

# Seals: Assessment on a Shoestring



**NOAA  
FISHERIES**



Gordon T. Waring  
Northeast Fisheries  
Science Center

April 15, 2015

# Framing the situation in New England



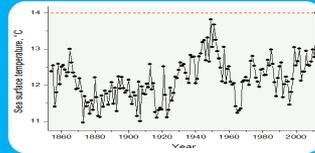
## Seal hunts and bounty programs, 1891-1962

- Effectively eradicated gray and harbor seals
- During most of our lifetimes, seals have been seasonal and few



## MMPA & other protections have worked

- Both gray and harbor seals have returned and are visible
- Gray seals are the prominent pinniped species in New England waters & are repopulating coastal areas also important for tourism, beach use, and fishing



## Many perturbations have impacted this ecosystem over the last 60 years

- Recent record high water temperatures (NOAA Fisheries 2012 Ecosystem Advisory Report)
- Fish distribution shifts due to climate change (Nye et al. 2009)
- Changes in species assemblages (Rothschild and Jiao 2012)



## Overlap with human activities

- Entanglement in fishing gear and depredation
- Growing ecotourism
- Concerns about competition with fisheries, water quality at beaches, sharks, etc.

## A new call for managing seals

- Research lags public discourse



# Science and Common Perceptions

| Science Question  | Common Perception  | What We Know   | Research Agenda  |
|---|--|--|--|
| How many seals are there?                                   | Too many   | 2012 harbor seal (75,834, CV=0.15);<br>March 2011 gray seal (16,000) SE Mass                             | Regional monthly aerial surveys/UAS pilot studies            |
| What is the direction and velocity of the population trend? | They are growing rapidly   | Gray seals are known to be increasing & expanding range;<br>Harbor seal less clear                       | Develop gray seal population model & monitor regional trends |
| What do seals eat and how much?                             | Too much of our fish   | Diverse diet, diverse prey, prey switching likely  | Monthly scat collection & examine bycaught stomachs          |
| To what extent are sharks and seals overlapping offshore?   | Sharks are at the beaches to eat seals and now swimmers have to beware           | Seals seem to affect the local density of white sharks, though the sharks may be transient               | Documenting seal/shark habitat use overlap beyond the beach  |
| What is important habitat and how do they use it?           | They stay close to shore, our beaches, foul our waters, and cause beach closures | Recent WHOI study does not suggest a link between seal haul-outs and beach closures due to water quality | Live capture, electronic tagging to establish use patterns   |

# NEFSC Seal Research Program Phases

- **Phase I** – ~1980-1995: 100% externally funded projects  
- LOW funding
- **Phase II** - ~1998-2010 Contracts, informal regional collaboration with federal and state agencies, academic institutions, and non-profit organizations conducted under federal research permits (e.g., NMFS Scientific Research Permit, FWS & NPS Special Use Permits); Funding – Highly variable – mostly low, BOEM support begins at end of time period
- **Phase III** – 2011 - Formal regional collaboration, BOEM funding ends in 2014, NMFS S&T and collaborator's funding supporting long term projects ...





# Recent PSB Research

## May/June 2012 Pv Abundance Survey

- 29 harbor seals radio tagged to adjust for animals not hauled-out during survey
- 2,700 digital images of haul-out sites over 5 days
- Harbor seal abundance survey paper in review

