
MarineFisheries
A Commonwealth of Massachusetts Agency

## Act III, Scene 1:

"Cry 'Havoc!', and let slip the dogs of war" between the states and NOAA Fisheries:

*Are we wedded to a dogfish doomsday scenario, or will ecosystem management spur a new direction for dogfish management and cooperation?*

David Pierce, Ph.D., Deputy Director

SPECIAL DOGFISH REPORT

# Dogfish: Special Report

SPECIAL DOGFISH REPORT

You'd be hard pressed to find a commercial or recreational fisherman in the Northeast who doesn't have a few choice words to say about spiny dogfish. Considered to be the "plague of the ocean," this schooling species of voracious predators has become the bane of fishermen everywhere, regardless of the gear they use.

What is it with these fish, and how can people be at such disparate odds over how to deal with them?

Environmentalists hold a heavy club over the fishery. They are impenetrable in their position, utterly fixated on increasing the female component of the population to the highest level possible. Their argument? "We need to ensure adequate pup production for the future."

The National Marine Fisheries Service (NMFS), with its hand forced by the Magnuson-Stevens Fishery Conservation and Management Act, continues its steady march forward on the rebuilding mission.

While it may be hard to believe considering the total inflexibility of dogfish management, we appear to be almost there in terms of stock rebuilding. The biomass of large females has grown significantly in recent years and is now at 70% of its target level.

But because that's not good enough in the eyes of the law, NMFS refuses to ease up on the federal waters commercial trip limits – 600 pounds for bycatch purposes only. The federal dogfish plan, developed by the Mid-Atlantic and New England Fishery Management Councils, prohibits a directed fishery on dogfish until the female component of the stock is fully rebuilt. So does the Atlantic States Marine Fisheries Commission's plan for state waters, although the interstate body has called for significantly higher catch limits.

To fishermen, the very idea of producing more pups and increasing the already enormous biomass of dogfish is nothing short of ludicrous. Spiny dogfish are everywhere. At certain times in certain places, they make it impossible to fish for anything else. You can't drop a hook in the water or set a net without getting completely fouled with dogfish, sometimes thousands – literally thousands – of them.

Worse yet, practically all those fish – minus the few fishermen can retain under the small bycatch quota – must be thrown overboard. The waste, the fouled nets and lines, the lost time, the spent fuel, and the financial setback are generating deep anger and resentment across the board.

On March 29, roughly 50 commercial and recreational fishermen and industry representatives gathered at the University of New England in Biddeford, ME to talk about dogfish.

The forum – organized by James Sulikowski of the university's Marine Science Center, Jay Allocca of Vessel Services Inc., Mike Jancovic of Maine River and Sea Charters, and tuna fisherman Phil Grondin of South Portland's Sturdivant Island Tuna Tournament – was an opportunity to learn more about how dogfish are managed and, more importantly, about ongoing and new research that's producing fascinating insights into the migration patterns, feeding habits, and pupping cycle of these fish.

CFN Associate Editor Janice Plante and staff photographer Peter Prybot attended the forum. This "Dogfish Special Report" details the revelations and discussions that took place. –Editor

# Bigelow and Schroeder
# Fishes of the Gulf of Maine

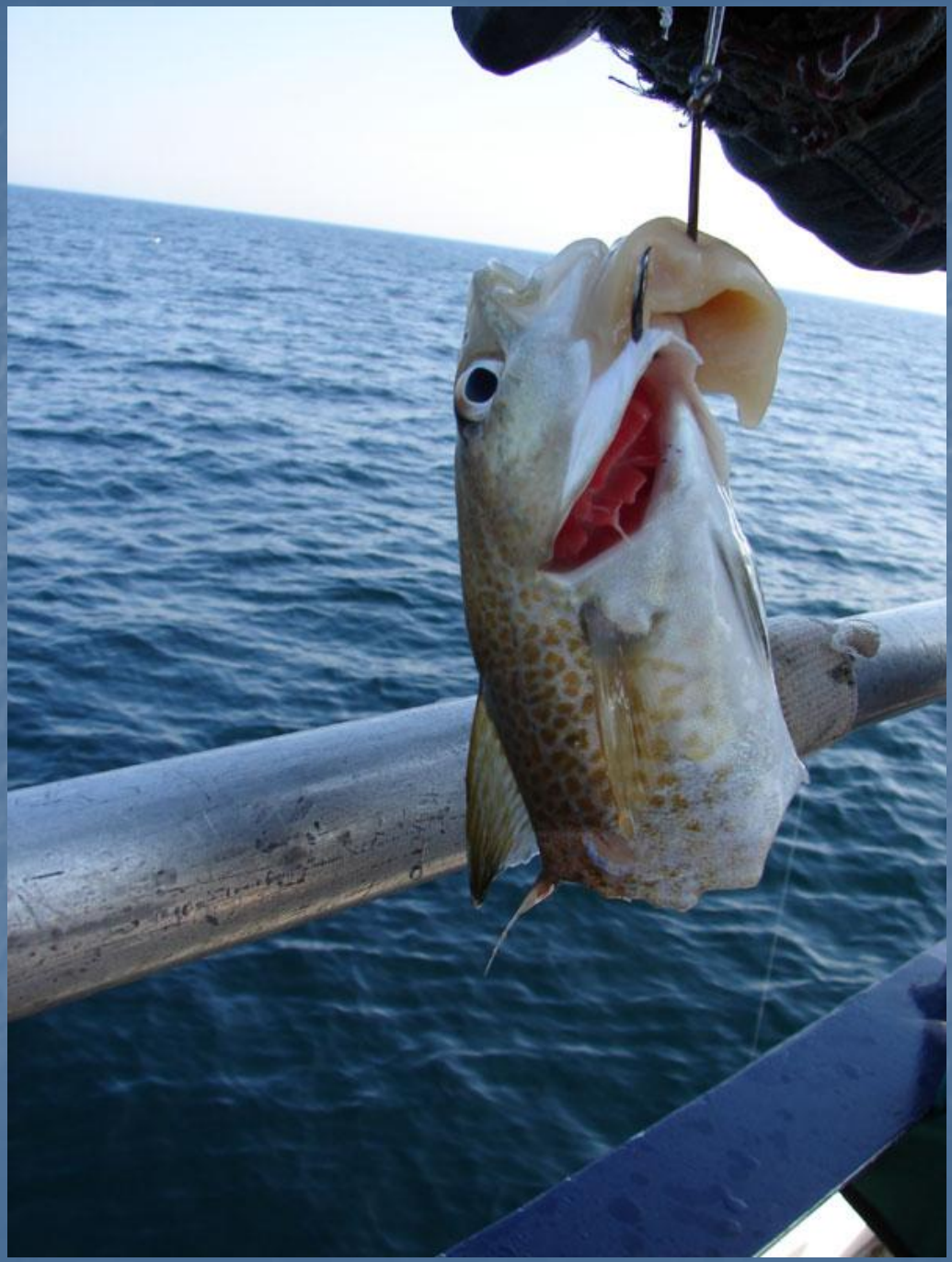
"Voracious almost beyond belief, the dogfish entirely deserves its bad reputation. Not only does it harry and drive off mackerel, herring, and even fish as large as cod and haddock, but it destroys vast numbers of them. Again and again fishermen have described packs of dogs dashing among schools of mackerel, and even attacking them within the seines, biting through the net...At one time or another they prey on practically all species of Gulf of Maine fish smaller than themselves, and squid are also a regular article of diet whenever they are found..."

