Science, Service, Stewardship

The effects of hanging ratio on the catch of harbor porpoise and targeted finfish species

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Background

- Harbor Porpoise Take Reduction Plan (HPTRP)
  - In effect since Dec. 1998
  - Gear modified during certain times of the year and in certain areas
- Initial decrease in takes at implementation of pinger usage, but takes have increased in recent years possibly due to non-compliance of pinger usage.
- At time of study pingers were not required south of Cape Cod South Management Area (south of 40º40’ N latitude)

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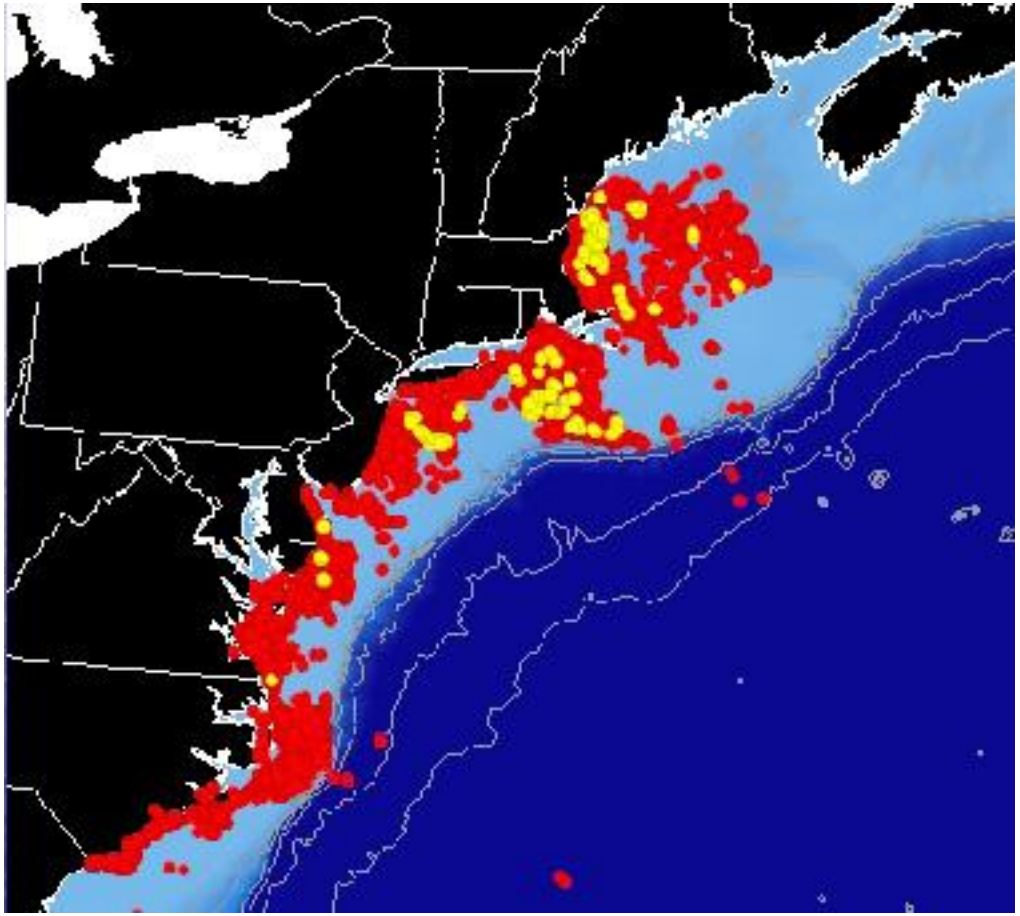
1999-2006 Observed Hauls and Observed Harbor Porpoise Takes

Observed Hauls in Red

Observed harbor Porpoise Takes in Yellow.



