Regional review of bycatch patterns

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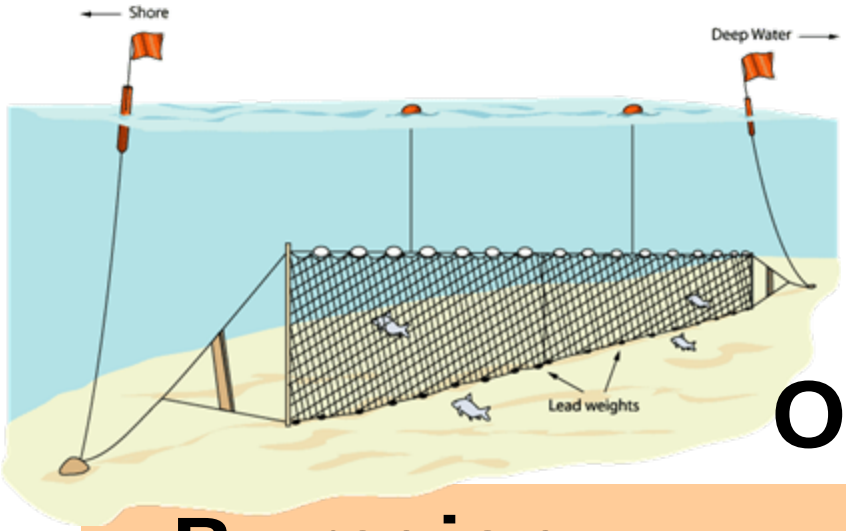
Protected Species Branch

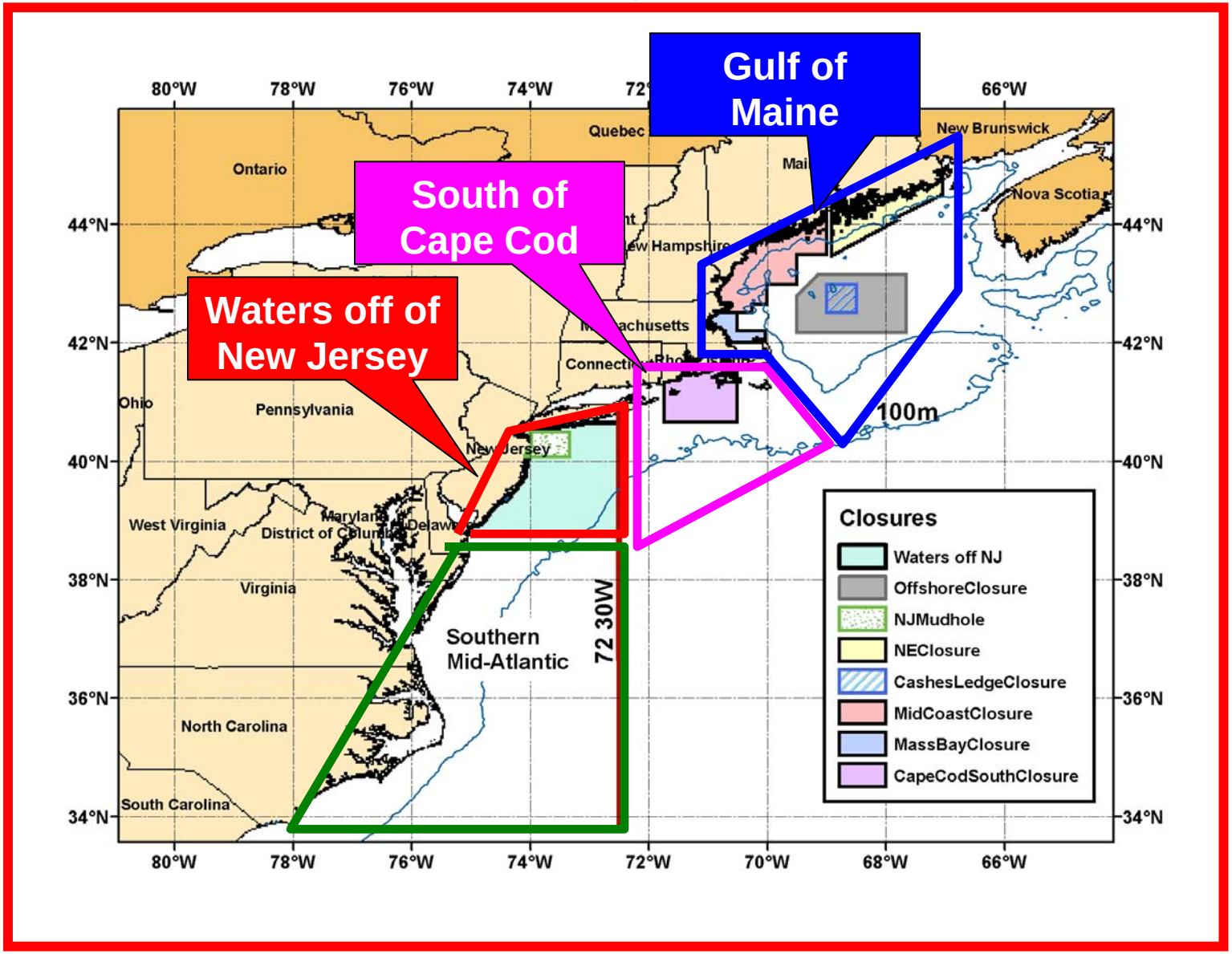


Overview

- **By region:**
  - **Bycatch patterns**
  - **Compliance to TRP* measures**
  - **Effectiveness of pingers**

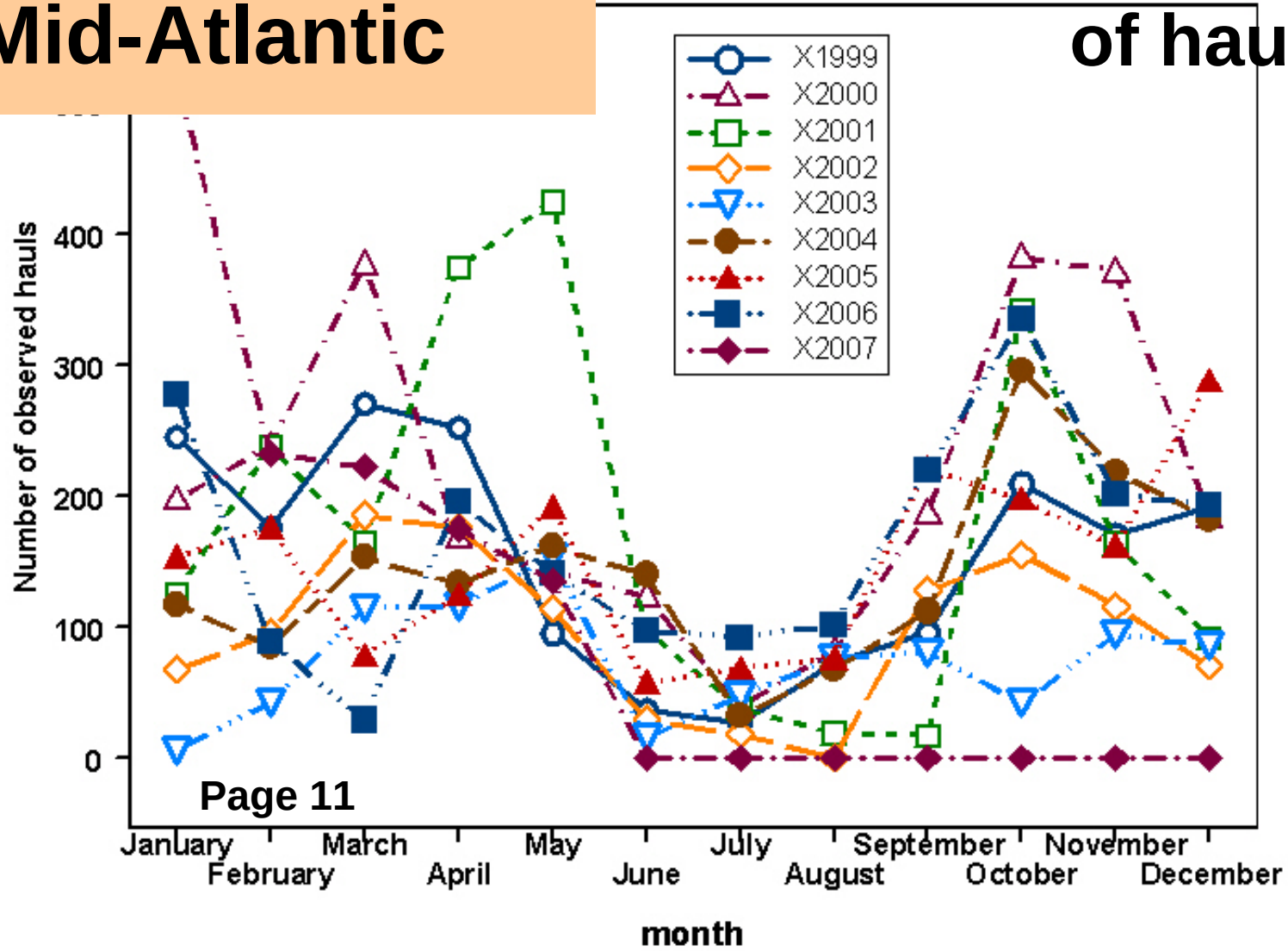
*** TRP = Take Reduction Plan**

Regions


Gulf of Maine
South of Cape Cod
Waters off of New Jersey
Southern Mid-Atlantic
72 30W
100m
Ontario
Quebec
New Brunswick
Nova Scotia
Pennsylvania
Ohio
West Virginia
Virginia
North Carolina
South Carolina
Closures
Waters off NJ
OffshoreClosure
NJMudhole
NEClosure
CashesLedgeClosure
MidCoastClosure
MassBayClosure
CapeCodSouthClosure
80°W
78°W
76°W
74°W
72°W
70°W
68°W
66°W
44°N
42°N
40°N
38°N
36°N
34°N

