# Harbor Porpoise Bycatch
# in the Northeast Multispecies Sink Gillnet Fishery
# and the
# Mid-Atlantic Coastal Gillnet Fishery
# in 1998 and during January-May 1999

by

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# ABSTRACT

This report provides estimates of the bycatch of harbor porpoise (*Phocoena phocoena*) in USA Atlantic coast commercial sink/bottom gillnet fisheries in 1998 and during January through May 1999. The incidental coast-wide catch of harbor porpoise was estimated to be 778 animals in 1998 and 207 animals during January-May 1999. In the Northeast multispecies sink gillnet fishery, the estimated bycatch of harbor porpoise in 1998 was 332 animals (CV = 46%, 95% CI = 170-728) and 154 animals (CV= 42%, 95% CI =5-248) during January-May 1999. In the Mid-Atlantic coastal gillnet fishery, estimated bycatch in 1998 was 446 harbor porpoise (CV = 36 %, 95% CI = 294-894) and 53 harbor porpoise (CV = 54%, 95% CI = 3-106) in January-May 1999.

# INTRODUCTION

The Harbor porpoise (*Phocoena phocoena*) is the most common cetacean species incidentally caught in commercial fishing gear off the northeastern coast of the United States, largely due to takes in gillnet fisheries. During 1993-1997, the average annual bycatch of harbor porpoise in USA gillnet fisheries was 1,519 animals, with 1,161 animals taken in the Northeast multispecies sink gillnet fishery and 358 in the Mid-Atlantic coastal gillnet fishery (Waring *et al.* 1999). This high annual take - relative to the Potential Biological Removal level (PBR = 483 animals) - led to the formation of Harbor Porpoise Take Reduction Teams in both the Gulf of Maine and Mid-Atlantic regions and the implementation of a Take Reduction Plan (TRP) on 1 December 1998. The major goal of the TRP is to reduce the bycatch of harbor porpoise to below PBR within six months after plan implementation. The TRP uses three general means to reduce incidental takes of harbor porpoise in gillnet fisheries: (1) complete gillnet fishery area closures; (2) partial gillnet fishery area closures which only allow fishing by gillnets equipped with acoustic deterrent devices ("pingers"); and (3) gear modifications.

The Northeast Fisheries Science Center (NEFSC) of the National Marine Fisheries Service (NMFS) has monitored harbor porpoise bycatch in USA Atlantic coastal sink/bottom gillnet fisheries since the early 1990s (Bravington and Bisack 1996; Bisack 1997; Waring *et al.* 1999). Bycatch estimates are developed by NEFSC staff and reviewed by the Atlantic Scientific Review Group during preparation of the annual *U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessment Report* (SAR). Each SAR typically reports bycatch estimates that predate the publication of the SAR by two years (*e.g.*, the SAR published in 1998 reported bycatch estimates for 1996). However, the bycatch estimation process had to be accelerated in 1999 to evaluate whether the TRP met the six-month goal of reducing harbor porpoise bycatch to below PBR.

In this report, estimates are provided of harbor porpoise bycatch in 1998 and during January-May 1999. Separate estimates are presented for the Northeast multispecies sink gillnet fishery and for the Mid-Atlantic coastal gillnet fishery.

# NORTHEAST MULTISPECIES SINK GILLNET FISHERY

The 1998 (January-December) and 1999 (January-May) estimates of harbor porpoise bycatch in the Northeast multispecies sink gillnet fishery were 332 (CV=46%, 95% CI=170-728) and 154 (CV=42%, 95% CI=5-248) animals, respectively. Table 1 summarizes the marine mammal time/area restrictions and closures in place in 1998 and 1999. Table 2 summarizes additional time/area restrictions in the multispecies fishery during 1999 implemented under Framework Adjustments 26 and 27 to the Northeast Multispecies Fishery Management Plan.

## Methods

Methods used to estimate harbor porpoise bycatch in 1998 and 1999 were similar to those used to estimate bycatch in 1996 and 1997. Three databases were used: (1) the NEFSC Sea Sampling [Fishery Observer Program] database was used to estimate the average bycatch of harbor porpoise

per observed ton of fish caught; (2) the Northeast Dealer Report database was used to determine the total quantity (in weight) of all species landed in the Northeast multispecies sink gillnet fishery; and (3) the Northeast Vessel Trip Report (VTR) database was used to allocate (prorate) the sink gillnet landings in the Northeast Dealer Report database into spatially/temporally defined strata (season/port group or area/closures). These strata were defined by fishery characteristics and harbor porpoise migratory patterns. Due to changes in reporting requirements implemented in 1994, a port group stratification was developed as an alternative to the historical stratification of fish landings by Statistical Area. Port groups were defined by Bisack (1997) who reviewed the Northeast sink gillnet fishery characteristics and harbor porpoise migratory patterns. As harbor porpoise takes in some new areas beginning in 1997, two new area strata were to the analysis: (1) an East Cape Cod port group; and (2) an offshore area.

Observed sea sampling hauls were divided into two types: (1) hauls in which the gillnets were equipped with "pingers"; and (2) gillnet hauls without "pingers". The two data sets were then further categorized by season/port group-area/closure (Table 3). When a harbor porpoise take occurred in an area that was only open to fishing with pingered nets, only observed hauls with pingers were used to compute the bycatch rate. Observed hauls with pingers that occurred outside of 'pinger-only' areas were not included in the bycatch rate calculations for those areas. Occasionally a harbor porpoise is taken in a pingered net in an unregulated ('no pingers') area - and vice versa. In these cases, both pingered and nonpingered hauls were used to compute a weighted mean bycatch rate for the time/area stratum in which the take occurred. The weighted bycatch rate from the pooled hauls was then used to estimate the mortality. For example, during fall 1998, one harbor porpoise was observed taken in a net with an active pinger in the South Cape stratum where pingers were not required. Therefore, the pingered hauls from this stratum (n=6) were pooled with the non-pingered hauls (n=152). The mean harbor porpoise bycatch rate for the stratum was then weighted by the total hauls (n=158).