Courtesy Christopher Orphanides, NEFSC

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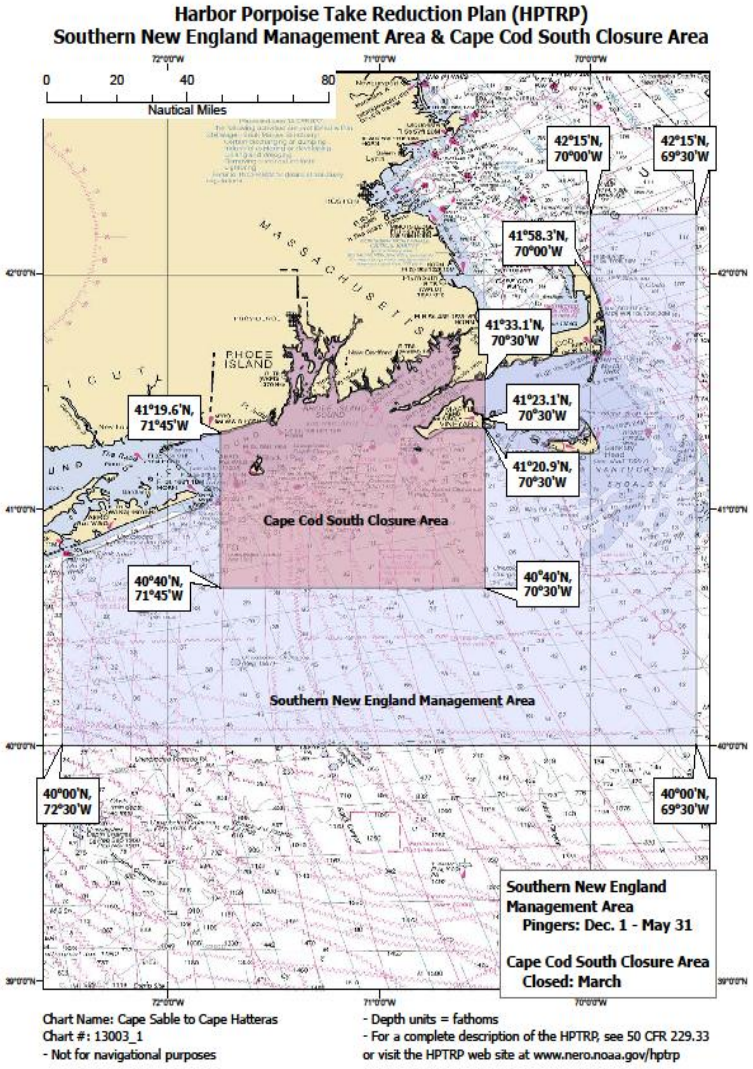
Harbor Porpoise Take Reduction Plan

Southern New England Management Area and Cape Cod South Closure Area



Courtesy of NOAA/NMFS/NERO
http://www.nero.noaa.gov/prot_res/porptrp/doc/SouthernNewEngland&CapeCodSouthAreas.pdf

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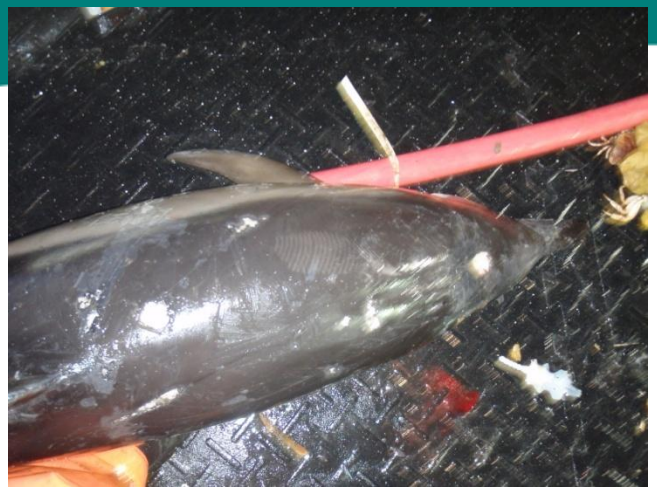
Background