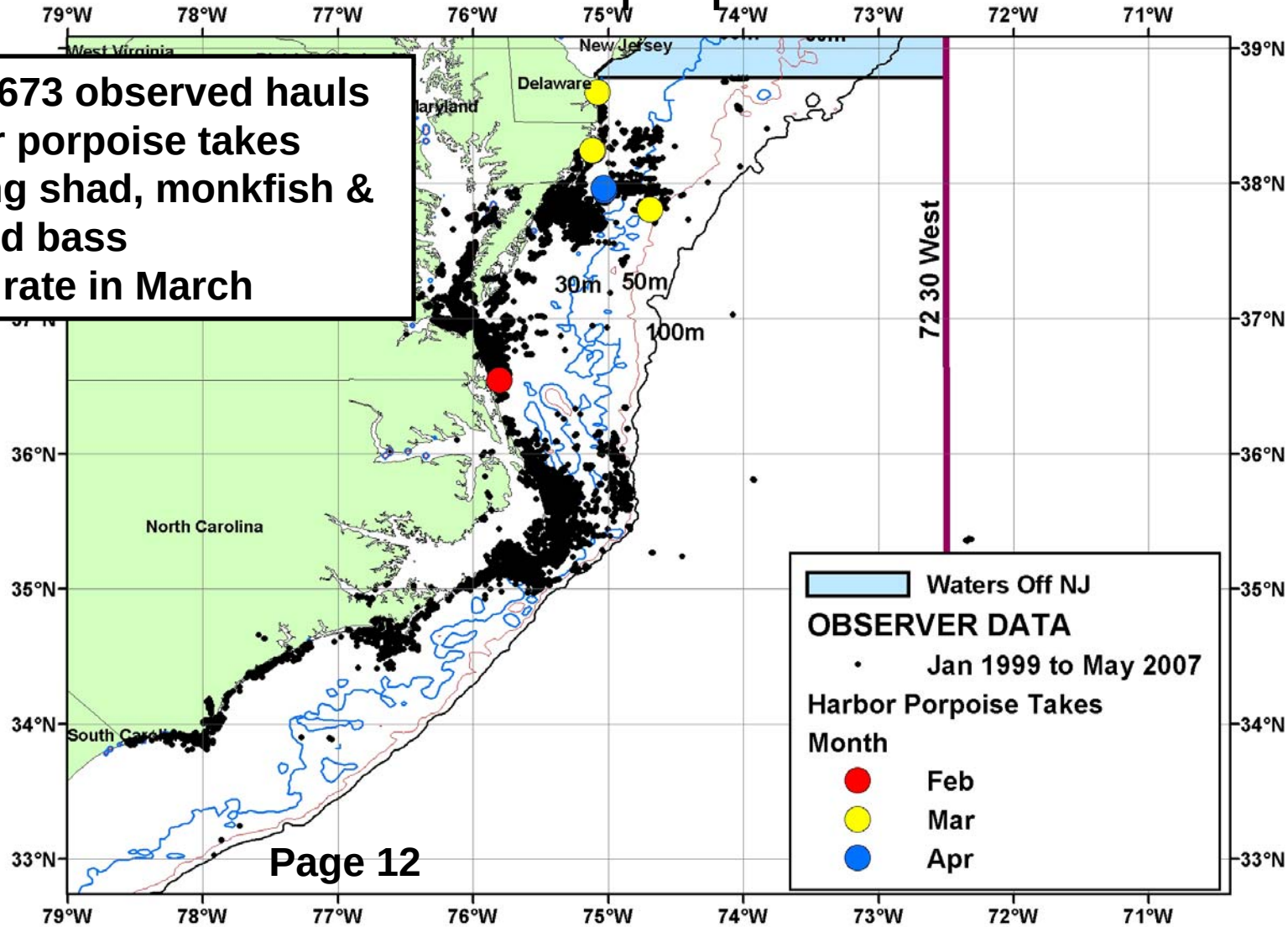
Southern Mid-Atlantic

Observed number of hauls



Location of harbor porpoise takes

- **Out of 4673 observed hauls**
- **8 harbor porpoise takes**
- **Targeting shad, monkfish & striped bass**
- **Highest rate in March**



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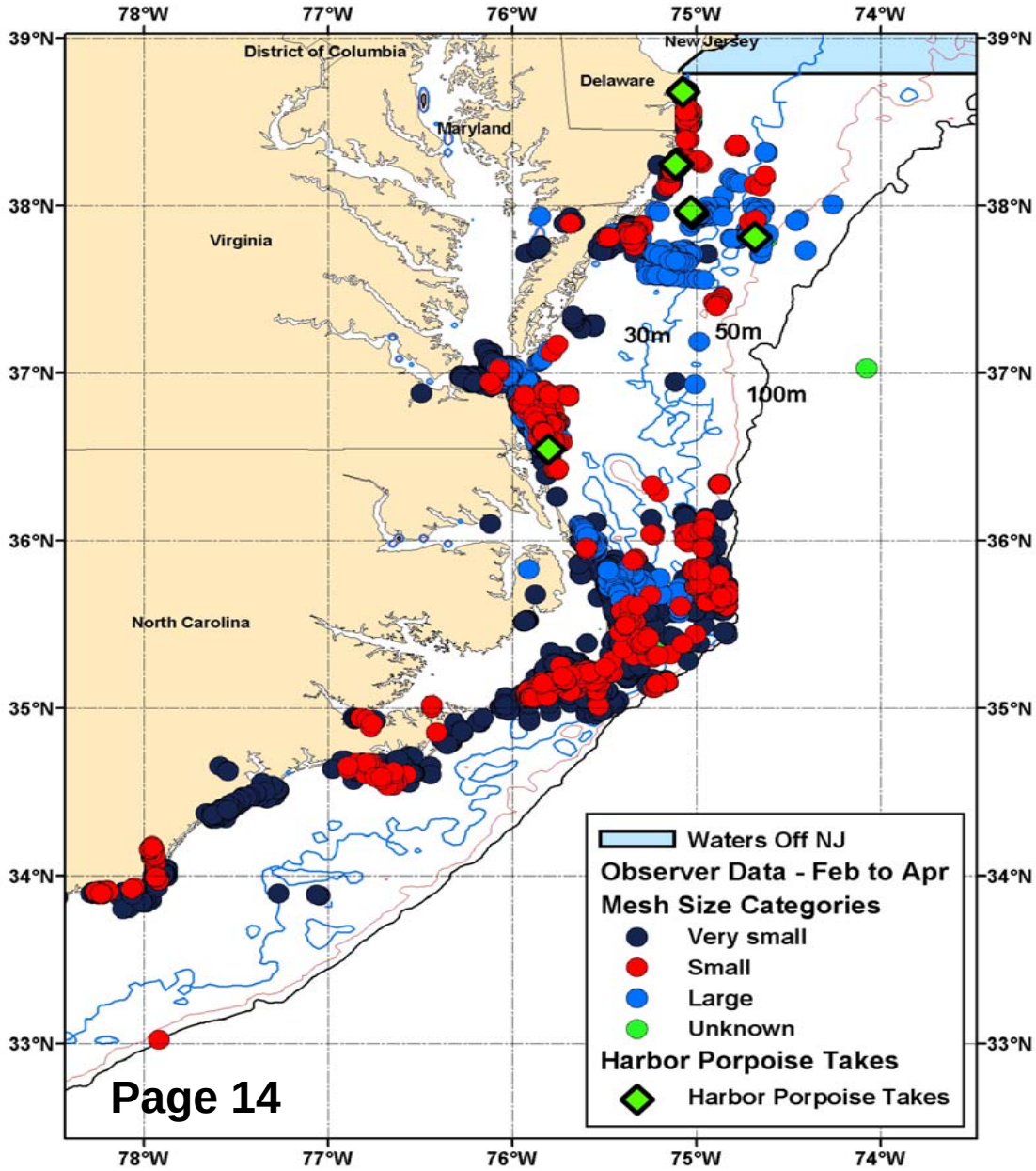
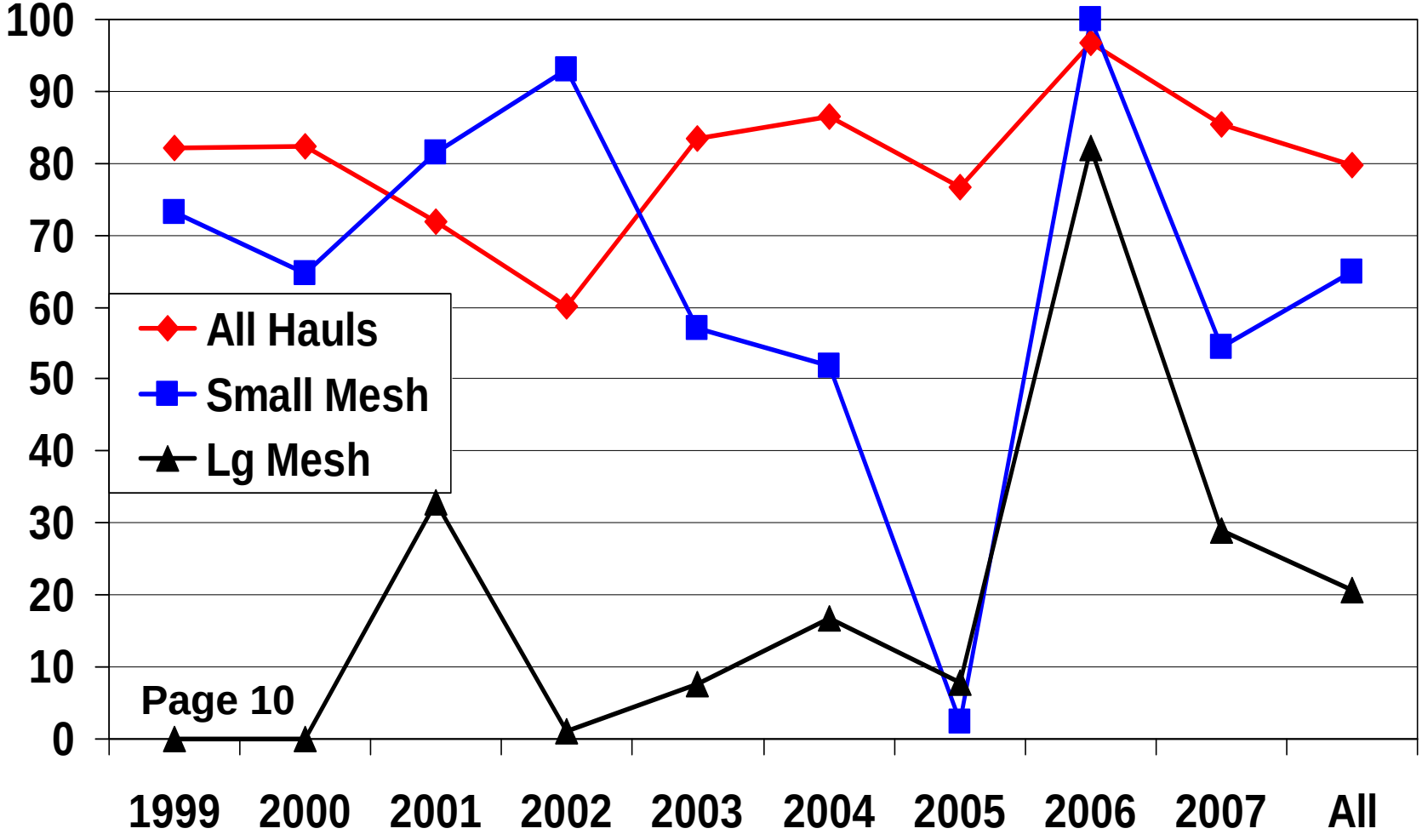
- 4 takes in very-small mesh sizes (<= 5 inches), targeting American shad in 1999 and 2000 during March.
- 4 takes in large mesh (7-18 inches), targeting monkfish or striped bass in nets out-of-compliance.
- No takes in small mesh (>5 to <7 inches)