The Northeast dealer database is presently considered the most reliable source of information on the quantity of commercial fish landings. Since May 1994 however, the dealer database has lacked the spatial information (i.e. area fished) needed to determine where fish were caught in the ocean. The VTR database, which contains spatial information was therefor used to allocate the dealer landings by area. VTR information on month, latitude, longitude, port landed, and catch was utilized to prorate the sink gillnet landings recorded in the dealer database to the port group-area or closure strata used in estimating bycatch. The VTR landings data were grouped by month/port group-area/closure and then pooled by the season/port group-area strata. The seasonal proportion of fish landed was determined for each stratum and multiplied by the dealer reported landings from the same stratum (Table 4). Total harbor porpoise bycatch was estimated by multiplying the observed harbor porpoise bycatch rate for each stratum by the prorated dealer reported landings assigned to that stratum and then summing over strata. Bootstrapping techniques (Bravington and Bisack 1996) were used to compute coefficients of variation (CVs) and 95% confidence intervals (CIs) for each of the strata specific bycatch estimates.

**Results**

<u>1998 Harbor Porpoise Bycatch</u>

A total of eleven harbor porpoise were observed taken in the Northeast multispecies sink gillnet fishery during 1998 (Table 5). Seven were taken during the winter season, zero during the summer and four during the fall. Nine of the eleven animals were taken on nets without pingers (Figure 3). No observed takes occurred on pingered nets during the winter. Two animals were taken on pingered nets during the fall (Figure 4). One of these two pingered takes occurred in a stratum (South Cape) not closed or regulated by pingers.

The total annual bycatch of harbor porpoise taken in the 1998 sink gillnet fishery was 332 (CV=46%, 95 %CI=170-728) animals. Observed coverage of the commercial fishery was 3.5% and 5.7% during the winter and fall seasons, respectively. An estimated 240 (CV=55%, 95% CI=98-609) animals were killed during the winter and 92 (CV=89%, 95% CI=4-283) during the fall. Approximately twice as many tons of fish were landed during fall than winter. Winter accounted for the majority (240/332=72%) of the harbor porpoise takes, and during this season approximately half (47%) of the porpoises were caught in offshore waters. During the summer season, harbor porpoise are typically not in the region, therefore bycatch is negligible or zero.

<u>1999 (January-May) Harbor Porpoise Bycatch</u>

A total of five harbor porpoise were observed taken in the Northeast multispecies sink gillnet fishery during the winter (Jan-May) (Table 6). Four of the animals were taken on one trip, in 3 separate hauls, in nets fished without pingers in the unregulated offshore stratum (Figure 5). The remaining animal as was caught on a pingered net in the pinger regulated South Cape closure area (Figure 6).

The preliminary bycatch estimate of harbor porpoise caught in the fishery during January through May 1999 is 154 (CV=42%, 95% CI=5-248) animals. Observed coverage of the commercial fishery during this period was 2.8%. Approximately one quarter (1130/5360=21%) of the fish landings came from the offshore closure area where observer coverage was 3.4%. Another quarter (1240/5360=23%) of the fish landings came from the South cape area where observer coverage was less than 1%..

**MID-ATLANTIC COASTAL GILLNET FISHERY**

The 1998 and 1999 (January-May) harbor porpoise bycatch estimates for the Middle Atlantic coastal gillnet fishery were 446 (CV=36%, 95% CI=294-894) and 53 (CV=54%, 95% CI=3-106) animals, respectively. Gear restrictions and time and area closures implemented during 1999 are listed in Table 7.

## METHODS

Methods used to estimate harbor porpoise bycatch in 1998 and 1999 were generally consistent with the methodology used to estimate bycatch in 1996 and 1997. However separate consideration was given to the two gillnet gear types (drift coastal gillnet and bottom coastal gillnet) observed in the Mid-Atlantic region.

Two sources of data were used to estimate harbor porpoise bycatch mortality in the Mid-Atlantic coastal gillnet fishery: 1) The NEFSC Sea Sampling [Fishery Observer Program] database was used to estimate the mean bycatch rate of harbor porpoise per observed ton of fish caught; (2) the Northeast Dealer Report database was used to determine the total quantity (in weight) of all species landed within the coastal gillnet fishery.

Prior to 1999, 50% of observed fishing trips were limited fish sampling trips (all hauls in a trip are observed for marine mammals). During 1999 the protocol used to in the Northeast multispecies sink gillnet fishery was applied to this fishery (i.e. 80% of all trips are limited fish sampling). Only limited fish sampling trips were used in the 1999 bycatch analysis. The 1998 analysis used both limited and complete sampling trips. Both the observer and dealer data sets were subdivided into strata defined by gear type, month, port, county and state. Observer coverage details of the Mid-Atlantic gillnet fisheries during 1998 and 1999 are provided in the Appendix.

Prior to 1998, two gillnet gear types (drift coastal gillnet and bottom coastal gillnet) were combined in estimating the mean bycatch rate of harbor porpoise in the Mid-Atlantic coastal gillnet fishery. Drift coastal gillnets have a smaller mesh size than bottom coastal gillnets and are typically utilized to catch mostly shad and menhaden. Bottom coastal gillnet catches are mostly mixed groundfish (primarily monkfish and dogfish). As the two gear types have different catch compositions and possibly different harbor porpoise bycatch rates, bycatch estimates were derived separately for each gear type.

Bycatch estimates are a product of the observed harbor porpoise bycatch rate multiplied by the dealer reported landings (within strata). Standard bootstrapping techniques were used to compute coefficients of variation and 95% confidence intervals for the bycatch estimates.

## Results

### 1998 Harbor Porpoise Bycatch

A total of 51 observed harbor porpoise takes occurred in the Mid-Atlantic bottom coastal sink gillnet fishery in 1998 (Table 8). All of the takes occurred in two strata off the states of New Jersey and Maryland. Off the coast of New Jersey, 47 harbor porpoise were taken between February and May, and one in December. Three animals were caught off the coast of Maryland in February and March (Figure 8). No harbor porpoise takes were observed in the drift coastal gillnet fishery (Figure 9).