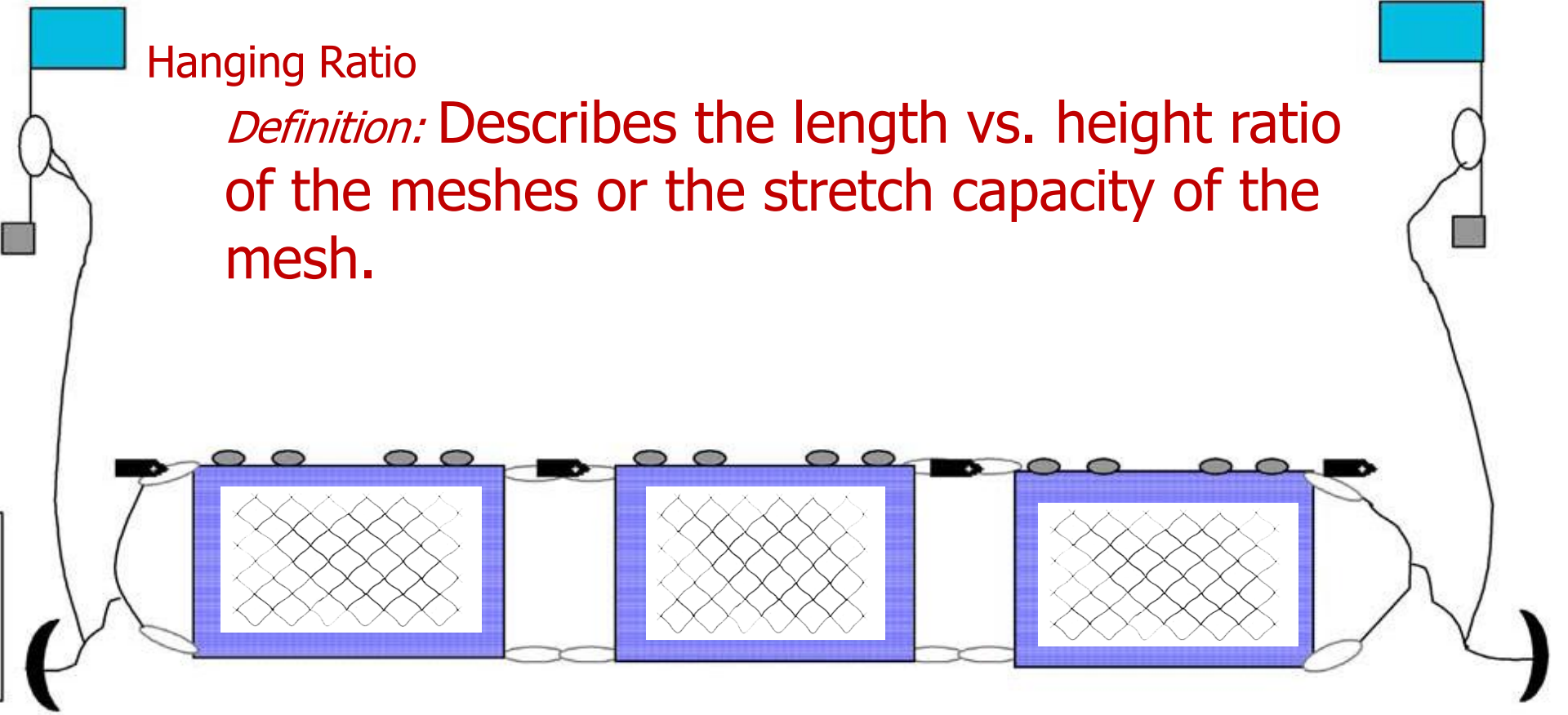


- Analysis of observer data by scientists at the NEFSC, Protected Species Branch (PSB) showed greater harbor porpoise bycatch in gear hung on the 1/3 (0.33) vs. gear hung on the 1/2 (0.50) in the area south of the South of Cape Management Area.

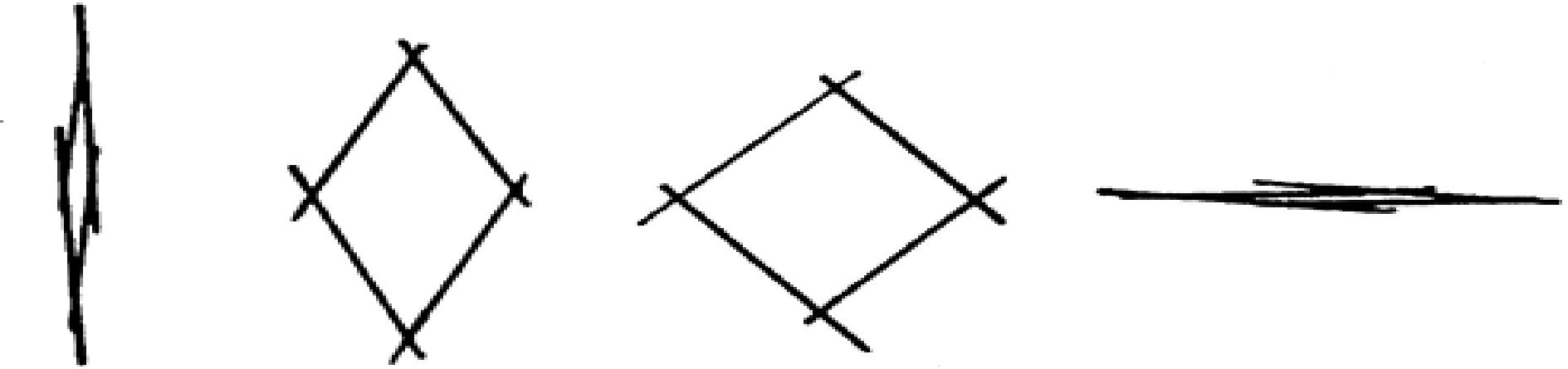
- GOAL: To examine the effects of two hanging ratios on Harbor Porpoise bycatch and targeted catch

Hanging Ratio

Definition: Describes the length vs. height ratio of the meshes or the stretch capacity of the mesh.