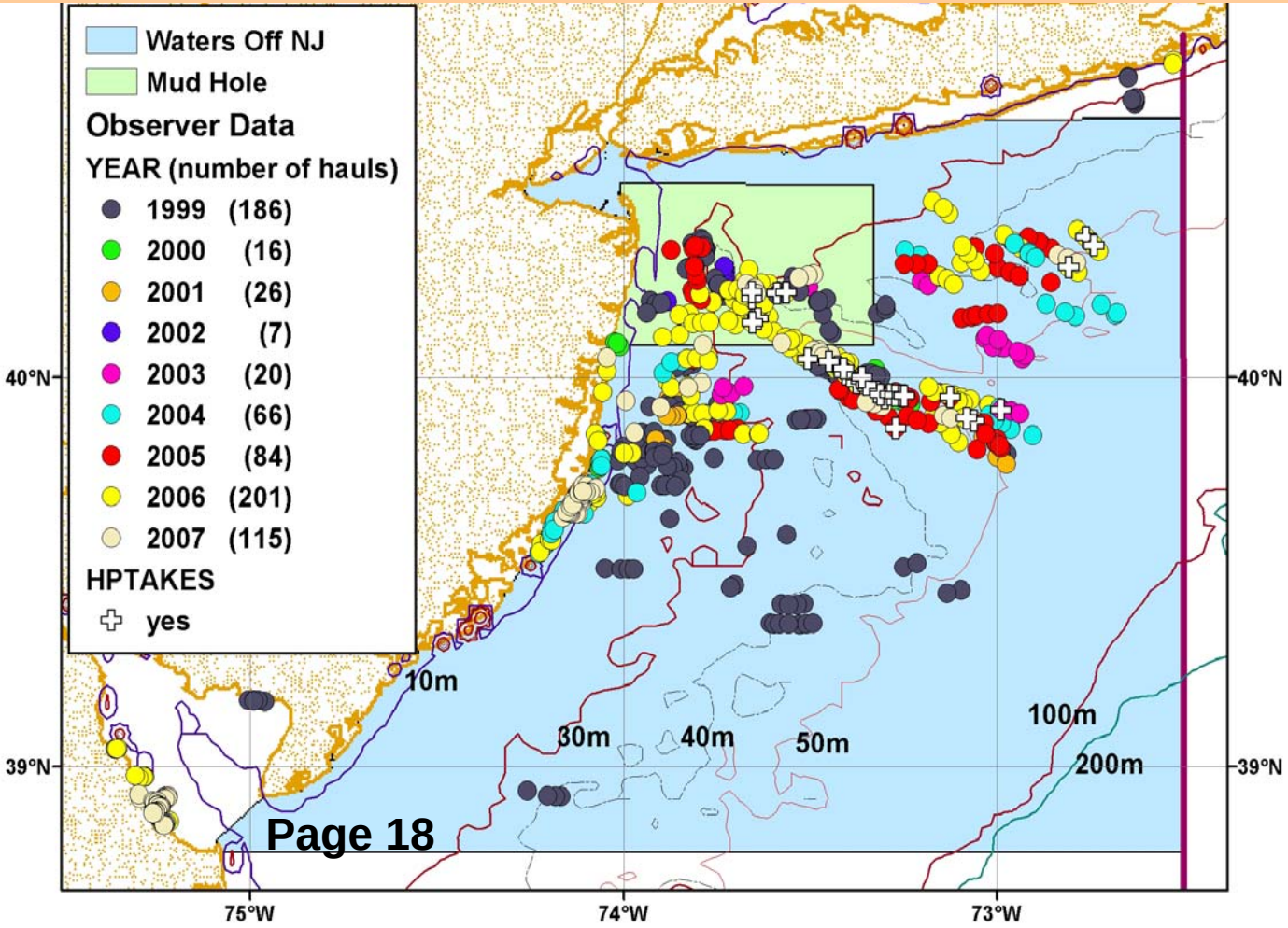
Percent Compliance During Feb-Apr



Non-compliance in observed hauls

- **Small mesh (721 hauls)**
  - 7.4% had string lengths too long (> 2118 feet)
  - 29% had twine sizes too small (< 0.81 mm)
- **Large mesh (874 hauls)**
  - 24% had string lengths too long (< 3900 feet)
  - 10% had twine sizes too small (< 0.90 mm)
  - 30% were in closed time (15 February to 15 March)
  - 54% did not use tie downs (TRP requires tie downs)

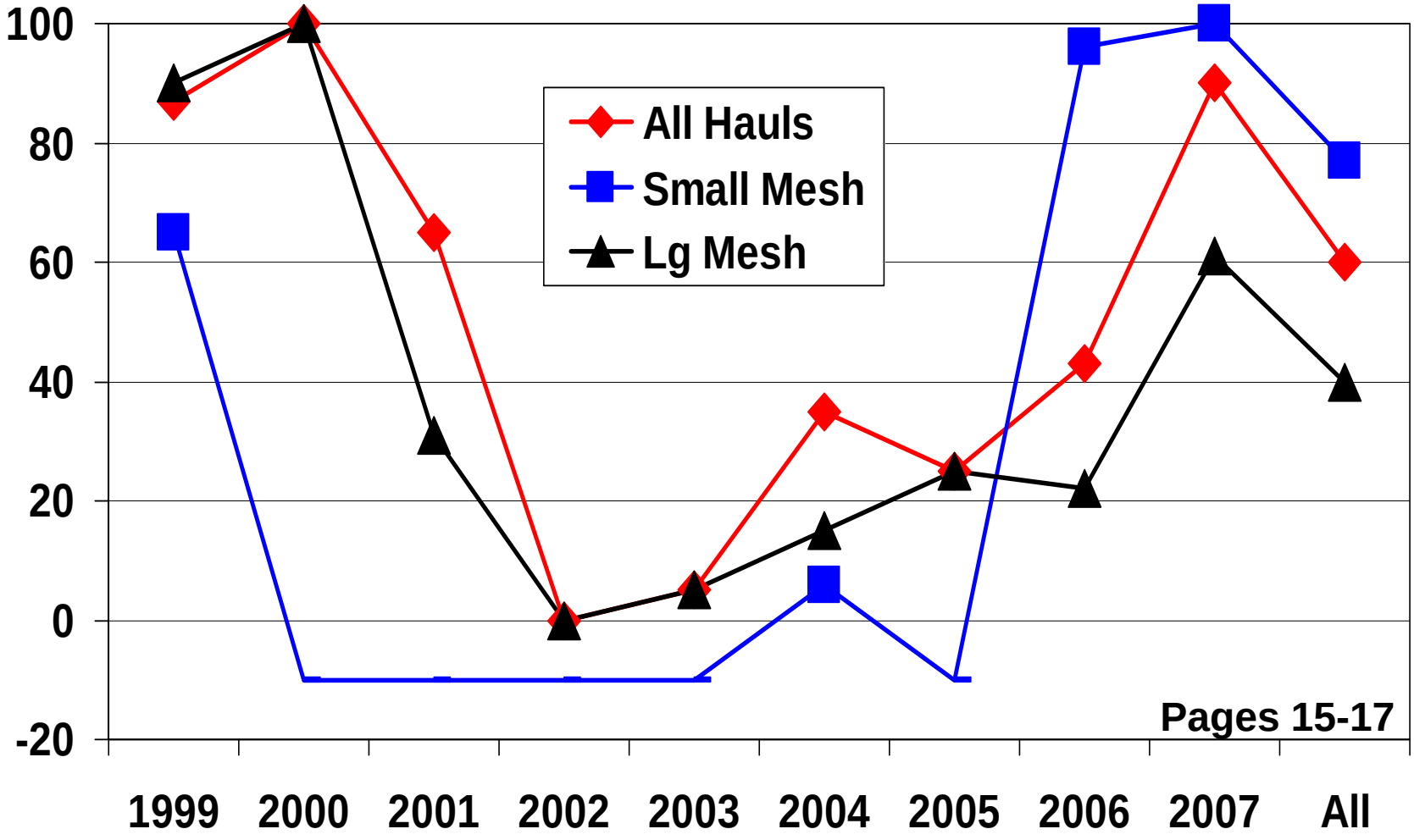
Waters off of New Jersey – including the Mud Hole



GENERAL PATTERNS
during Jan-Apr: (pg 11-14)

- 721 observed hauls
- 43 harbor porpois takes
- Highest bycatch rates in:
  - February
  - large mesh monkfish hauls
  - 40-50m depth
  - strings with long soak durations (> 200 hrs)
  - strings with long string lengths (>4000 ft)
  - strings out-of-compliance (65% of takes)

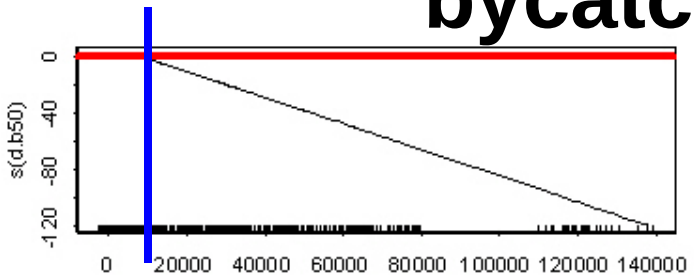
Percent Compliance During Jan-Apr



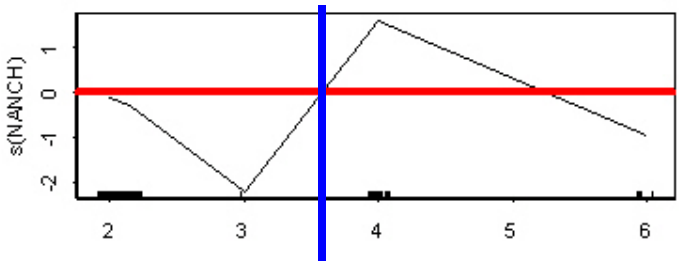
Non-compliance in observed hauls in waters off of NJ, including Mud Hole

- **Small Mesh (133 hauls)**
  - 11% had string lengths > 3000 ft
  - 12% had twine sizes < 0.81 mm
  - 0.8% were fishing in closed time/area
- **Large Mesh (437 hauls)**
  - 52% had string lengths too long
  - 0.7% were fishing in closed time/area
  - 11% had twine sizes < 0.90 mm
  - 5% did not use tied downs

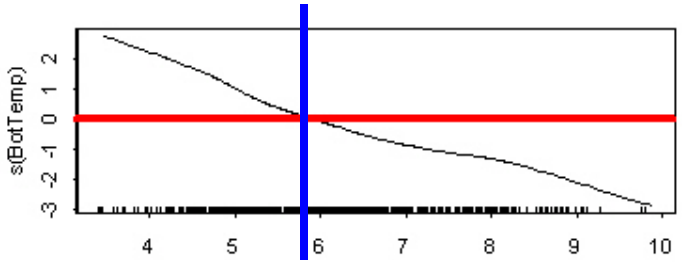
What variables are related to high bycatch rates? Pages 13-14, 21-22



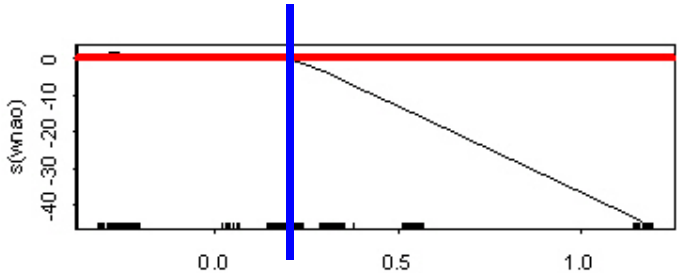
Distance to 50m depth contour



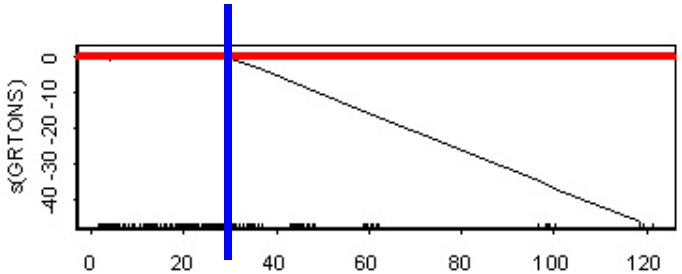
Number of Anchors



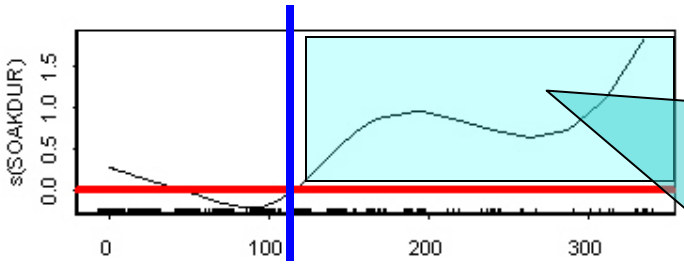
Bottom temperature (c)