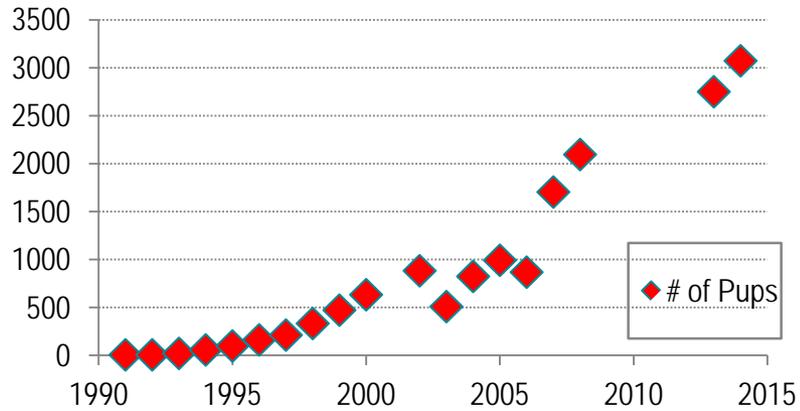
## Gray seal capture

- Non-pups: June 2013 – 9 (7-gps; 2-sat tags) seals tagged in Chatham to obtain info on how they utilize their habitat
- Biological samples collected for health assessment, diet, contaminants, stock ID, age
- Pups: Jan 2014 & 2015 pups captured/sampled/flipper tagged on Muskeget and one pup satellite tagged in 2015; Jan 2015 field team also deployed to Monomoy