The total annual bycatch estimate of harbor porpoise by the bottom coastal sink gillnet fishery was 446 (CV=36%, 95% CI=294-894). Coverage of this fishery during the first quarter within Ocean county New Jersey and Worcester county Maryland was 14% and 13, respectively (see Appendix). An estimate of 416 animals were taken by fishing effort that came from the state of New Jersey. An estimate of 30 animals were taken by fishing effort that came from the state of Maryland. Only 18% of the effort (tons of fish) from Ocean County New Jersey was landed during the first quarter of the year. This is when the harbor porpoise bycatch occurred. In contrast, 69% of the fishing effort from Worcester county Maryland was landed during the first quarter, also when the harbor porpoise bycatch occurred.

1999 (January-May) Harbor Porpoise Bycatch

In contrast to the 1998 analysis, all the observed harbor porpoise (3) were taken by the drift coastal gillnet fishery (Table 9). No harbor porpoise were observed taken within the bottom coastal sink gillnet fishery (Figure 10). All the animals were taken from one strata, Worcester county Maryland, during the month of March (Figure 11).

The total annual (through May) bycatch estimate of Harbor Porpoise by the drift coastal gillnet fishery was 53 (CV=54%, 95% C.=3-106). Coverage of this fishery during the first quarter within Worcester county Maryland was 5%.

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Table 1.   Marine mammal time and area closures and restrictions for the Northeast multispecies sink gillnet fishery during 1998 and 1999.

| 1998[*] | Pingers Required | 1999[*] | Pingers Required |
|---|---|---|---|
| **Northeast**<br>August 15 - September 13 | N<br>(Complete Closure) | **Northeast**<br>August 15-September 13 | N<br>(Complete Closure) |
| **Midcoast**<br>March 25 - April 25,<br>September 15 - December 31 | <br>Y<br>Y | **Midcoast**<br>September 15 - May 31,<br>2000 | <br>Y |
| **Mass Bay**<br>March 1- March 30<br>December 1 - 31 | N<br>(Complete Closure)<br>Y | **Mass Bay**<br>January 1 - May 31<br>Except March 1-31 | <br>Y<br>N<br>(Complete Closure) |
| **South Cape**<br>March 1- March 30<br>December 1 - 31 | N<br>(Complete Closure)<br>Y | **South Cape**<br>January 1 - May 31<br>Except March 1-31 | <br>Y<br>N<br>(Complete Closure) |
| **Offshore**<br>December 1-31 | <br>Y | **Offshore**<br>January 1- May 31<br>November 1 - December 31 | <br>Y<br>Y |
| **Cashes Ledge**<br>December 1 - 31 | <br>Y | **Cashes Ledge**<br>January 1 - May 31<br>Except February 1 -28/29<br><br>November 1 - December 31 | <br>Y<br>N<br>(Complete Closure)<br>Y |

[*] See Figure 1 for map of closure areas.

Table 2.   Fishery related time/area closures in effect during the last four months of the 1998 fishing year (January 1, 1999-April 30, 1999) and the 1999 fishing year (May 1, 1999-April 30, 2000), implemented under Frameworks 26 and 27 to the Northeast Multispecies Fisheries Management Plan.

| Closure Area [*] | Time Period |
|---|---|
| GM2 and GM3a | May 1-May 31, 1999 |
| GM2 | April 1-April 30, 2000 |
| GM3b | May 1-June 30, 1999 |
| GM4 | June 1-June 30, 1999 |
| Cashes Ledge | July 1-Oct 31, 1999 |
| MB1 | February 1-29, 1999 |
| | Oct 1-Nov 30, 1999 |
| | March 1-April 30, 2000 |
| GM1 | February 1-29, 1999 |
| | March 1-April 30, 2000 |
| Inshore Closure Areas I and II | April 1- 30, 1999 |
| WGOM | Year Round |

[*] See Figure 2 for map of closure areas.

Table 3: Port group-areas closure stratification used to estimate harbor porpoise bycatch in the Northeast multispecies sink gillnet fishery.

|  | 1998 Winter/Summer/Fall | 1999 Winter/Summer/Fall |
|---|---|---|
| Port Group-Area | Northern Maine | Northern Maine |
|  | Southern Maine | Southern Maine |
|  | New Hampshire | New Hampshire |
|  | North of Boston | North of Boston |
|  | South of Boston | South of Boston |
|  | South of Cape Cod | South of Cape Cod |
|  | East of Cape Cod | East of Cape Cod |
|  | Offshore Area | Offshore Area[*] |
| Closures[**] | Northeast | Northeast |
|  | Midcoast | Midcoast |
|  | Mass Bay | Mass Bay |
|  | South Cape | South Cape |
|  | - | Offshore |
|  | - | Cashes Ledge |
|  | Cape Cod Bay | Cape Cod Bay |
|  | Great South Channel | Great South Channel |

[*] Represents the area outside of the offshore closure boundaries.
[**] See Figure 1 for location of these closures.