0 **1/3** **1/2** **1**



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Methods

- Field Seasons: February to April 2009 and 2010
- Fishing Vessels
  - 4 Commercial gillnets vessels
- Fishing Gear
  - Monofilament gillnet constructed by I.M.P. Fishing Gear LTD, New Bedford, MA
  - Tie down spacing every 24’
  - Total of 8 research strings, 4 strings per vessel, 14 nets per string= 56 nets/vessel and 28 nets of each hanging ratio per vessel

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Methods (con't)

- Fishing Practices
  - Set and hauled in a manner consistent with normal fishing practices in designated study area
  - Targeted soak time was <96 hours
  - Standard haul information was collected for each haul
  - Effort was to be consistent between treatments

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Fish Sampling Protocols

- Based on modified Fisheries Observer Program protocols
- Kept catch weights
  - Actual if possible, otherwise tote or tally counts
- Discarded weights
  - Everything accounted for
  - Actual weights for all targeted species
- Length Frequencies-only for kept and commercially important discarded fish

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Marine Mammal Sampling Protocols

- Based on modified NEFOP Protocols
- Species ID, lat/long, time, net location on string, hanging ratio, body temp, wounds, body condition, gear entanglement code. 2010 field season also recorded distance of take from end bridle
- Pictures taken for all mammals caught in gear
- All mammals were tagged
- If dead fresh, retained for necropsy

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Gear Reconfiguration

- 2009:
  - Hauls 1-19: randomized array; 7 nets of each hanging ratio randomly placed on each string. 18 February-6 March, 2009 ***Phase I***
  - Hauls 20-79: Each string consisted of only one hanging ratio. 8 March-28 April, 2009 ***Phase II***
- 2010
  - No reconfiguration needed; configuration the same as Phase II of 2009 season

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Results

- 79 hauls completed between 18 February and 28 April, 2009 and 80 hauls completed between 28 February to 28 April, 2010 (Total 159 hauls)
  - Field Season 2009: 19 hauls completed in Phase I; 60 Hauls Phase II
  - Field Season 2010: All 80 hauls same configuration of Phase II of 2009 field season
  - Average soak time=127 hours
  - Depth ranges 40-84 fm

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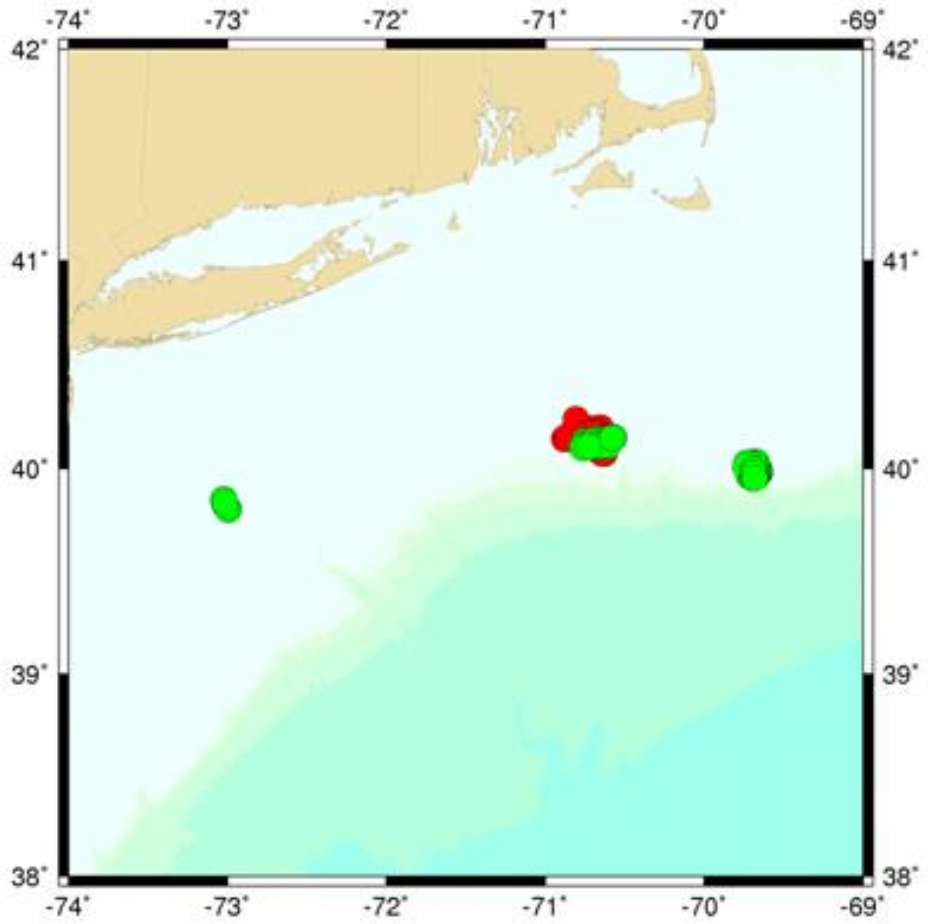
Gillnet Sets 2009 and 2010



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Results (con't)

- Marine Mammals
  - Total caught for entire study: 13 harbor porpoise, 4 harp seals, 17 grey seals, 4 harbor seals and 1 common dolphin.
  - Hanging ratio 0.33: 17 animals; hanging ratio 0.50: 23 animals. Differences not significantly different from zero.

