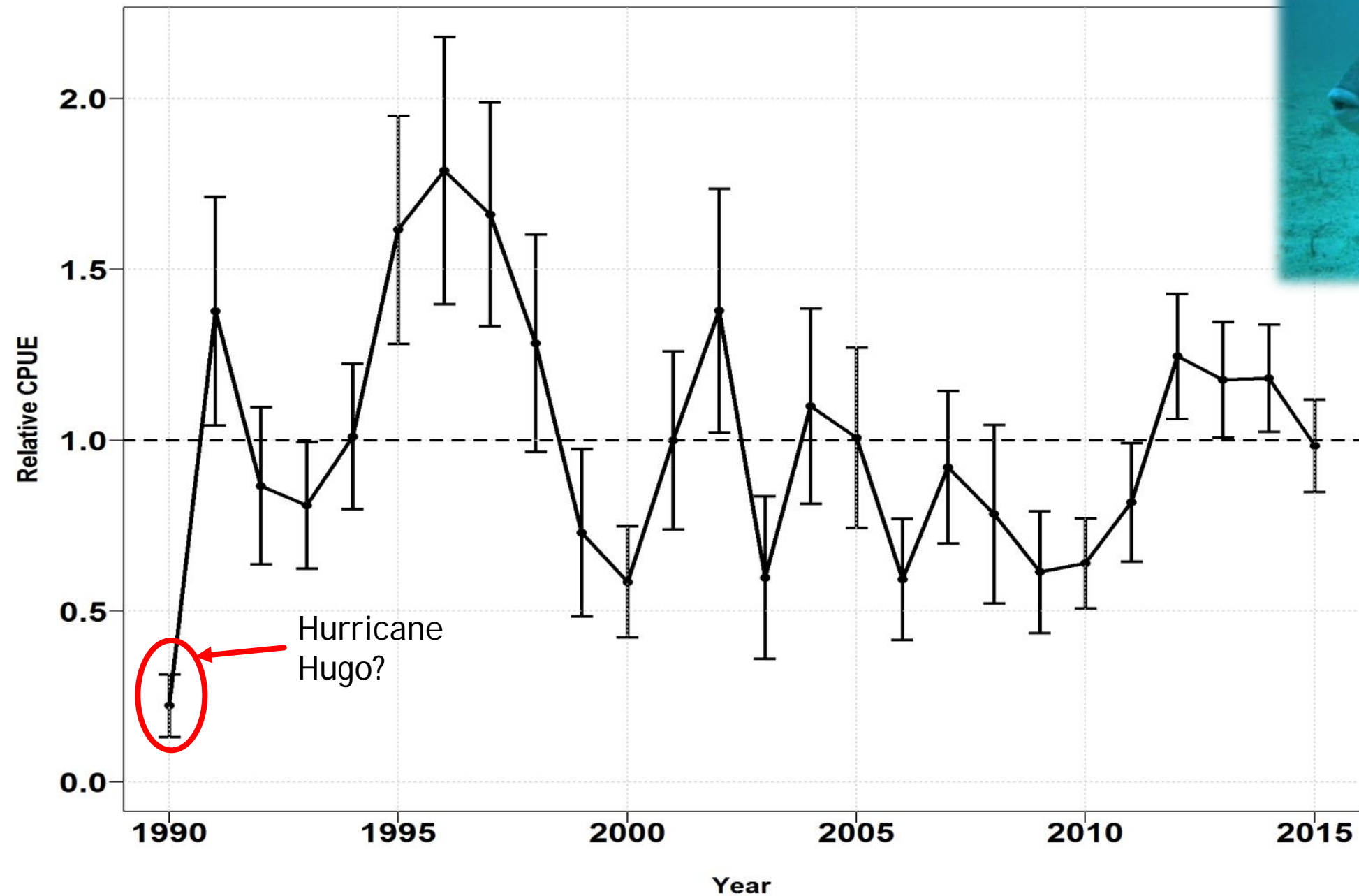
- ▶ Species in blue – routine life history sampling
- ▶ Species in green – currently no routine life history sampling