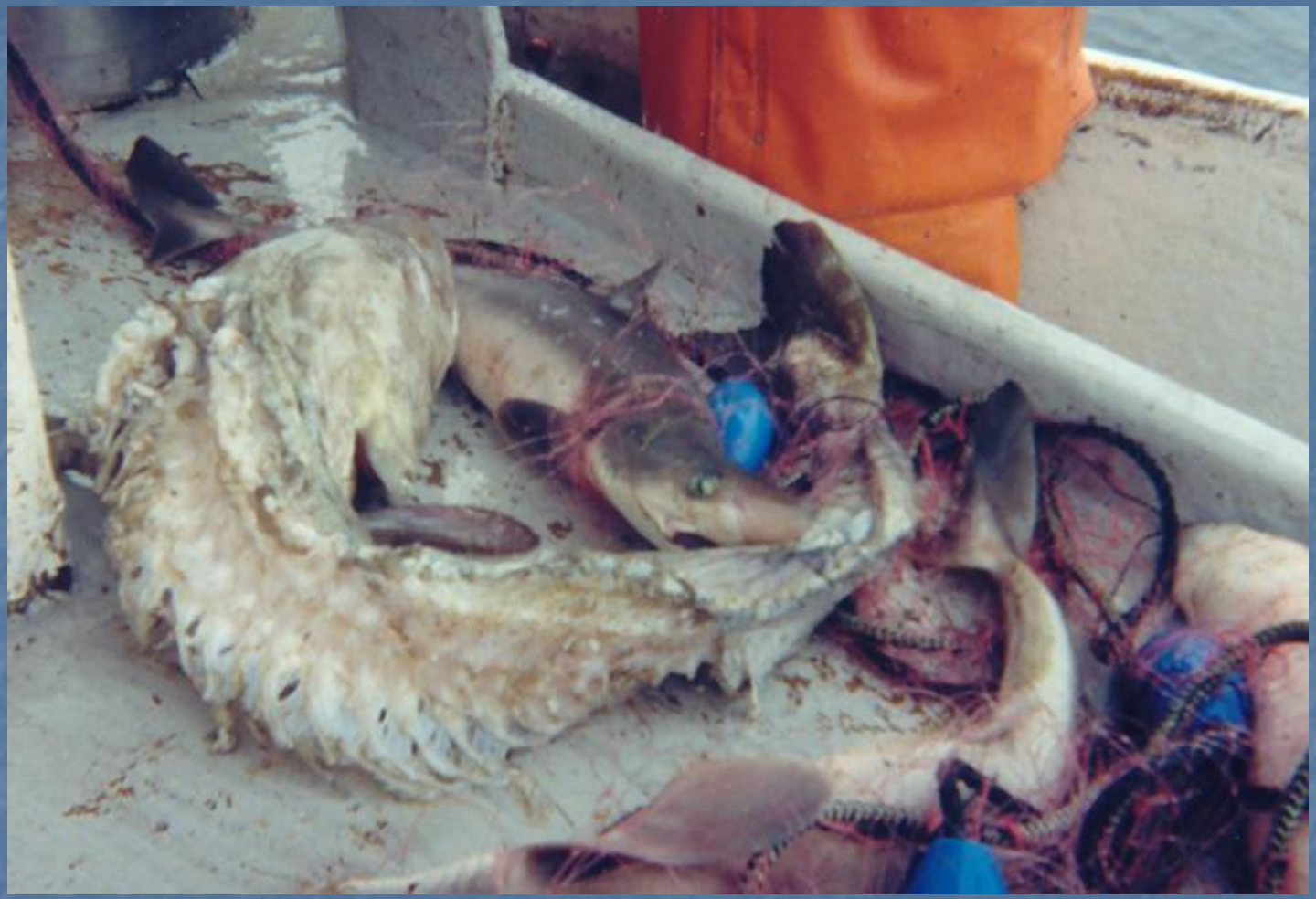
## Murawski 1991 paper, Can we manage our multispecies fisheries?

"Whether or not species changes on Georges Bank are due to biological interactions among species or are simply due to differential fishing mortality rates remains conjectural. However, total biomass in the system does seem to have again reached a threshold. The ability to increase the abundance of marketed species may thus be limited by predation from or competition with the elasmobranch species."

# Dogs

9/06/06 - estimated 10,000 lbs. of dogfish taken in a 1.3 hour tow on Stellwagen Bank.

