

Georges Bank fish assemblages collected during commercial fishing operations

Introduction

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Collaboration with the New Bedford trawler fleet is a vital component of the



20 vessels participated

62-82 ft, 65-198 tons, 365-850 hp

Gear – Otter trawls or various types 6-6 ½ in mesh

78 (25-150) ft wide

14 (5-26) ft high

165 trips 1-13 DAS

Tow speed ave. 2.9 knots

Depth ave. 68 fm (7-162 fm)

5,976 Hauls



Why develop Cooperative Fisheries Research Programs?

- Obtain fisheries data with higher spatial and temporal resolution
- Involve industry in collection of fisheries data and management of resources

Data

November 2000-October 2001

August 2002-July 2003

N=5,976 tows (more or less)

8,494,239 lbs caught

2,784,532 lbs discarded

Mean Catch statistics per tow

Total 1422 lbs/tow

Kept 956 lbs/tow

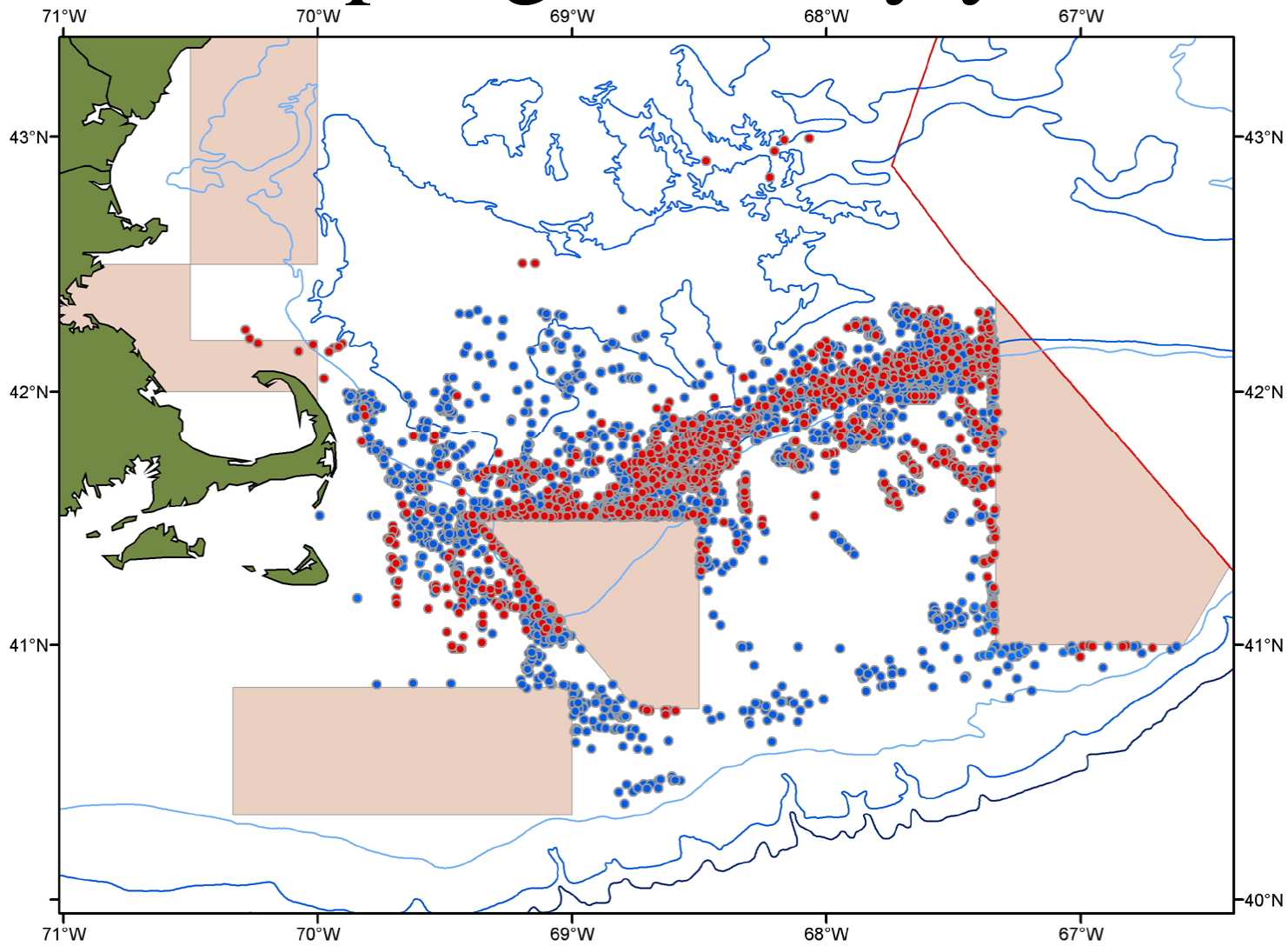
Discarded 467 lbs/tow

25 % discarded/tow

6.7 species caught/tow

3.3 species discarded/tow

Sampling effort by year



Dominant catch by weight

Species/species group	Mean Weight/tow-hr	SE
Rajidae	240	9.9
Gadus morhua	90	6.2
Lophius americanus	80	2.0
Melanogrammus aeglefinus	56	4.8
Pleuronectes americanus	53	2.4
Pleuronectes ferrugineus	25	1.2
Hippoglossoides platessoides	16	0.5
Glyptocephalus cynoglossus	15	0.4
Homarus americanus	11	0.4
Pollachius virens	9	0.8
Squalus acanthias	8	1.5
Raja laevis	7	1.0
Hemitripterus americanus	6	0.3
Cottidae	5	0.4

Dominant catch discard

Species or species group	Mean Discard Weight/tow-hr	SE
Rajidae	206	9.4
Squalus acanthias	8	1.5
Raja laevis	7	1.0
Hemitripterus americanus	6	0.3
Gadus morhua	5	1.8
Cottidae	5	0.4
Melanogrammus aeglefinus	4	0.7
Homarus americanus	3	0.3
Lophius americanus	3	0.1
Mustelus, squalus sp	2	0.4
Macrozoarces americanus	2	0.2
Scophtalmus aquosus	1	0.1
Hippoglossoides platessoides	1	0.0
Glyptocephalus cynoglossus	1	0.0