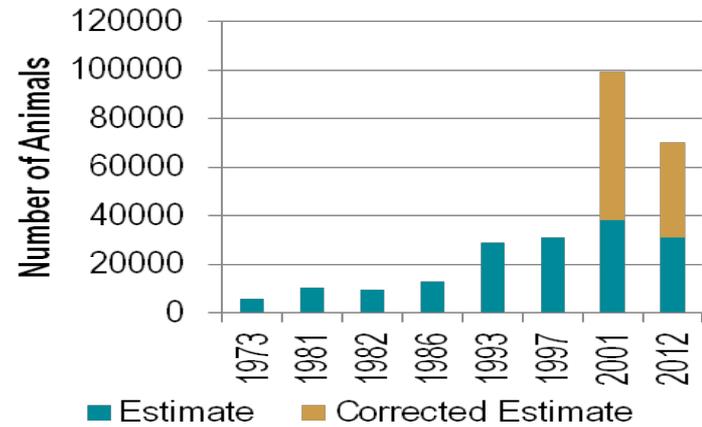


# Population Trends

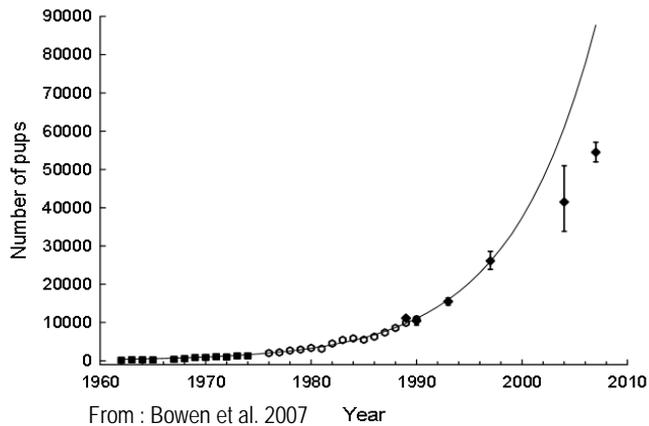
## Gray Seals



## Harbor Seals

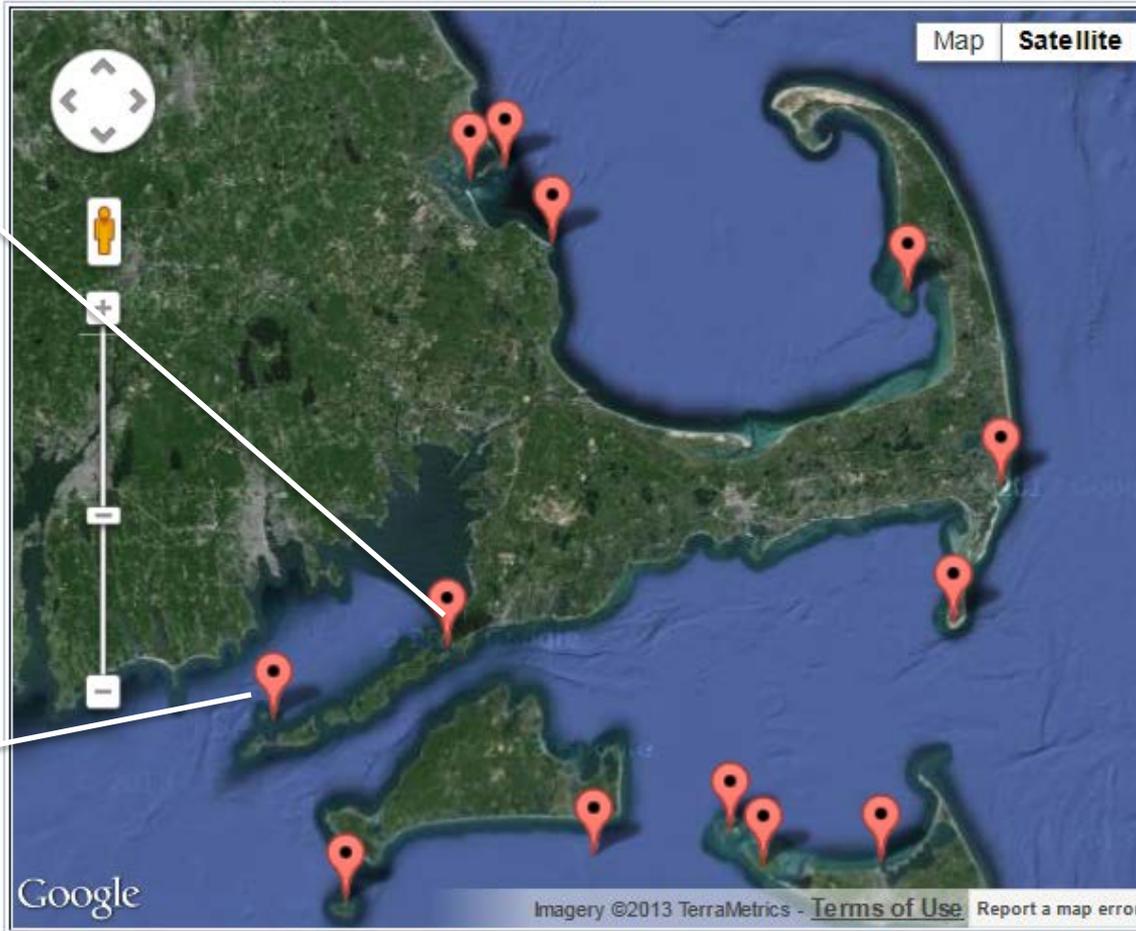


## Sable Island

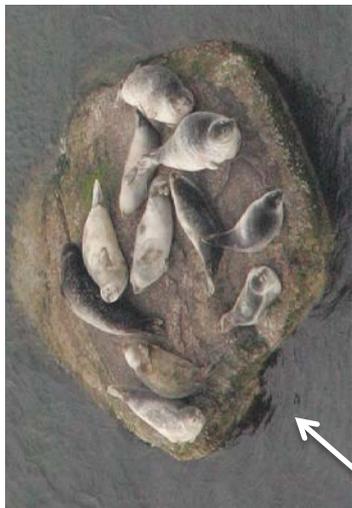


## Aerial Seal Surveys at the Protected Species Branch, NEFSC

Seal Haulout Sites Surveyed by the PSB Aerial Survey Team



- [Grassy Island](#)
- [Gull Island](#)
- [Noman's Island](#)
- [Muskeget](#)
- [Tuckernuck Island](#)
- [Nantucket Harbor Jetties](#)
- [Monomoy Island](#)
- [Wasque Shoals](#)
- [Chatham Harbor](#)
- [Jeremy Point](#)
- [Manomet Point](#)
- [Gurnet Point](#)
- [Bug Light](#)
- [Seal Island](#)
- [Green Island](#)