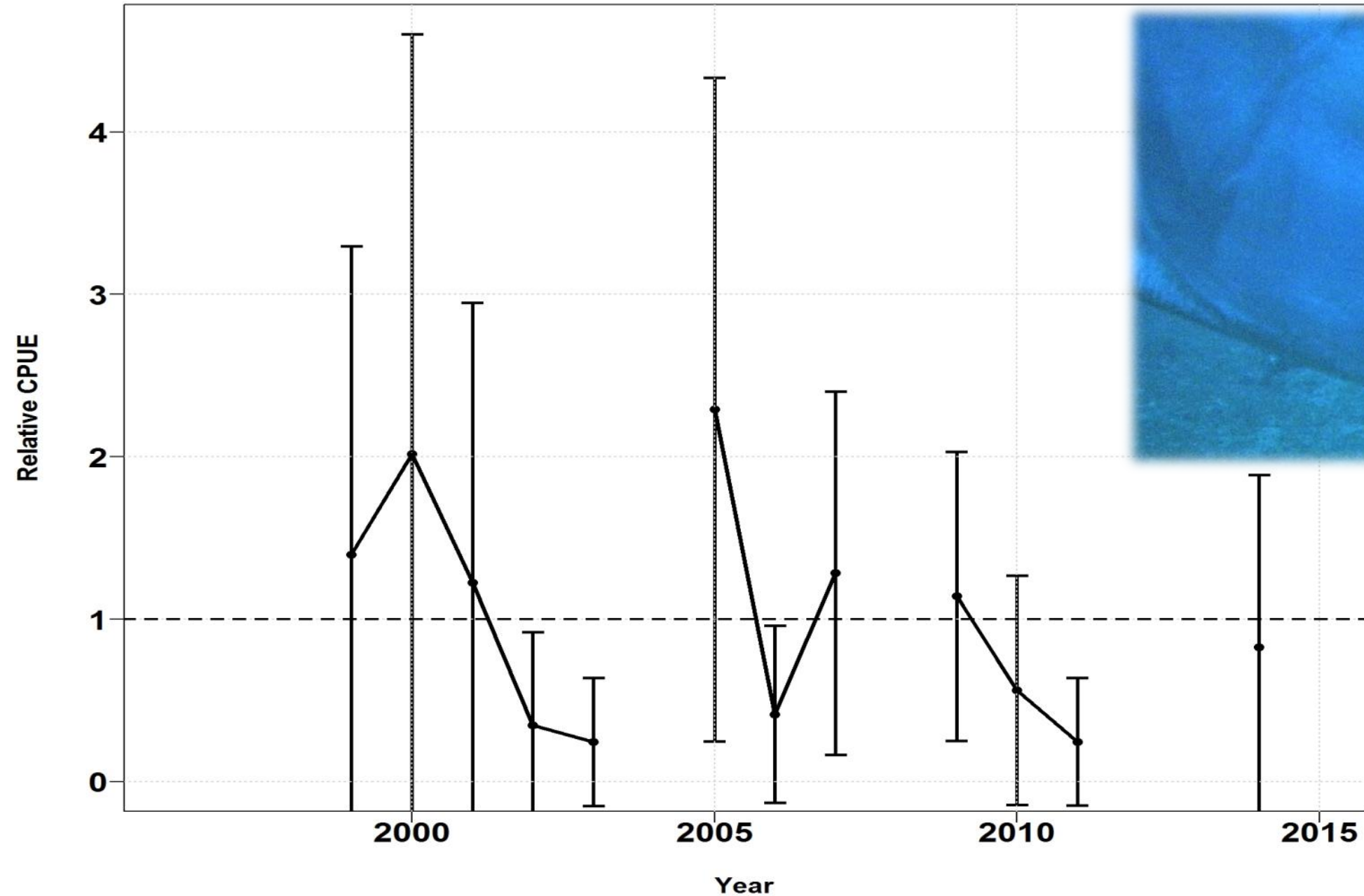
Gray Triggerfish - Chevron Trap



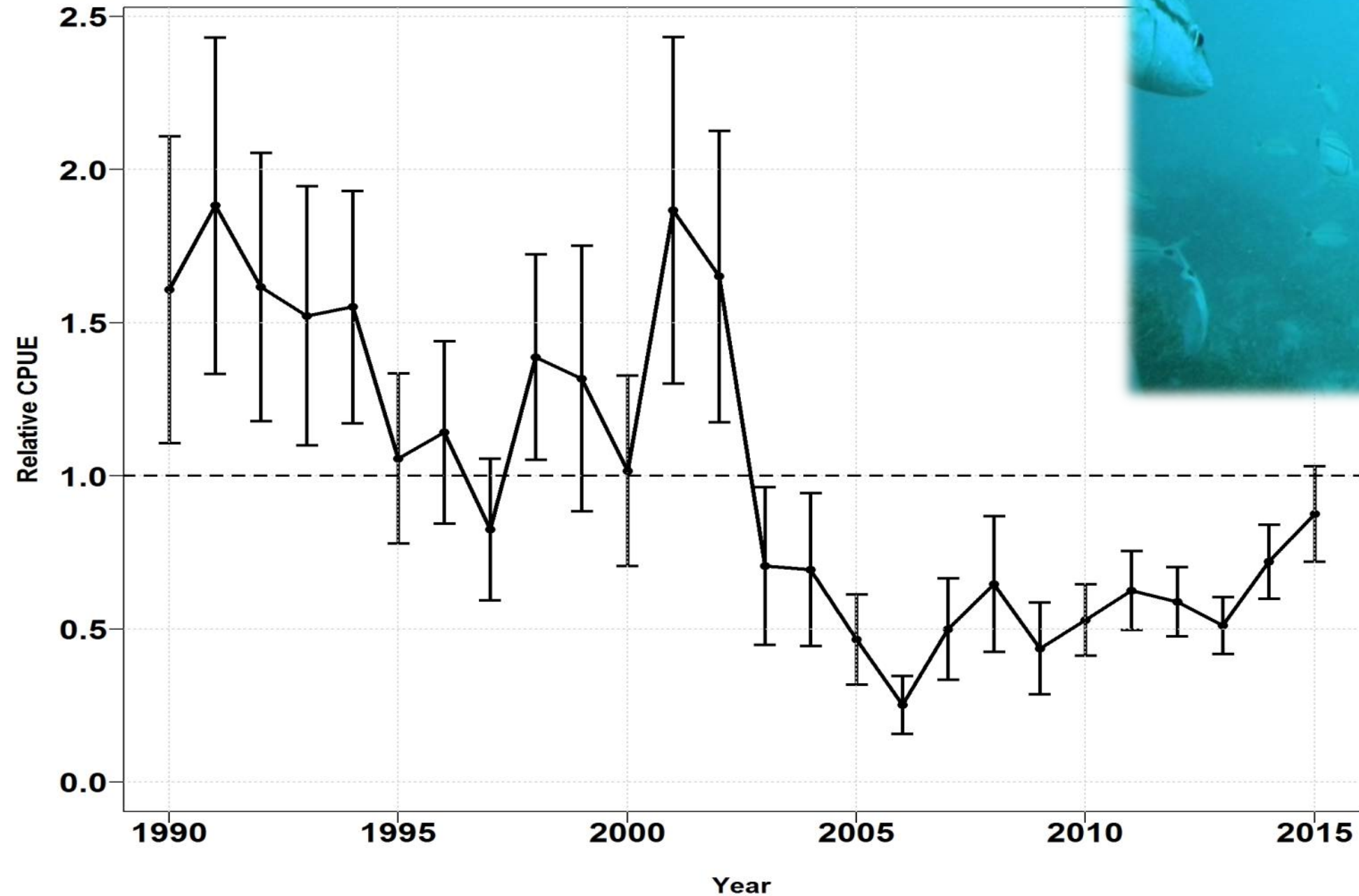
Gray Triggerfish - Chevron Trap



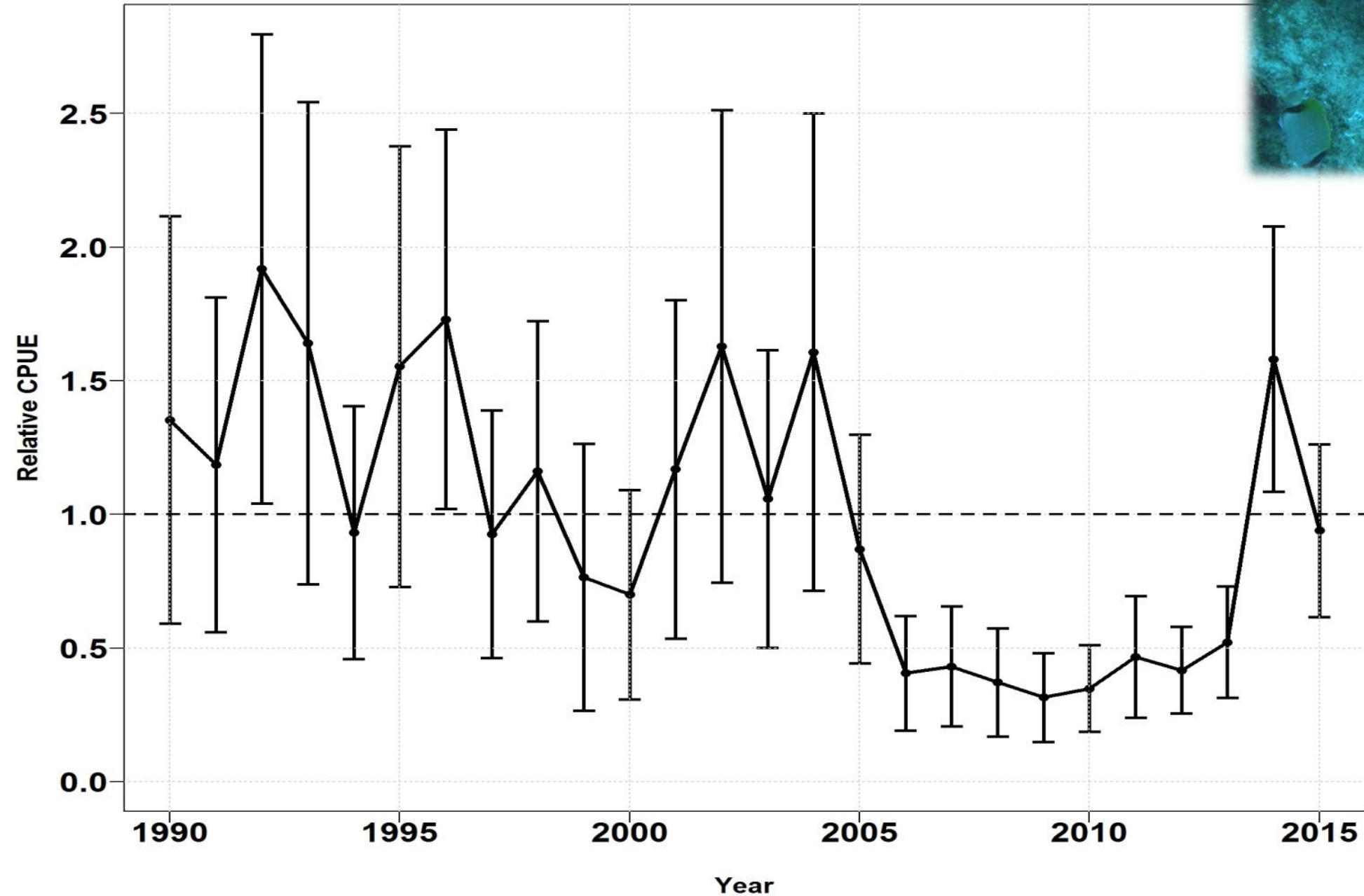
Greater Amberjack - Short Bottom Longline