Atlantic Cod, *Gadus morhua*



Fat cod



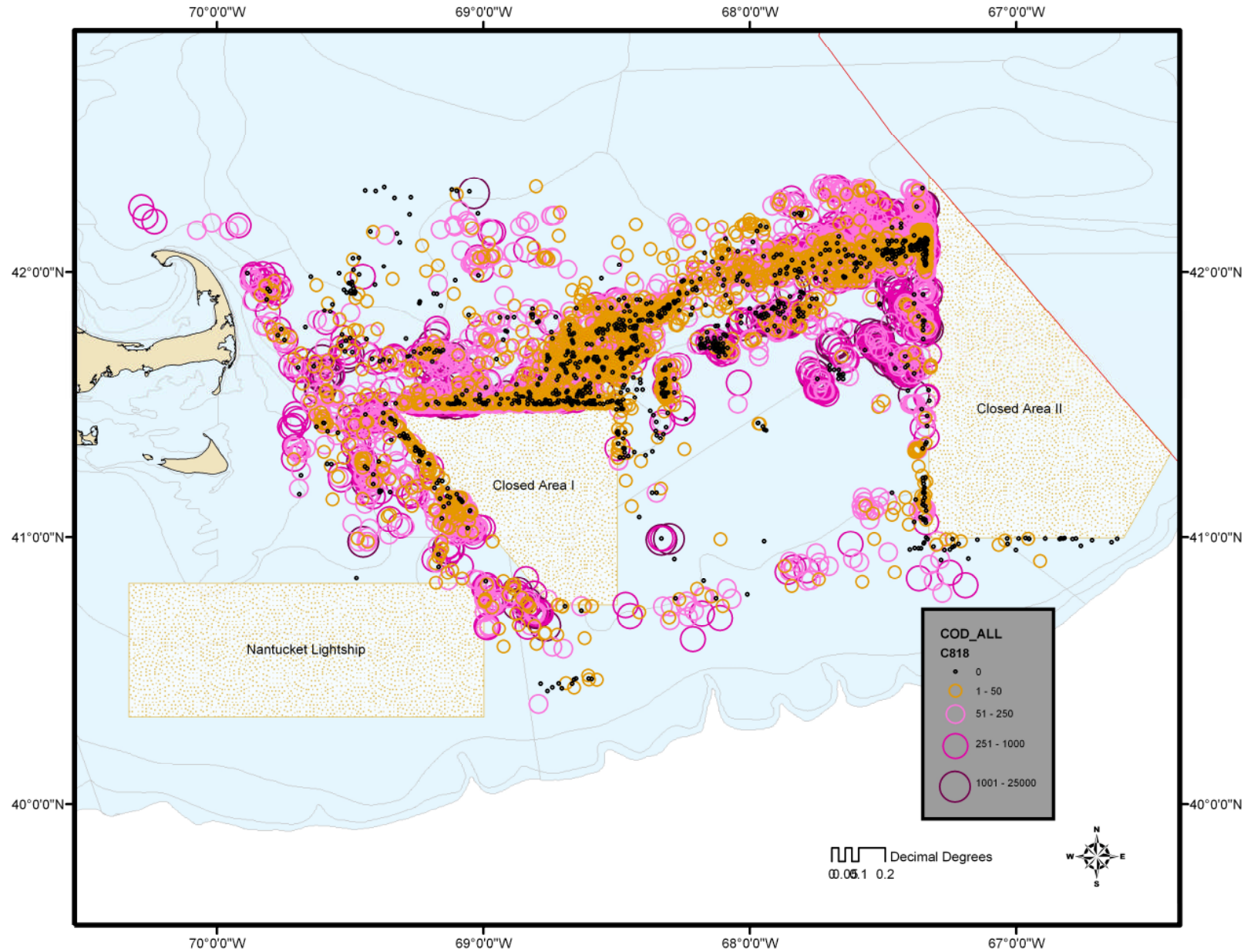
Bag of cod



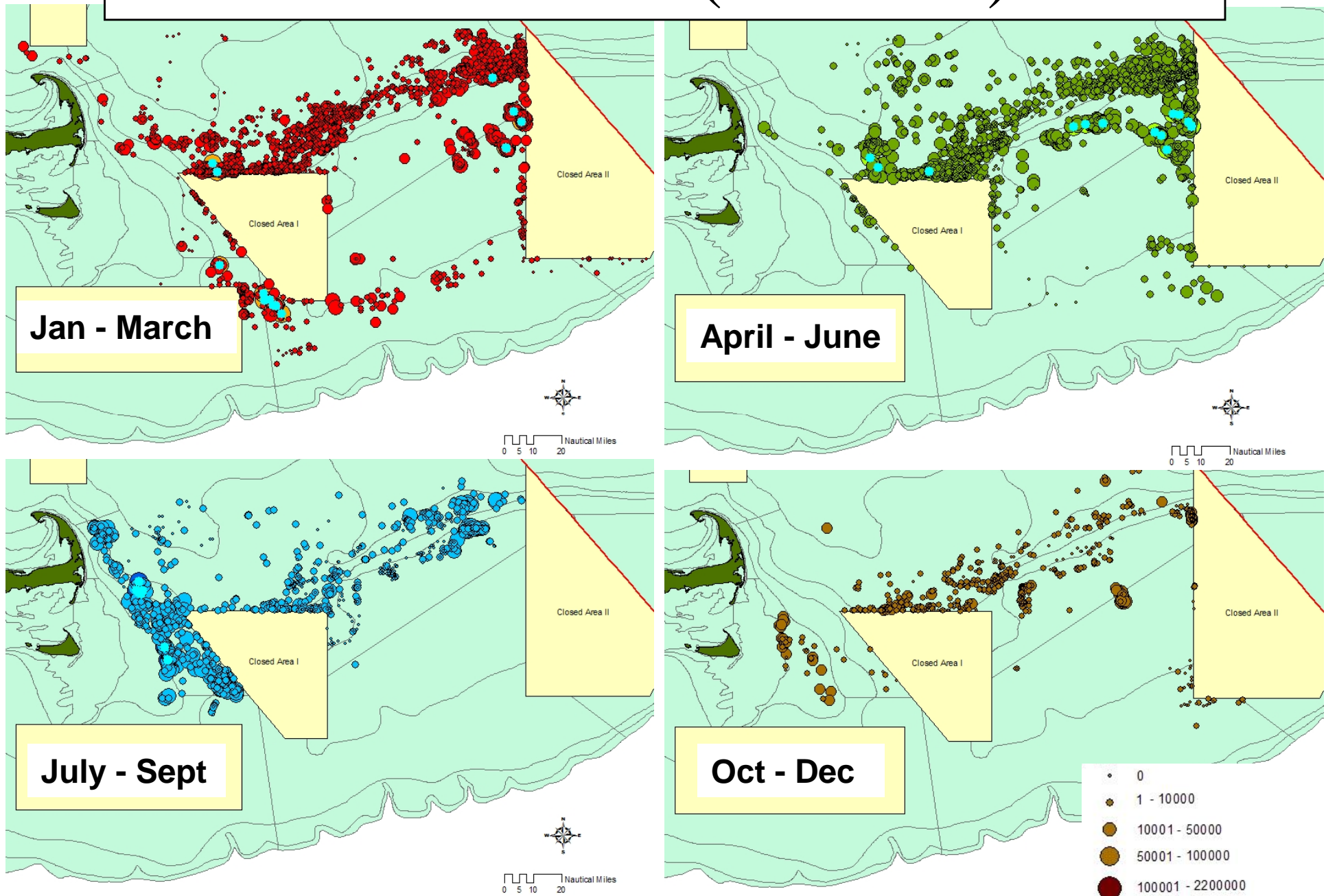




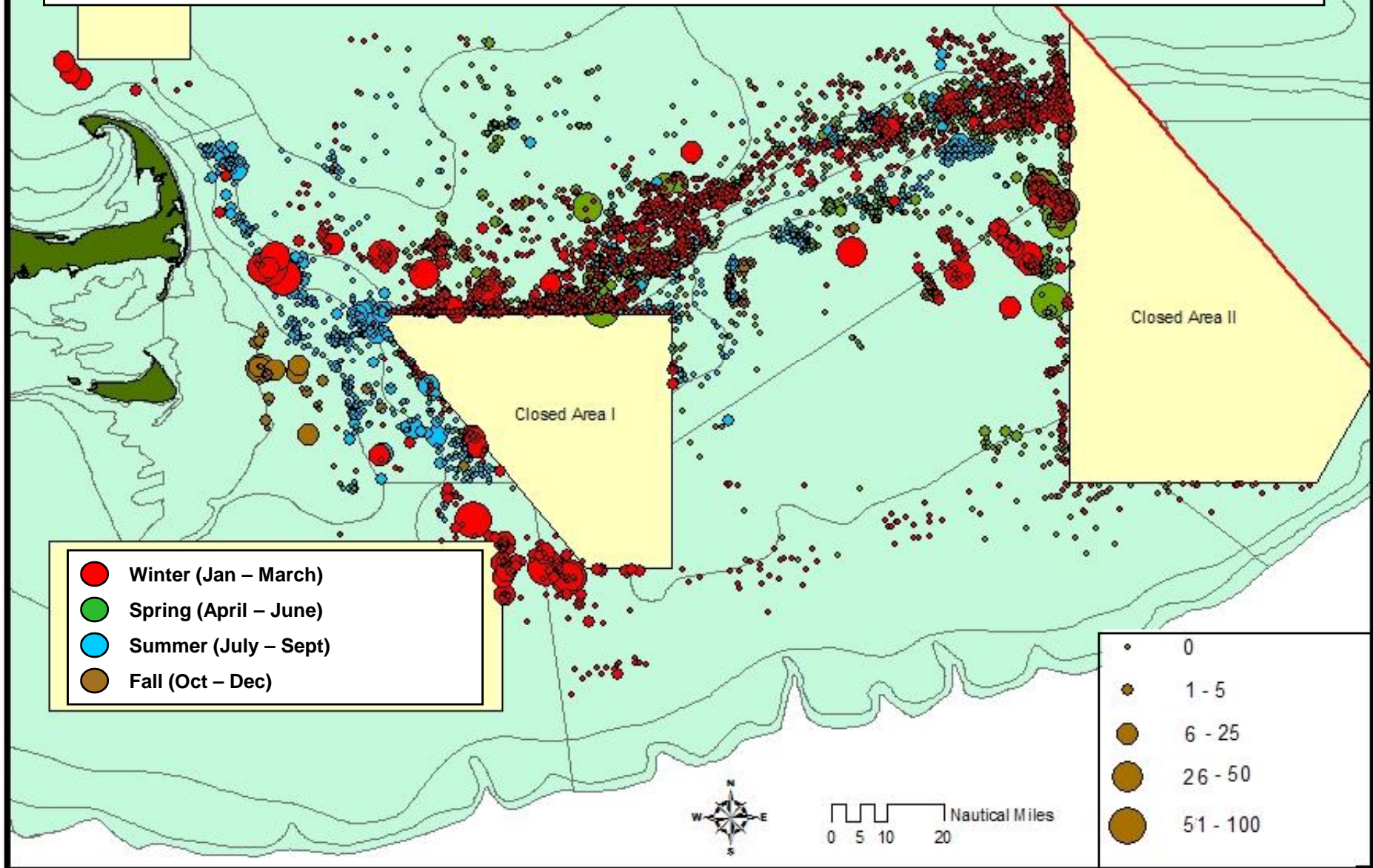
Cod



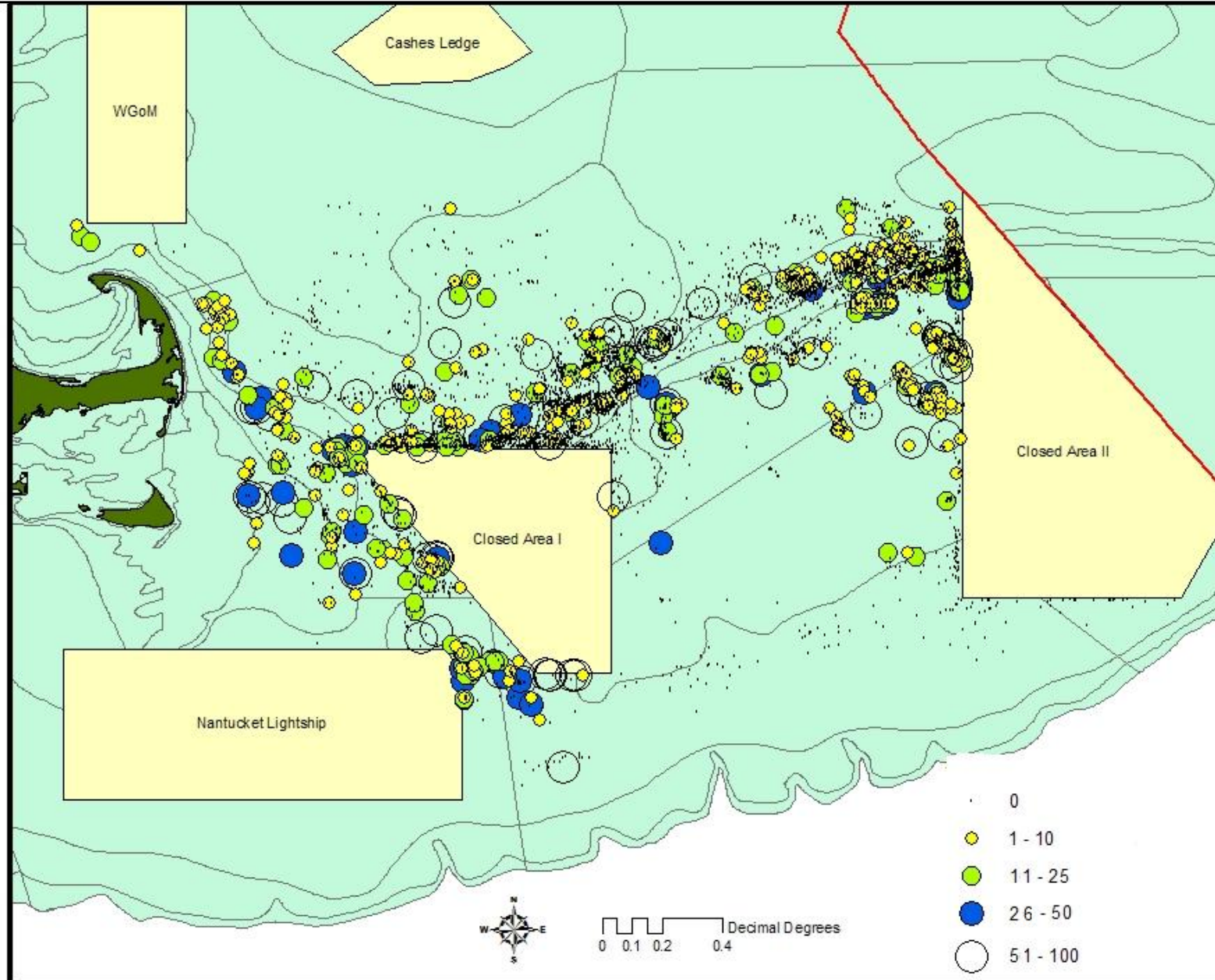
Cod CPUE (lbs/hour)



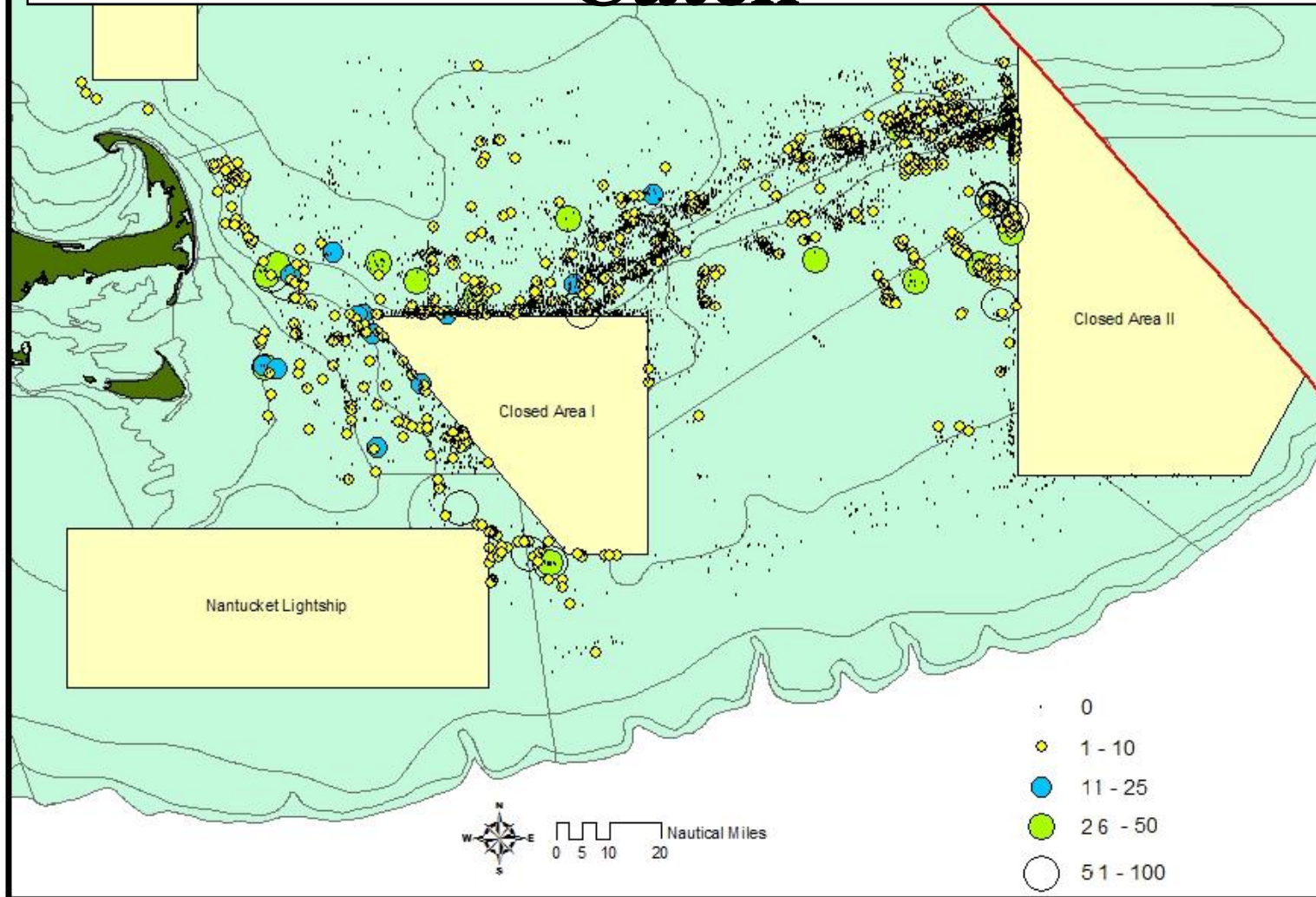
Discard CPUE of Cod (lbs/hour)



Percent of cod catch that is discarded



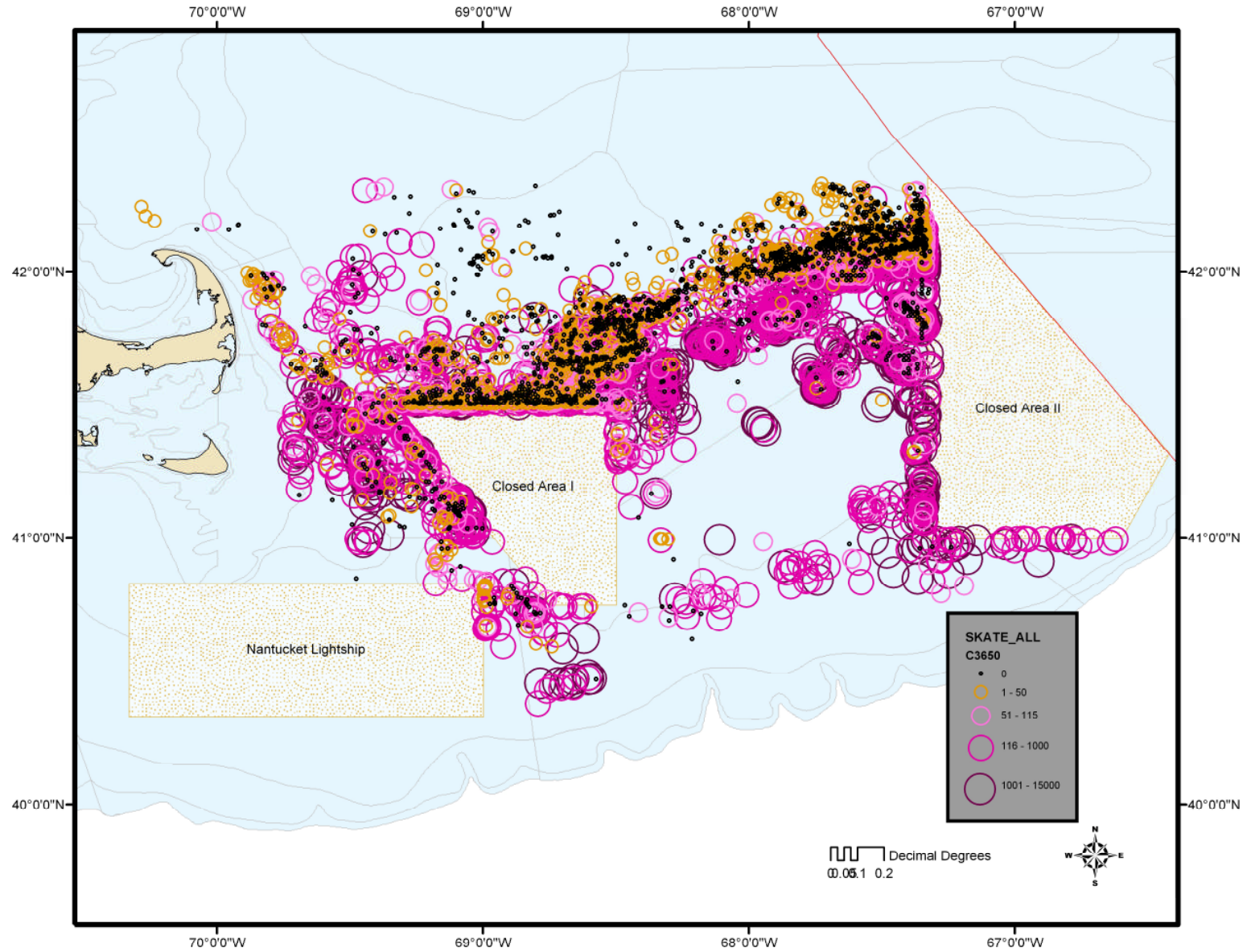
Cod Discard as Percent of Total Catch



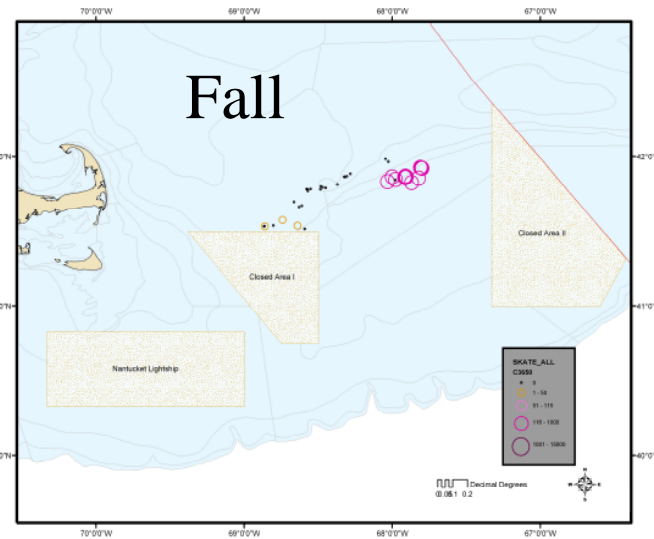
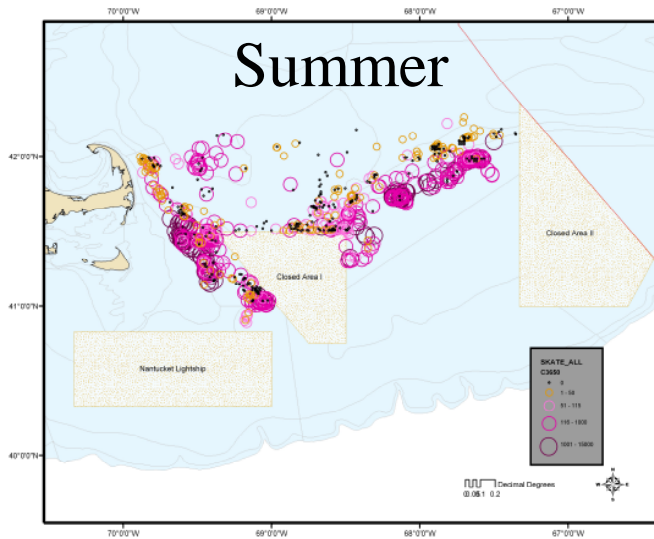
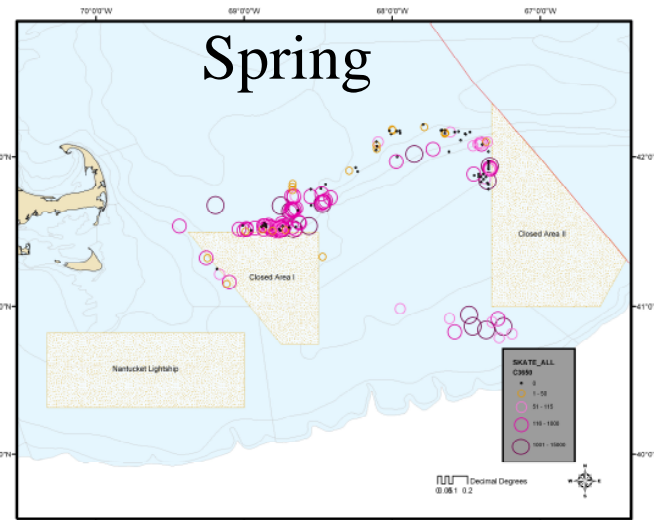
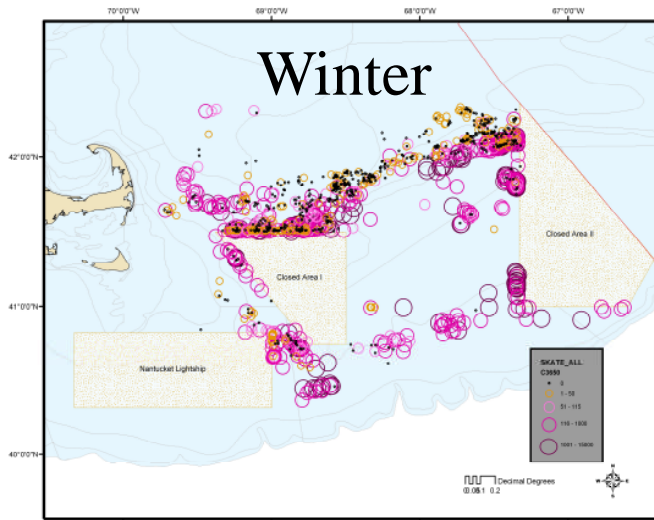
Skates
&
scallops