Species	0.33	0.50
Harbor Porpoise	7	6
Harp Seal	2	2
Grey Seal	6	11
Harbor Seal	1	3
Common Dolphin	0	1
Cetacean, nk	1	0
TOTAL	17	23

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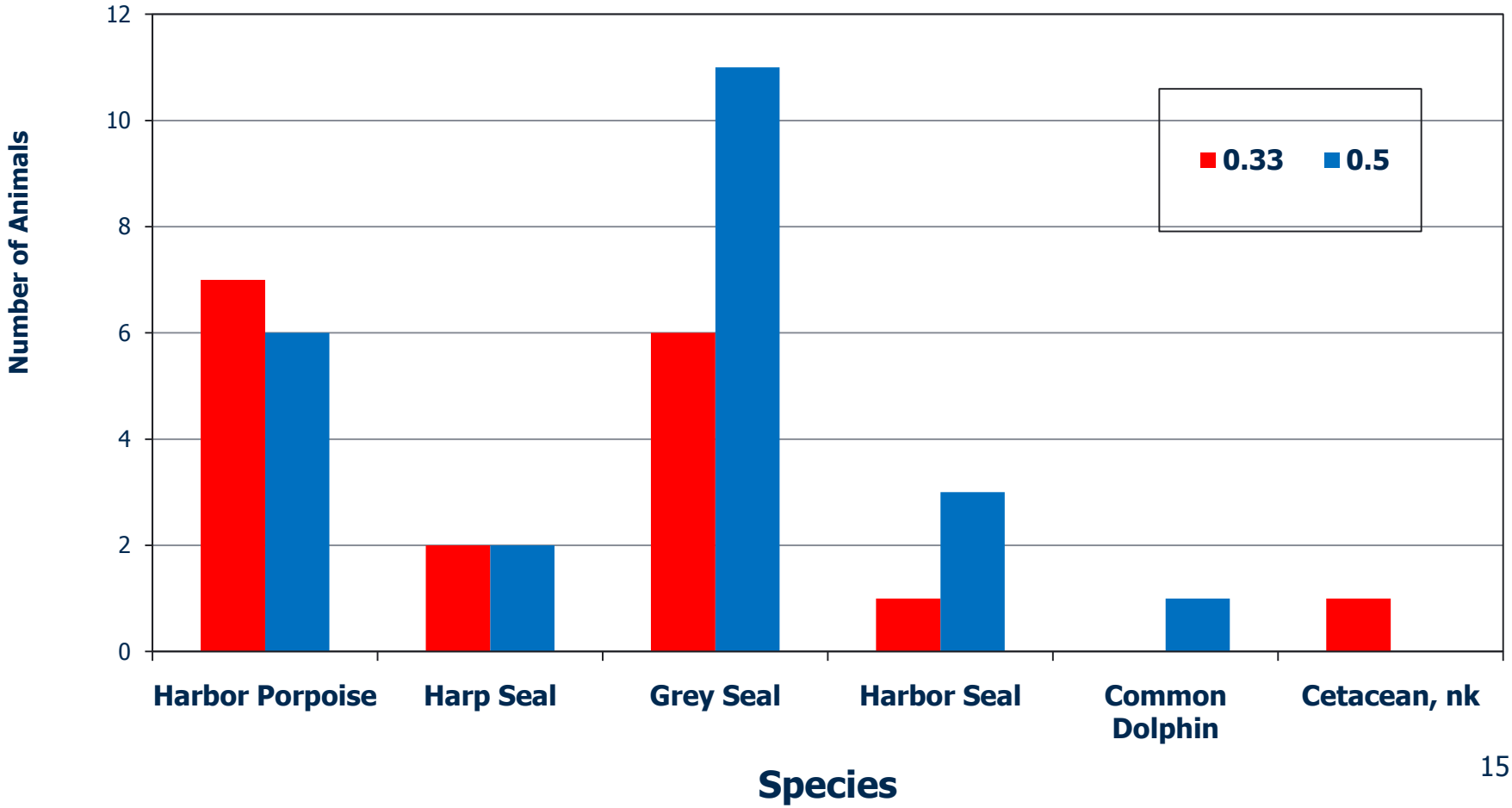
Bycatch of Marine Mammals by Hanging Ratio, 2009-2010