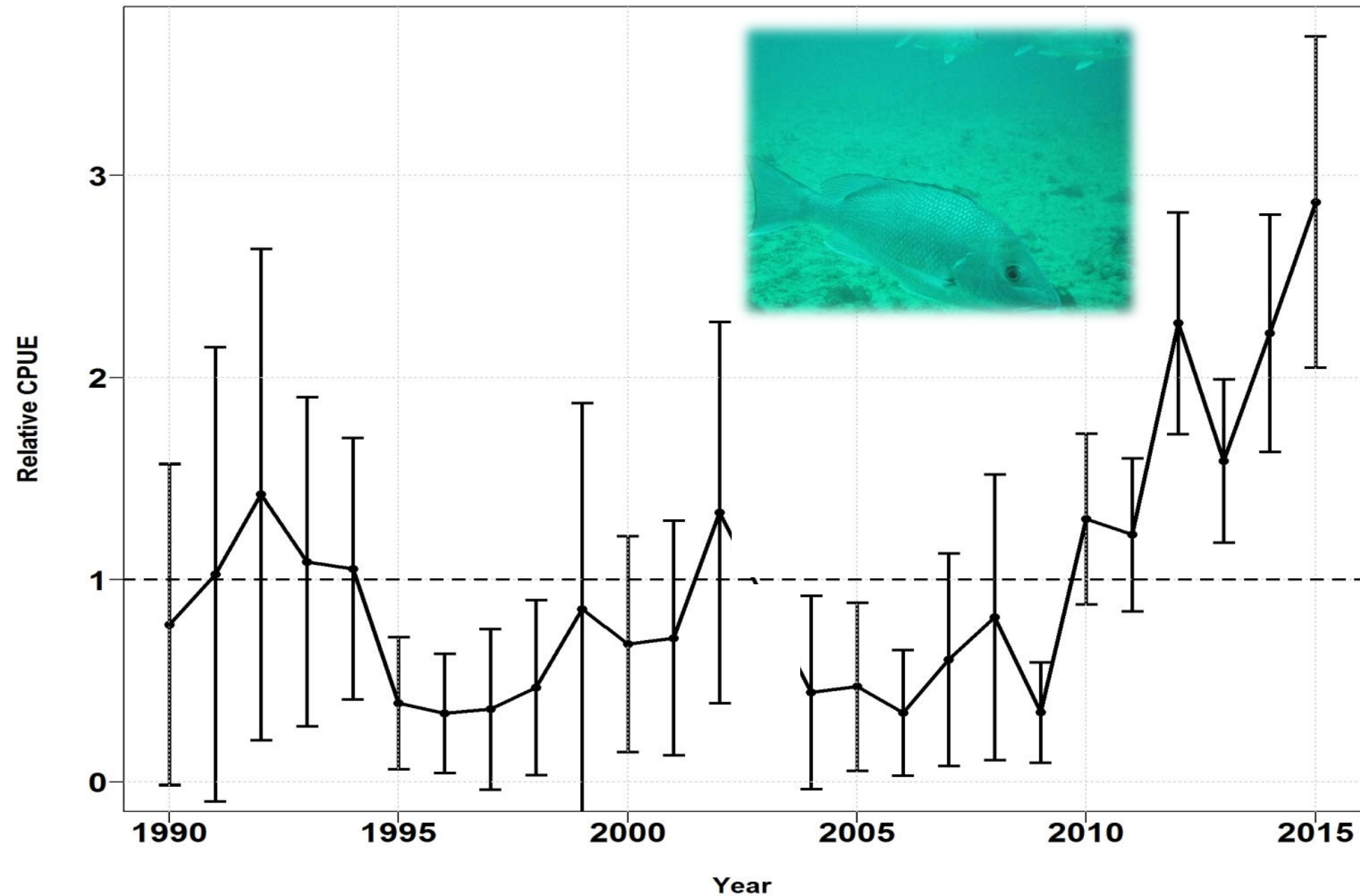
Tomtate - Chevron Trap



White Grunt - Chevron Trap

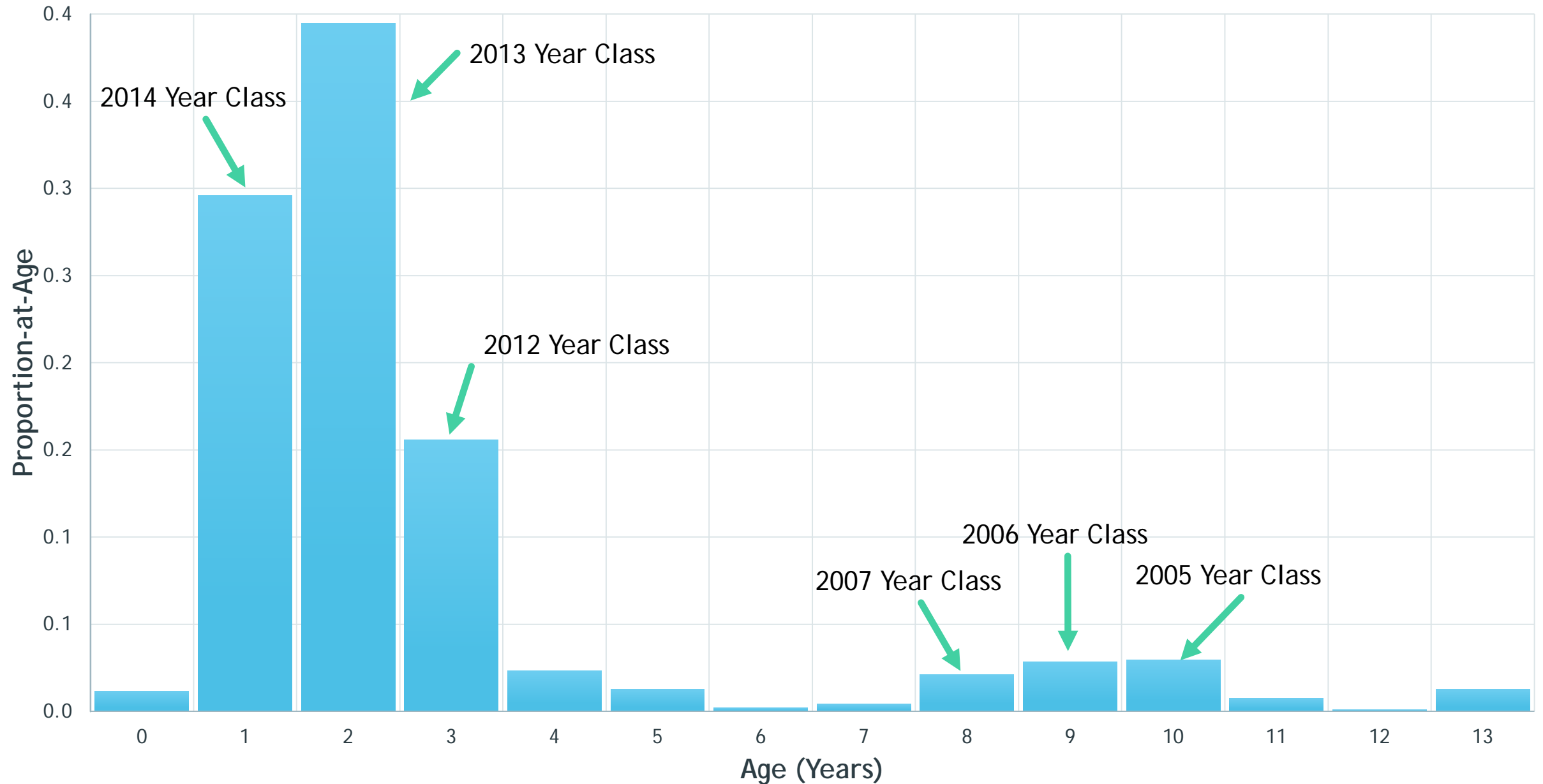


Red Snapper - Chevron Trap

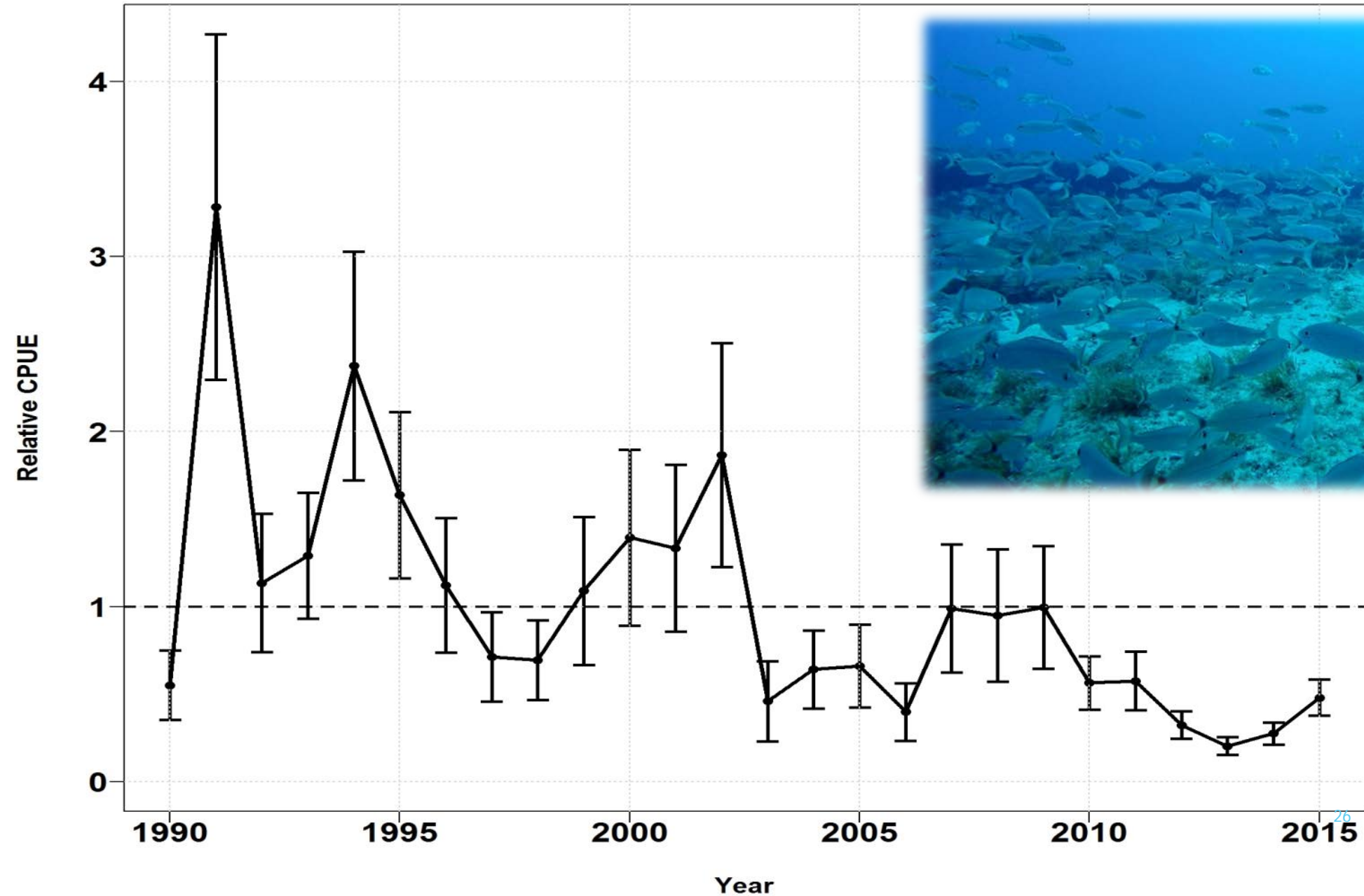




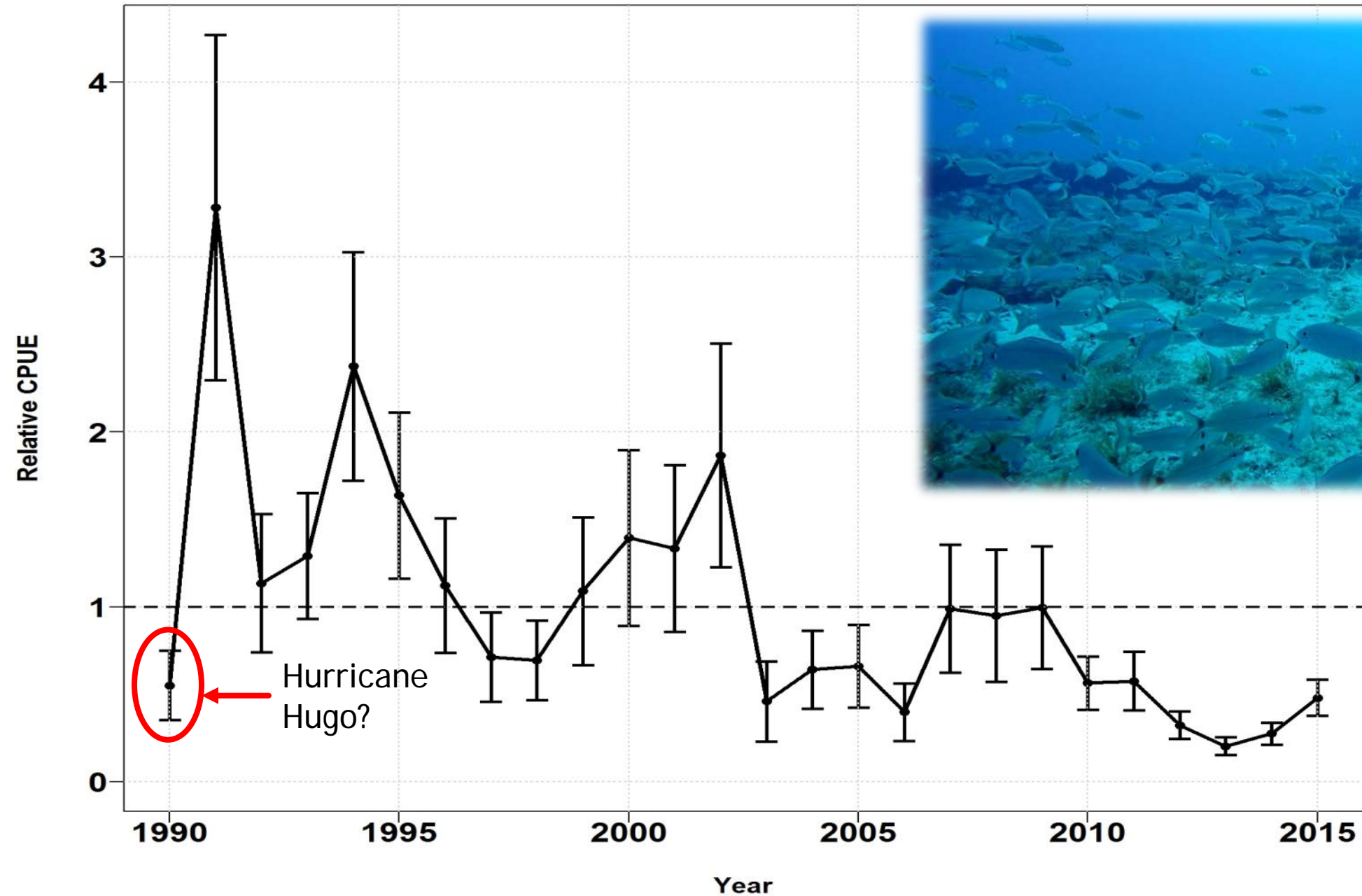
2015 Red Snapper Age Comps



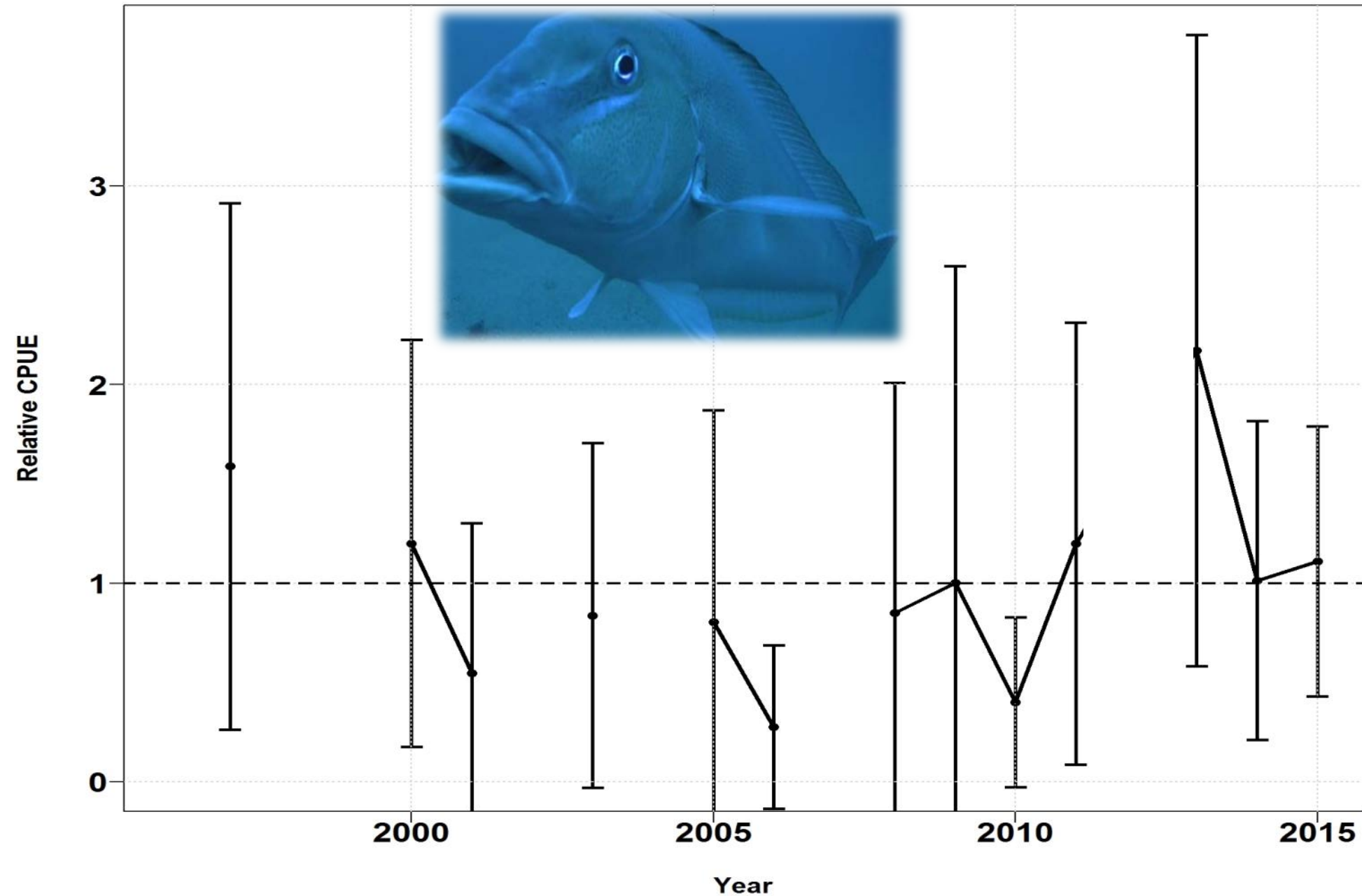