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Table 4. The 1998 and 1999 dealer reported fish landings (tons) and vessel trip report (VTR) effort allocation percentages by season/port group-area/closure. Only the seasons where harbor porpoise takes were observed are present.

| | | | % VTR Landings In Each Stratum Associated With The Port Group - Area | | | | | |
|---|---|---|---|---|---|---|---|---|
| Season | Port Group-Area | Total Dealer Reported Landings (Tons) | Port Group - Area (within itself) | Midcoast Closure | Mass Bay Closure | South Cape Closure | Offshore Area | Total Percentage within Port Group-Area |
| 1998 Winter | | | | | | | | |
| | N. Maine | 34 | 1.0 | | | | | 1.0 |
| | S. Maine | 319 | .14 | .01 | | | .85 | 1.0 |
| | New Hampshire | 638 | .35 | .14 | | | .51 | 1.0 |
| | N. Boston | 1334 | .60 | .03 | .00 | | .37 | 1.0 |
| | S. Boston | 615 | .99 | .00 | .00 | | .01 | 1.0 |
| | E. Cape Cod | 380 | .96 | | | | .04 | 1.0 |
| | S. Cape Cod | 1294 | .98 | | | .00 | .02 | 1.0 |
| 1998 Fall | | | | | | | | |
| | N. Maine | .12 | 1.0 | | | | | 1.0 |
| | S. Maine | 434 | .21 | .08 | | | .71 | 1.0 |
| | New Hampshire | 889 | .16 | .49 | | | .35 | 1.0 |
| | N. Boston | 2465 | .49 | .31 | | | .20 | 1.0 |
| | S. Boston | 1209 | .90 | .00 | | | .10 | 1.0 |
| | E. Cape Cod | 1894 | .99 | | | | .01 | 1.0 |
| | S. Cape Cod | 1560 | .97 | | | | .03 | 1.0 |

Table 4 (continued).

| Season | Port Group-Area | Total Dealer Reported Landings (Tons) | Port Group-Area (within itself) | Midcoast Closure | Mass Bay Closure | South Cape Closure | Offshore Area | Offshore Closure | Cashes Ledge Closure | Great South Channel | Total Percentage within Port Group-Area |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1999 Winter | N. Maine | 36 | .38 | | | | .12 | .50 | | | 1.0 |
| | S. Maine | 435 | <.01 | | | | .60 | .40 | | | 1.0 |
| | New Hampshire | 517 | <.01 | .11 | | | .06 | .80 | .03 | | 1.0 |
| | N. Boston | 1124 | .32 | .10 | .05 | | .07 | .46 | | | 1.0 |
| | S. Boston | 382 | .74 | <.01 | .25 | | | .01 | | | 1.0 |
| | E. Cape Cod | 858 | .97 | | | | | | | .03 | 1.0 |
| | S. Cape Cod | 2008 | .62 | | | .38 | | | | | 1.0 |

Table 5.   1998 harbor porpoise bycatch estimates for the Northeast multispecies sink gillnet fishery by season/port group-area/closure.

| Winter (Jan-May) | Observed Tons | Prorated Dealer Tons | Coverage (Tons) % | Observed Takes | Bycatch Rate (Takes/Ton) | Estimated Takes | C.V. | 95% C.I. |
|---|---|---|---|---|---|---|---|---|
| **Port Group Strata** | | | | | | | | |
| Northern Maine | - | 33.80 | 0.00 | - | - | - | | |
| Southern Maine | - | 43.68 | 0.00 | - | - | - | | |
| New Hampshire | 4.08 | 221.74 | 1.84 | 0 | 0.000 | 0 | | |
| North of Boston | 38.59 | 798.43 | 4.83 | 2 | 0.052 | 41 | 75% | 0-114 |
| South of Boston | 39.66 | 608.41 | 6.52 | 1 | 0.025 | 15 | 104% | 0-54 |
| South Cape | 37.14 | 1273.28 | 2.92 | 2 | 0.054 | 69 | 64% | 0-158 |
| East Cape | 21.09 | 365.11 | 5.78 | 0 | 0.000 | 0 | | |
| Offshore Area | 19.41 | 1113.64 | 1.74 | 2 | 0.103 | 115 | 103% | 0-459 |
| **Closure Strata** | | | | | | | | |
| Midcoast Closure | 1.25 | 135.48(135.43)b | 0.92 | 0 | 0.000 | 0 | | |
| Mass Bay Closure | - | 7.36 | 0.00 | - | - | - | | |
| Cape Cod Bay Closure | - | 0.00 | - | - | - | - | | |
| South Cape Closure | - | 0.81 | 0.00 | - | - | - | | |
| Great S. Channel Closure | - | 13.12 | 0.00 | - | - | - | | |
| Subtotal | 161.21 | 4614.86 | 3.49 | 7 | | 240 | 55% | 98-609 |
| **Summer (Jun-Aug)** | | | | | | | | |
| **Port Group Strata** | | | | | | | | |
| Northern Maine | 0.93 | 206.99 | 0.45 | 0 | 0.000 | 0 | | |
| Southern Maine | - | 368.49 | 0.00 | - | - | - | | |
| New Hampshire | 50.85 | 1104.49 | 4.60 | 0 | 0.000 | 0 | | |
| North of Boston | 68.88 | 3418.71 | 2.01 | 0 | 0.000 | 0 | | |
| South of Boston | 51.34 | 1359.85 | 3.78 | 0 | 0.000 | 0 | | |
| South Cape | 30.33 | 645.90 | 4.70 | 0 | 0.000 | 0 | | |
| East Cape | 43.37 | 1265.66 | 3.43 | 0 | 0.000 | 0 | | |
| Offshore Area | 8.04 | 1475.50 | 0.54 | 0 | 0.000 | 0 | | |
| **Closure Strata** | | | | | | | | |
| Northeast Closure | - | - | - | - | - | - | | |
| Great S. Channel Closure | - | 21.57 | 0.00 | - | - | - | | |
| Subtotal | 253.73 | 9867.16 | 2.57 | 0 | 0.00 | 0.00 | | |