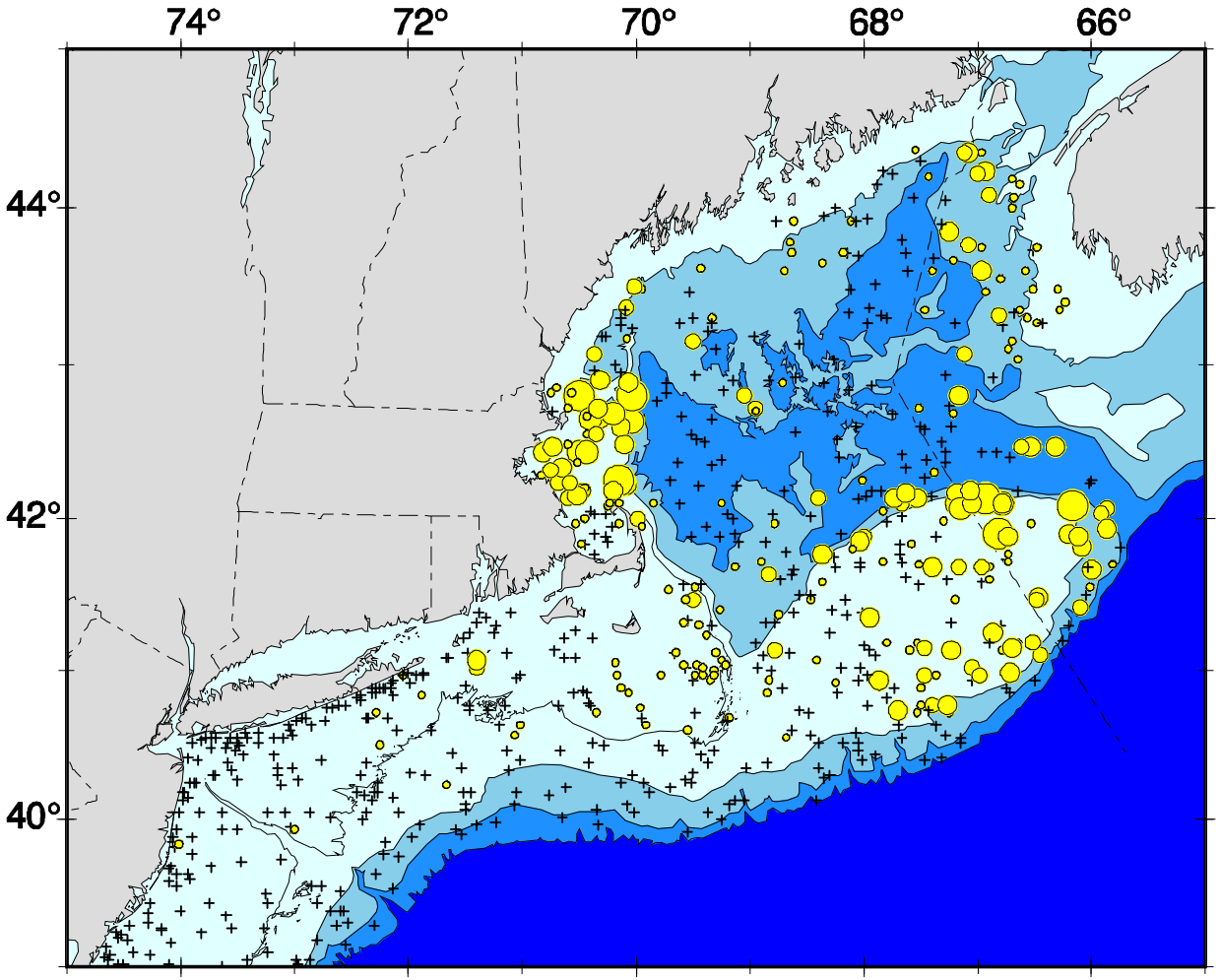




# Cod - Extremely important to Commonwealth

- Golden Cod hanging in our State Legislature.
- Cod (Gulf of Maine & Georges Bank) has had major influence on Commonwealth's history.

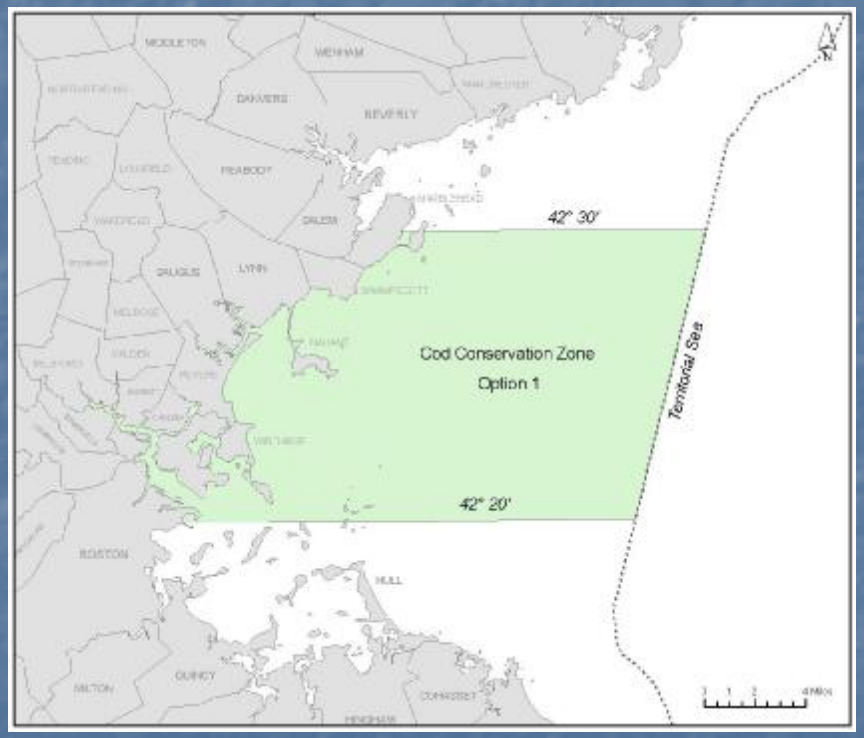
# Cod



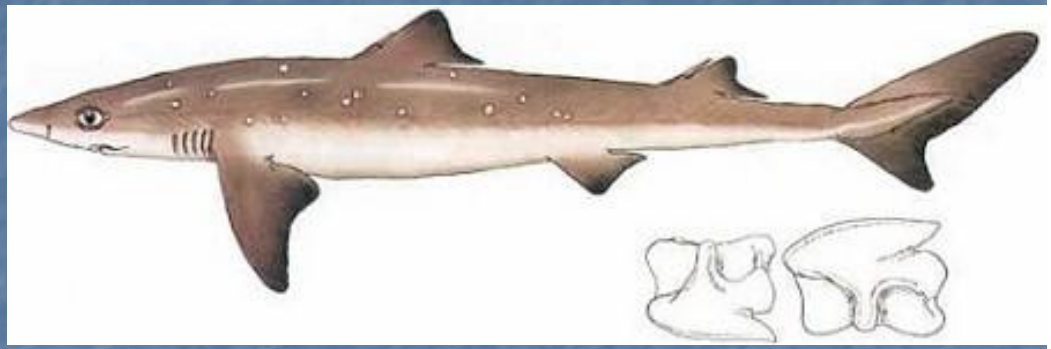

Spring 2003-2005

# Cod Conservation Zone

- Taken very important and dramatic steps to foster Gulf of Maine cod rebuilding.
- Implemented Cod Conservation Zone with December 1 through February 28 closure.
- 3-month closure to protect pre-spawning and spawning cod in Massachusetts Bay area.
- Strong indication efforts have been successful.