Vermilion Snapper – Chevron Trap



Vermilion Snapper – Chevron Trap

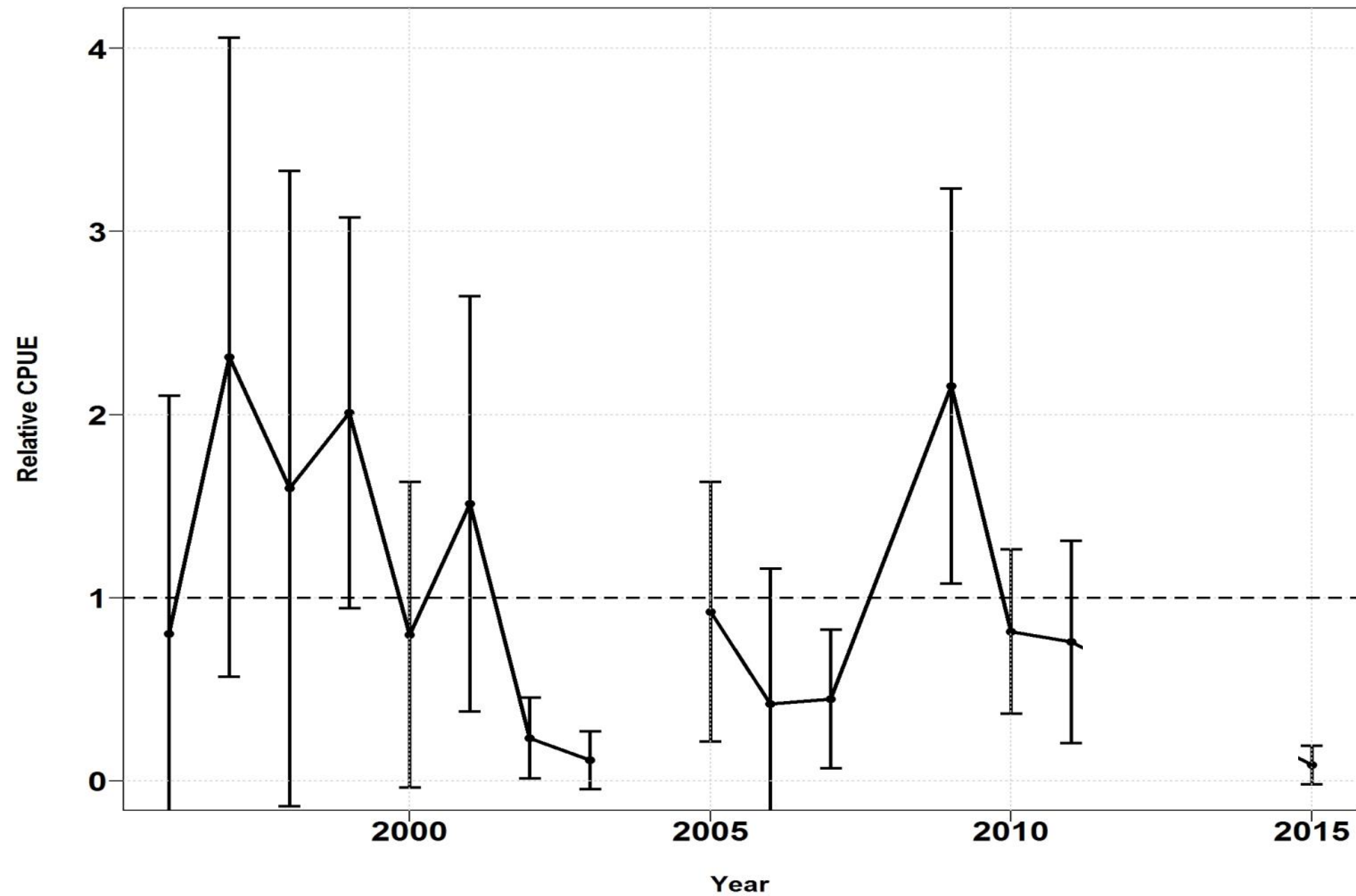


Blueline Tilefish - Short Bottom Longline

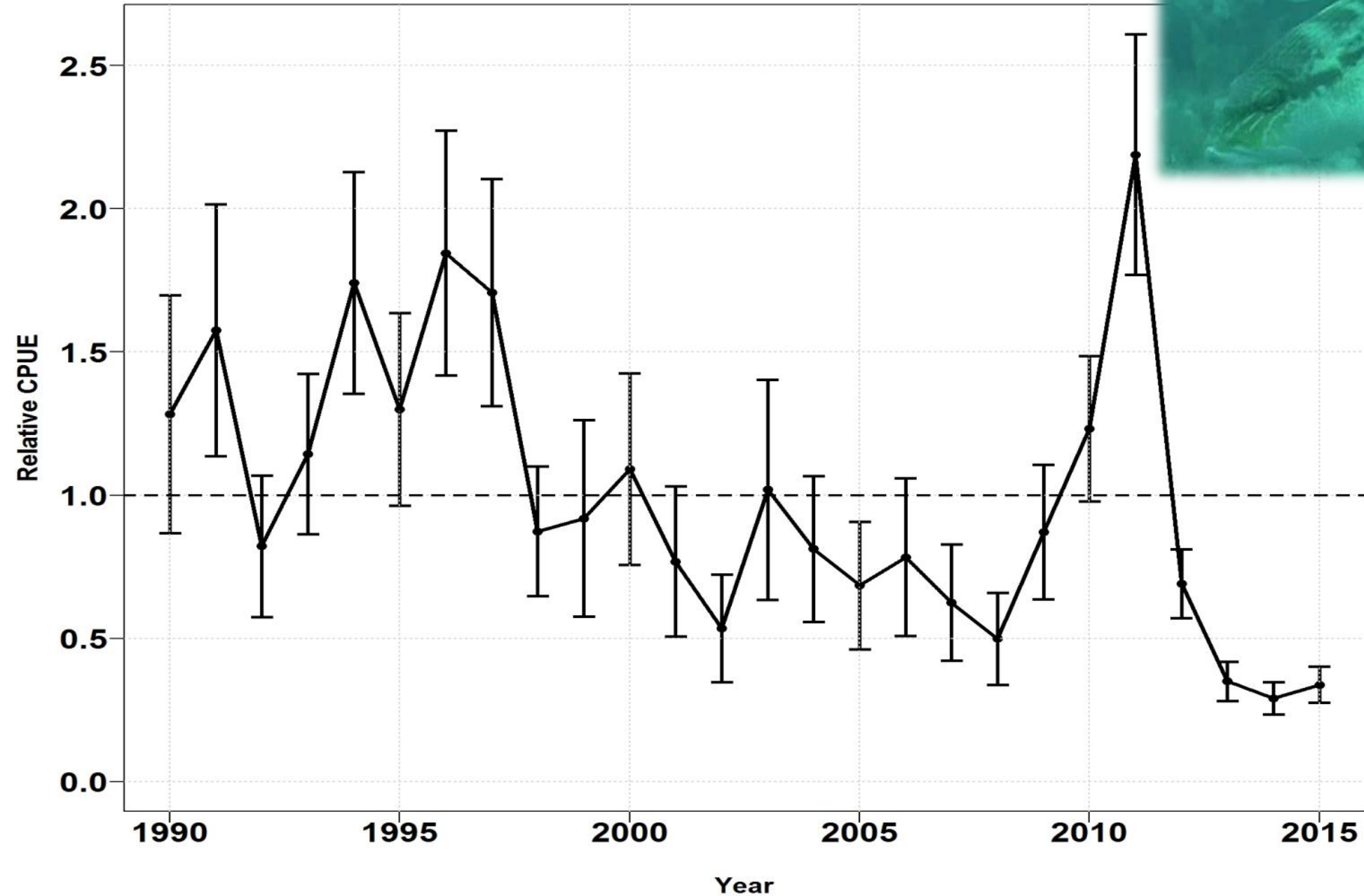




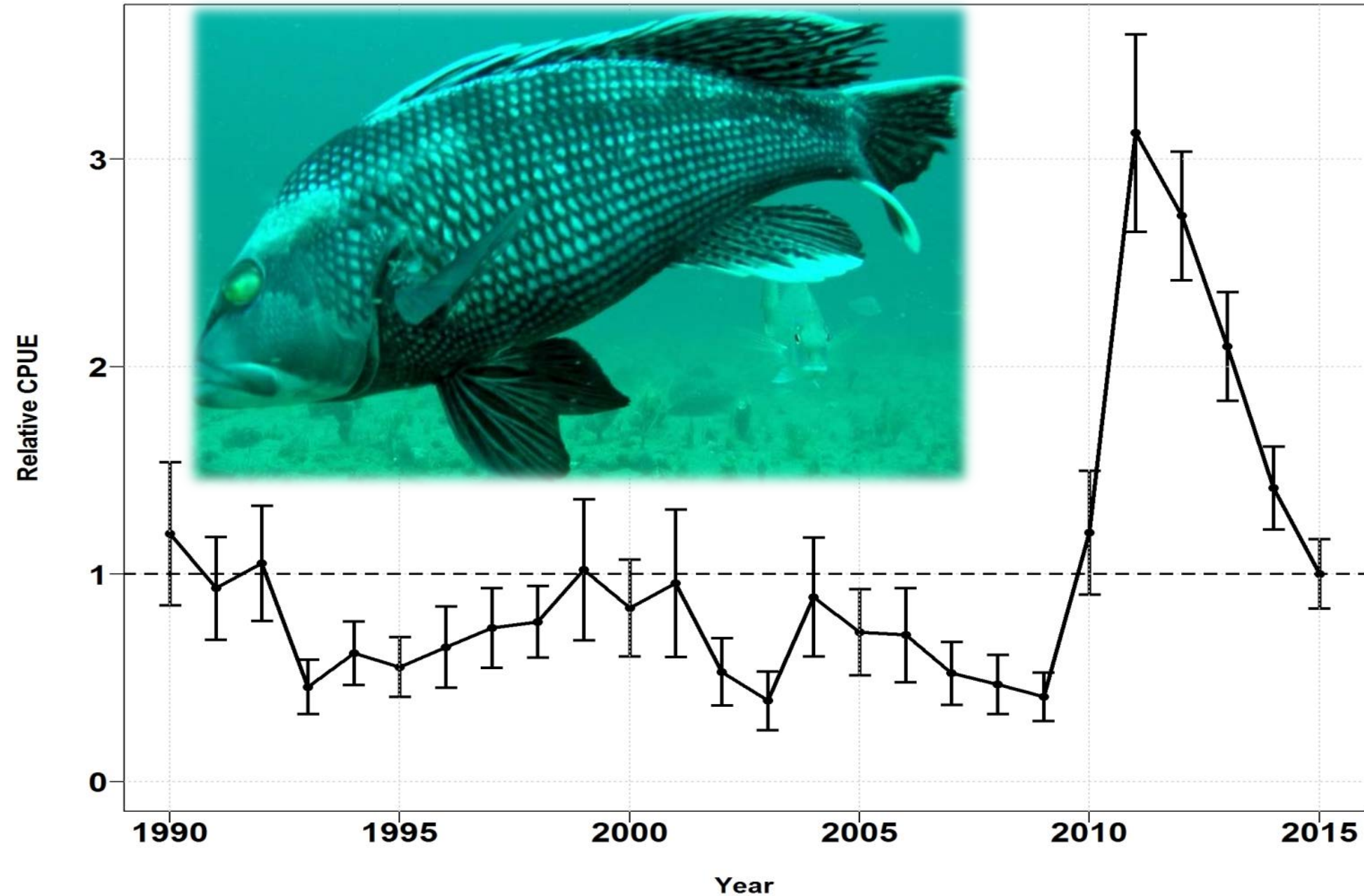
Golden Tilefish - Long Bottom Longline



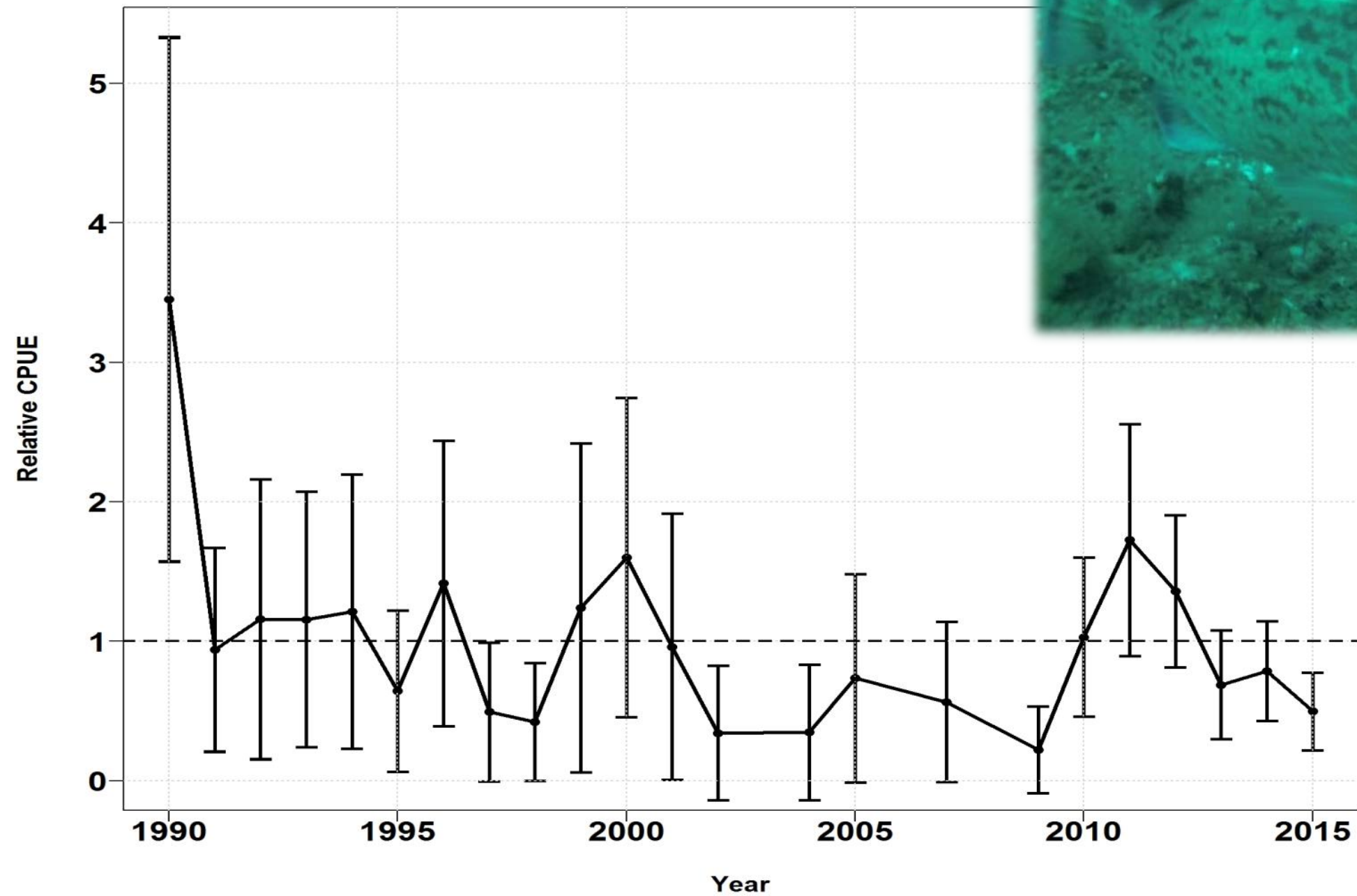
Bank Sea Bass - Chevron Trap