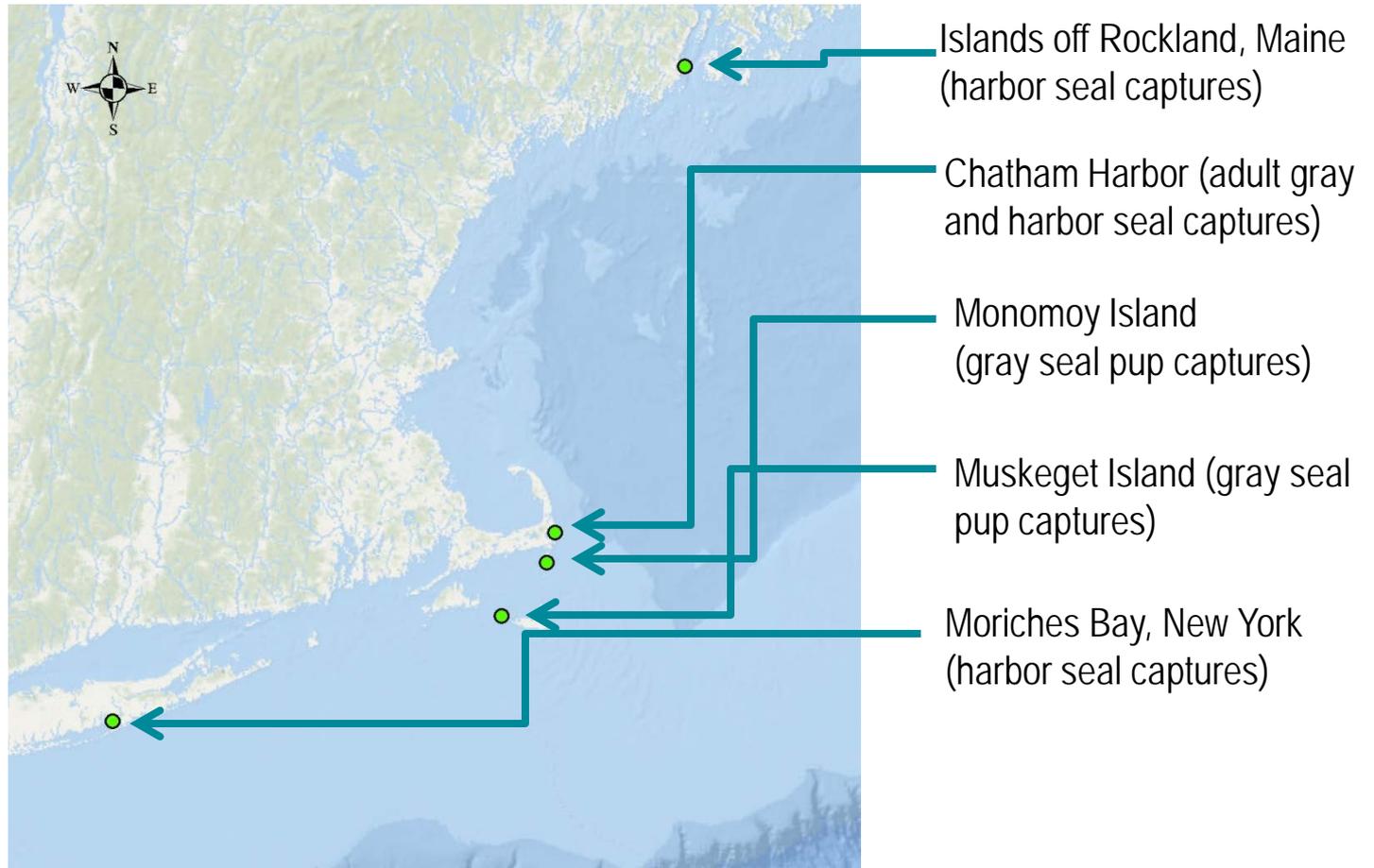


Grassy Island, WH

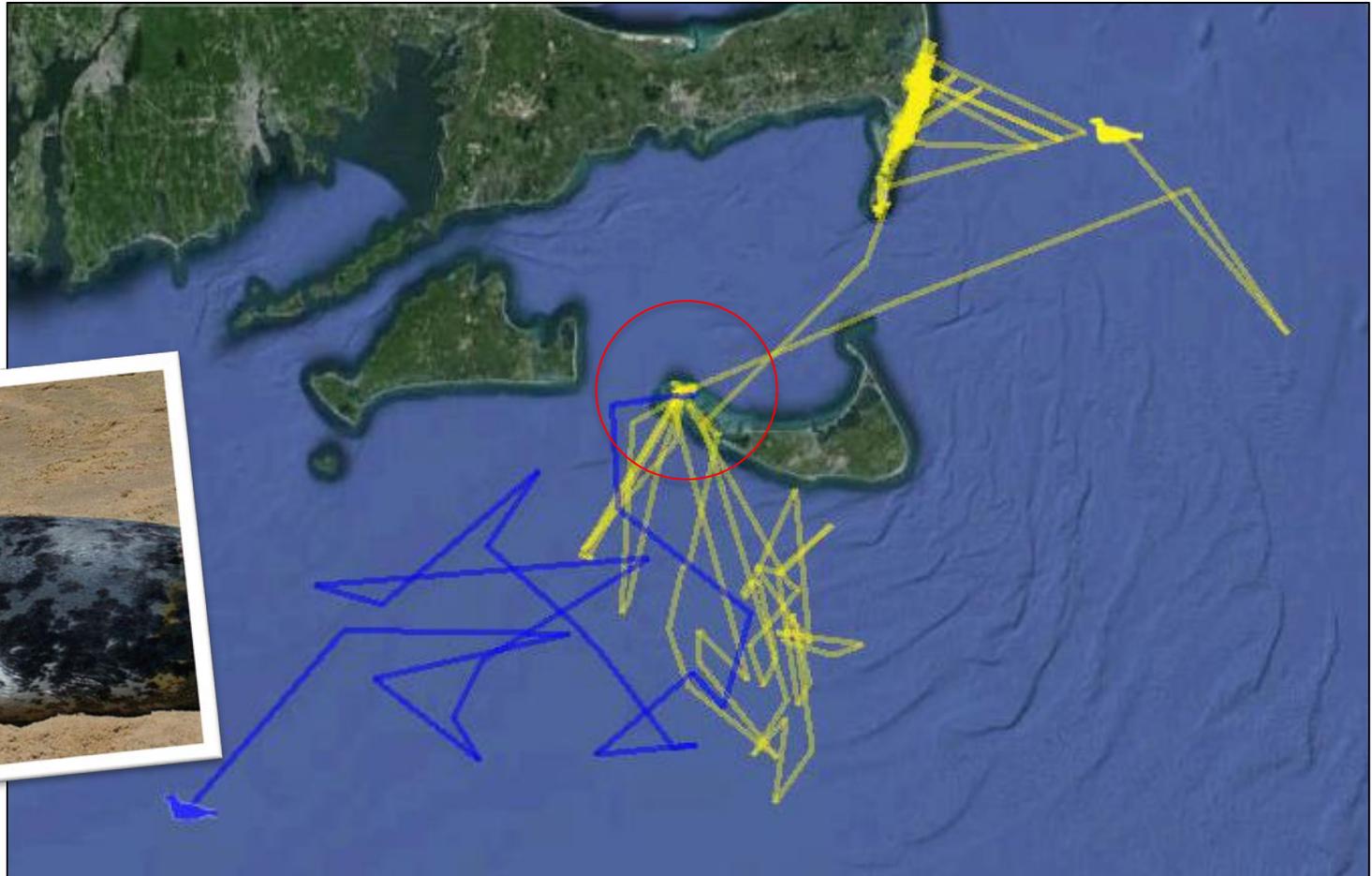


Gull Island, Buzzards Bay

# NEFSC Seal Capture Sites



# Satellite tracks from June 2013 Chatham adult (yellow) & Jan 2015 Muskeget weaned pup (blue) gray seals.

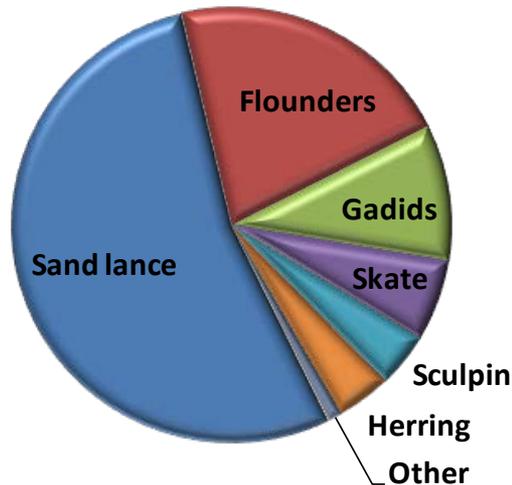


# Gray Seal Food Habits



Percent wet weight of prey in

**scat** n= 305



Gadids

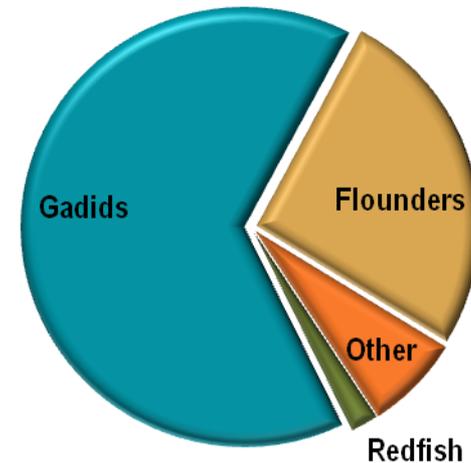
6% cod

3% Red/white hake

1% Silver hake (Ampela 2010)

Percent wet weight of prey in

**stomachs** n= 49



Gadids

33% Red/white hake

29% Silver hake

3% Pollock

# Sable Island Branded Gray Seals



# Review/Transparency

- Marine Mammal Commission Program Review : August 2012
- Atlantic Scientific Review Group: January 2014
- Marine Mammal Commission Annual Meeting: May 2014
- Maine Fishermen's Forum
- Seal Abatement Coalition
- Public Fora: NPS, MNWR, Science Education organizations, Shark Week, News interviews