# COD & DOGS



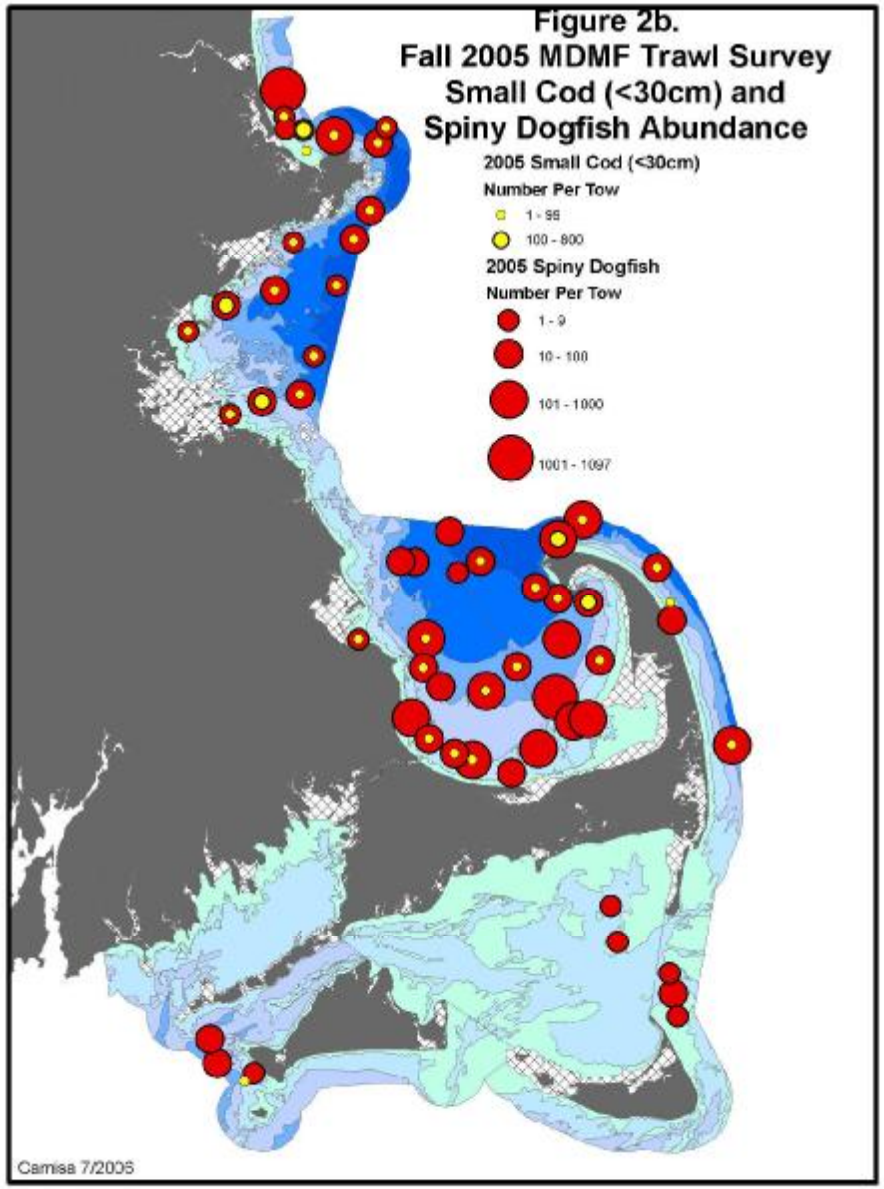


Figure 2b.
Fall 2005 MDMF Trawl Survey
Small Cod (<30cm) and
Spiny Dogfish Abundance
2005 Small Cod (<30cm)
Number Per Tow
1 - 99
100 - 800
2005 Spiny Dogfish
Number Per Tow
1 - 9
10 - 100
101 - 1000
1001 - 1097
Camisa 7/2005

# Ecological interactions between elasmobranchs and groundfish species on the northeastern U.S. Continental Shelf: *Evaluating predation*.

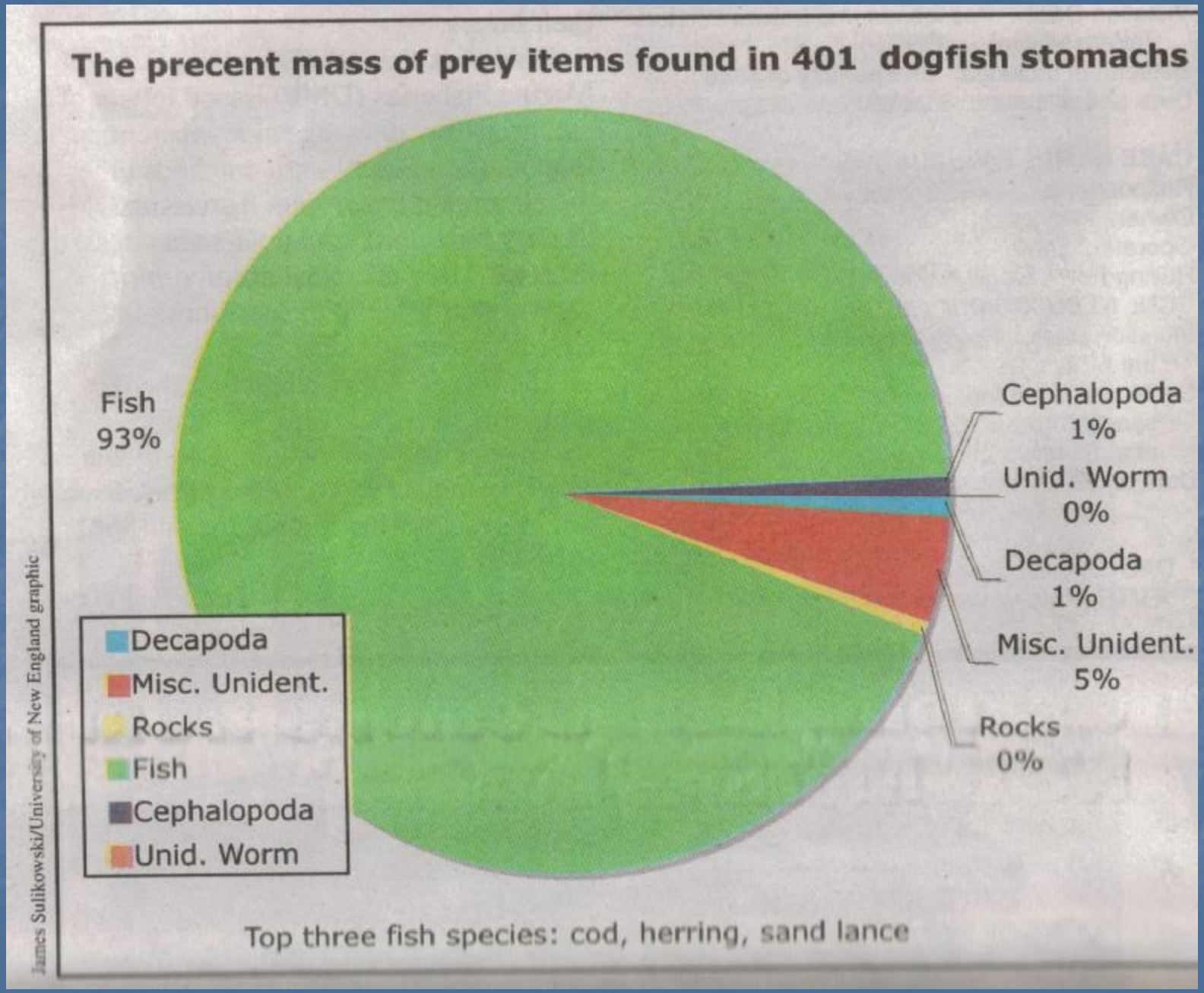
In: North American Journal of Fisheries Management (2002) by J.S. Link, L.P. Garrison, and F.P. Almeida