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| Fall (Sep-Dec) | Observed Tons | Prorated Dealer Tons | Coverage (Tons)% | Observed Takes | Bycatch Rate Take/Ton | Estimated Takes | C.V. | 95% C.I. |
|---|---|---|---|---|---|---|---|---|
| **Port Group Strata** | | | | | | | | |
| Northern Maine | - | 0.12 | 0.00 | - | - | - | | |
| Southern Maine | 0.28 | 91.34 | 0.30 | 0 | 0.000 | 0 | | |
| New Hampshire | 12.71 | 146.48 | 8.67 | 2 | 0.157 | 23 | 102% | 0-92 |
| North of Boston | 122.76 | 1197.12(1196.6)a | 10.25 | 0 | 0.000 | 0 | | |
| South of Boston | 57.25 | 1086.63 | 5.27 | 0 | 0.000 | 0 | | |
| South Cape | 95.52 | 1512.93(1511.85)a | 6.31 | 0 (1)[c] | 0 (0.035)[e] | 53 | 104% | 1-202 |
| East Cape | 105.25 | 1880.55 | 5.60 | 0 | 0.000 | 0 | | |
| Offshore Area | 12.82 | 1280.55 | 1.00 | 0 | 0.000 | 0 | | |
| **Closure Strata** | | | | | | | | |
| Midcoast Closure | 77.52 | 1255.64(1251.83)b | 6.17 | (1)[c] | (0.013)[d] | 16 | 103% | 0-58 |
| Subtotal | 484.10 | 8451.36 | 5.73 | 4 | | 92 | 89% | 4-283 |
| 1998 Total | | | | 11 | | 332 | 46% | 170-728 |

[a] Dealer tons landed with sea sampled landings from pingered hauls removed.

[b] Dealer tons landed with sea sampled landings from non-pingered hauls removed.

[c] Takes from hauls with active pingers.

[d] Take per ton for pingered hauls only.

[e] Weighted bycatch rate applied to fall South Cape stratum (both pingered, n=6, and nonpingered, n=152, hauls combined).

Table 6. 1999 Winter (January-May)[*] harbor porpoise bycatch estimates for the Northeast multispecies sink gillnet fishery by season/port group-area/closure.

| Winter (Jan-May) | Observed Tons | Dealer Tons | Coverage (Tons)% | Observed Takes | Bycatch Rate Take/Ton | Estimated Takes | C.V. | 95% C.I. |
|---|---|---|---|---|---|---|---|---|
| **Port Group-Area** | | | | | | | | |
| Northern Maine | - | 13.69 | - | - | - | - | | |
| Southern Maine | - | 0.16 | - | - | - | - | | |
| New Hampshire | 0.01 | 2.18 | 0.00 | 0 | 0.000 | 0 | | |
| North of Boston | 23.76 | 359.52 | 6.61 | 0 | 0.000 | 0 | | |
| South of Boston | 19.75 | 282.87 | 6.98 | 0 | 0.000 | 0 | | |
| South Cape | 3.26 | 1239.95 | 0.00 | 0 | 0.000 | 0 | | |
| East Cape | 26.12 | 831.86 | 3.14 | 0 | 0.000 | 0 | | |
| Offshore Area | 7.32 | 371.36 | 1.97 | 4 | 0.077[c] | 117 | 45.00% | 4-137 |
| **Closure Strata** | | | | | | | | |
| Offshore Closure | 38.54 | 1130.46 | 3.41 | 0 | 0.000 | 0 | | |
| Cashes Ledge Closure | 1.18 | 16.68 | 7.08 | 0 | 0.000 | 0 | | |
| Midcoast Closure | 1.49 | 163.02 | 0.91 | 0 | 0.000 | 0 | | |
| Mass Bay Closure | 8.88 | 154.27 | 5.75 | 0 | 0.00 | 0 | | |
| Cape Cod Bay Closure | - | 0.00 | - | - | - | - | | |
| South Cape Closure | 22.11 | 768.21 | 2.88 | 1[e] | 0.05[d] | 38 | 99.00% | 1-127 |
| Great S. Channel Closure | 0.57 | 26.19 | 2.17 | - | - | - | | |
| Subtotal | 152.42 | 5360.42 | 2.84 | 5 | | 154 | 42.00% | 5-248 |

[c] Takes from hauls with active pingers.

[d] Take per ton for pingered hauls only.

[e] Weighted bycatch rate applied to one pooled offshore stratum (offshore area+offshore and cashes ledge closures combined equal the pooled offshore stratum).

[*] An estimate for the first quarter of 1999 (Jan.-Apr.) was also produced to meet the requirements of a civil action against the NMFS. The first quarter estimate of harbor porpoise bycatch = 104 animals.

Table 7.  Marine mammal gear restrictions and time and area closures in place for the Mid-Atlantic coastal gillnet fishery during 1999.

| Area [1] | Time | Mesh Size Restrictions |
|---|---|---|
| Mudhole | February 15-March 15 | Closed to all large[2] and small[3] mesh gillnets. |
| New Jersey | January 1-April 30 | Large and small mesh gillnets allowed. |
|  | April 1-20 | Closed to all large mesh gillnets. |
| Southern Mid-Atlantic | February 1-April 30 | Large and small mesh gillnets allowed. |
|  | February 15-March 15 | Closed to all large mesh gillnets. |

[1] See Figure 7 for map of these areas.

[2] Large mesh is defined as mesh >=7.0 inches.

[3] Small mesh is defined as mesh >=5.0 inches and <7.0 inches.

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Table 8.    1998 harbor porpoise bycatch estimates for the Mid-Atlantic coastal sink gillnet fishery by port, county state, and month.

| Port | County | State | Month | Observed Tons | Dealer Tons | Coverage (Tons) % | Observed Takes | Bycatch Rate Take/Ton | Estimated Takes | C.V. | 95% C.I. |
|------|--------|-------|-------|---------------|-------------|-------------------|----------------|-----------------------|-----------------|------|----------|
| Ocean City | Worcester | MD | Feb-Mar [a] | 62 | 621 | 0.10 | 3 | 0.048 | 30 | 74% | 3-87 |
| Pt. Pleasant | Ocean | NJ | Feb-Apr [b] | 58 | 480 | 0.12 | 46 | 0.796 | 382 | 23% | 234-581 |
| Pt. Pleasant | Ocean | NJ | May | 27 | 222 | 0.12 | 1 | 0.037 | 8 | 96% | 1-27 |
| Pt. Pleasant | Ocean | NJ | Dec | 7 | 184 | 0.04 | 1 | 0.143 | 26 | 482% | 1-427 |
| Total | | | | | | | 51 | Total | 446 | 36% | 294-894 |

[a] Months February and March were pooled after a chi-square analysis showed no significant difference among the harbor porpoise bycatch rates for these months.