Winter N. Atlantic Oscillation



Vessel gross tonnage



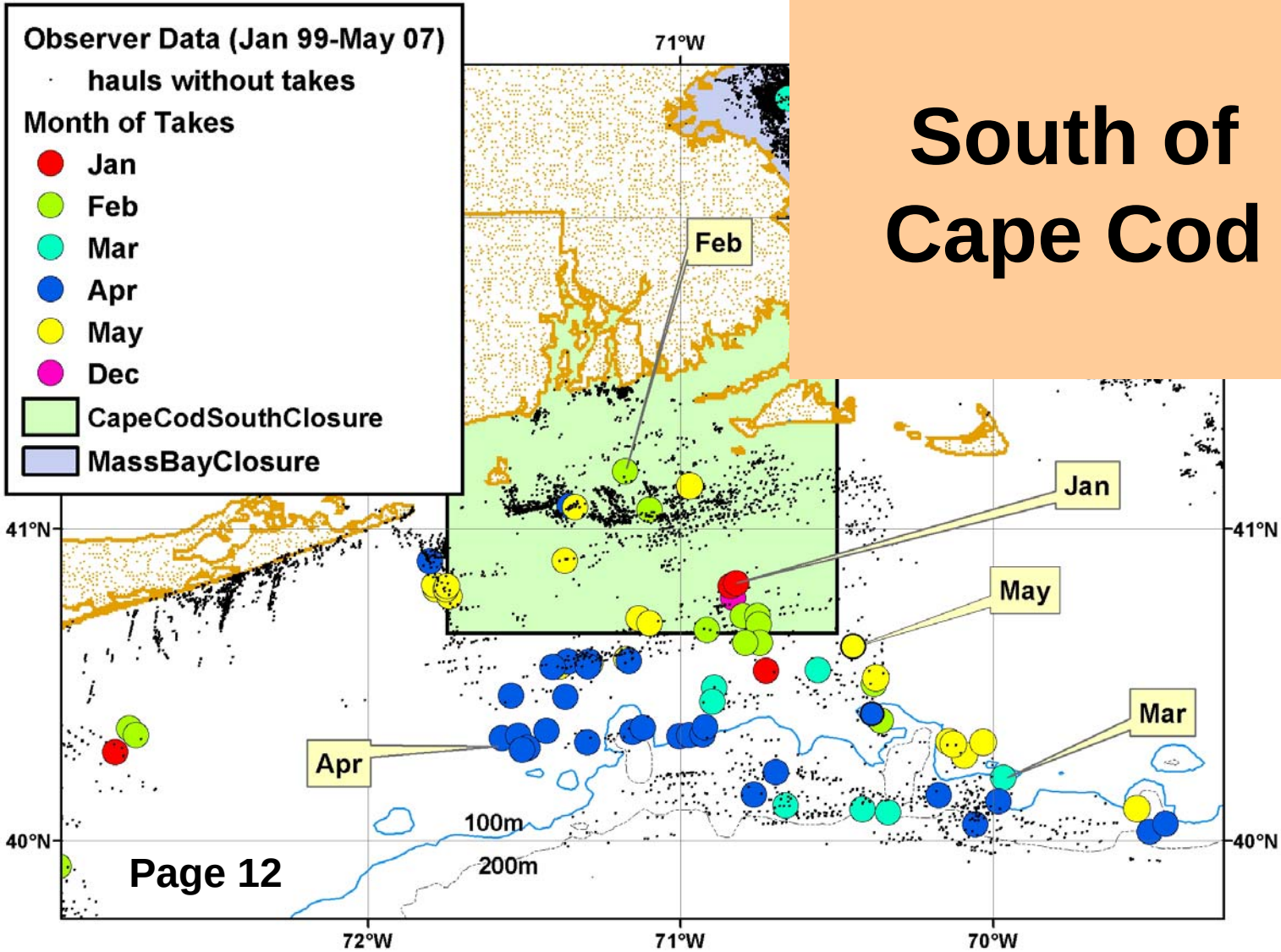
Soak Duration (hrs)

Area above red line has higher than average bycatch rate

Interpretation of bycatch rate model

- **Fixed environmental factors (depth)**
  - **Indicates Hudson Canyon region around 50m depth contour is general location of high rates**
- **Annually varying environmental factors (water temperature, winter NAO)**
  - **Helps explain reason for inter-annual variability**
- **Gear characteristics**
  - **Long soak durations have high bycatch rates**
  - **Anchors could indicate location or long soak durations (> 6.5 days) and if shorter soak duration then poor weather**

South of Cape Cod



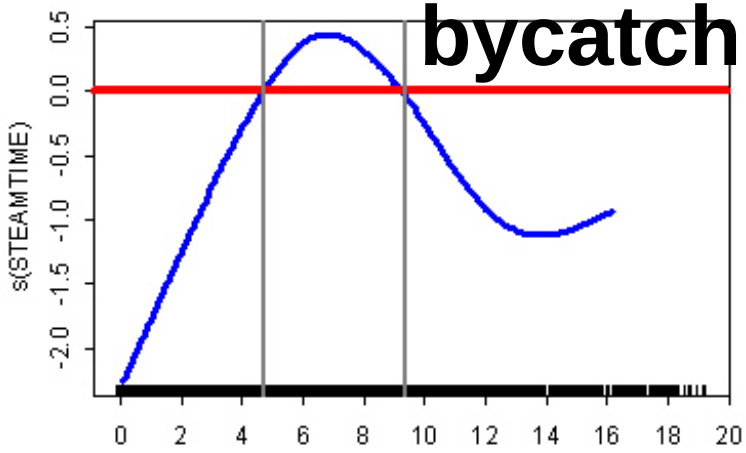
General patterns

- 2831 observed hauls since Jan 1999
- 87 harbor porpoise takes
  - 24 inside Cape Cod South Closure
  - 63 outside Closure (rate 50% higher than inside)
- All takes in nets targeting monkfish or winter skate
- Bycatch rates higher in:
  - non-pingered strings
  - Feb and April
  - longer strings (> 4000 ft)
  - waters 50-100 fa deep
  - long soak durations (> 200 hours)
  - since 2005

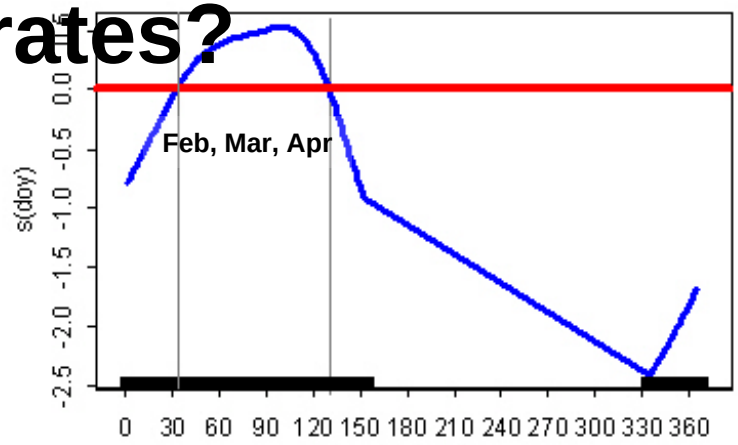
Compliance in observed hauls

- **Only 1 trip inside closed time/area (March)**
- **40% did not use any pingers (15% of takes)**
- **13% did not use enough pingers**

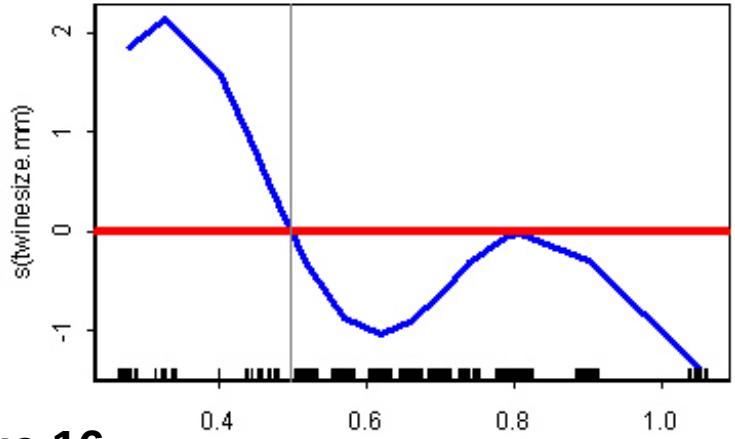
What variables are related to high bycatch rates?



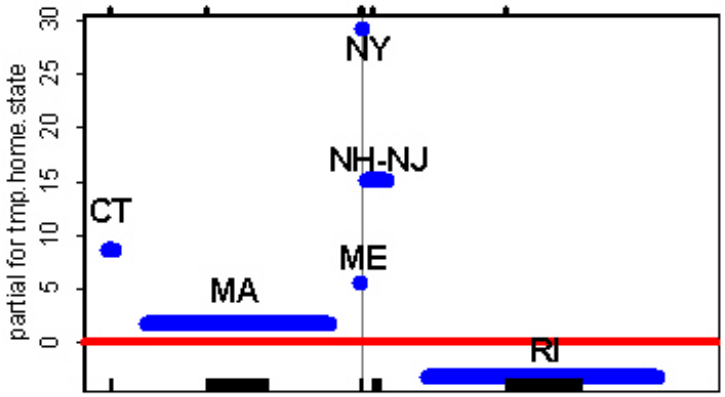
Steam Time (hrs)



Day of the Year



Twine Size (mm)