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Status (Kept or Discarded)	Species	0.50 (lbs)	0.33 (lbs)
K	Monkfish	75,940	81,568
K	Winter Skate	47,750	68,736
D	Winter Skate	1,023	1,647
D	Skate, nk	1,095	1,468
D	Monkfish	10,729	9,927
D	Summer Flounder	2,313	3,179
D	Barndoor Skate	13,529	22,051
D	little skate	303	601

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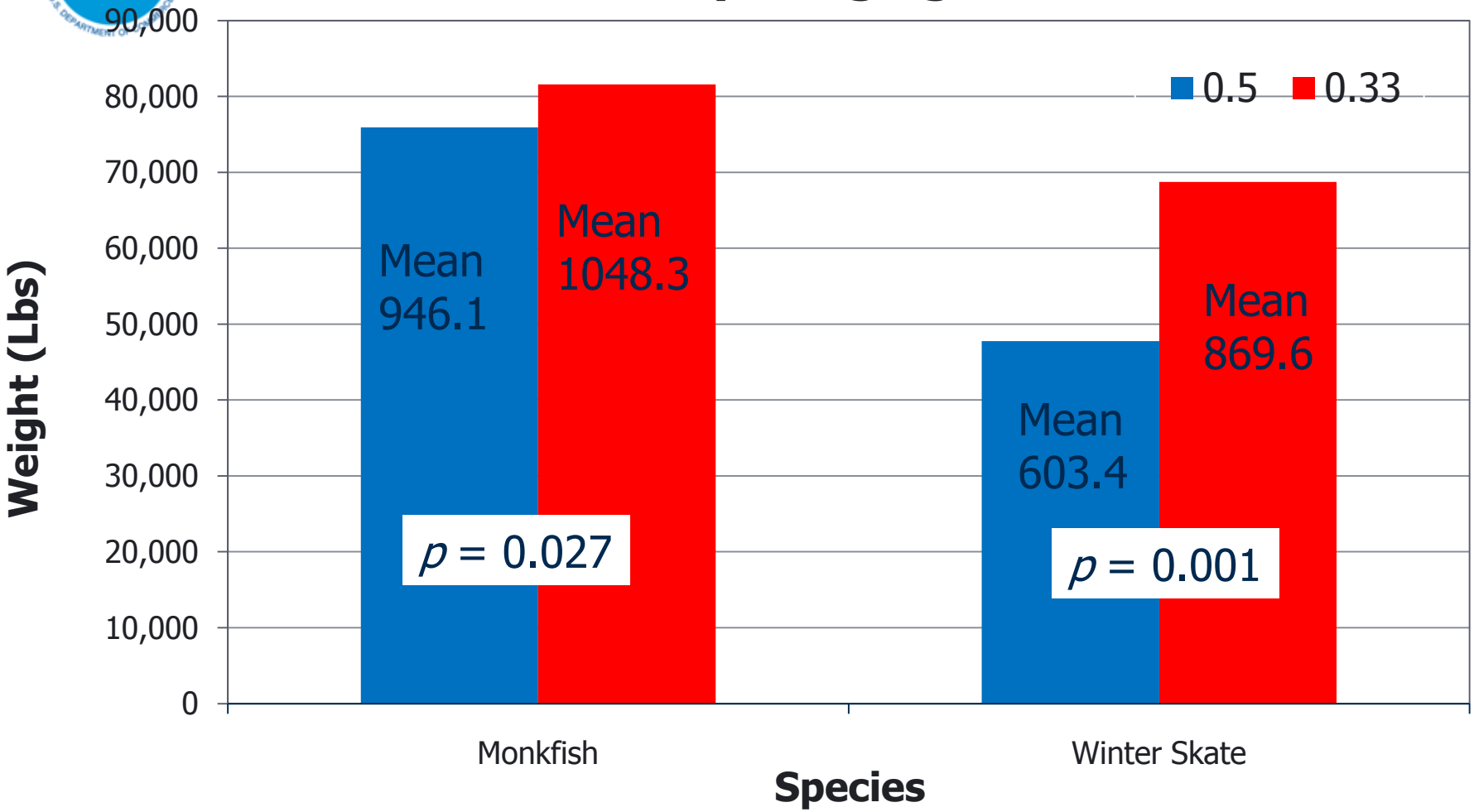
Retained Finfish By Hanging Ratio, 2009-2010