- Atlantic and Gulf of Mexico Annual Stock Assessment Reports
- PSB Website: <http://www.nefsc.noaa.gov/psb/>



# Seal Research Strengths

## Collaboration:

- The success of the PSB seal program is structured on **strong** collaboration with states, federal, and international agencies, and seal researchers from universities and non-profit organizations;
- Graduate student research, publications, and public education are results of these efforts



# Seal Research Challenges

- Lack of internal (NOAA) or external resources to support seal research – low to no funding and one partial FTE
- Strong public interest in increasing seal populations and even stronger perceptions regarding various proposed impacts of seals on ecosystem and human activities
- Lack of research results to address questions regarding seals leaves us largely unable to inform public perceptions and discourse
- We also must monitor the status of seals themselves and threats facing them, this also is constrained by limited resources combined with emphasis on understanding seal impacts on human activities



# Seal Research Recommendations

- Build a sustainable program (preferably with internal NOAA funding) to conduct the research necessary to monitor seal status and address common questions/perceptions regarding seals
- Continue to build partnerships and collaboration with seal biologists and other interested stakeholders and partners in Northeast and elsewhere, including the Alaska Fisheries Science Center pinniped programs; collaboration with Northeast partners remains the foundation for success moving forward
- Conduct harbor and gray seal surveys with sufficient coverage and frequency to monitor stock status and describe trends
- Evaluate and employ new/existing technologies for enhancing seal research, including UAS platforms, satellite/cell-phone tags, and advanced diet analysis techniques