Home State

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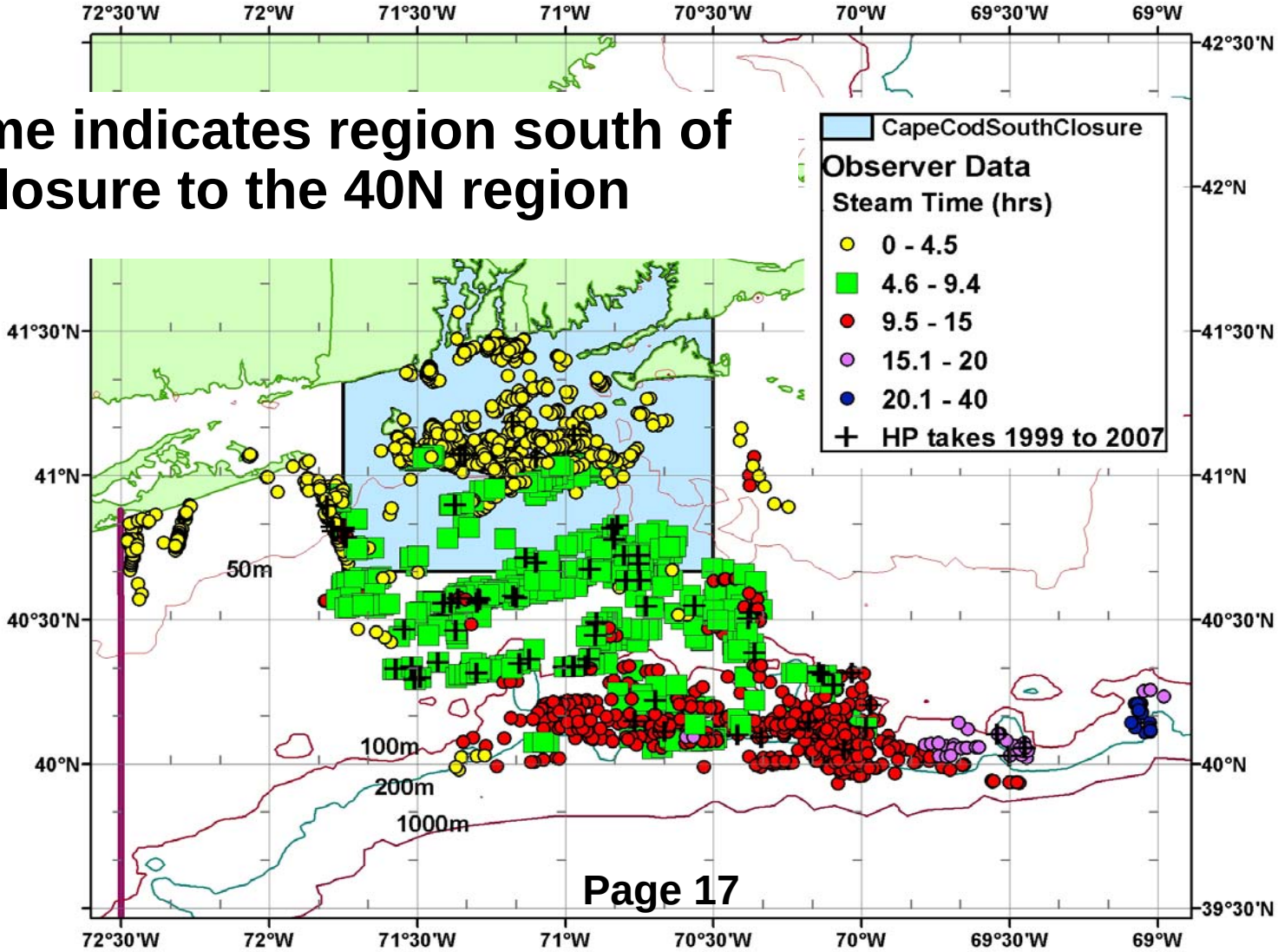
Interpretation of bycatch rate model

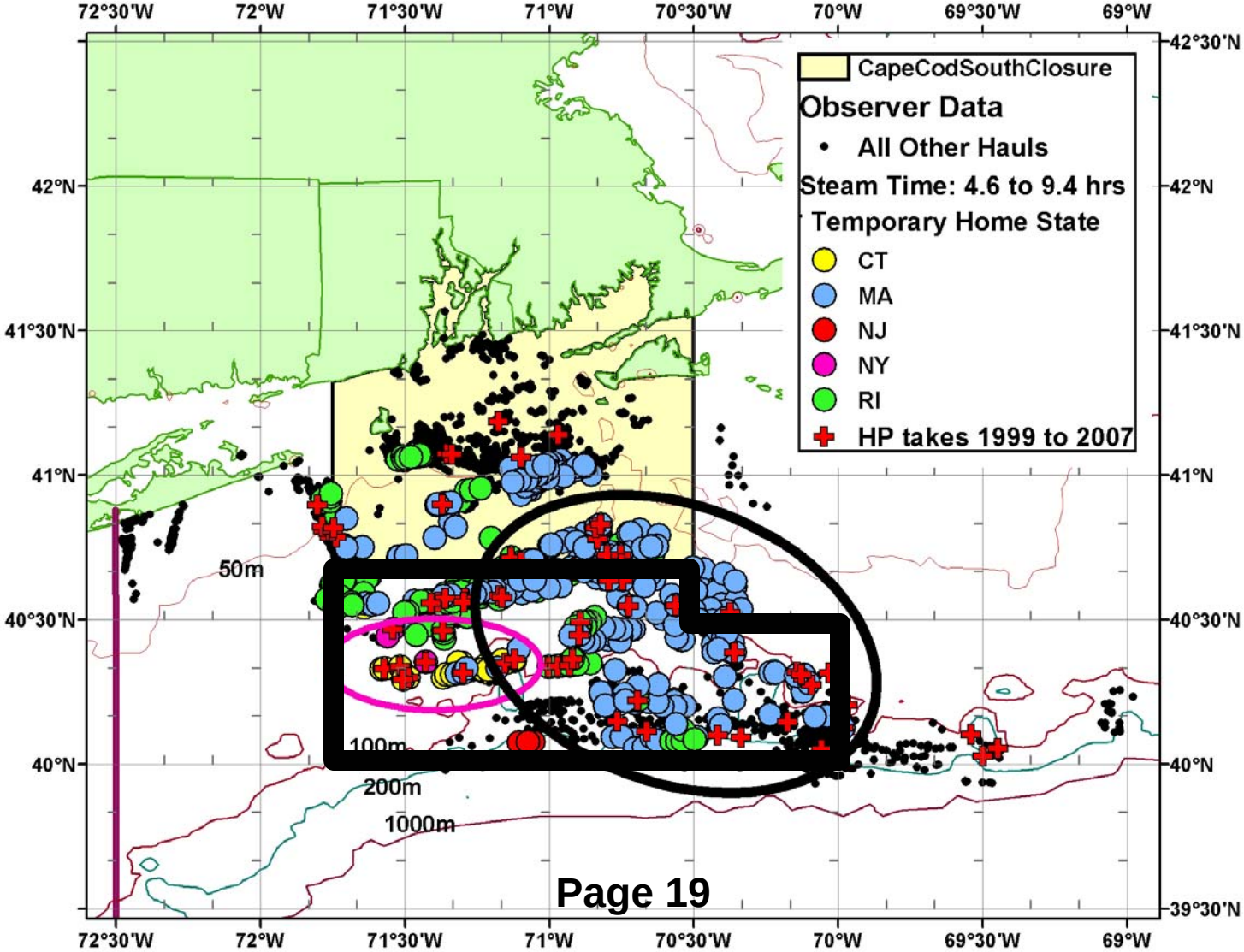
- **Day of year indicates Feb – Apr had highest bycatch rate**
- **Twine sizes < 0.5 mm had highest bycatch rate**
  - **Note: usual practice of monkfish hauls use twine sizes >= 0.57 mm and have a much lower bycatch rate then when use twine sizes < 0.57**

Interpretation of bycatch rate model

Steam time indicates region south of CCS Closure to the 40N region



Interpretation of bycatch rate model



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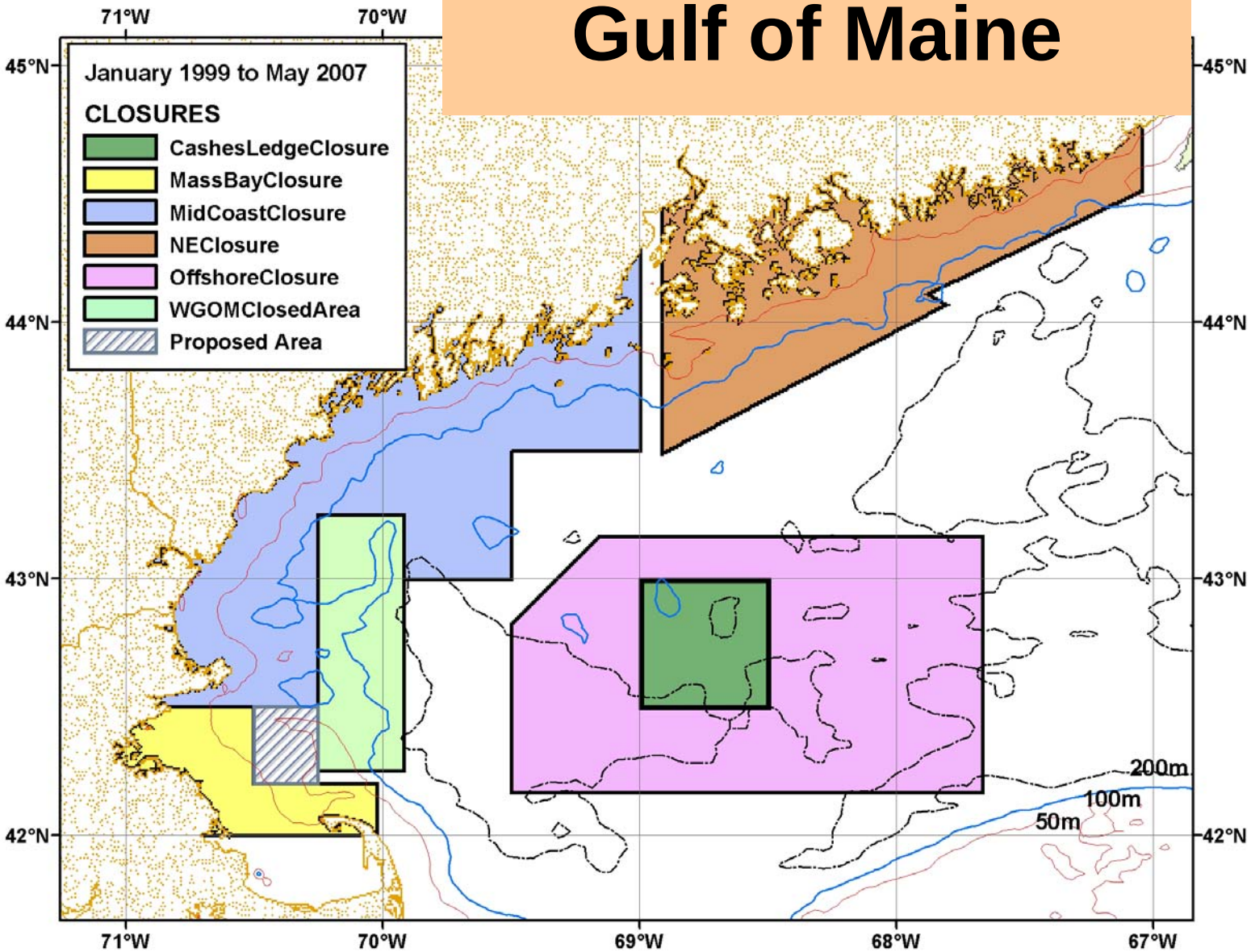
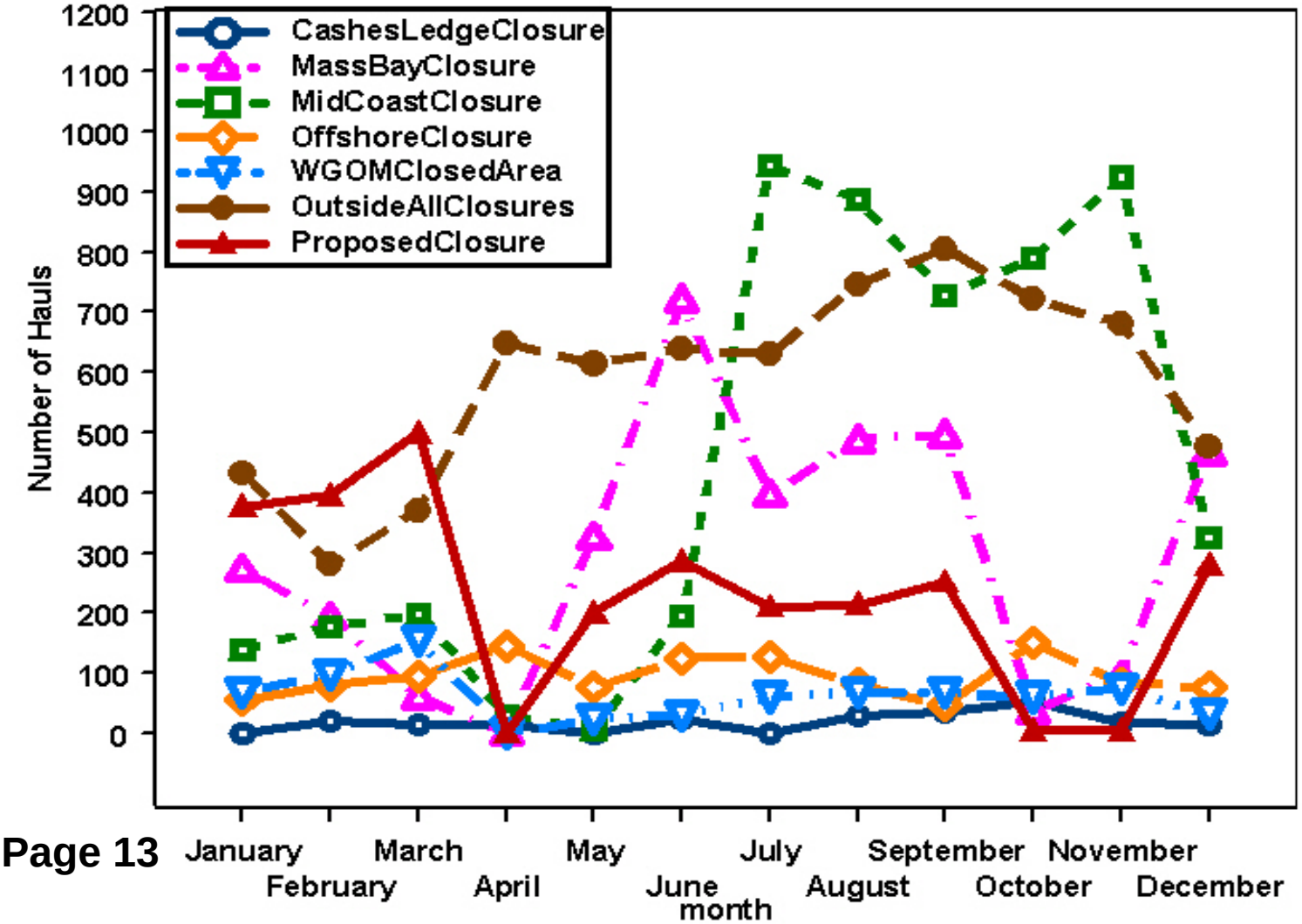
Gulf of Maine