Skate Catches



Skate by season



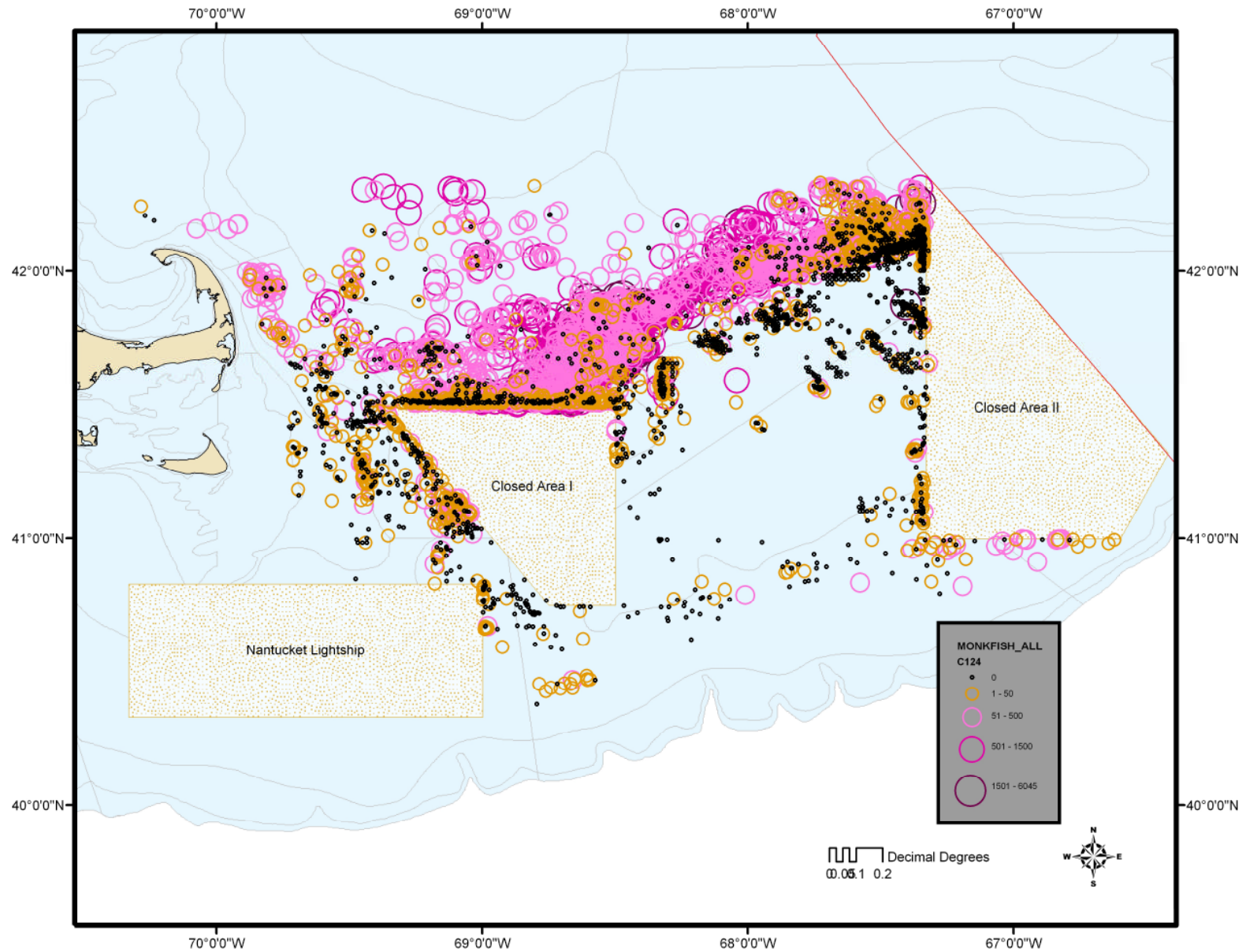
Monkfish, *Lophius americanus*



Tub of monkfish



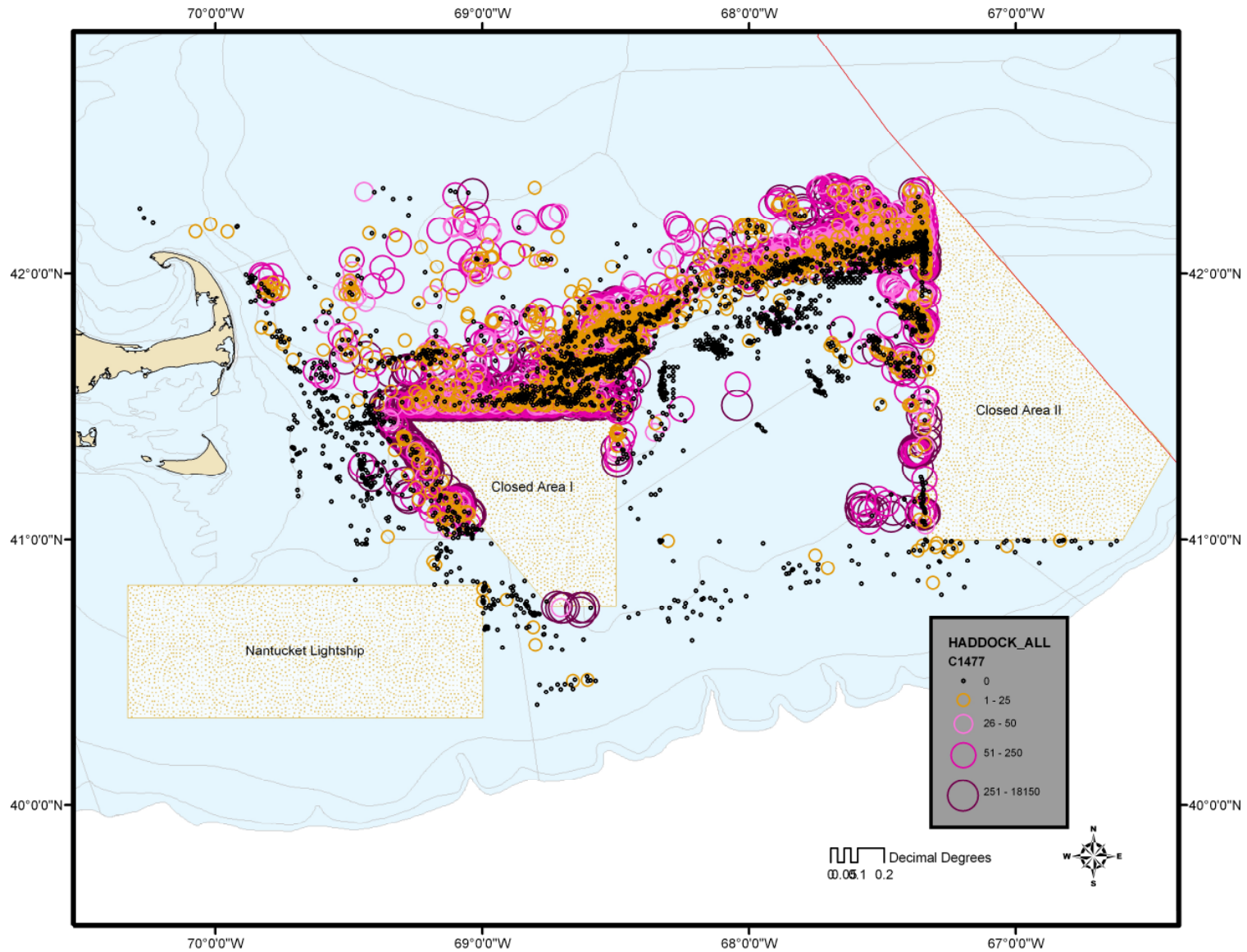
Monkfish



Haddock, *Melanogrammus aeglefinus*



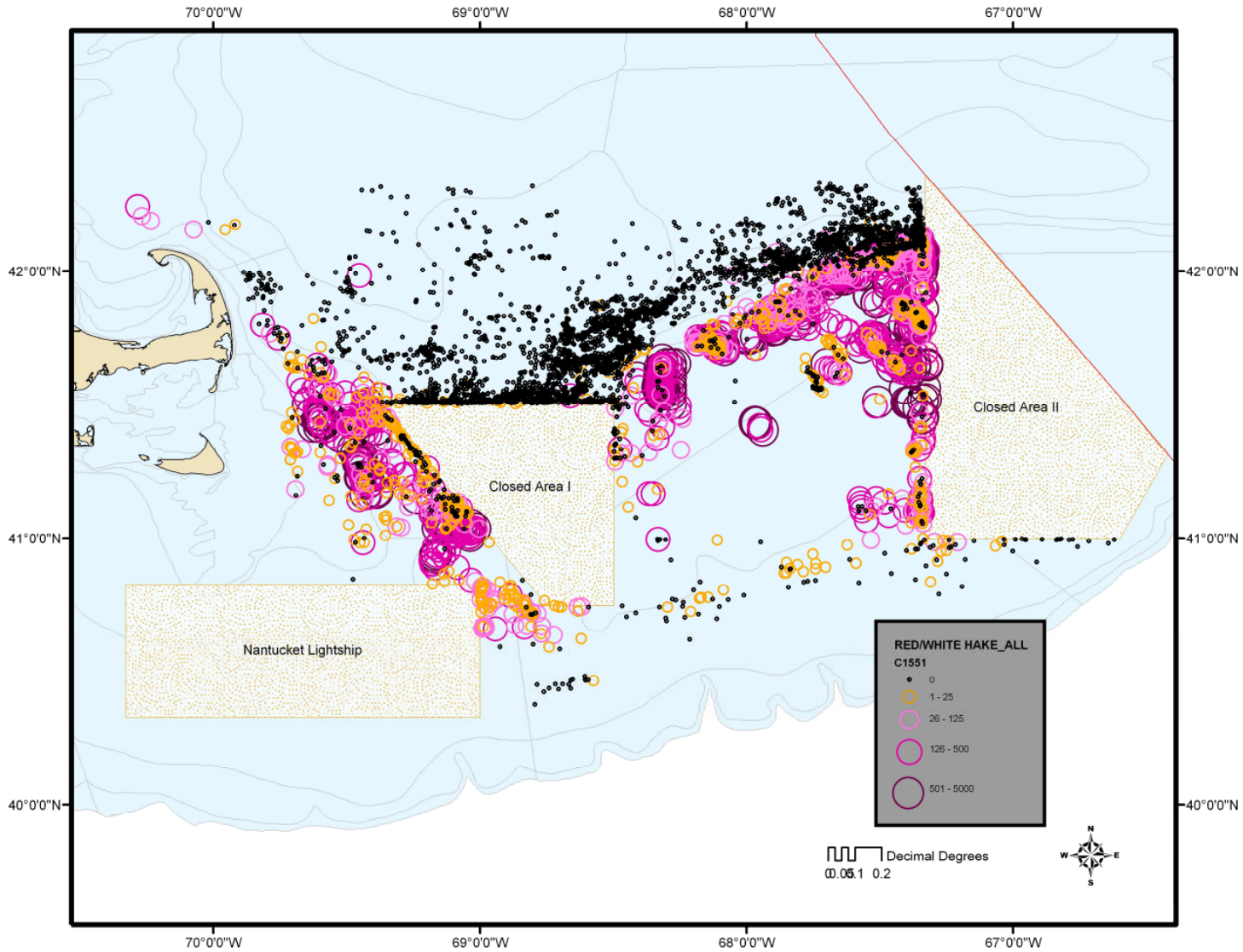
Haddock



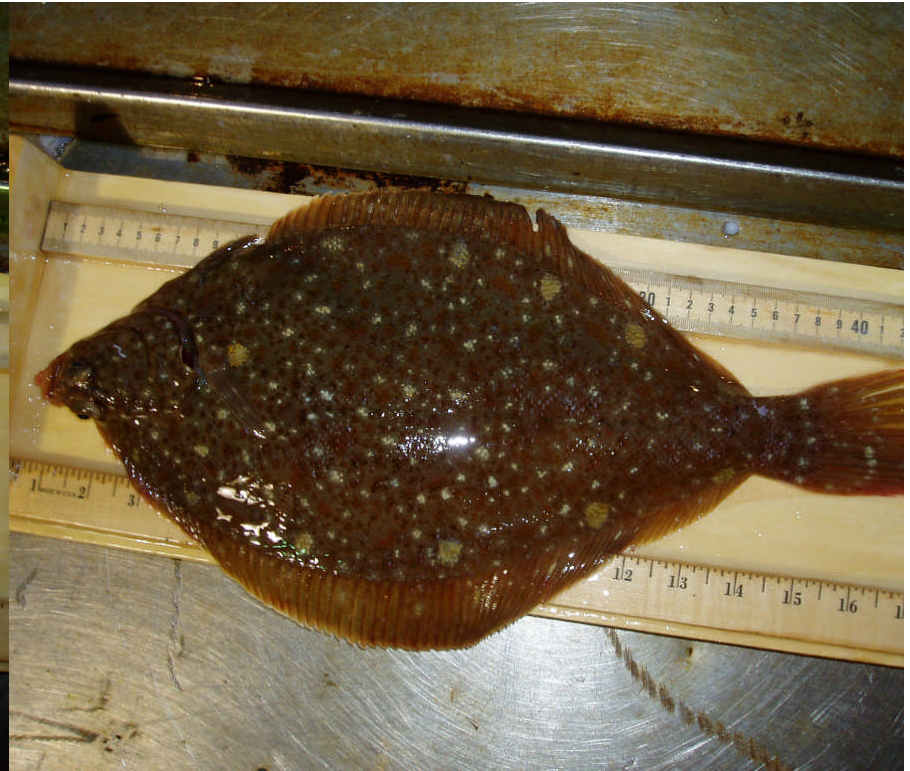
Winter flounder,
Pseudopleuronectes americanus