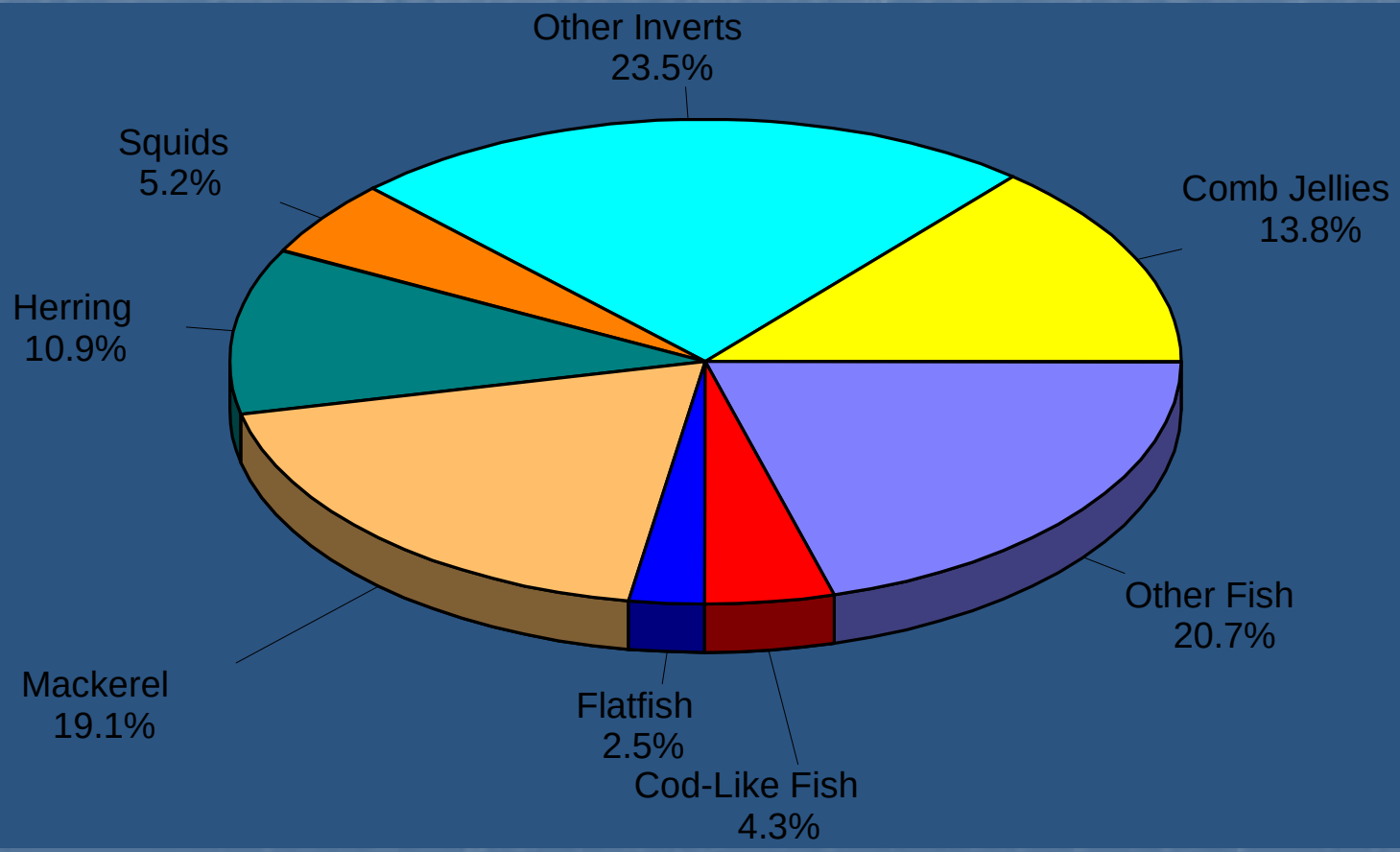
# Dogfish 1998 Predation

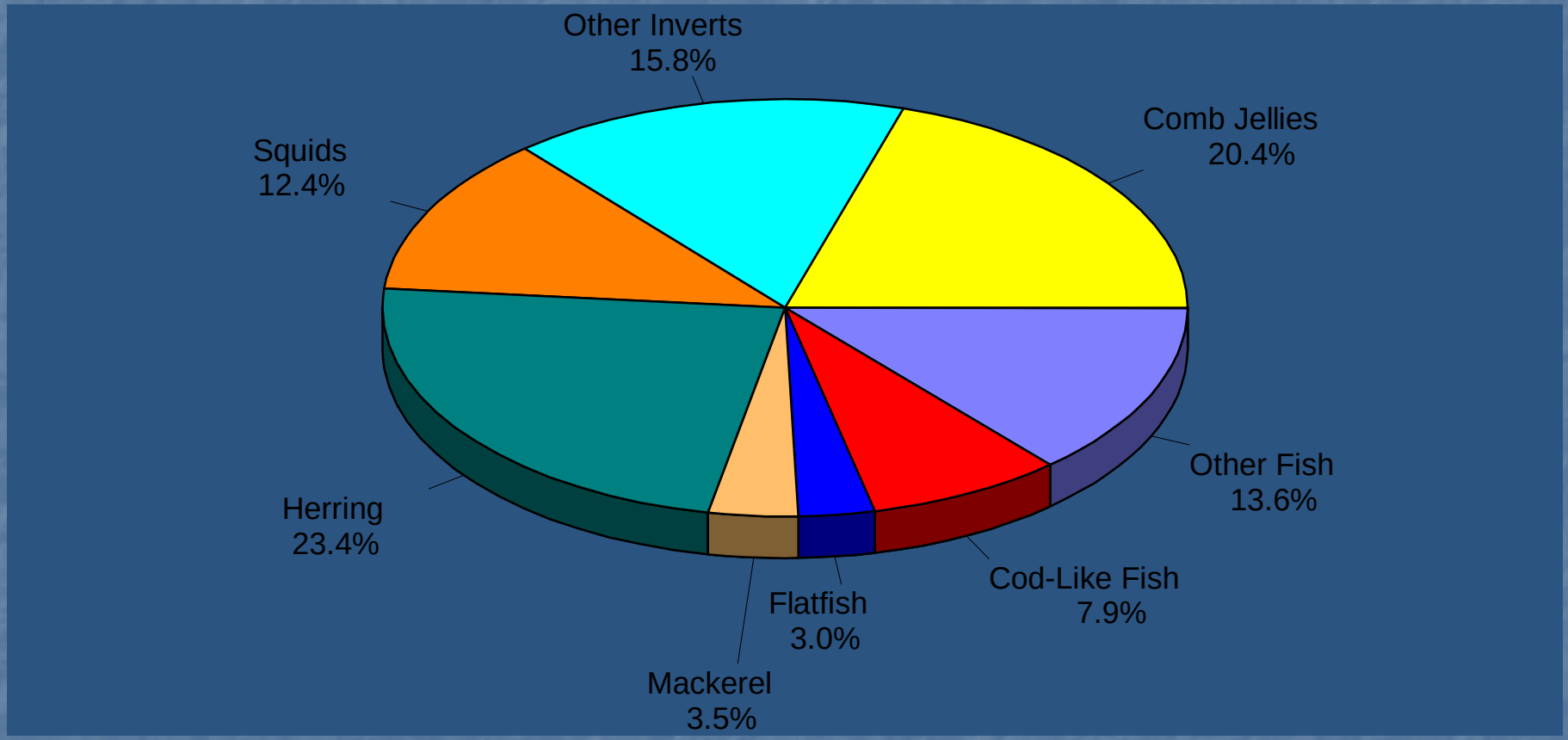
- Cod (age 1) **2.15 million fish** (mean); range from 490,000 to 4.66 million fish
  VPA age 1 stock size = **5.77 million fish**
- Fluke (ages 0 & 1) **19.9 million fish** (mean); range of 4.5 to 43.1 million fish
  VPA ages 0 & 1 = **62.88 million fish**

# Juvenile Cod → Dogfish

- NEFSC research has verified that dogfish prey on juvenile cod.
- Although amount of predation considered by NMFS to be minimal when compared to predation on other species, an annual amount of 2.2 million cod with most being juvenile fish is consequential especially because that predation likely localized on inshore, cod spawning and nursery grounds.

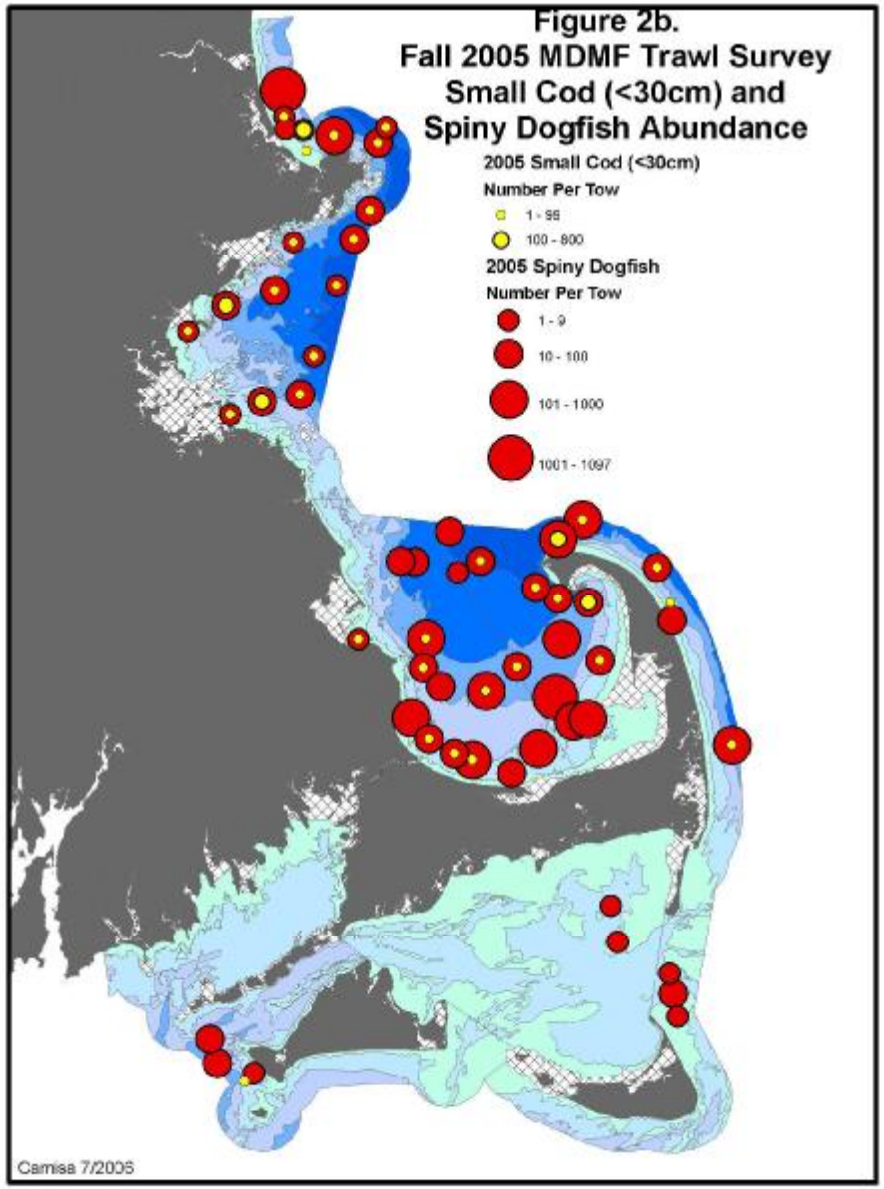

The precent mass of prey items found in 401 dogfish stomachs
Fish
93%
Cephalopoda
1%
Unid. Worm
0%
Decapoda
1%
Misc. Unident.
5%
Rocks
0%
Decapoda
Misc. Unident.
Rocks
Fish
Cephalopoda
Unid. Worm
James Sulikowski/University of New England graphic
Top three fish species: cod, herring, sand lance


Other Inverts
23.5%
Squids
5.2%
Comb Jellies
13.8%
Herring
10.9%
Other Fish
20.7%
Mackerel
19.1%
Flatfish
2.5%
Cod-Like Fish
4.3%


Other Inverts
15.8%
Comb Jellies
20.4%
Squids
12.4%
Other Fish
13.6%
Herring
23.4%
Cod-Like Fish
7.9%
Flatfish
3.0%
Mackerel
3.5%

**Irony** of having to rebuild dogfish even though by doing so we will impact efforts to rebuild cod, etc., if we are to believe NEFSC scientists. Dogfish management plan silent on this issue. It shouldn't be.