Number of observed hauls by Closure



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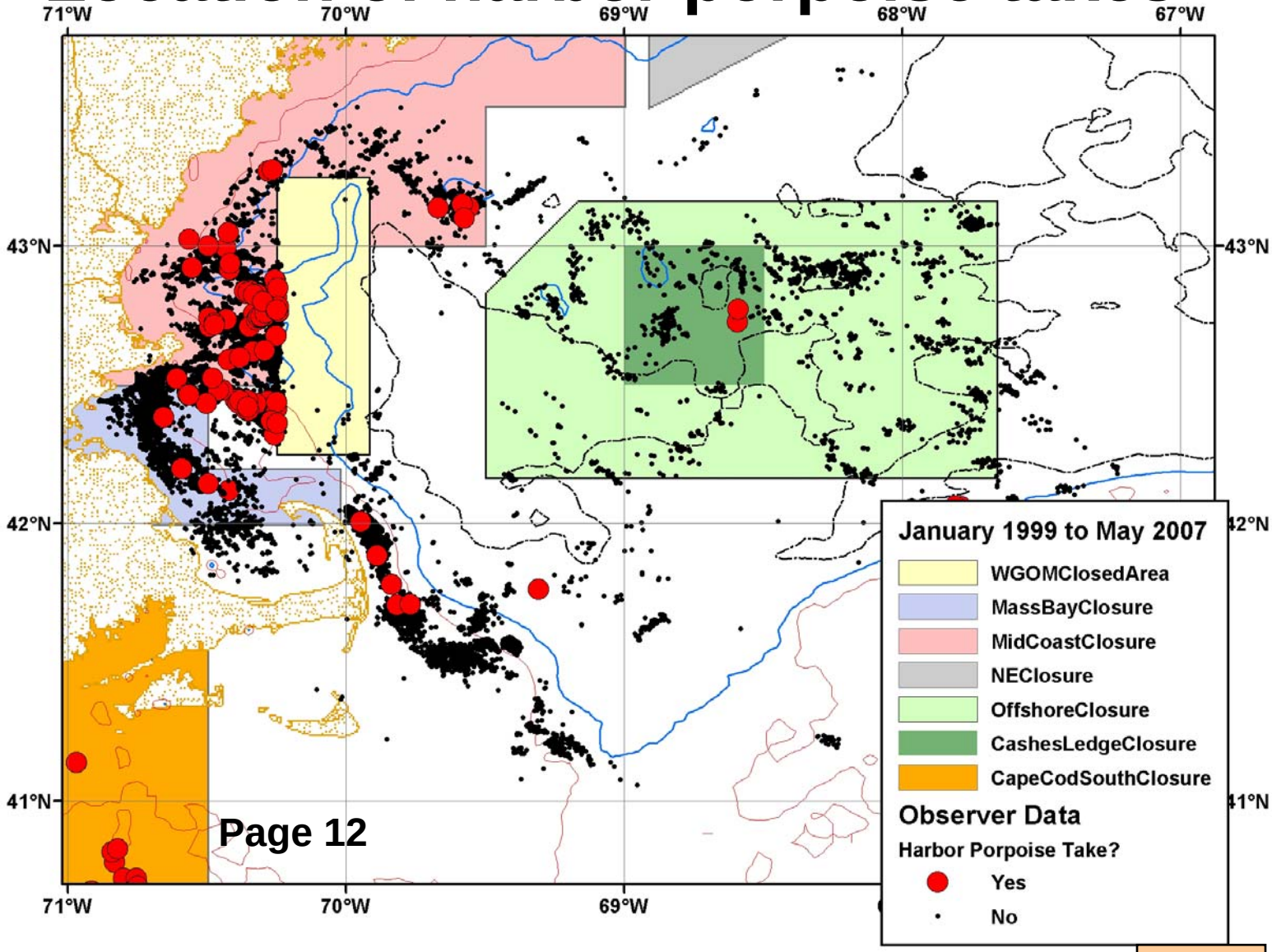
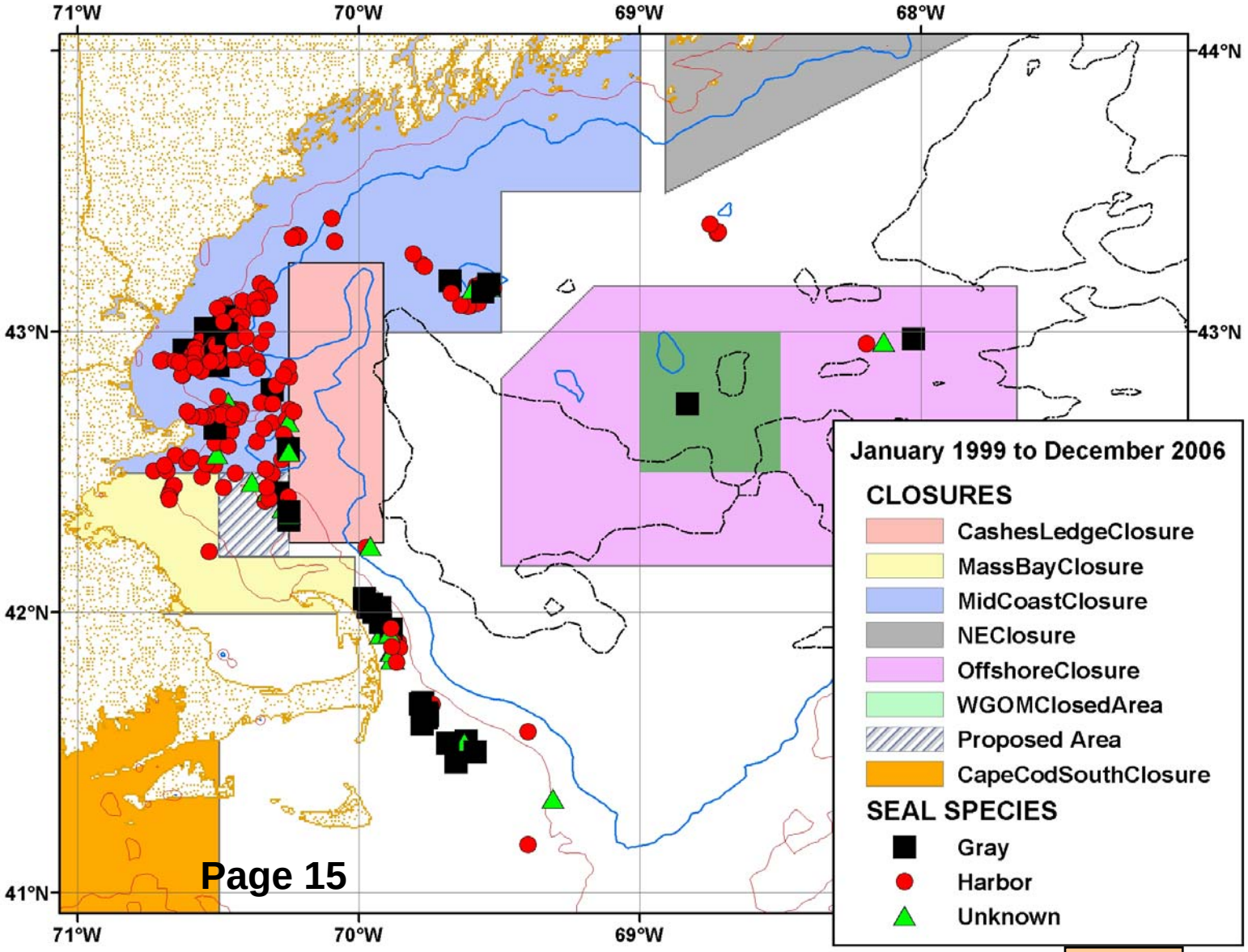
Location of harbor porpoise takes