[b] Months February through April were pooled after a chi-square analysis showed no significant difference among the harbor porpoise bycatch rates for these months.

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Table 9. The 1999 (Jan-May) harbor porpoise bycatch estimates for the Mid-Atlantic drift coastal gillnet fishery by port, county, state, and month.

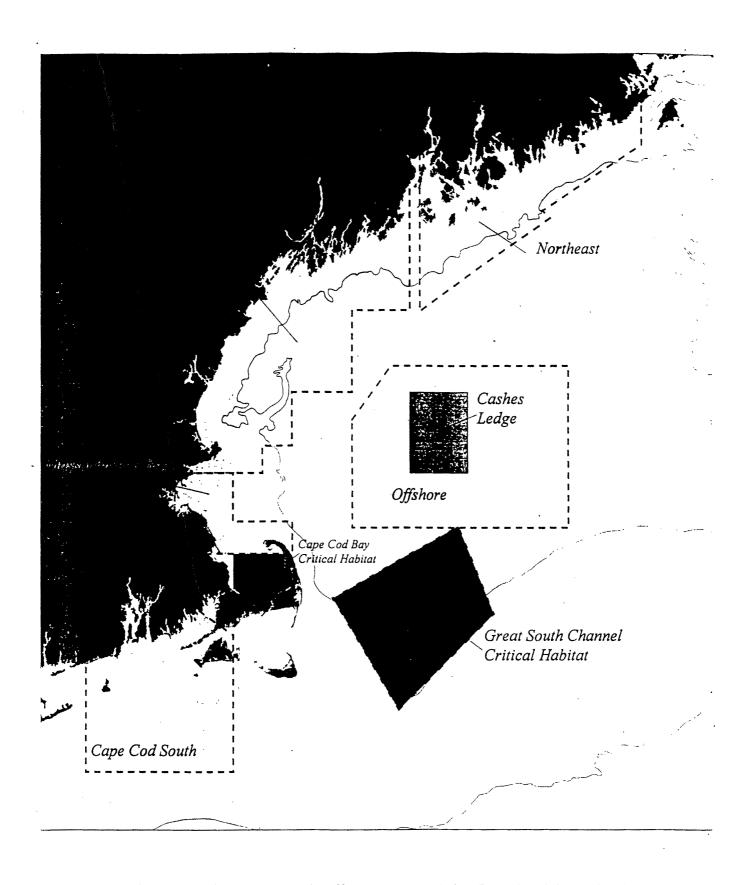| Port | County | State | Month | Observed Tons | Dealer Tons | Coverage (Tons) % | Observed Takes | Bycatch Rate Take/Ton | Estimated Takes | C.V. | 95% C.I. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ocean City | Worcester | MD | Mar. | 1 | 16 | 6.34 | 3 | 3.359 | 53 | 54% | 3-106 |
| Total | | | | | | | 3 | Total | 53 | 54% | 3-106 |

Figure 1. Marine mammal closure areas in effect under the Harbor Porpoise Take Reduction Plan (HPTRP).
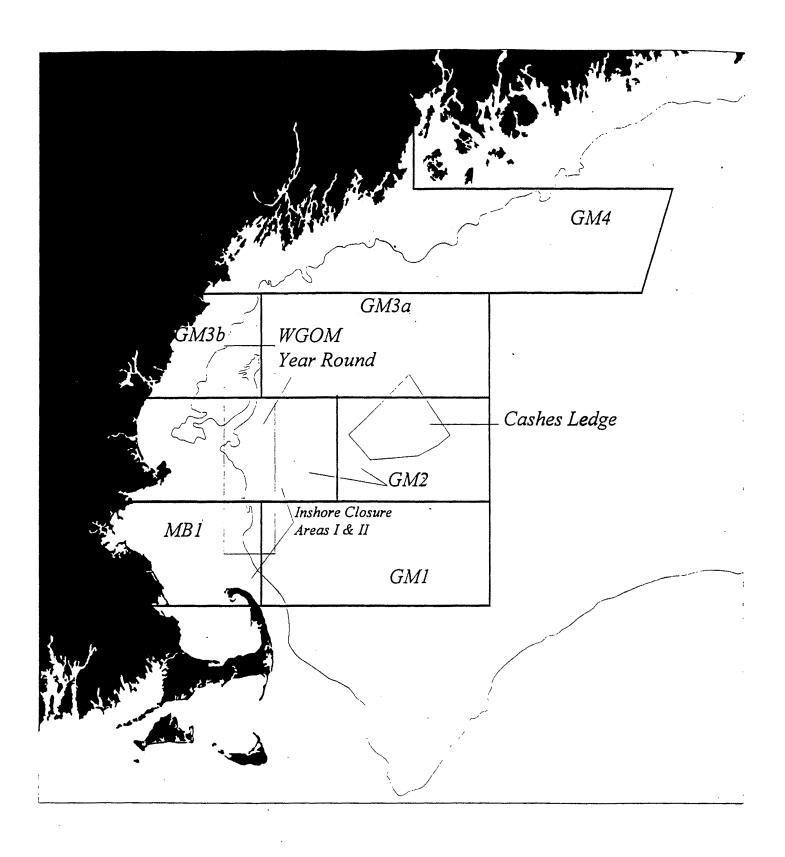
Figure 2.  Fishery related time and area closures in effect from January 1 - December 31, 1999, implemented under Frameworks 26 and 27 to the Northeast Multispecies Fishery Management Plan.
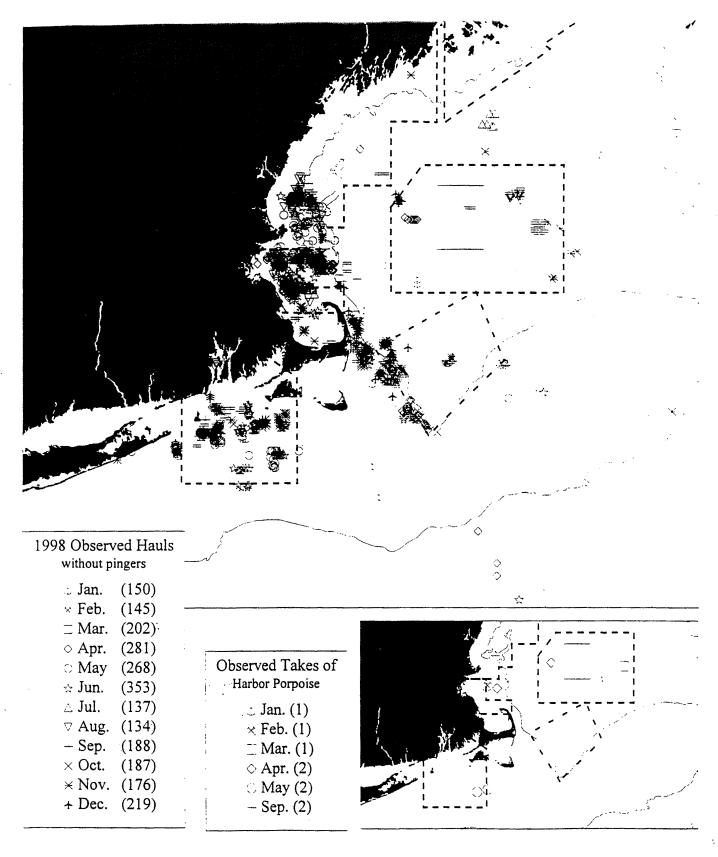
1998 Observed Hauls
without pingers