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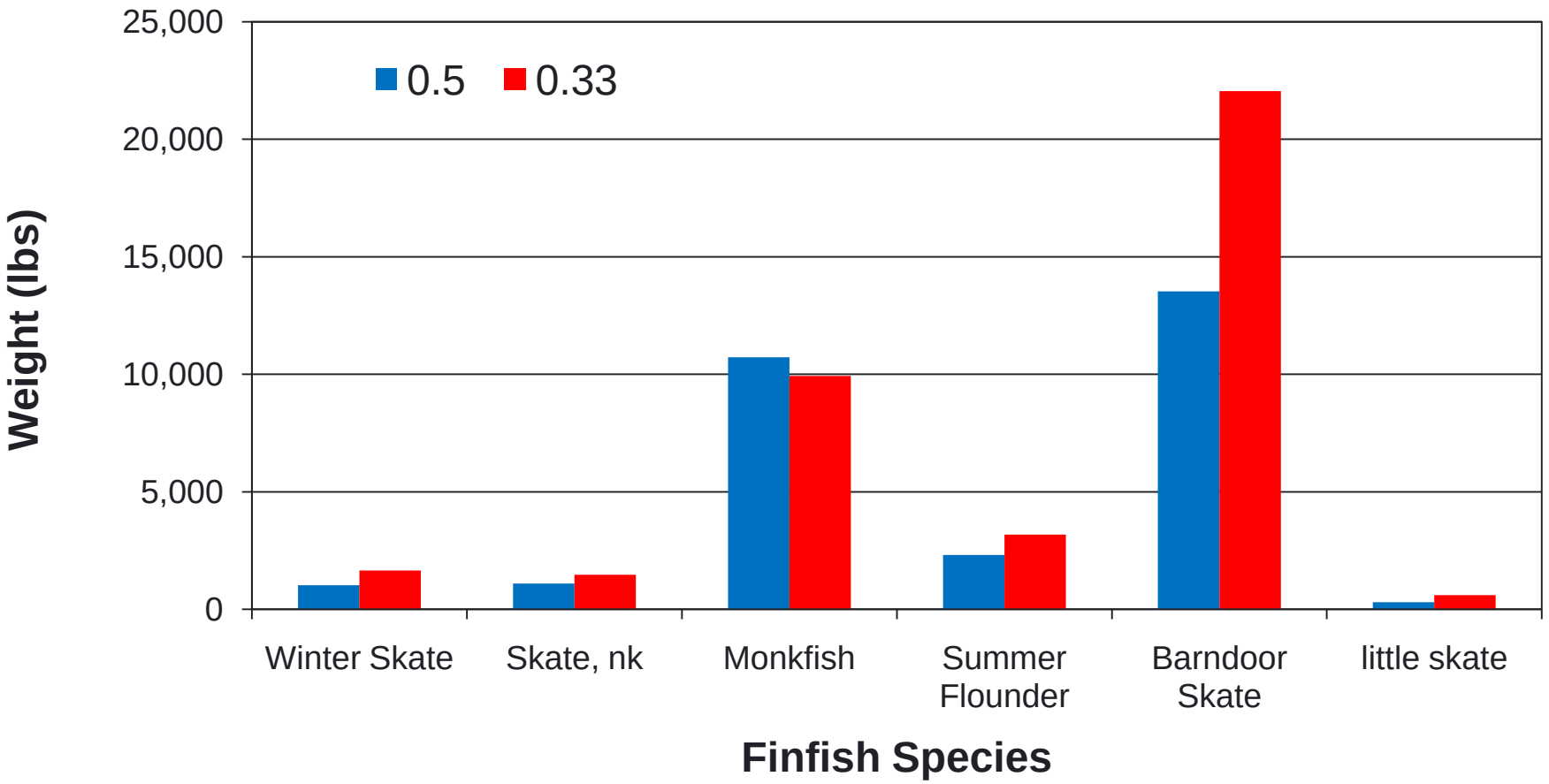
Discarded Finfish Species By Hanging Ratio 2009-2010