Single species plan with multi-species implications.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# Justification

- GOM cod rebuilding requirements have impacted Massachusetts fishermen especially in near-shore portion of western Gulf of Maine.
- Because fishermen will be obliged to fish under existing and proposed new restrictions, chances for cod spawning success, juvenile survival, and rebuilding must be maximized.
- Removing dogfish predators through fishing, even through small-scaled, is precautionary and common sense approach especially in context of ecosystem-based fishery management.
- Promote higher ecological integrity of MassBay portion of GOM ecosystem by favoring highly desirable status of ecosystem, i.e., one not dominated by large-sized, piscivorous spiny dogfish.

# Justification

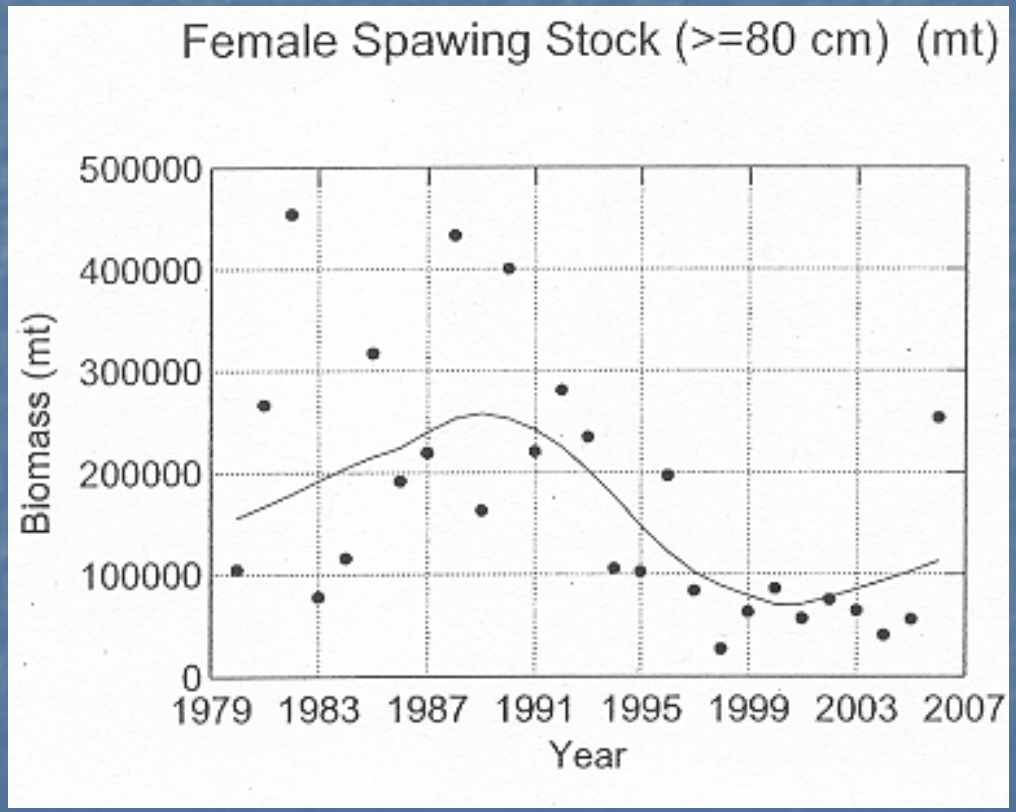
- Furthering higher ecological integrity argument, by allowing small-scale directed fishery, we contribute towards removal of one of the major predators of sea herring.
- According to NEFSC, dogfish consume about 68,000 mt of sea herring (848 million fish) annually.
- Area 1A quota reduced to 45,000 mt from 50,000 mt for 2008 & 2009.
- Allowing small-scale directed fishery is consistent with concerns about herring removals.

# Return to small-scale fishing & landing more bycatch

- New assessment information and SARC/SAW conclusions; e.g., spiny dogfish is **no longer overfished**, and, applying new $F_{threshold}$ value (F = 0.39, not current F = 0.11), **overfishing is not occurring**.
- Assessment information suggests to *MarineFisheries* a need for precautionary approach with regards to cod conservation, i.e., err on side of cod rebuilding, not dogfish rebuilding.