- ⊾ Jan.  (150)
- × Feb.  (145)
- ⁻ Mar.  (202)
- ◇ Apr.  (281)
- ○ May  (268)
- ☆ Jun.  (353)
- △ Jul.  (137)
- ▽ Aug.  (134)
- − Sep.  (188)
- × Oct.  (187)
- ✳ Nov.  (176)
- ＋ Dec.  (219)

Observed Takes of
Harbor Porpoise

- ⊾ Jan. (1)
- × Feb. (1)
- ⁻ Mar. (1)
- ◇ Apr. (2)
- ○ May (2)
- − Sep. (2)

Figure 3.   Observed Northeast multispecies sink gillnet fishery hauls and harbor porpoise takes
without active marine mammal devices (pingers) during the 1998 NEFSC Fisheries
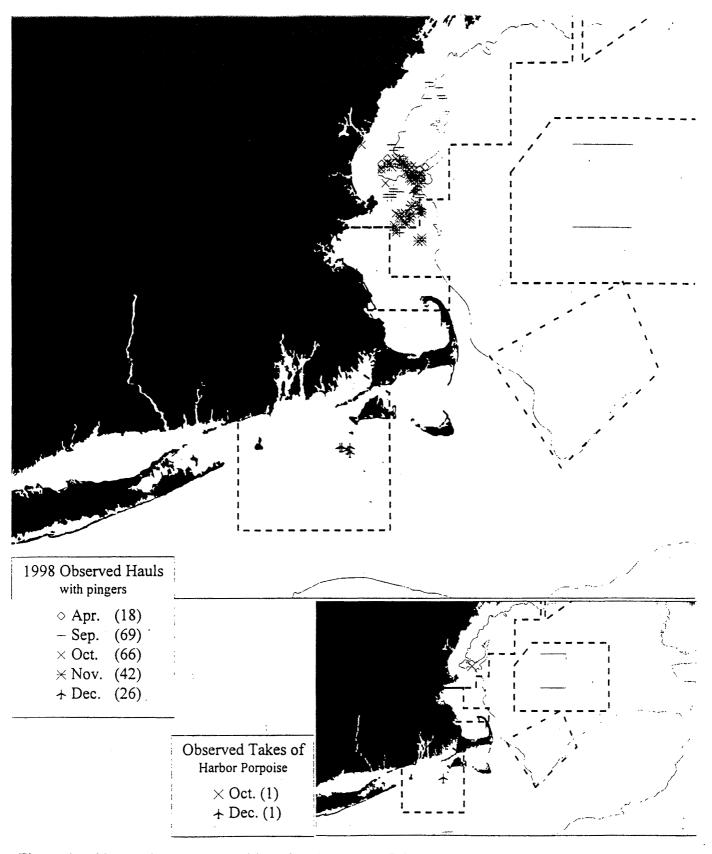Sea Sampling Program.

**1998 Observed Hauls**
with pingers

◇ Apr.  (18)
— Sep.  (69)
× Oct.  (66)
✳ Nov.  (42)
+ Dec.  (26)

**Observed Takes of**
Harbor Porpoise

× Oct. (1)
+ Dec. (1)

Figure 4.   Observed Northeast multispecies sink gillnet fishery hauls and harbor porpoise takes
with active marine mammal devices (pingers) during the 1998 NEFSC Fisheries Sea
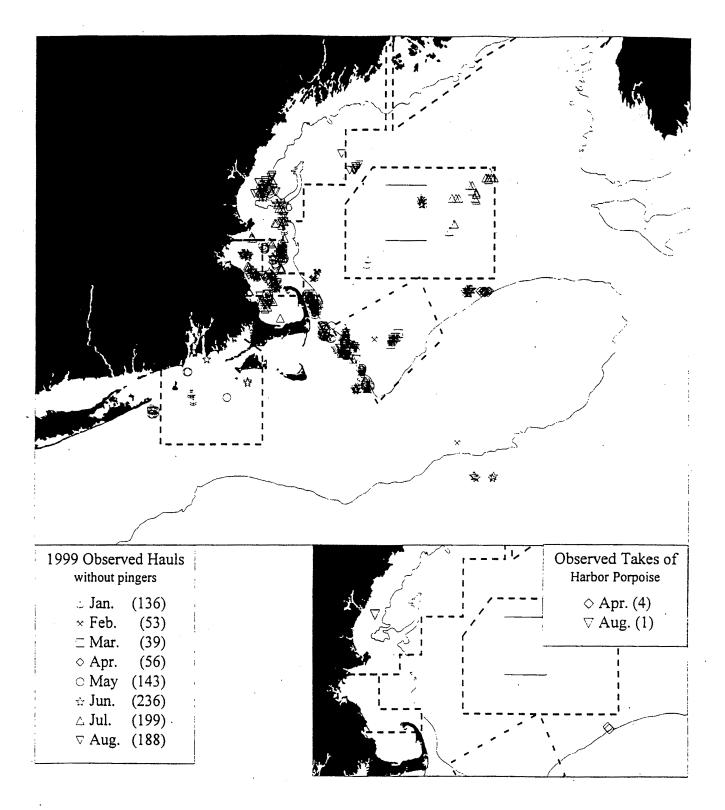Sampling Program.