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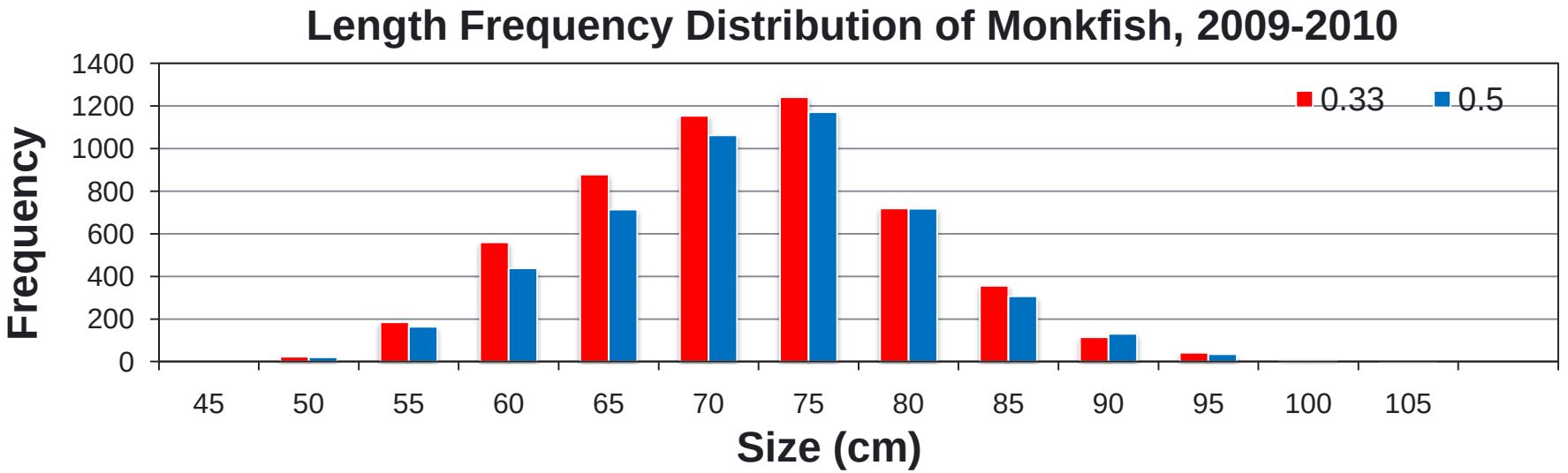
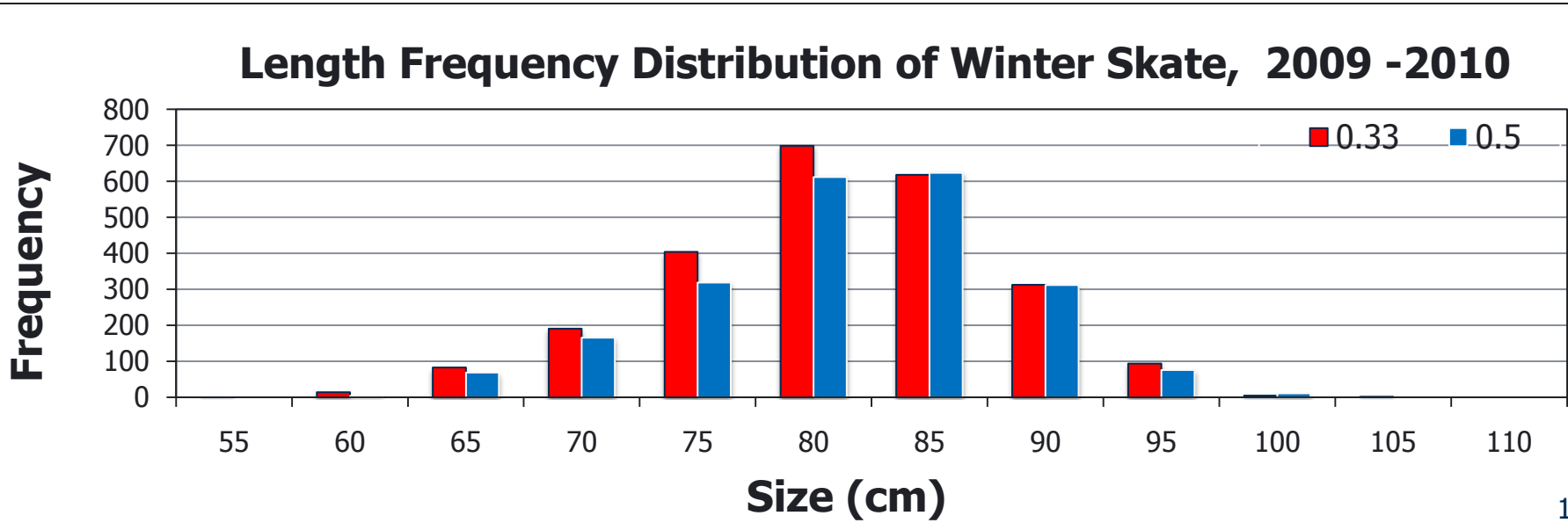
Results (con't)





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Conclusions

- Number of targeted fish greater in gear hung on the 0.33.
- Number of incidental takes greater in gear hung on the 0.50, except number of harbor porpoise were greater in gear hung on the 0.33– **differences not significantly different from zero.**

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Take Home Messages

- Hanging ratio does not appear to decrease harbor porpoise / marine mammal bycatch, but the results of this work have provided managers information that can help them make better informed decisions.

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Future Research Suggestions

- Increase bridle/spacing between nets
- Other types of pingers with scanning frequencies
- Reconfigure with tie down at every float




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