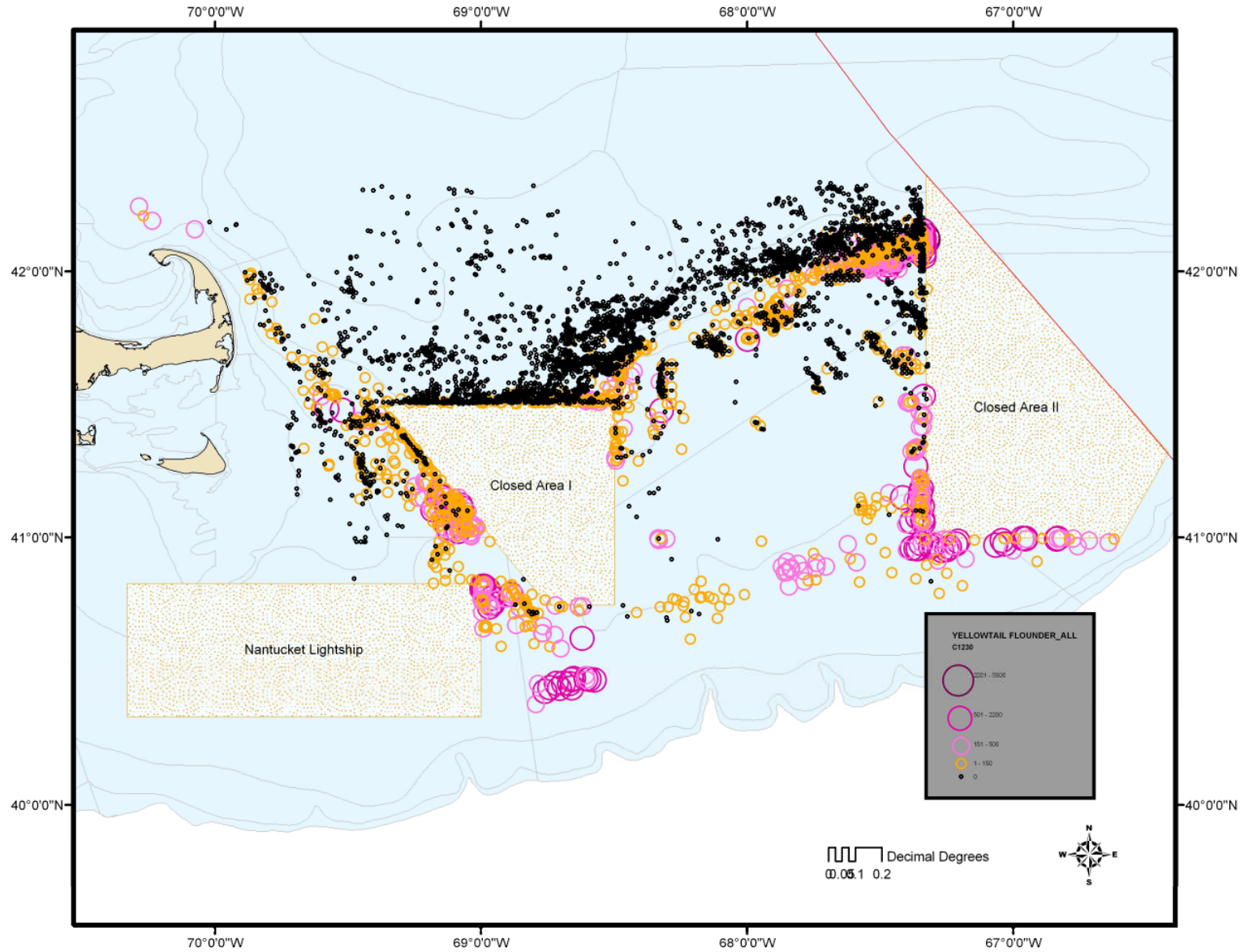
Winter flounder



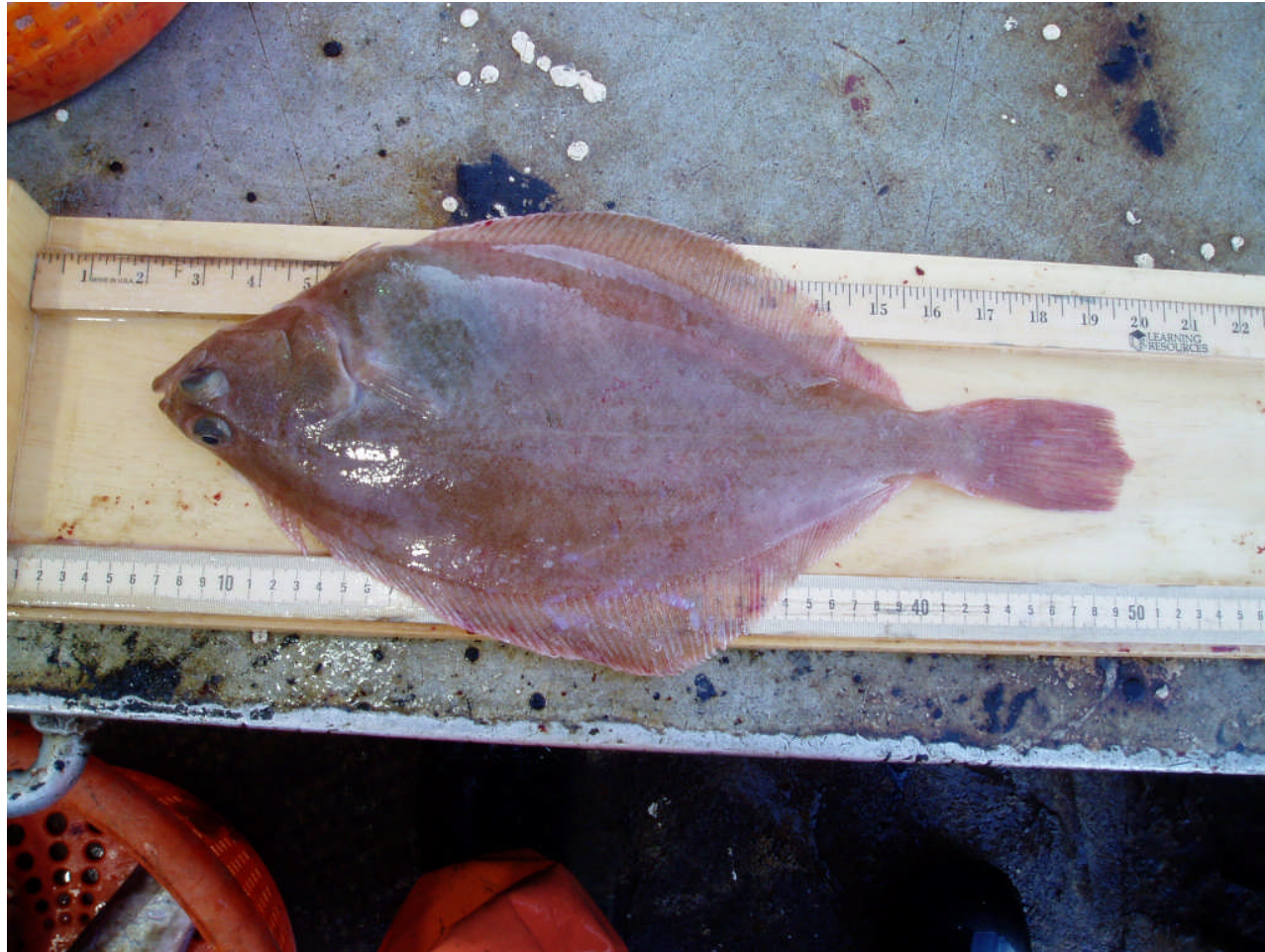
YT, *Pleuronectes ferrugineus*



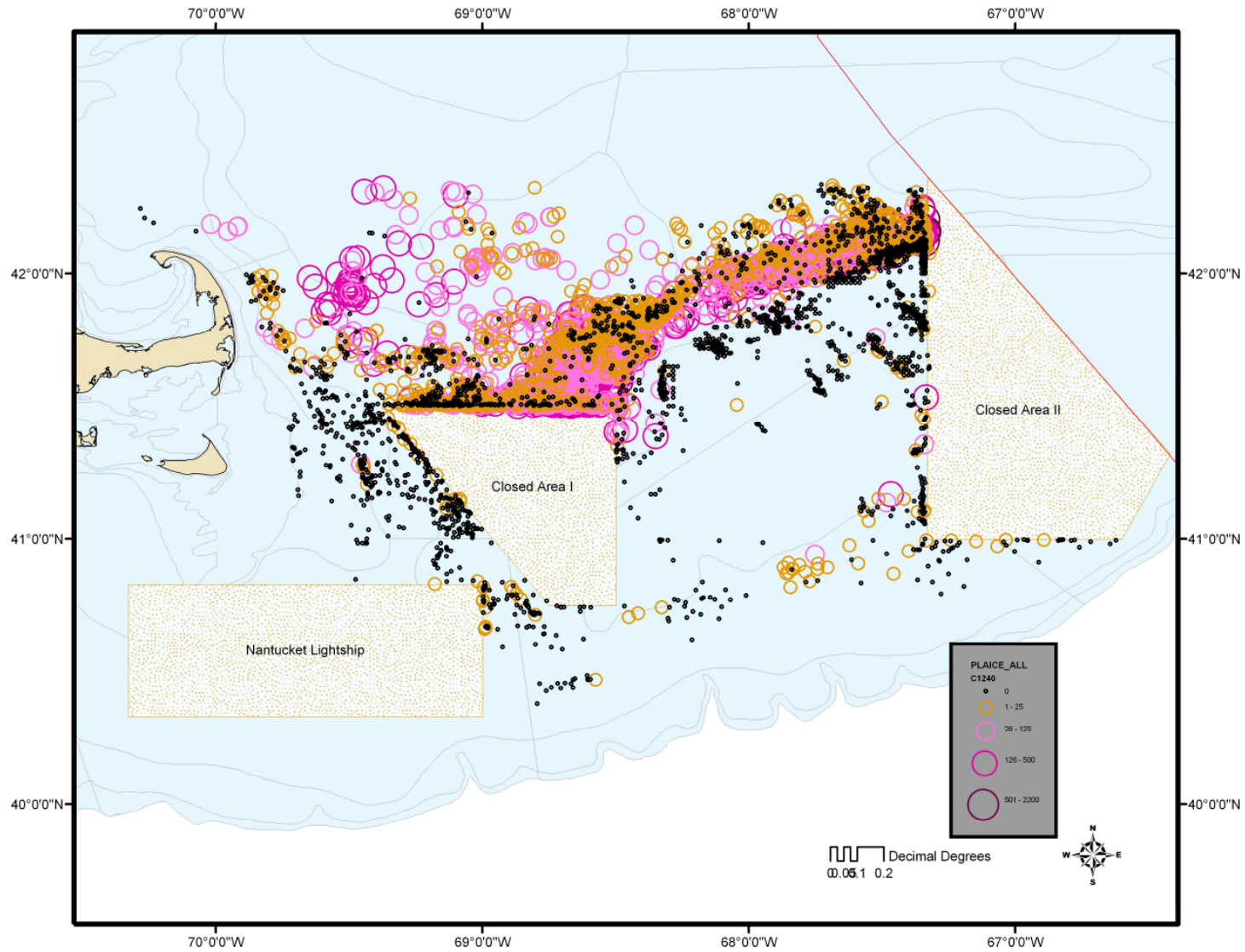
Yellowtail flounder



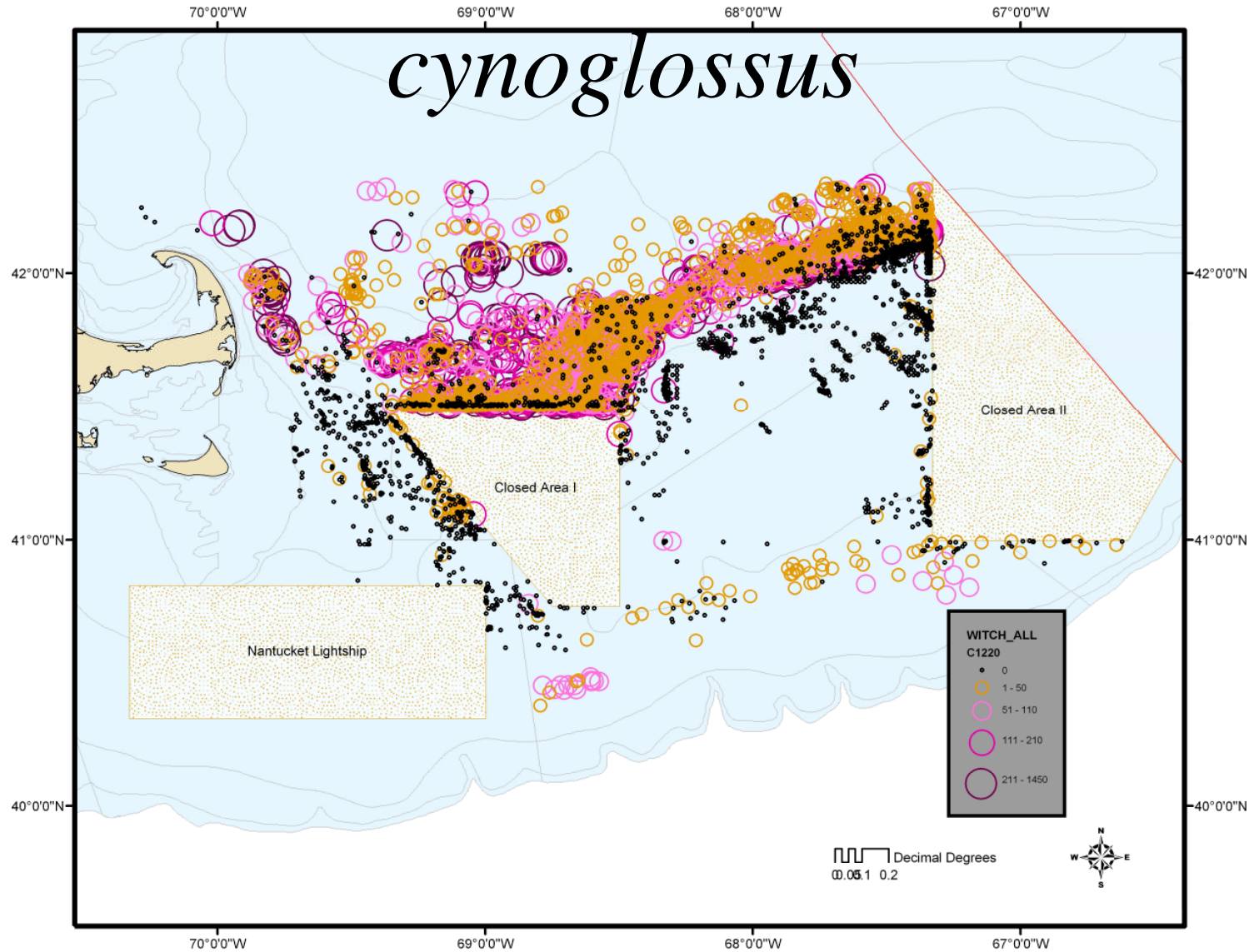
American plaice,
Hippoglossoides platessoides