Location of seal takes



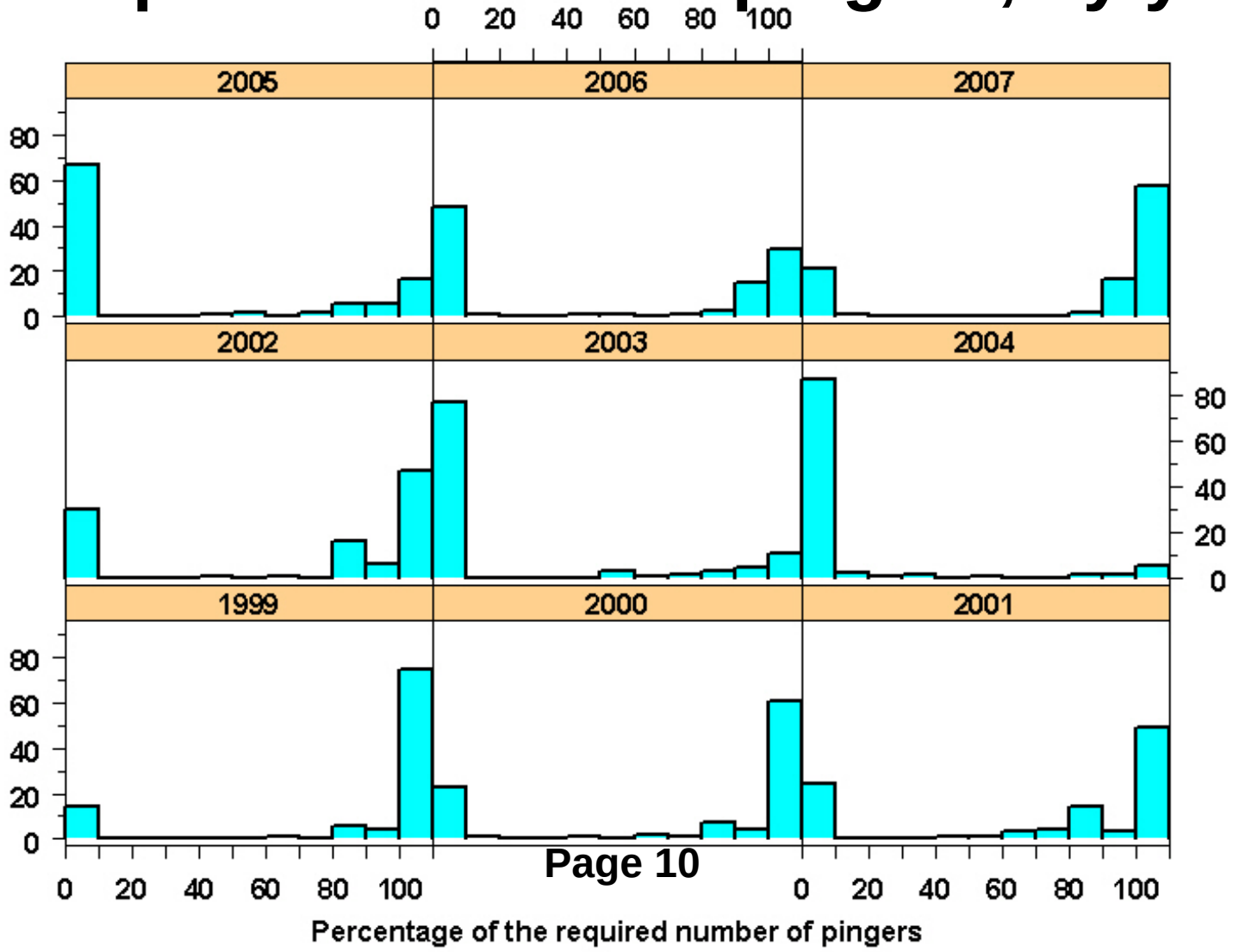
General patterns

- 20,758 observed hauls since Jan 1999
- 104 harbor porpoise (HP) takes (pg 6)
- 91 seal takes (pg 7)
- HP bycatch in every month
- HP bycatch rates higher in:
  - Western GOM Closed Area, Mid-Coast Closure, and proposed area
  - non-pingered strings
  - strings with less than the required number of pingers
  - Nov, Feb, Dec and April (in order)
  - 2005 and 2006

Compliance in observed hauls

- All closed areas had some observed hauls
- (Unknown if pingers on nets were working)
- Pinger usage dropped substantially in 2003, and increased in 2007
- 20-40% used required number of pingers
- During years of high levels of compliance, 60-80% of the observed hauls did not have the full compliment of pingers

% required number of pingers, by year



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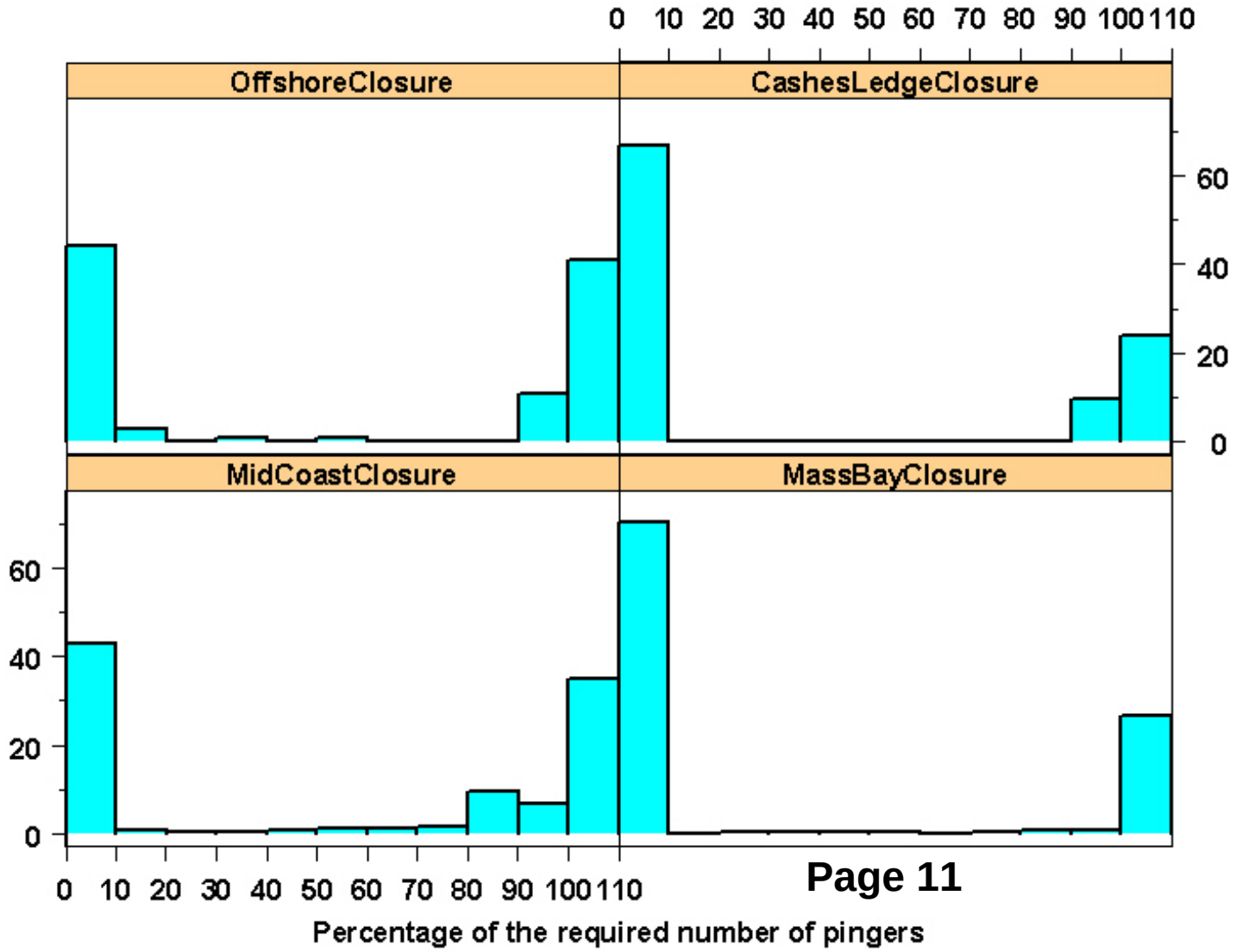
% required number of pingers, by Closure



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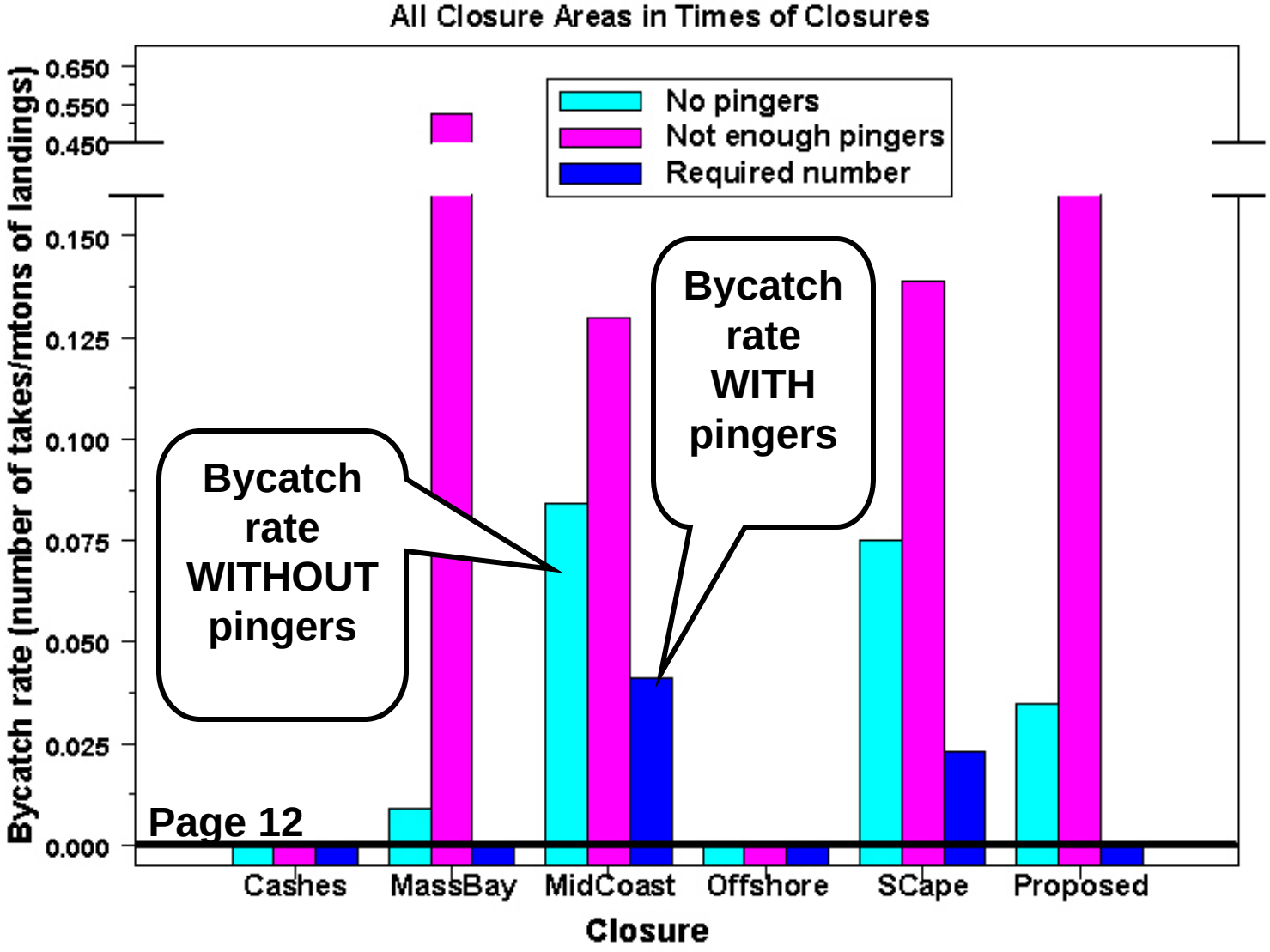
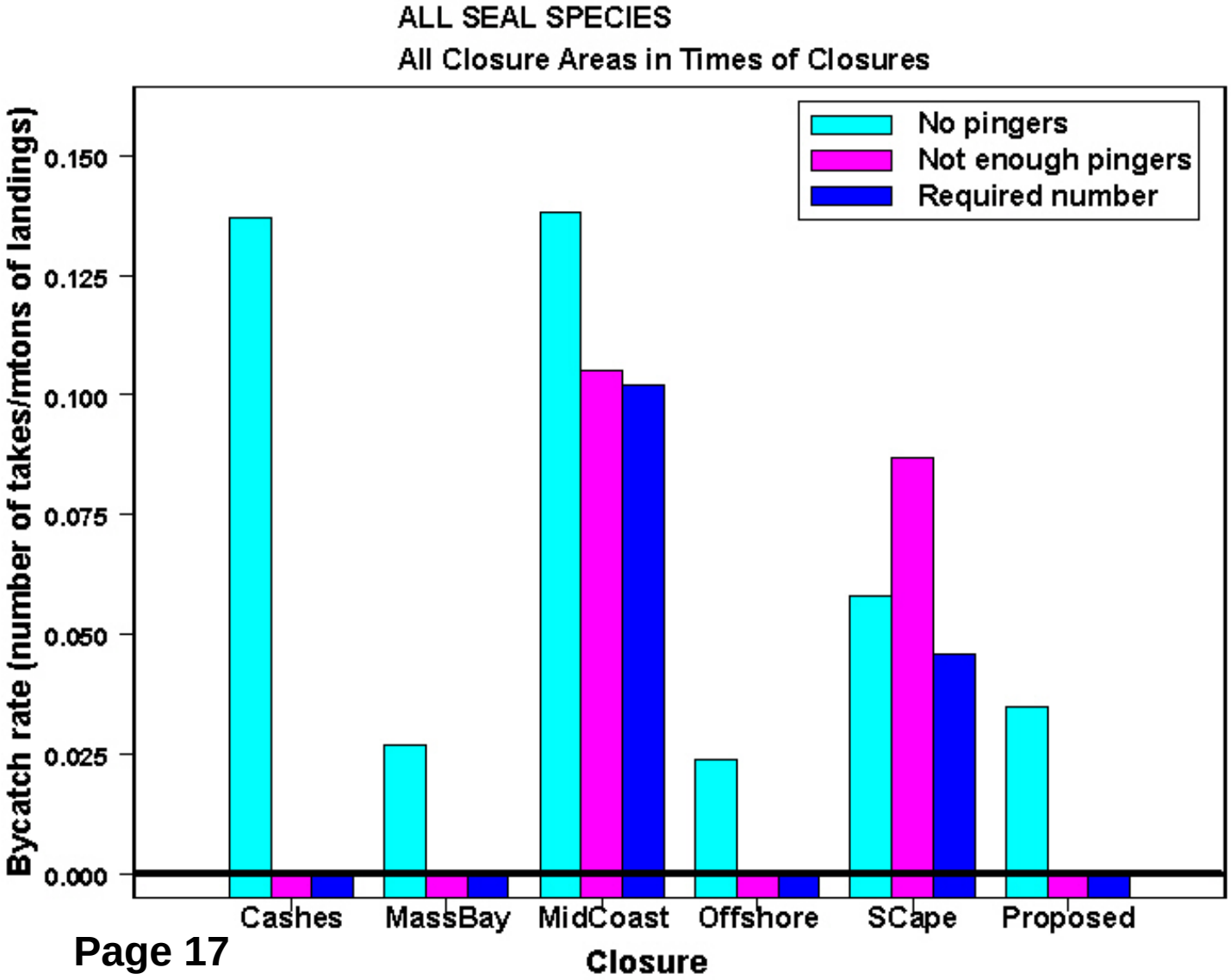
HP rate in pingered strings < without pingers