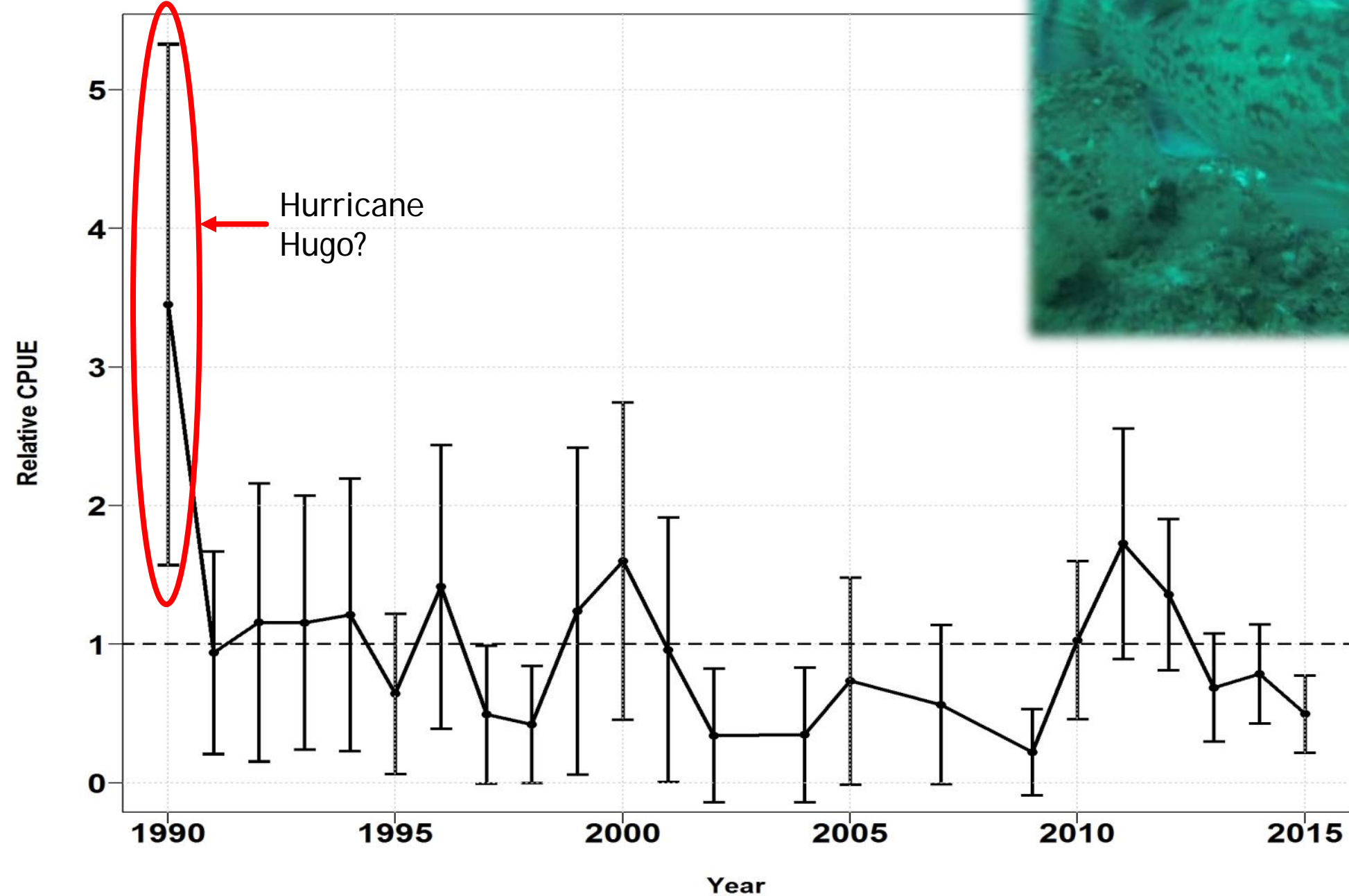
Black Sea Bass – Chevron Trap



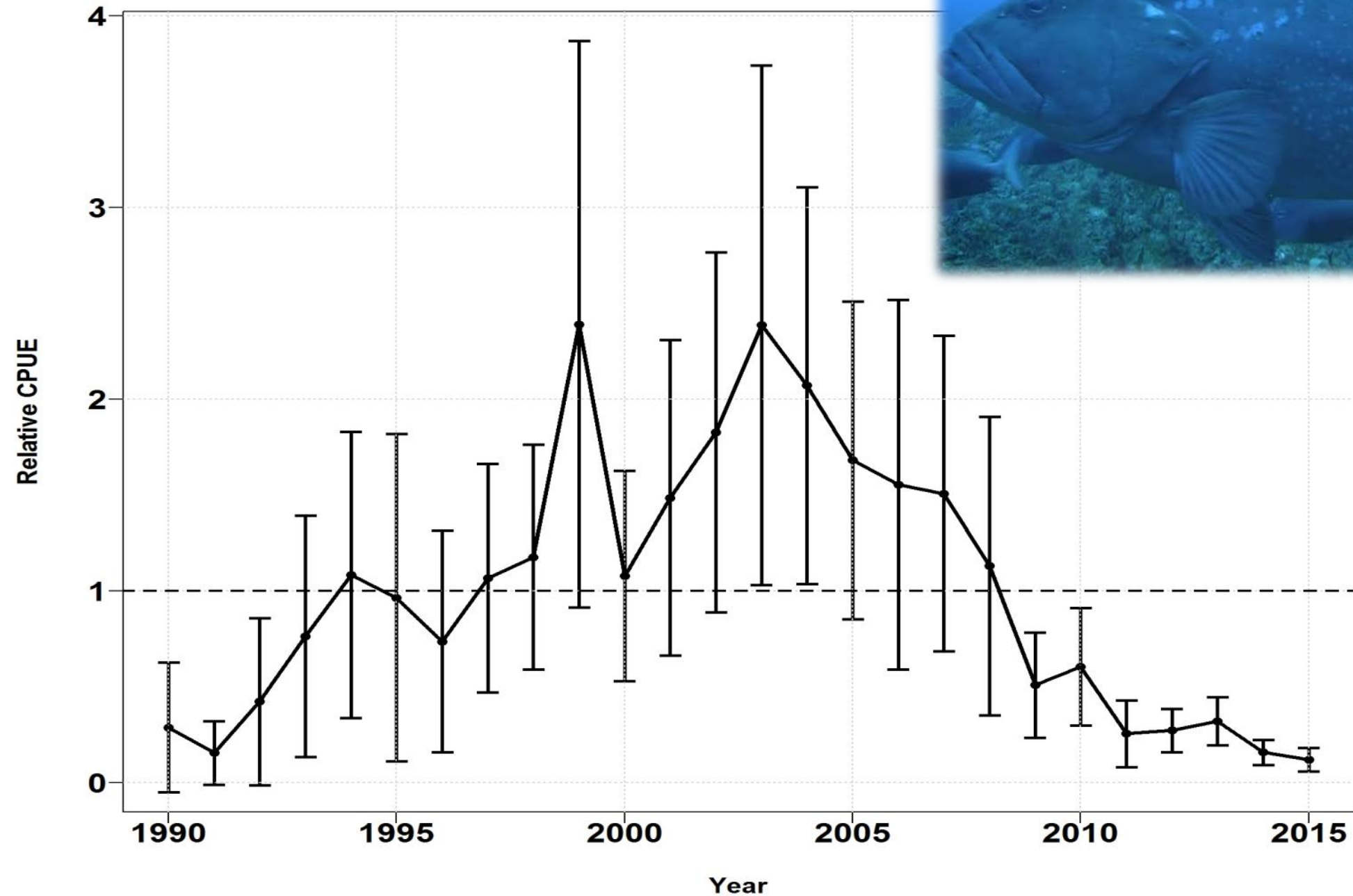
Gag - Chevron Trap



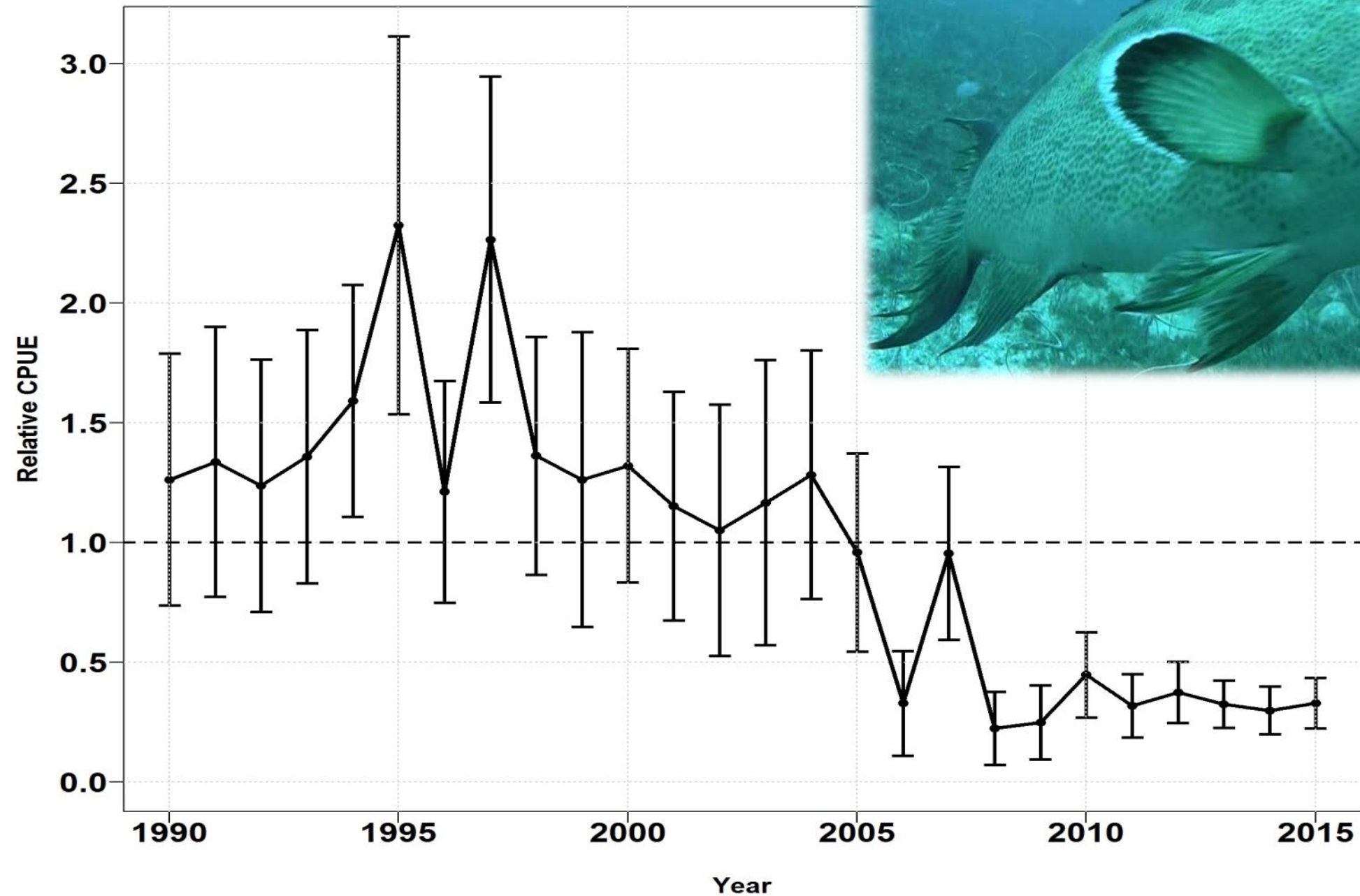
Gag - Chevron Trap



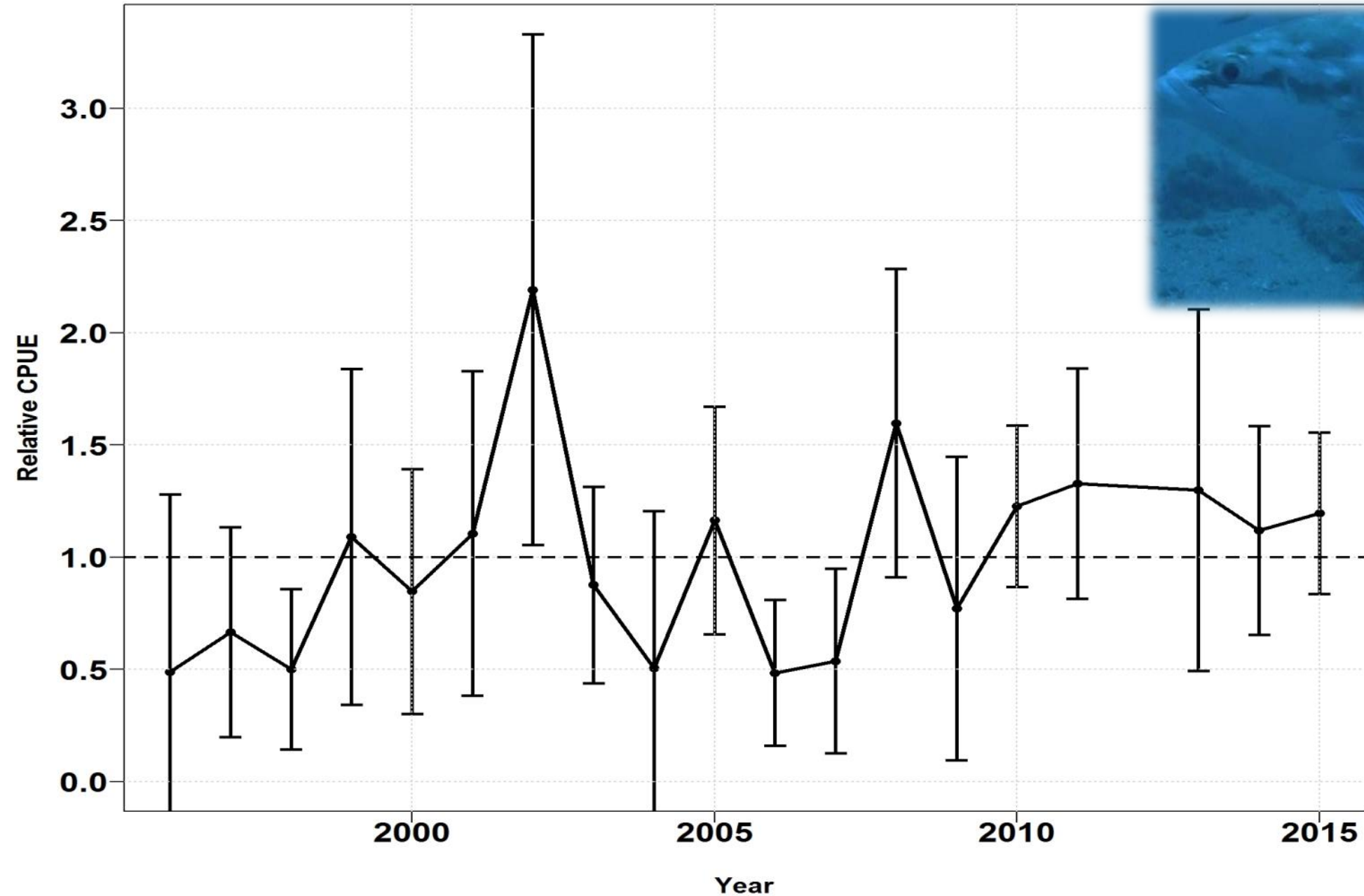
Red Grouper - Chevron Trap



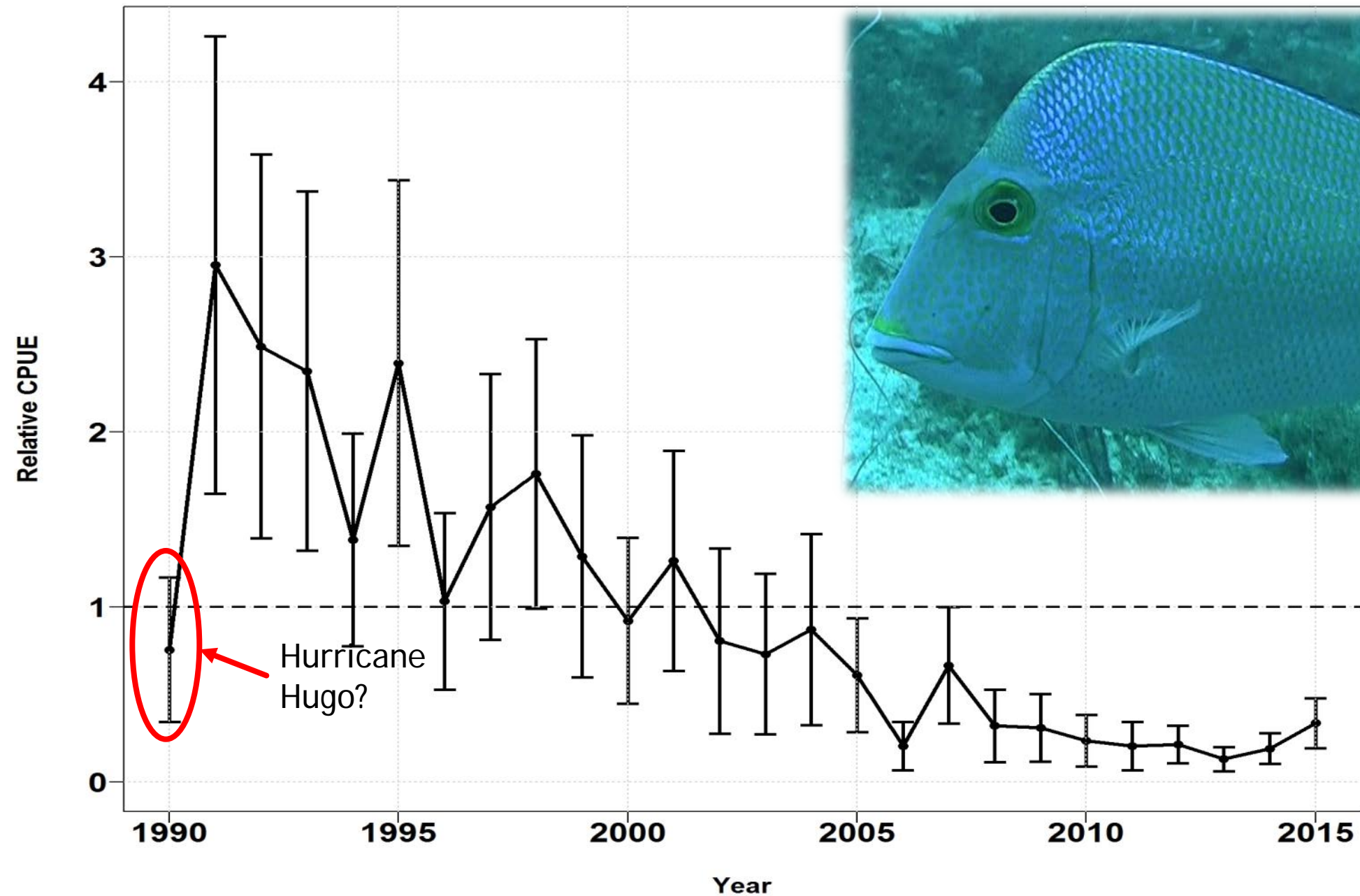
Scamp - Chevron Trap