American plaice



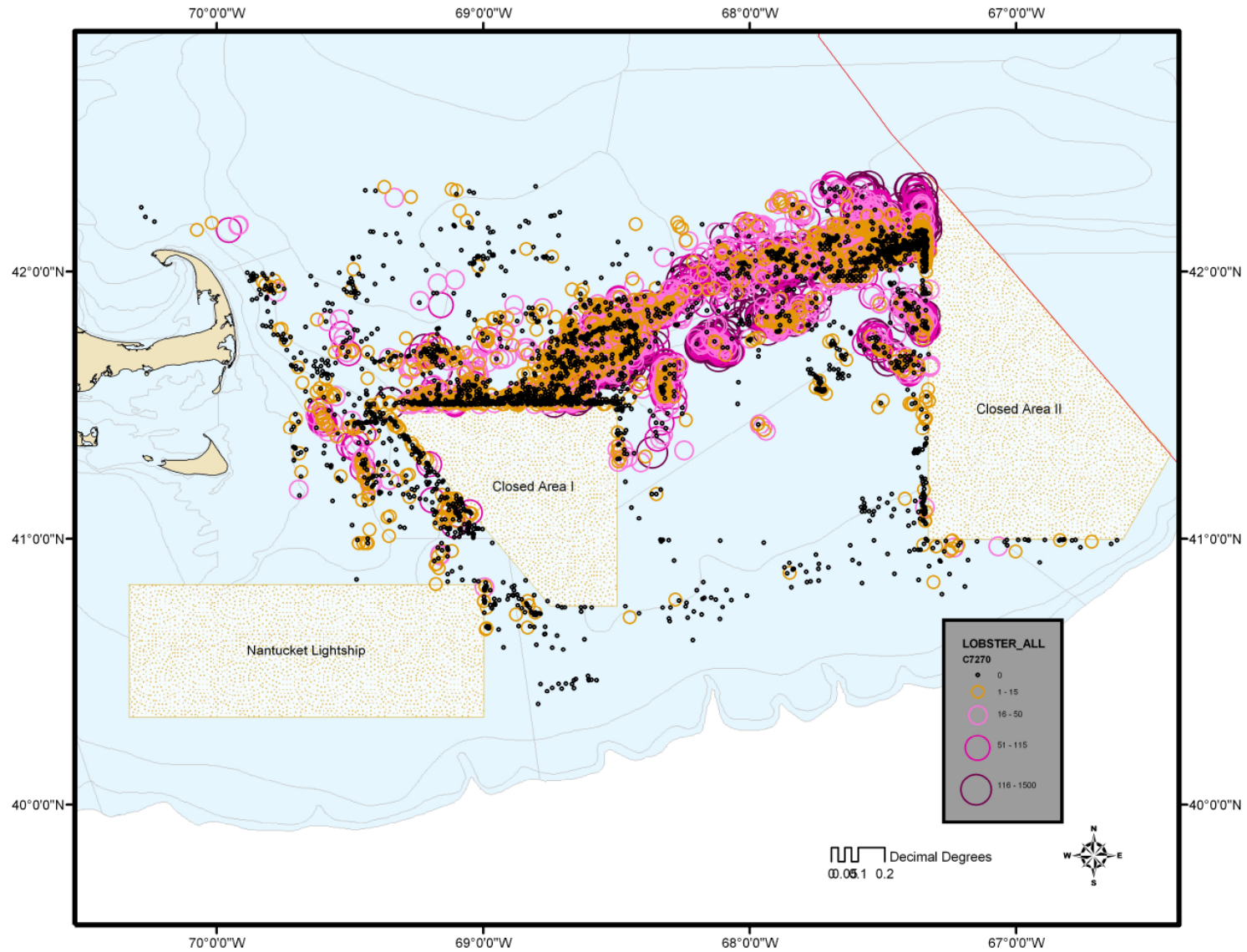
Witch flounder, *Glyptocephalus*



Big lobster
*Homarus
americanus
giganticus*



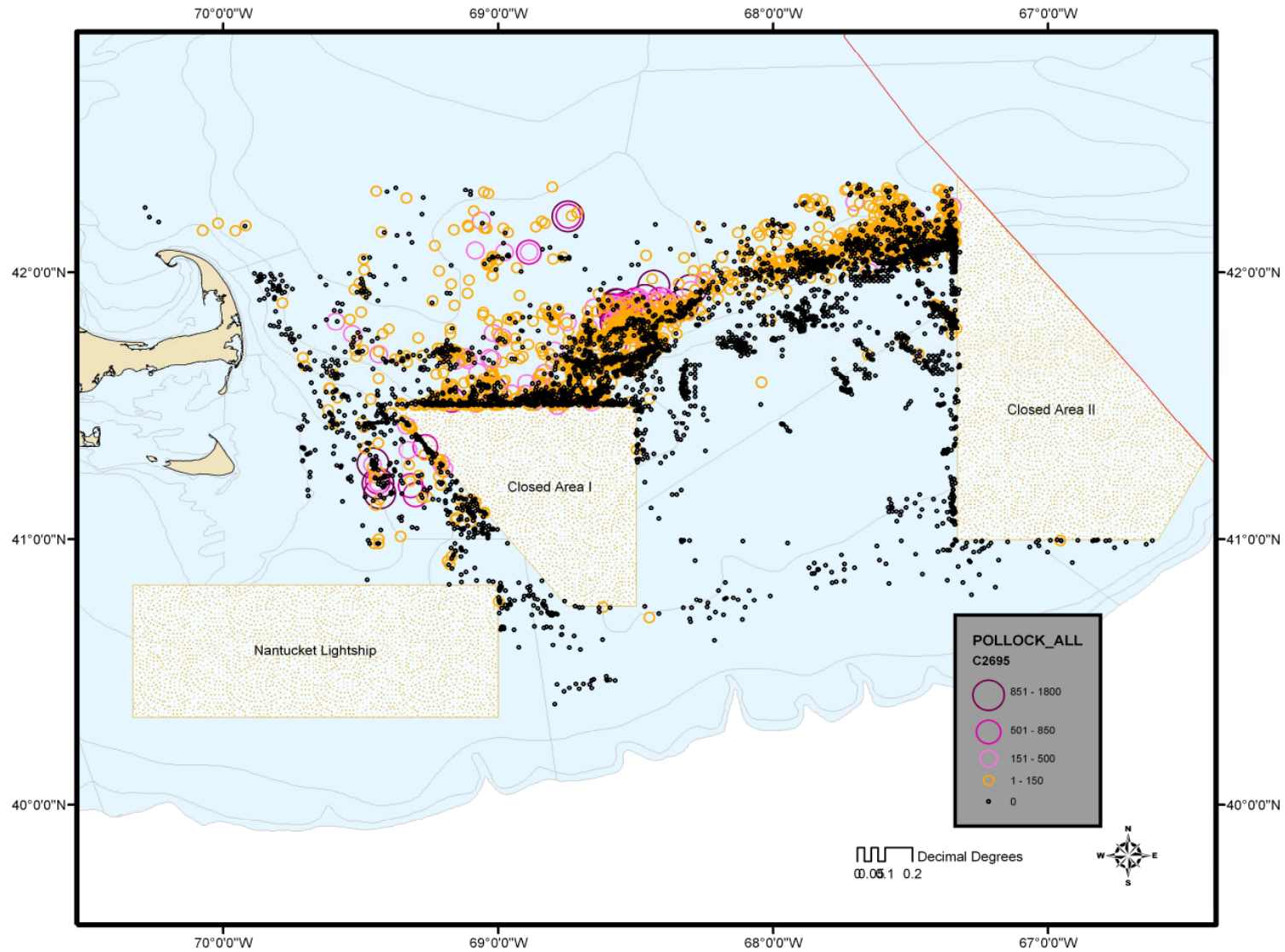
American Lobster



Pollock, *Pollachius virens*



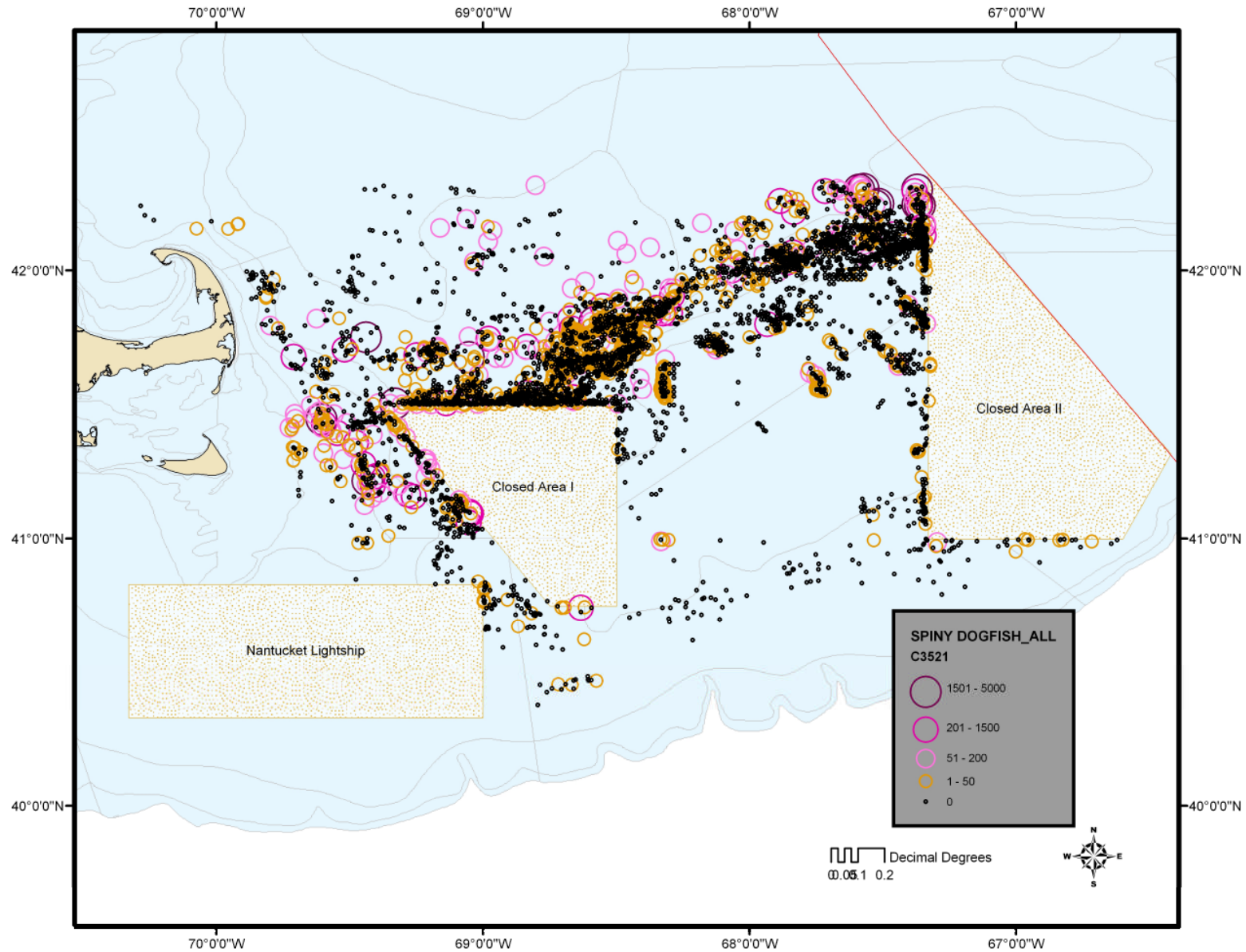
Pollock



Spiny dogfish, *Squalus acanthias*



Spiny dogfish



Ocean pout, *Macrozoarces
americanus*



Wolffish, *Anarhichas lupus*



Silver hake, *Merluccius* spp.



Atlantic herring, *Clupea harengus*



Fourspot, *Paralichthys oblongus*



Fluke, *Paralichthys dentatus*

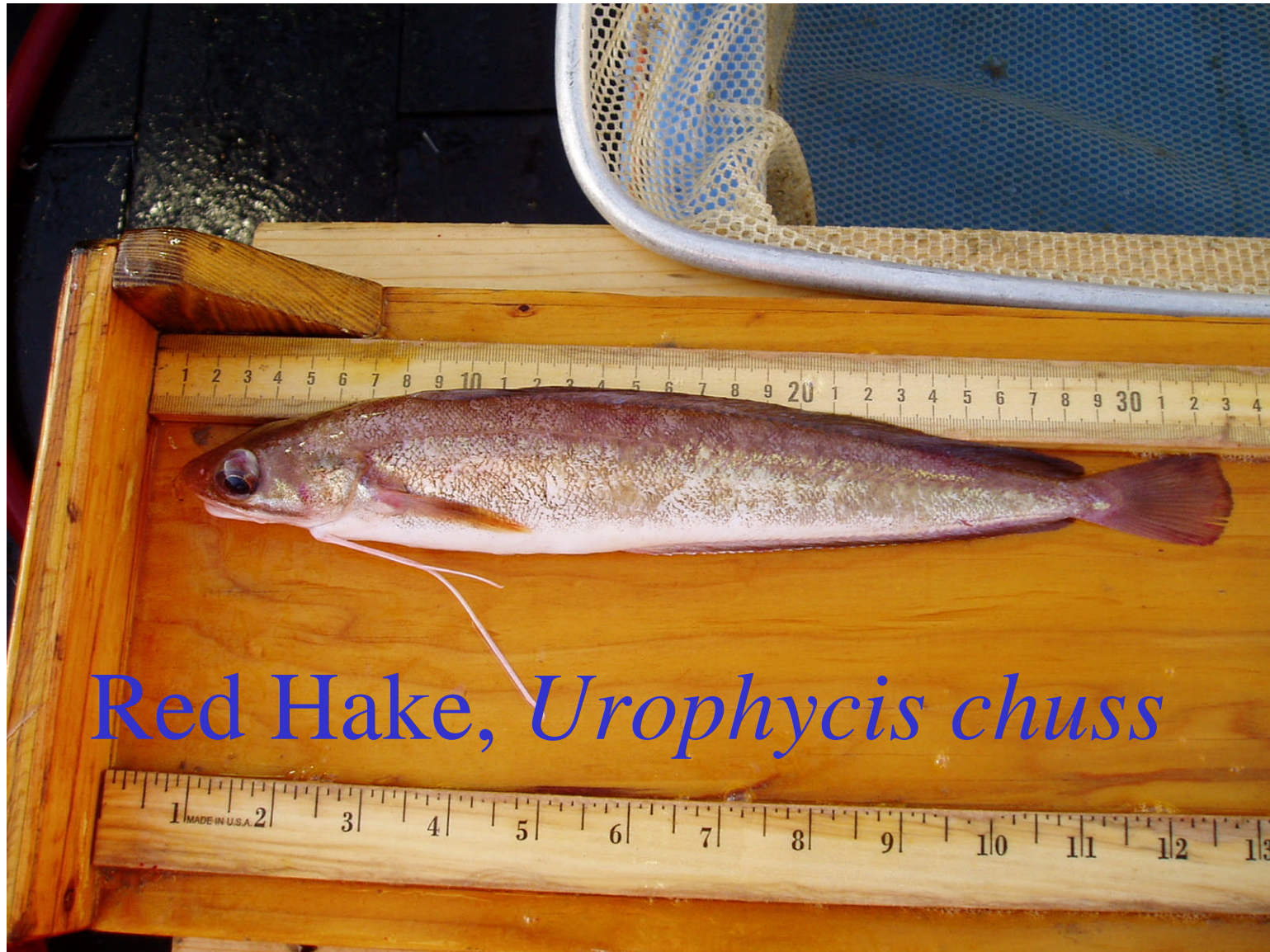


Windowpane, *Scophthalmus aquosus*



Redfish, *Sebastes* sp.