SEAL rate in pingered strings < without pingers



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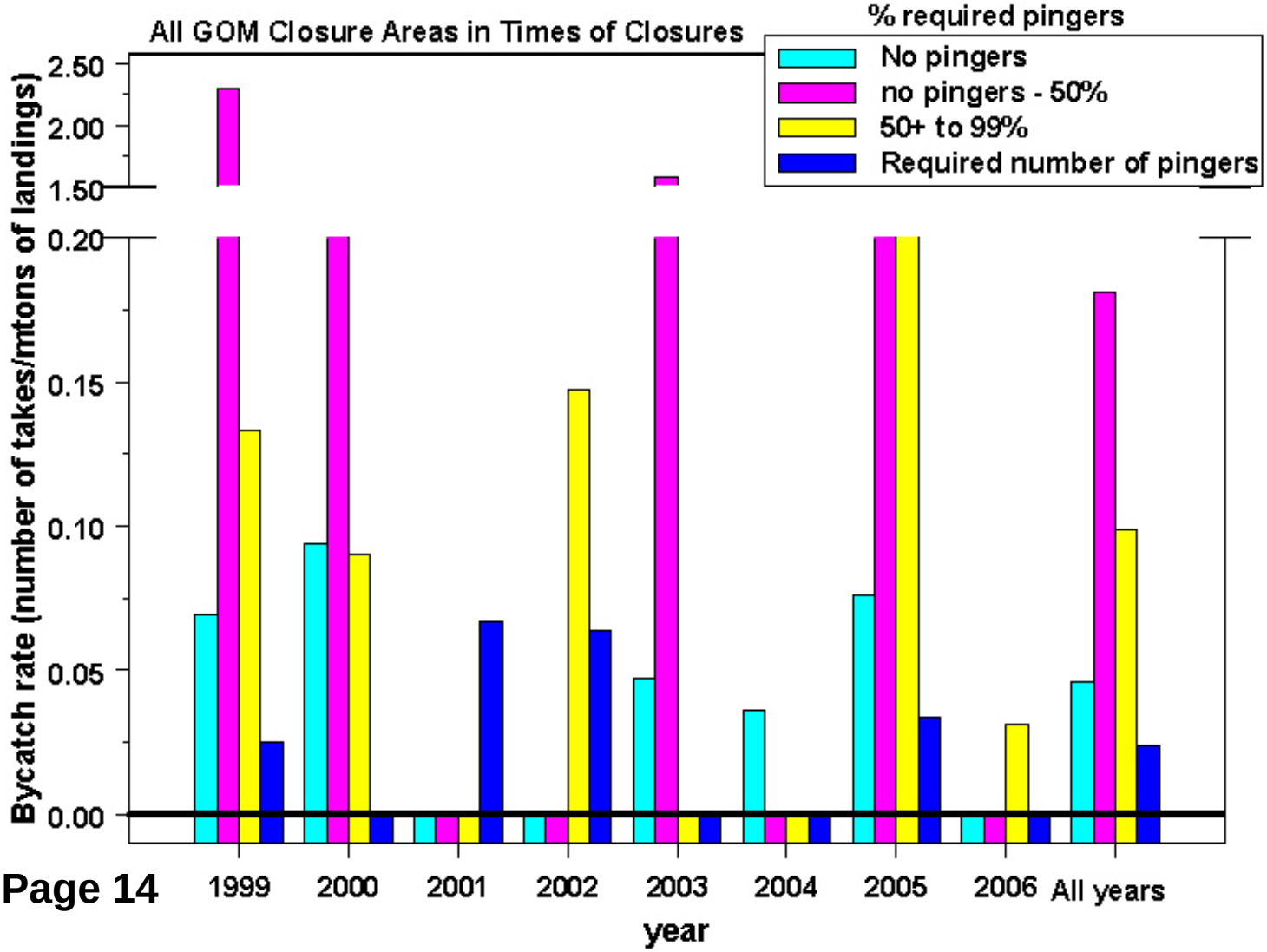
No habituation by harbor porpoises?



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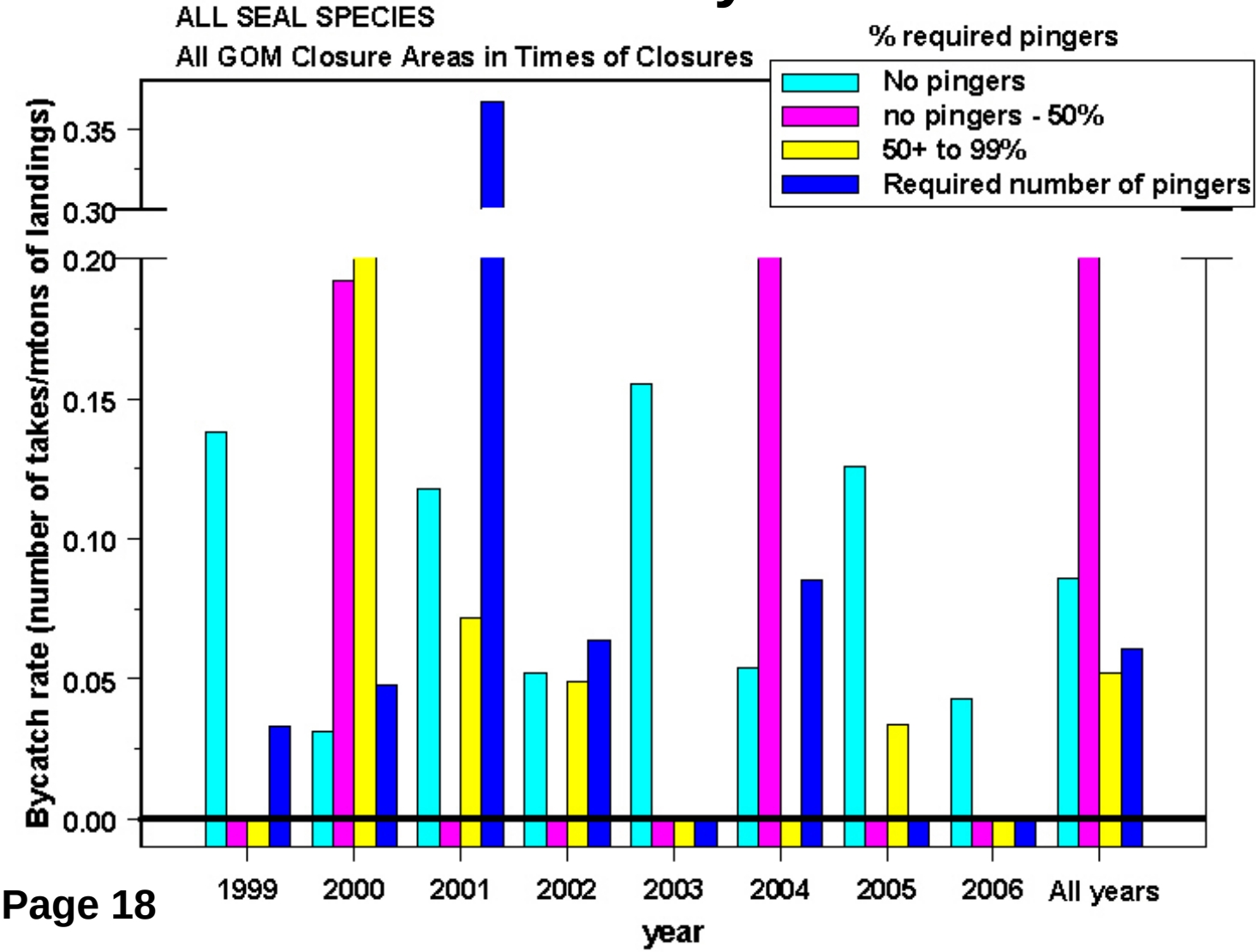
No habituation by seals?



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