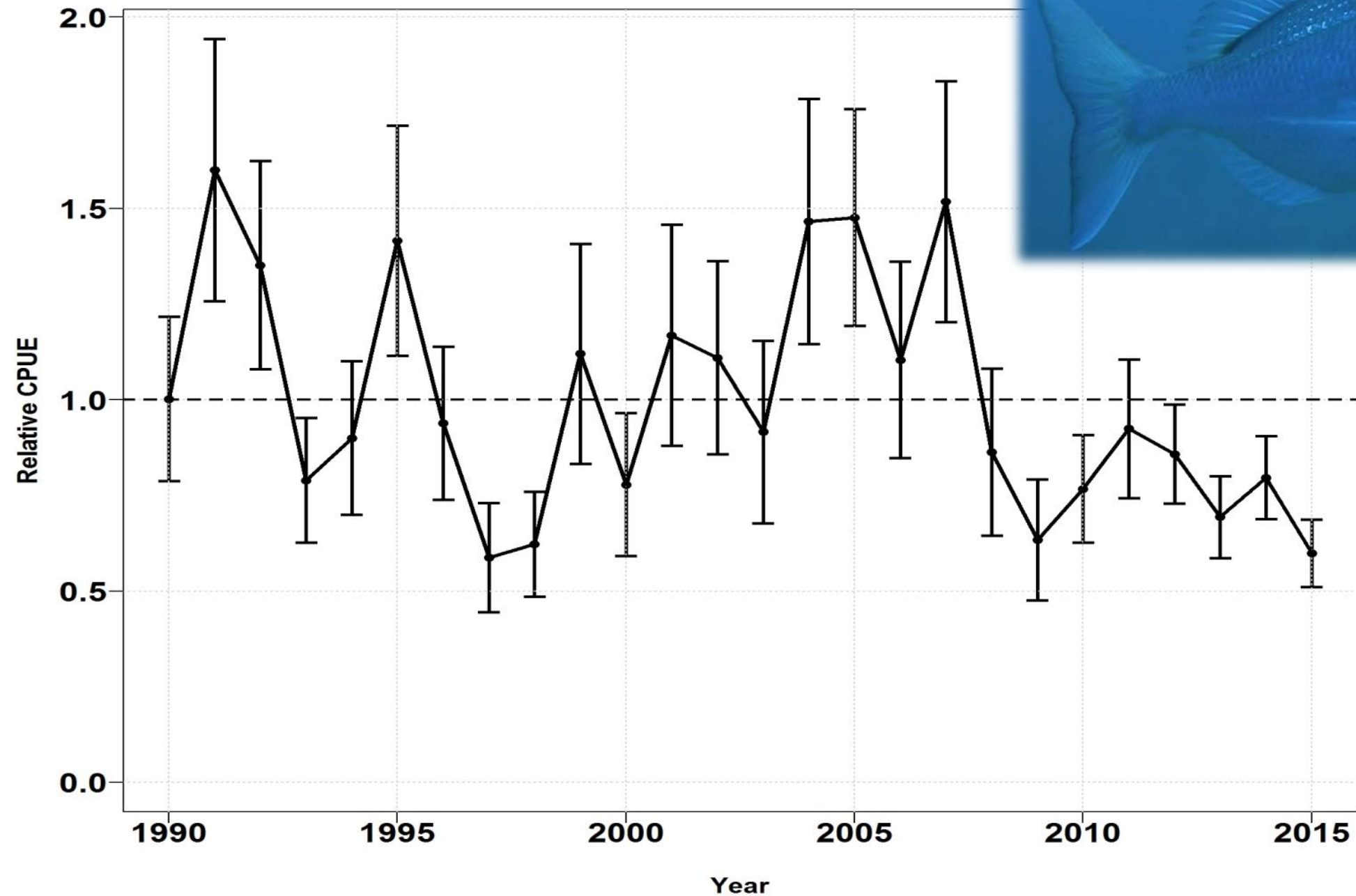
Snowy Grouper – Short Bottom Longline



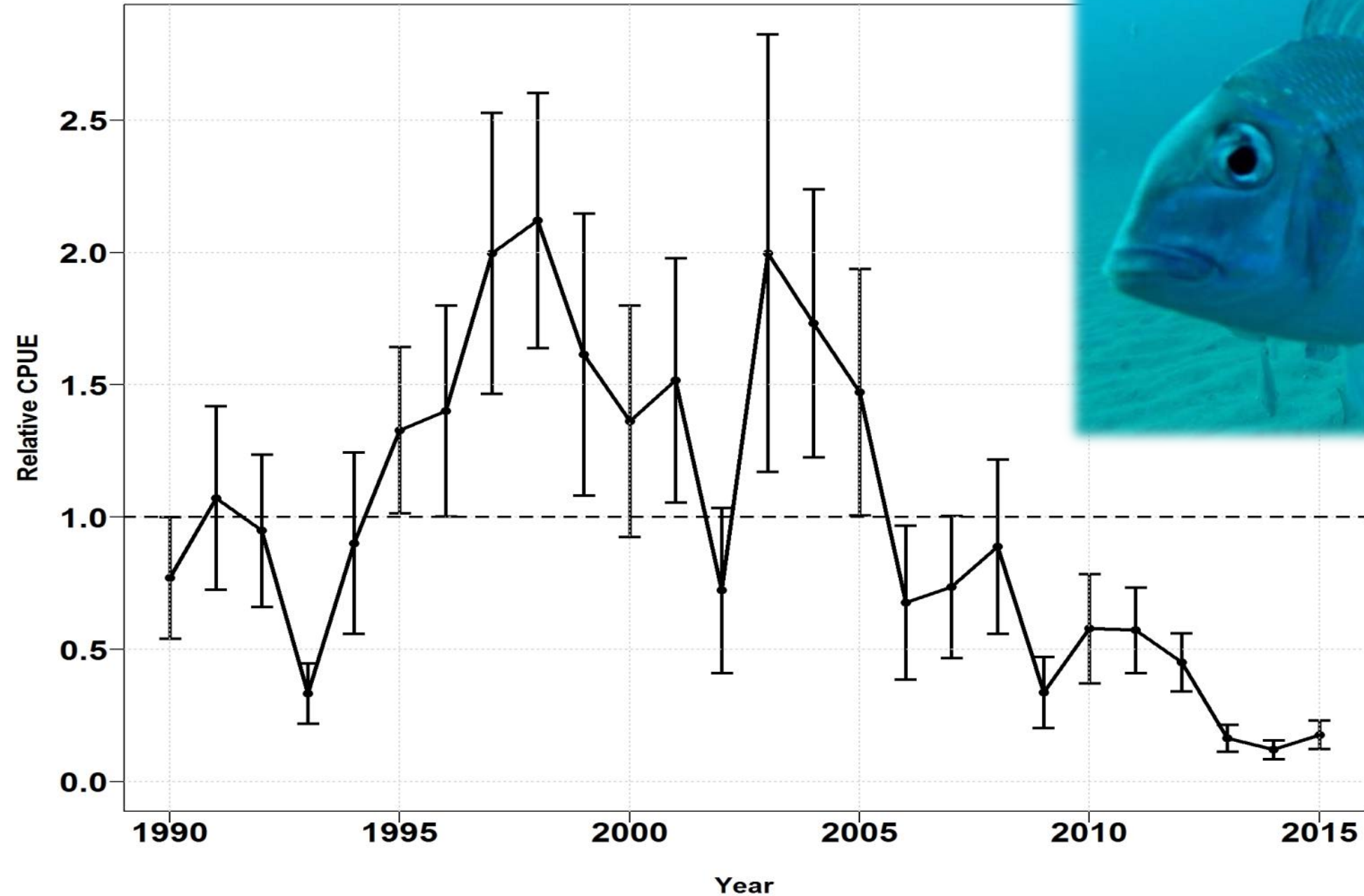
Knobbed Porgy – Chevron Trap



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 stripe and a yellow eye is visible. Above it, a large, dark fish with a white stripe and a yellow eye is swimming. To the right, a smaller, yellow and white striped fish is visible. The background shows a dense coral reef with many small fish swimming around. The text "2016 Reef Fish Monitoring" is overlaid in yellow on the left side of the image.

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 Bubley,
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, casting a bright glow across the sky and reflecting on the choppy water. The sky is filled with scattered clouds. On the right side, a ship's crane arm extends over the water, with a heavy chain hanging from it. The water is dark with white foam from the ship's wake. A blue geometric overlay is on the right side of the image.

Questions???