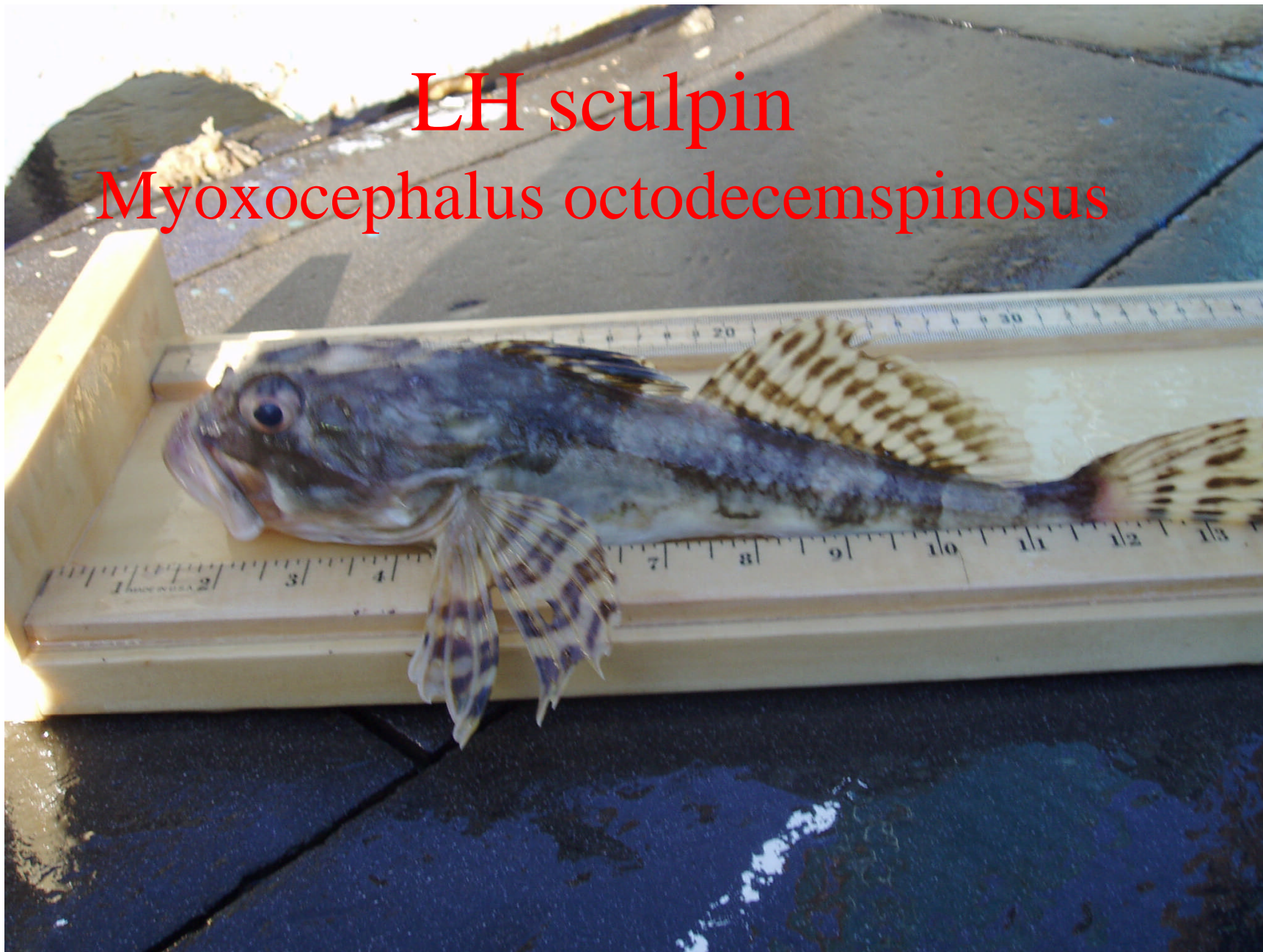


Red Hake, *Urophycis chuss*

Cunner, *Tautogolabrus adspersus*



LH sculpin
Myoxocephalus octodecemspinosus



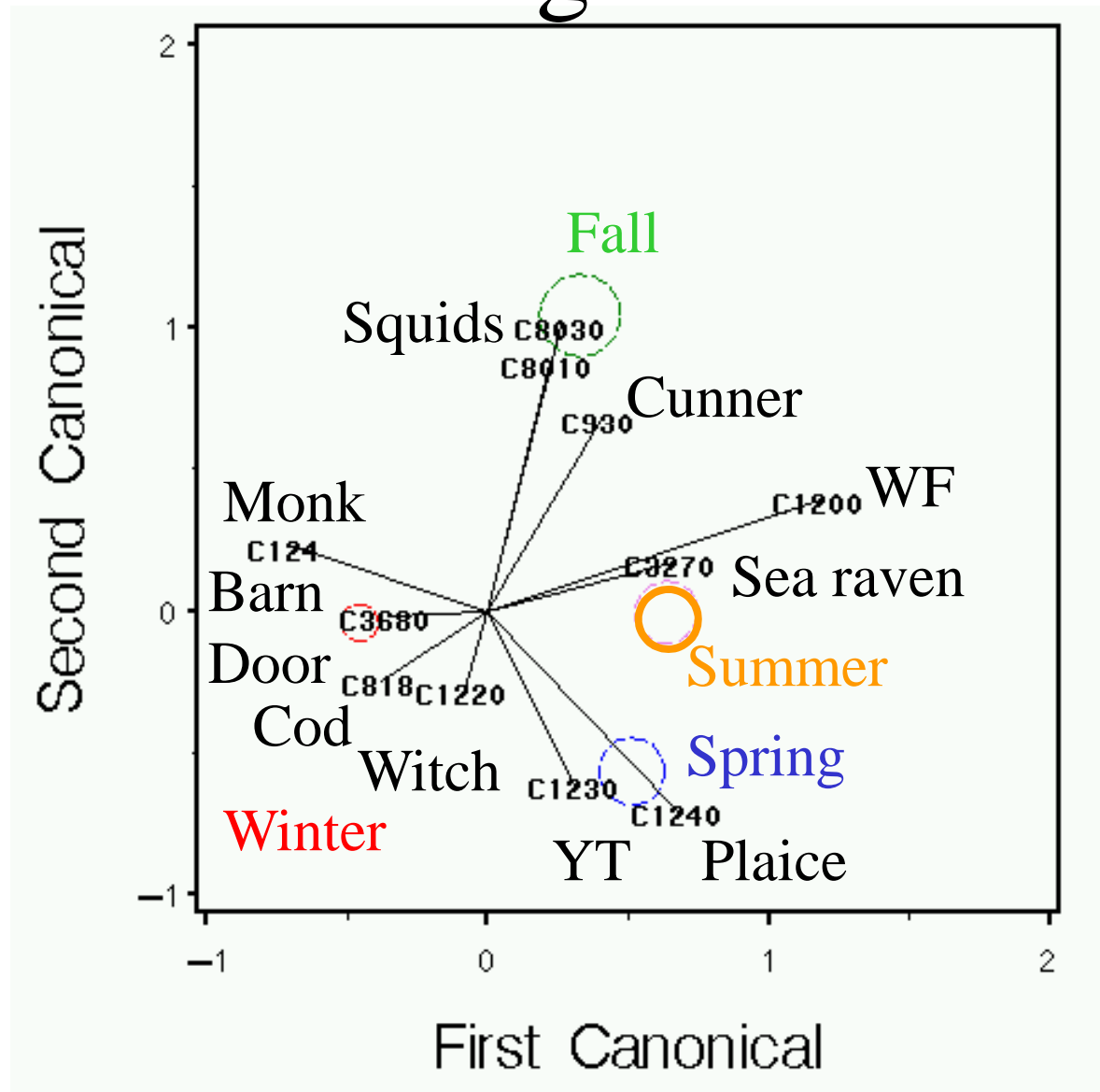
Sea Raven,
Hemitripterus americanus



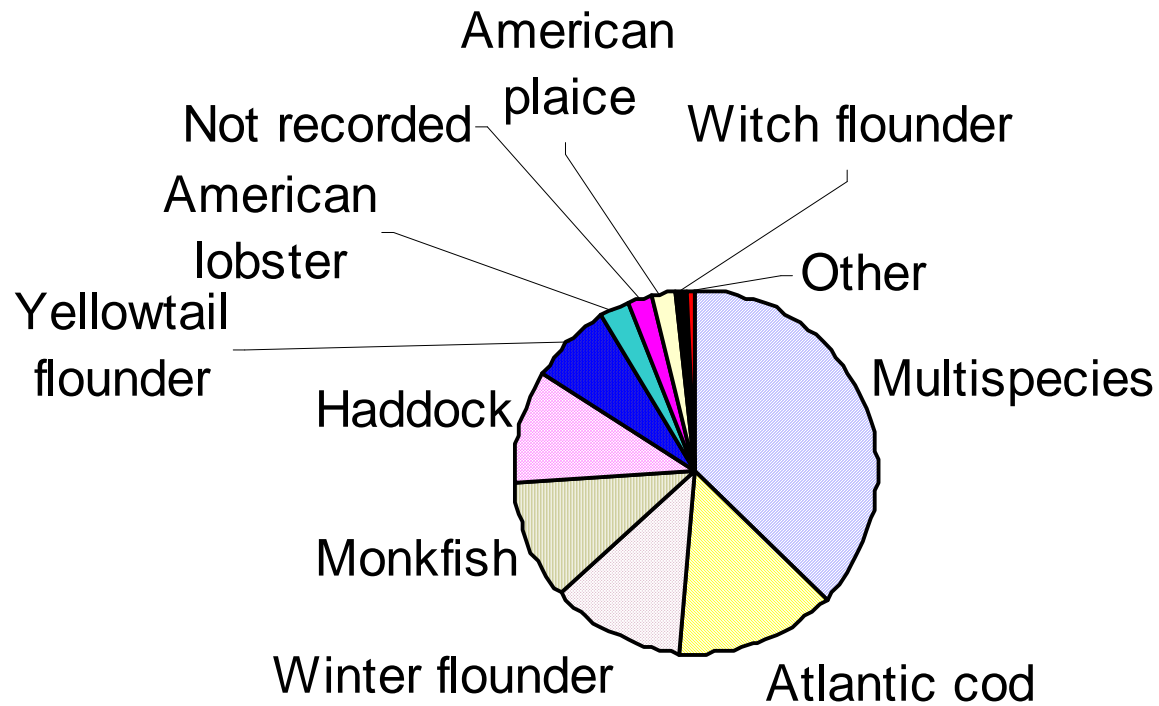
Yellow sea raven



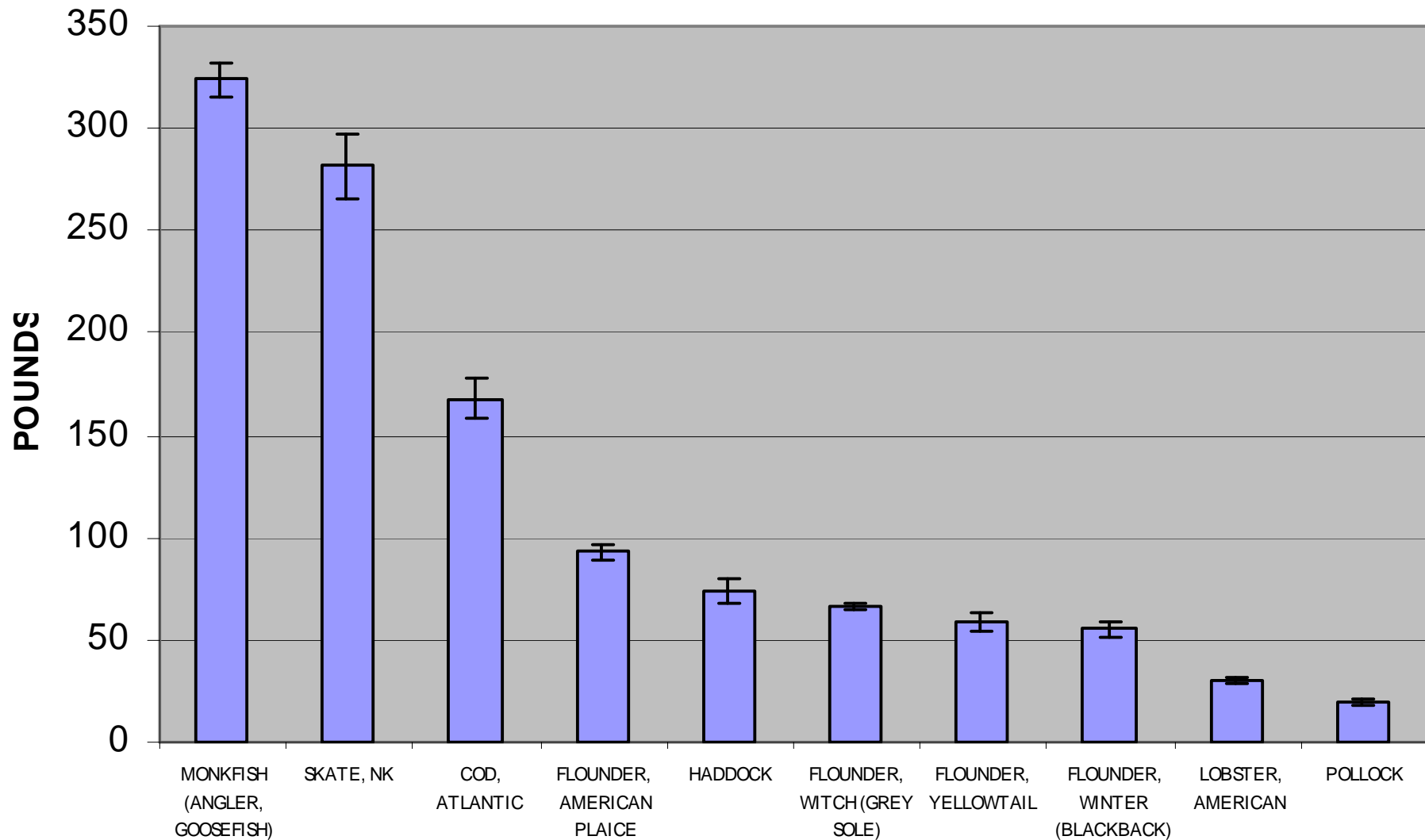
Canonical Discrimination among seasons



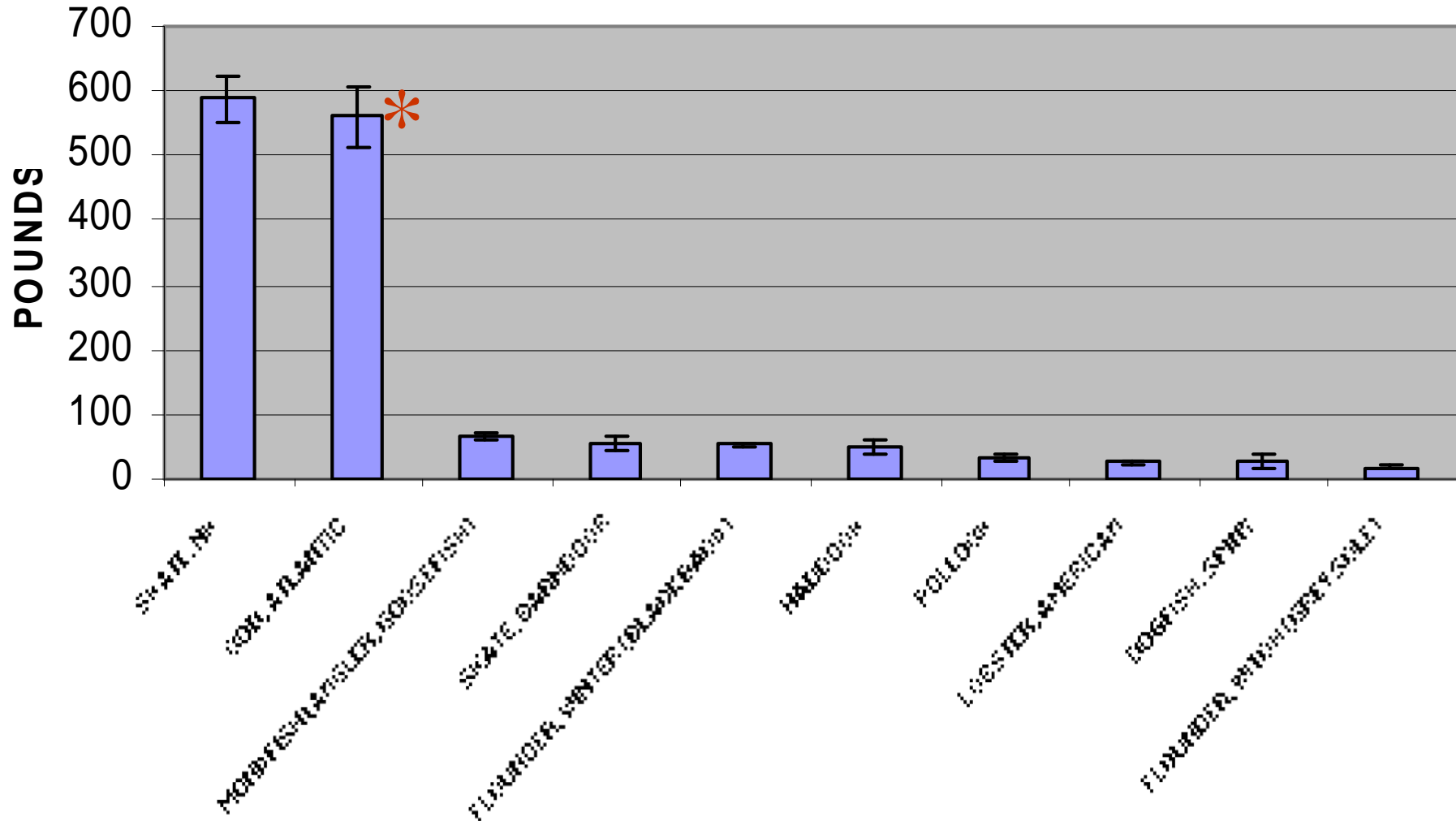
Fishing effort by target



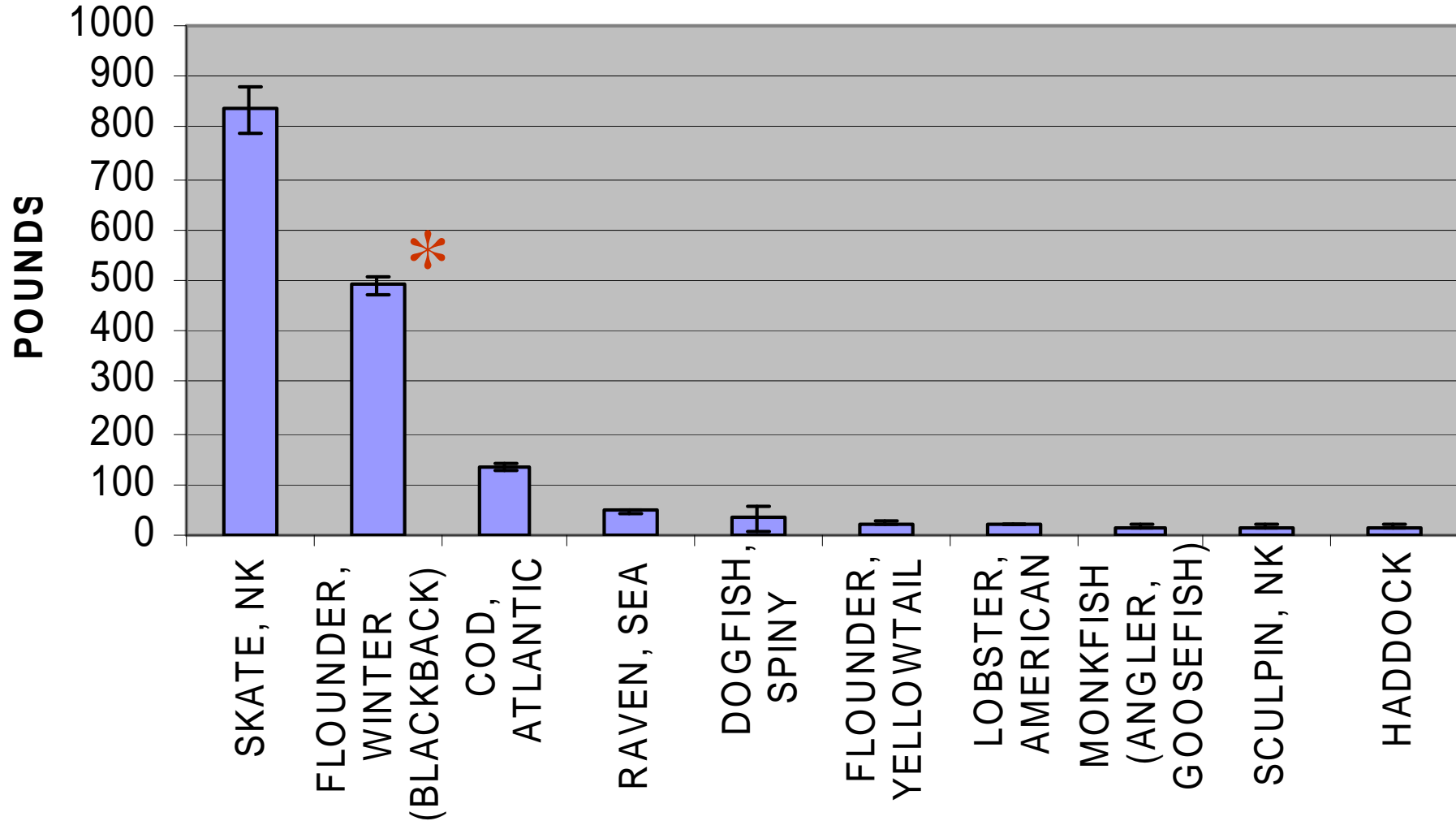
TOP 10 CATCH MEANS BY TARGET SPECIES, MULTISPECIES (37% of total hauls)