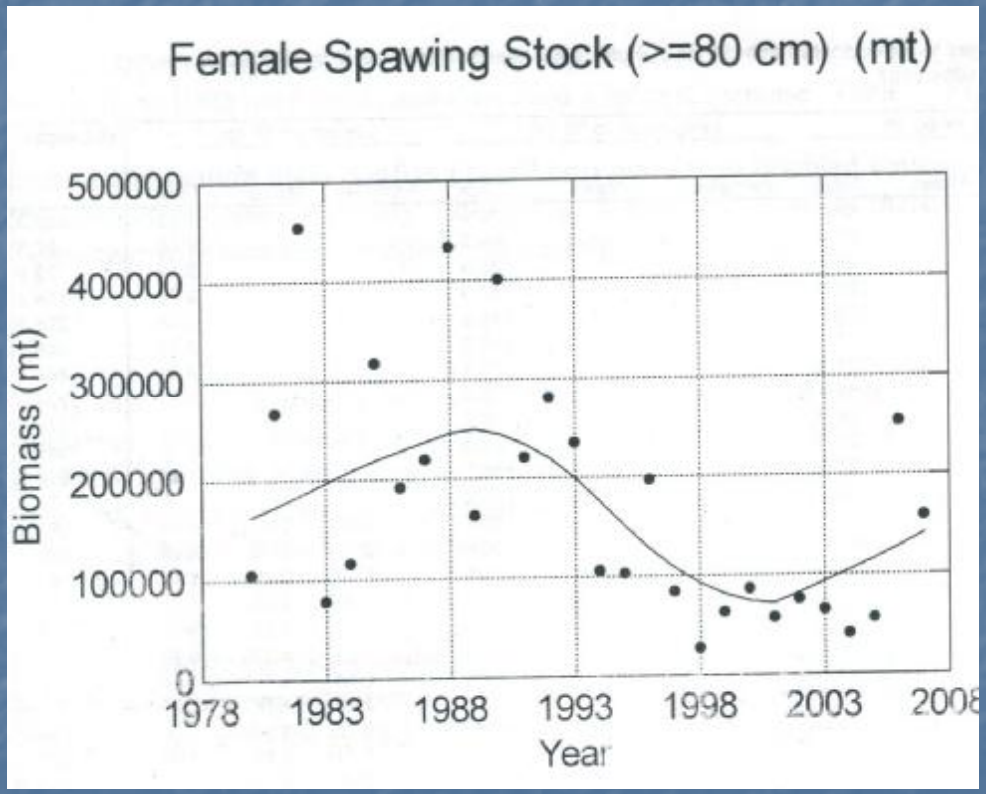
# 2006 Assessment Update

- Swept-area biomass estimate for 2006 based on the NMFS spring bottom trawl survey increased dramatically to 253,400 mt of large, mature females (≥ 80 cm).
- The 3-year moving average of large female biomass increased to 116,600 mt; therefore, the stock is no longer overfished ($SSB_{threshold}$ about 100,000 mt large females).



# 2007 Assessment Update

- Swept-area biomass estimate for 2007 based on the NMFS spring bottom trawl survey 158,000 mt of large, mature females (≥ 80 cm).
- The 3-year moving average of large female biomass increased to 155,800 mt; therefore, the stock is no longer overfished ($SSB_{threshold}$ about 100,000 mt large females).



# There's no season; dogfish produce pups all year long

SPECIAL DOGFISH REPORT

BIDDEFORD, ME – Most fish species have a distinct spawning season. Cut open a bunch of female cod in June from Georges Bank and chances are that most of those fish will be in just about the same spawning condition.

Not so with spiny dogfish. Researchers from the University of New England here recently cut open 50 randomly selected females harvested in December. And, to their astonishment, all the fish were in different stages of gestation. Some of the pups were tiny – essentially all yolk-sack – while others were just about fully developed. The same was true for females harvested and cut open during previous months.

"I think this is one of the most interesting things that could be going on here with dogfish," said James Sulikowski, an assistant professor at the university's Marine Science Center.

During a March 29 forum at the university's campus in Biddeford, Sulikowski said most sharks – as well as most fish – have distinct reproductive cycles where individuals within the same species mate and spawn at right around the same time.

gestation period. That's a long time for females to carry pups. But if dogfish were synchronous in their reproduction cycles, they'd all be giving birth at about the same time after carrying those pups for 22 months. Furthermore, all the pups would be relatively the same size.

But apparently that's not the case at all with dogfish.

"Female spiny dogfish appear to be giving birth and producing pups year round," said Sulikowski.

Fishermen who deal with dogfish on deck have long sensed this to be the case. Female dogfish have a high tendency to squeeze out pups no matter what time of year they're caught.

But it usually takes documented science to change traditional mindset, and this latest work, which specifically looked

James Sulikowski/University of New England photo

*Researchers were astonished to find dogfish pups in different stages of gestation, above, when they cut open 50 females harvested in December. Some of the pups were tiny, essentially all yolk-sack, while others were just about fully developed. If spiny dogfish give birth to pups year round, the question is raised whether that reproductive phenomenon matters to the management of the species.*

Why do we want to rebuild dogfish "competitors and predators" to 440 million lbs. (200,000 mt) – stock size (just females ≥ 80 cm) believed to maximize average recruitment and used as a proxy for $B_{msy}$?

# WHY?

- Because we have to!
- Ecological considerations be damned!
- MSRA implications? Who knows?
- Assume worst-case scenario?
- Optimism? ASMFC!

*Atlantic States Marine Fisheries Commission*

# NEWS RELEASE

*Working towards healthy, self-sustaining populations of all Atlantic coast fish species, or successful restoration well in progress by the year 2015*

FOR IMMEDIATE RELEASE
May 8, 2007

PRESS CONTACT: Tina Berger
(202) 289-6400

## ASMFC Spiny Dogfish Board Initiates Two Addenda to Address Quota Allocation

Alexandria, VA – The Spiny Dogfish & Coastal Sharks Management Board approved the initiation of two addenda to address the distribution of the spiny dogfish annual quota among the states. This action responds to the concern of some states that the current seasonal allocation program is not providing their commercial fishermen the opportunity to harvest the available quota as was intended by the Interstate Fishery Management Plan (FMP) for Spiny Dogfish.

Currently, the interstate spiny dogfish management program allocates the annual commercial quota both seasonally and regionally. The seasonal allocation system divides the quota into two periods, with 57.9% of the quota harvested from May 1 to October 31 and 42.1% harvested from November 1 to April 30. The regional allocation system divides the quota between two regions, with 58% allocated to the northern states (ME – CT) and 42% allocated to the southern states (NY-NC). Both allocation schemes were established to allow all states the opportunity to access and land available quota based on historical landings percentages. In recent years, however, the seasonal allocation strategy, which is influenced by dogfish migratory patterns, has resulted in overages of the northern quota share and reduced access to the resource by the southern states.

The first addendum (Draft Addendum II) will propose the elimination of the current seasonal allocation system, while maintaining the standing regional allocation system. To ensure that the regions stay within their allocation of the annual quota and maintain the conservation goals of the plan, the addendum will propose that regions be required to payback quota overages in the following year. It is the Board's intent that this addendum will ensure southern states receive 42% of the annual quota while Addendum III is developed.

The second addendum (Draft Addendum III) will provide options for the establishment of a state-by-state allocation system, including a provision that would allow quota transfers between states. The Board has requested that the states submit issues and ideas for inclusion in the draft addendum.

Both addenda will be developed for consideration by the Board during the Commission's the Summer Meeting in August. For more information, please contact Christopher Vonderweidt, Fisheries Management Plan Coordinator, a
(202) 289-6400 or cvonderweidt@asmfc.org

Beginning May 1, 2008 the spiny dogfish daily limit shall be 600-lbs. This trip limit will remain in effect through August 31st. On September 1st the trip limit will increase to 2,000-lbs. and remain in effect until *MarineFisheries* determines that 58% of the annual ASMFC approved regional quota of **8-million lbs.** has been reached. The increased 2,000-lb. trip limit in effect beginning September 1st applies to permit holders who do not possess federal permits. The federal trip limit will remain unchanged at 600-lbs. and applies to any vessel that holds a federal permit for spiny dogfish. When 58% of the interstate plan quota is reached, and DMF closes the fishery – all landings of dogfish (by state and federal permit holders) will be prohibited through the end of the fishing year.

# Doggone it!!