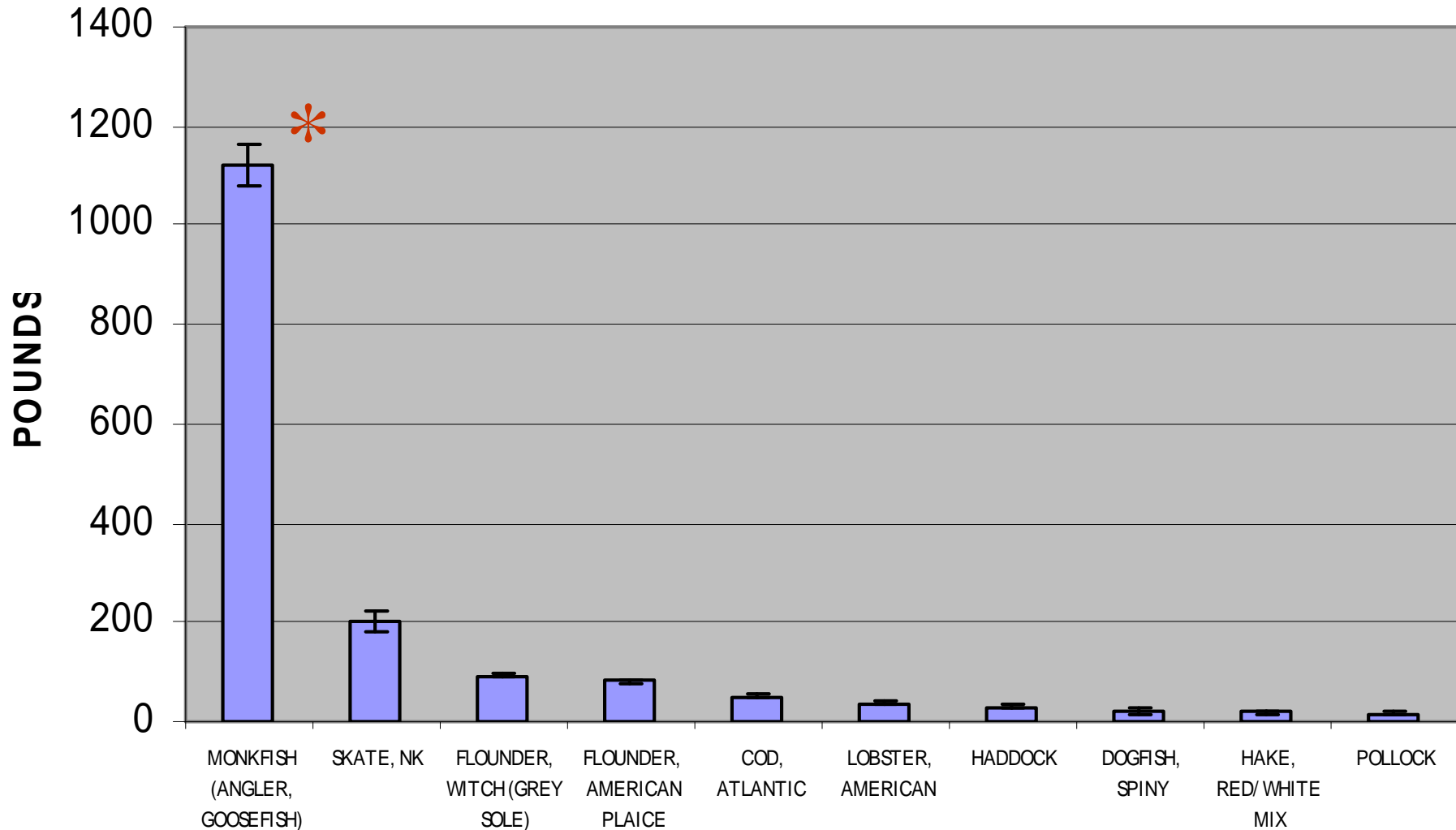
TOP 10 CATCH MEANS BY TARGET SPECIES, COD (14% of total hauls)



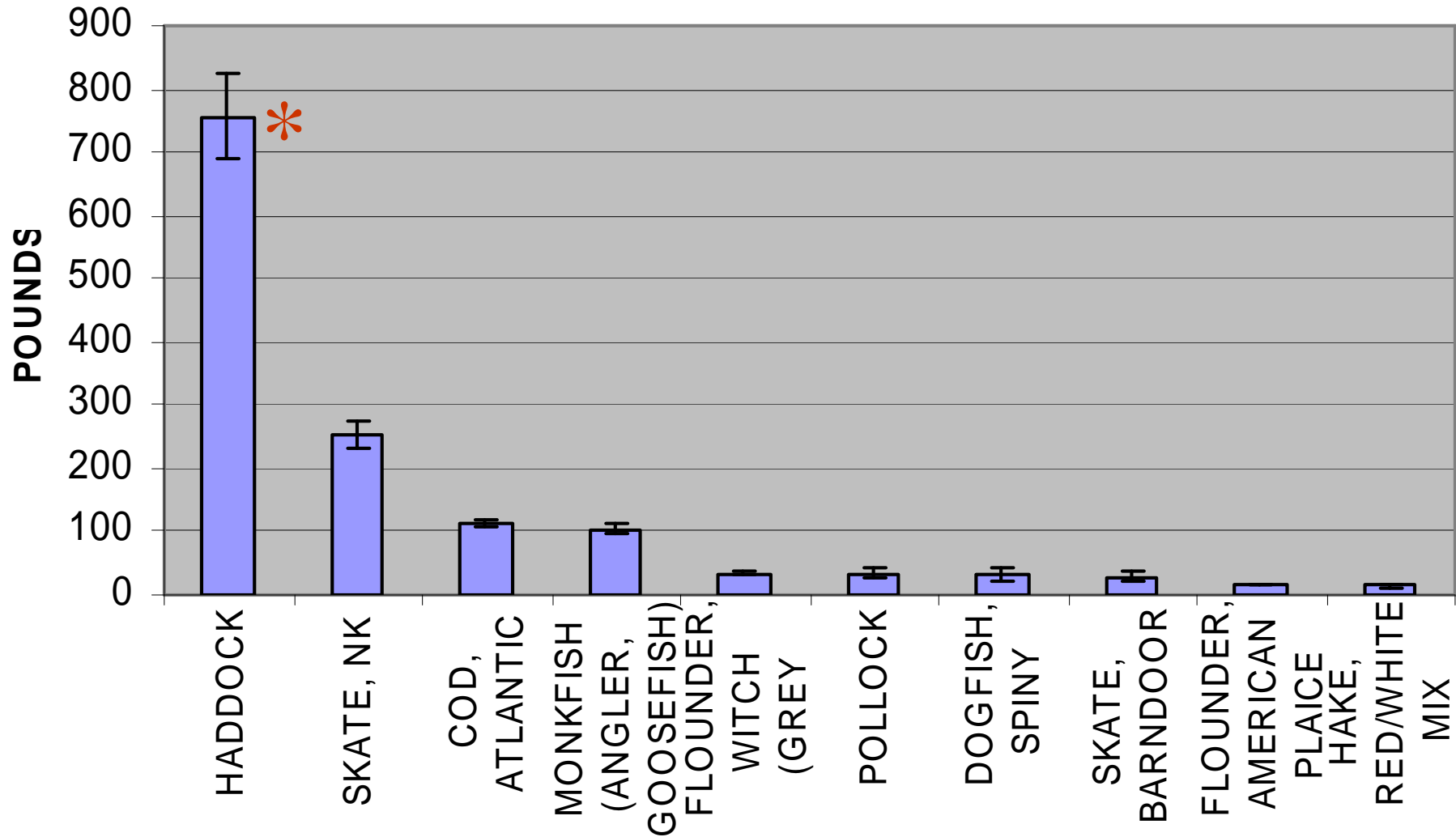
TOP 10 CATCH MEANS BY TARGET SPECIES, Winter Flounder (12% of total hauls)



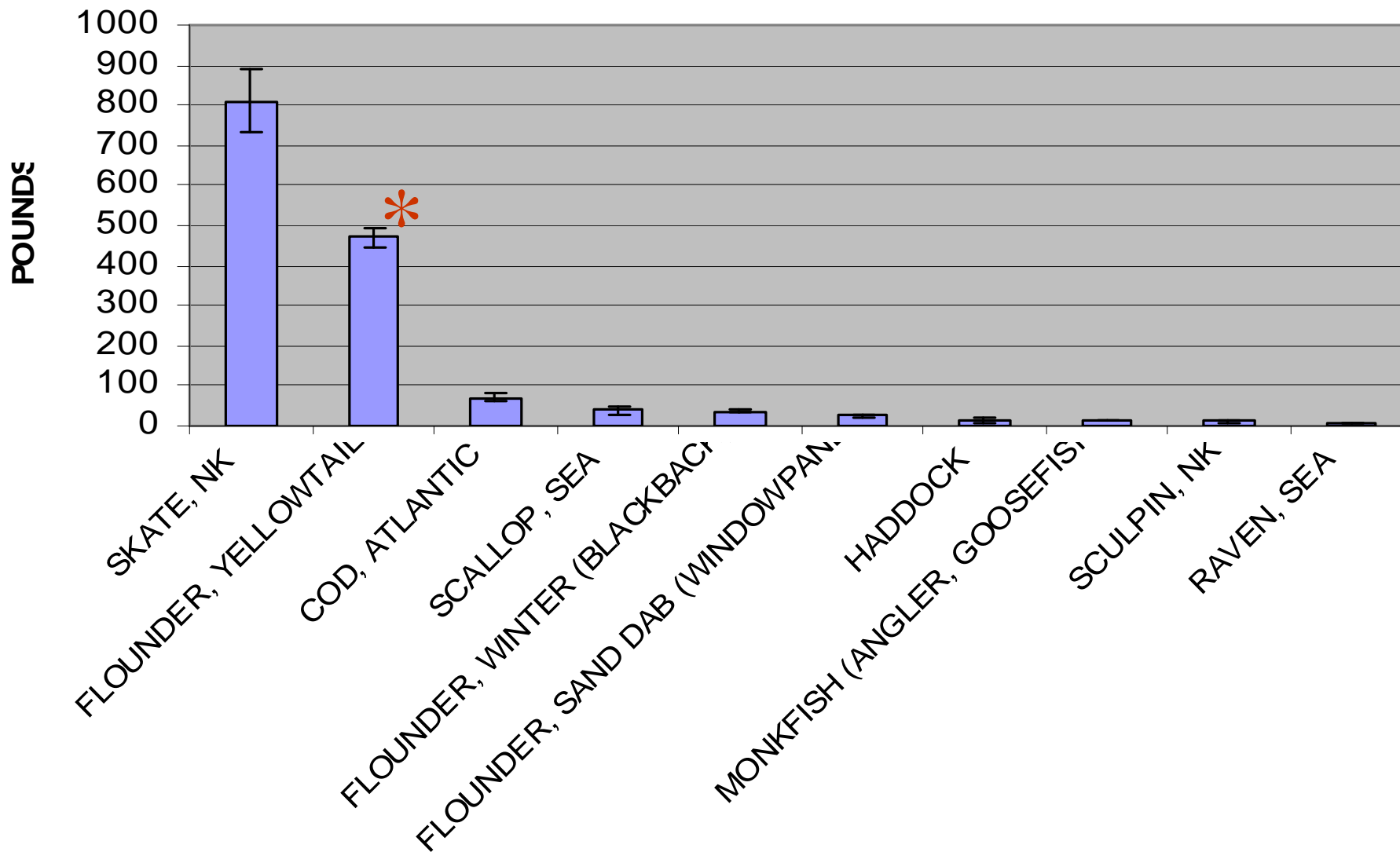
TOP 10 CATCH MEANS BY TARGET SPECIES, MONKFISH (11% of total hauls)



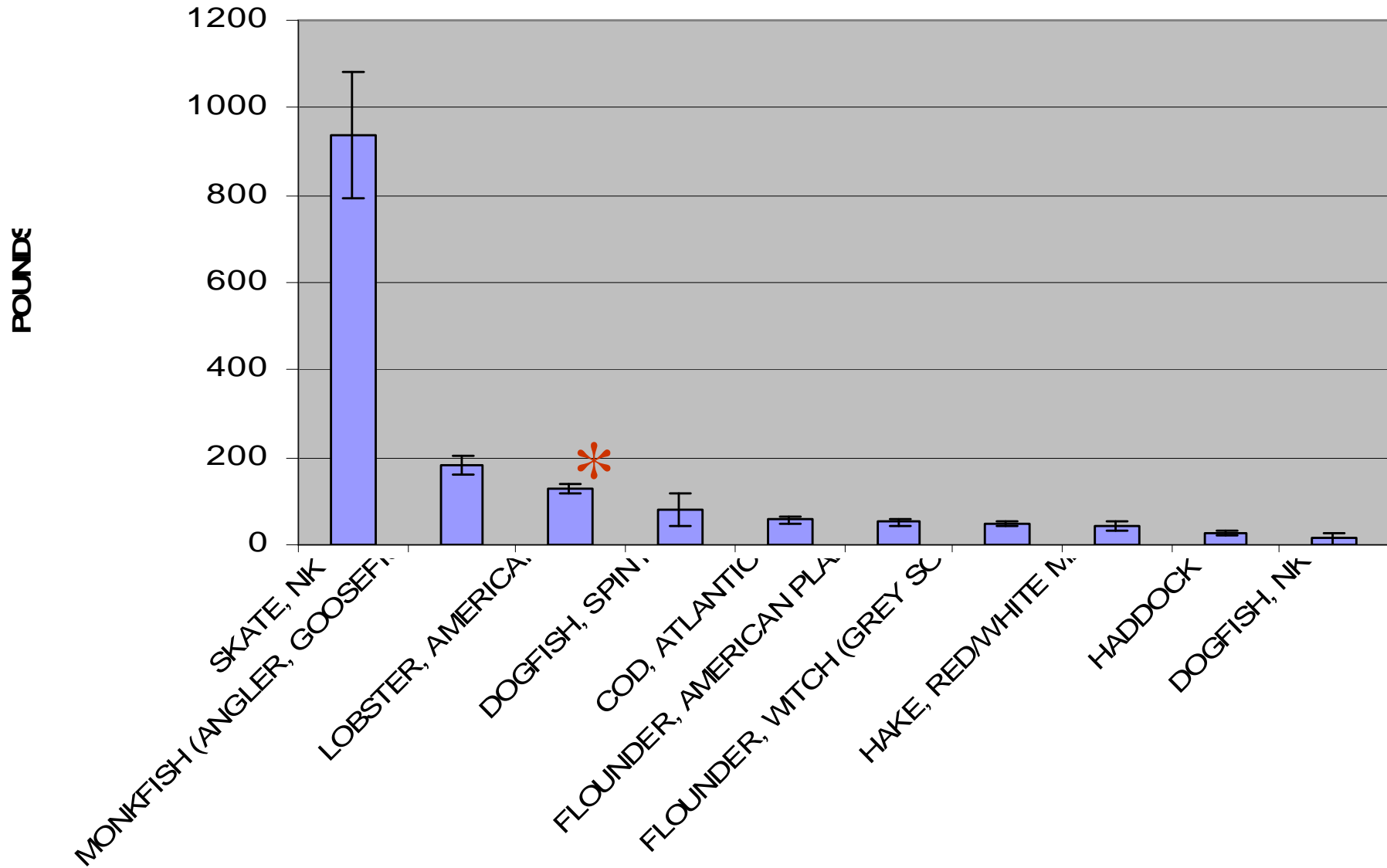
TOP 10 CATCH MEANS BY TARGET SPECIES, Haddock (10% of total hauls)



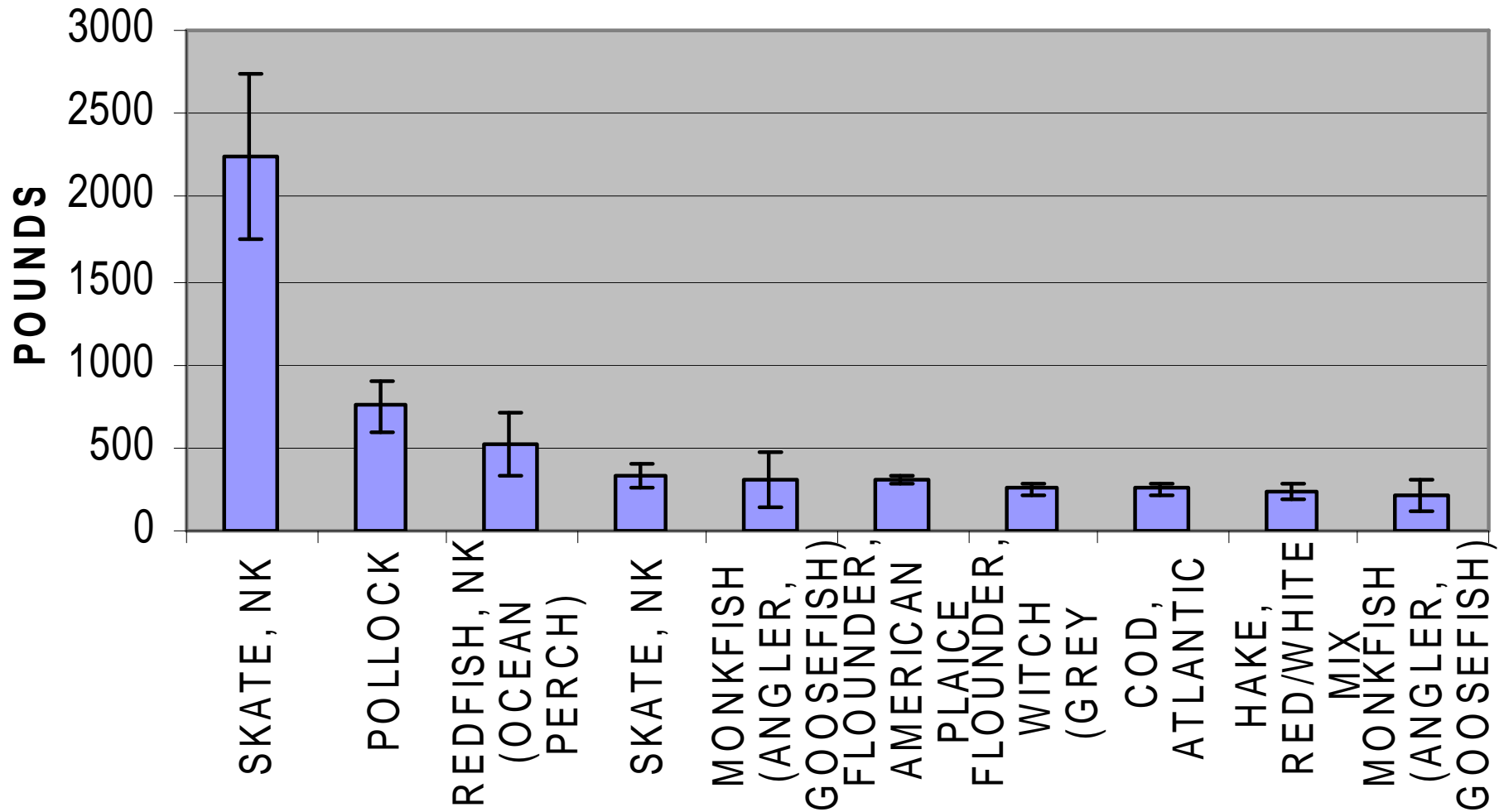
TOP 10 CATCH MEANS BY TARGET SPECIES, Yellowtail Flounder (7% of total hauls)



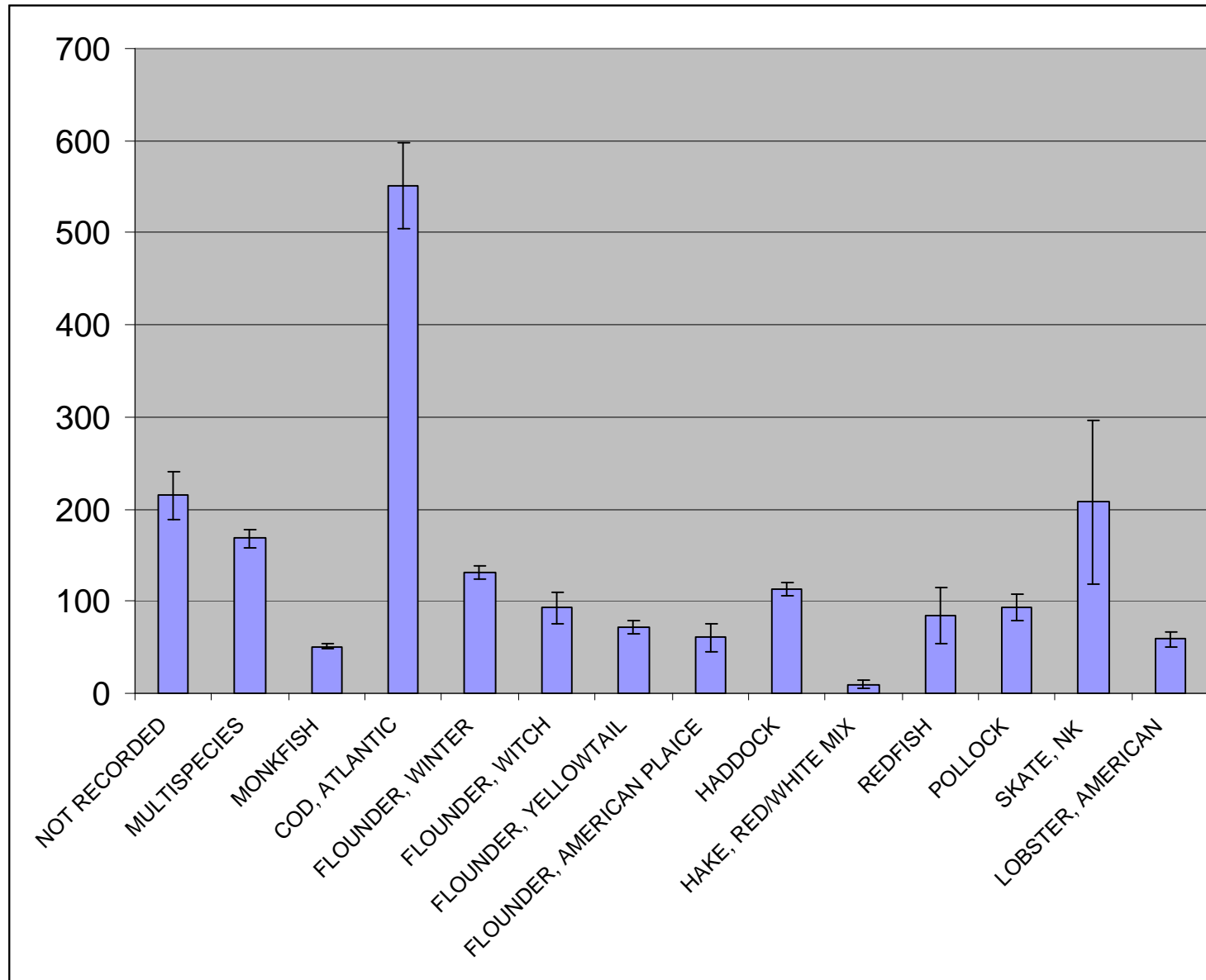
TOP 10 CATCH MEANS BY TARGET SPECIES, Lobster (3% of total hauls)



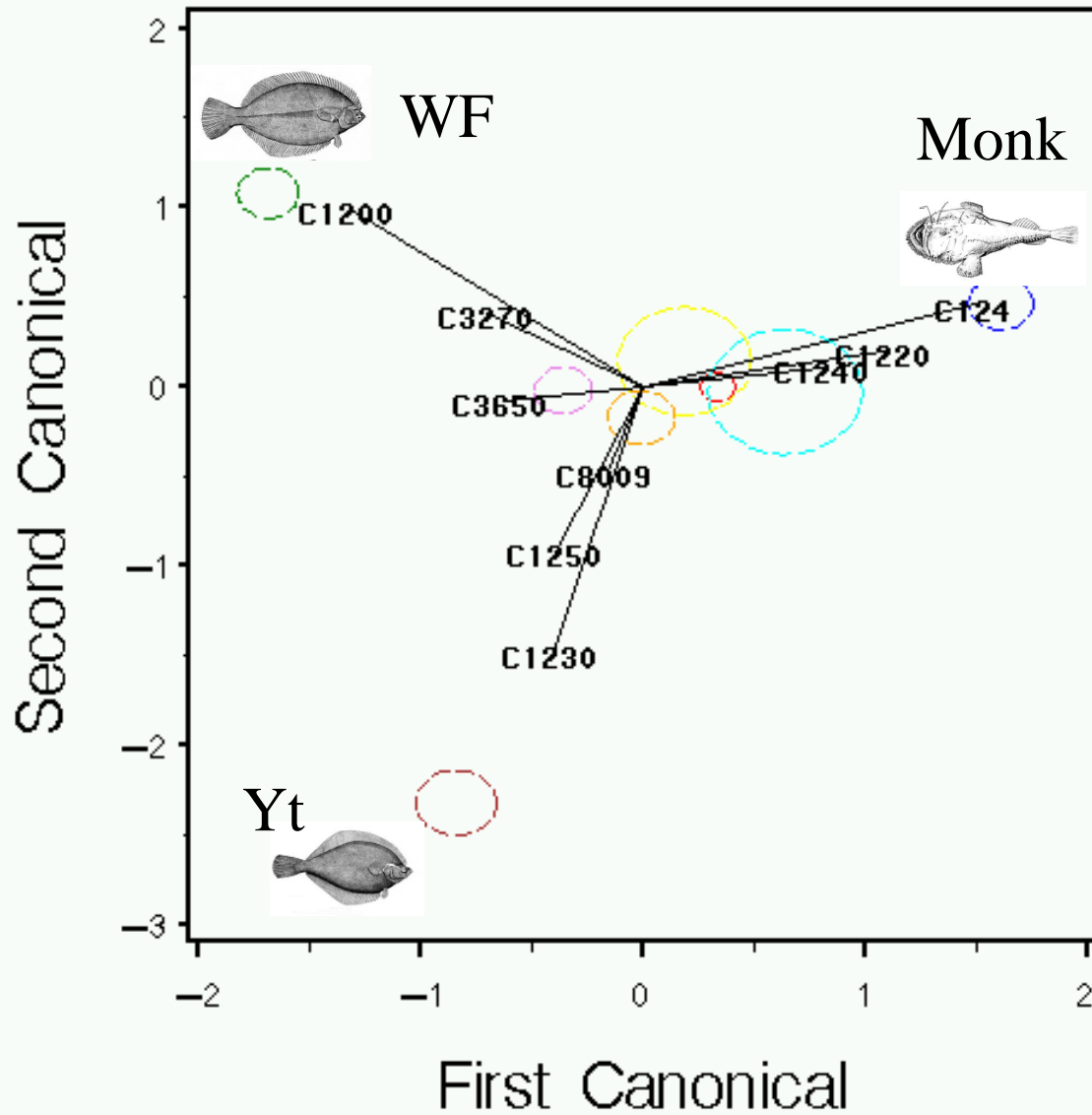
TOP 10 CATCH MEANS BY TARGET SPECIES, ALL OTHERS (6% of total hauls)



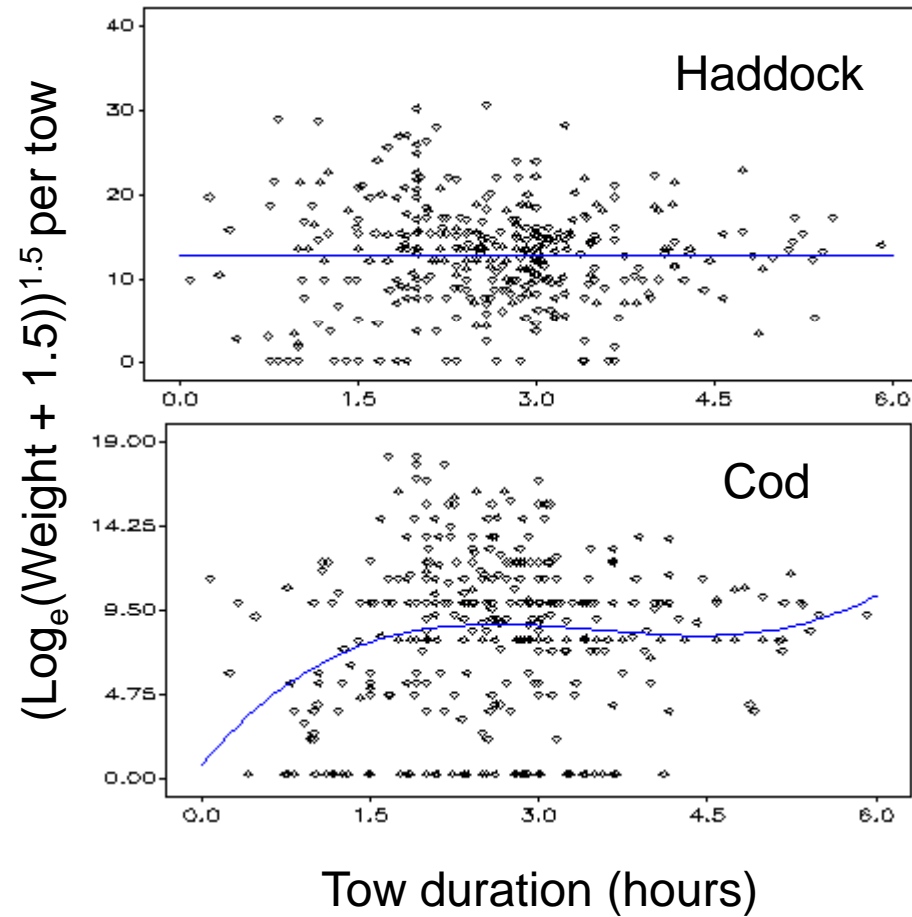
Catch of cod by target species



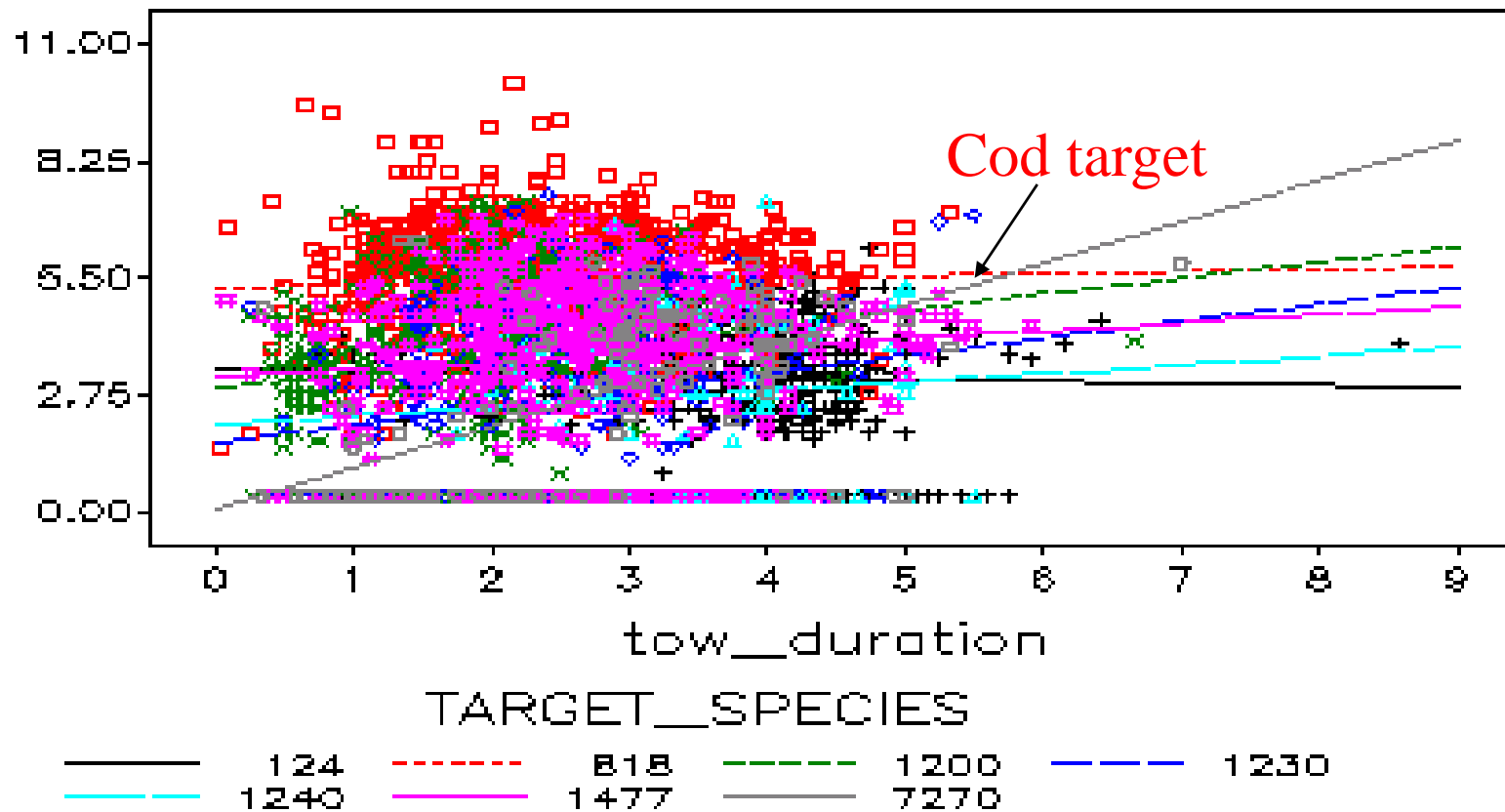
Canonical Discrimination by target



Relationship of haddock and cod catches to tow duration in the winter haddock fishery



Effect of tow duration on cod catch modified by target species



Conclusions

- I have a lot of work to do...
- Fishermen appear to be able to effectively target groundfish species and reduce bycatch
- The relationship between tow duration and catch is complex, seems to be affected both by the behavior of the fishermen and the fish

A lumpfish prince?
Or a biologist at sea toooooo long?