**1999 Observed Hauls**
without pingers

⌐ Jan.　(136)
× Feb.　(53)
⌐ Mar.　(39)
◇ Apr.　(56)
○ May　(143)
☆ Jun.　(236)
△ Jul.　(199)
▽ Aug.　(188)

**Observed Takes of**
Harbor Porpoise

◇ Apr. (4)
▽ Aug. (1)

Figure 5.　Observed Northeast multispecies sink gillnet fishery hauls and harbor porpoise takes without active marine mammal devices (pingers) during the 1999 NEFSC Fisheries Sea Sampling Program.
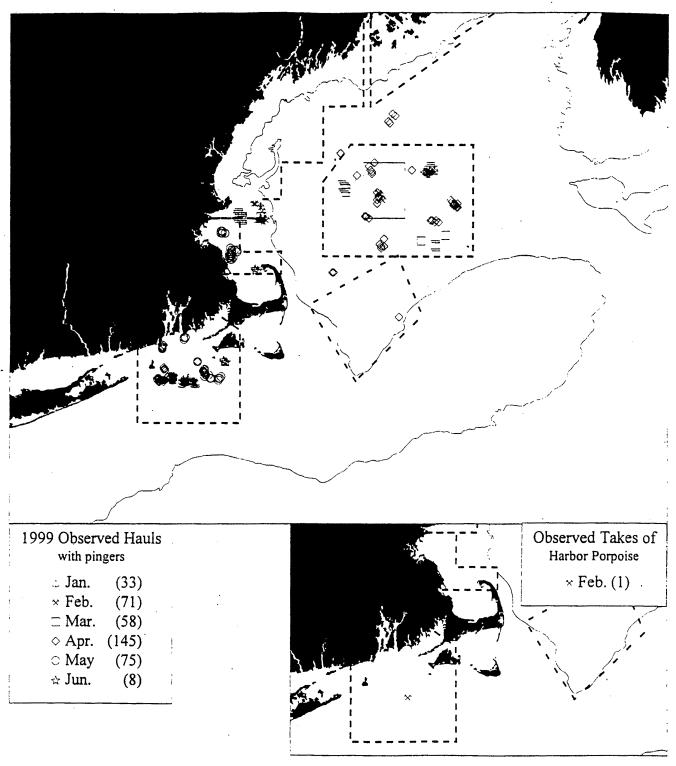
Figure 6. Observed Northeast multispecies sink gillnet fishery hauls and harbor porpoise takes
with active marine mammal devices (pingers) during the 1999 NEFSC Fisheries
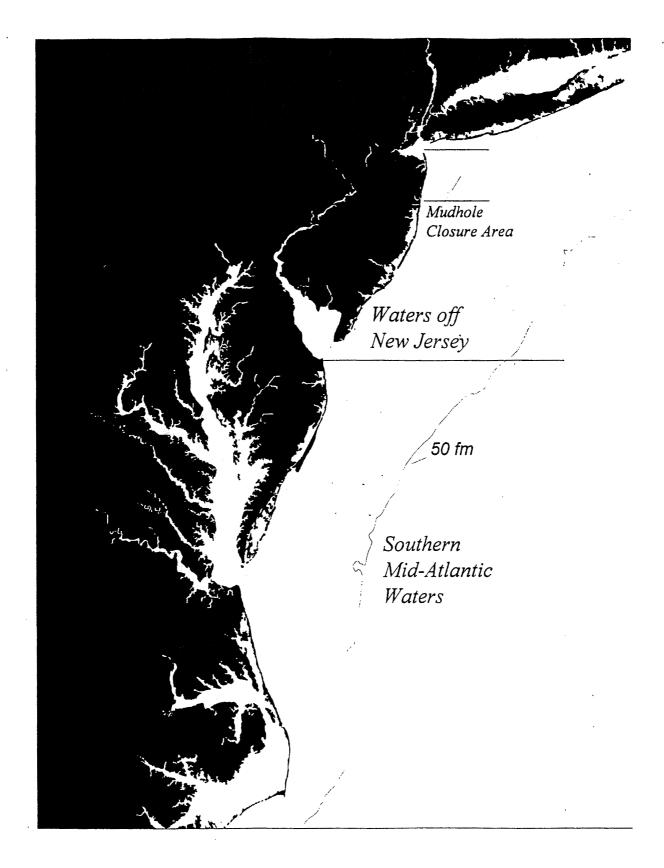Sea Sampling Program.

Figure 7.  Marine mammal closures in effect in the Mid-Atlantic region under the Harbor Porpoise Take Reduction Plan (HPTRP).

1998 Observed Hauls
Bottom Coastal Sink Gillnet

∴ Jan.   (178)
⊻ Feb.   (341)
⊏ Mar.   (379)
◇ Apr.   (309)
⌃ May   (112)
✩ Jun.   (190)
⊥ Jul.   (101)
⊤ Aug.   (51)
− Sep.   (75)
⌃ Oct.   (175)
⤬ Nov.   (221)
✛ Dec.   (237)

Observed Takes of
Harbor Porpoise

⤬ Feb. (21)
⊏ Mar. (20)
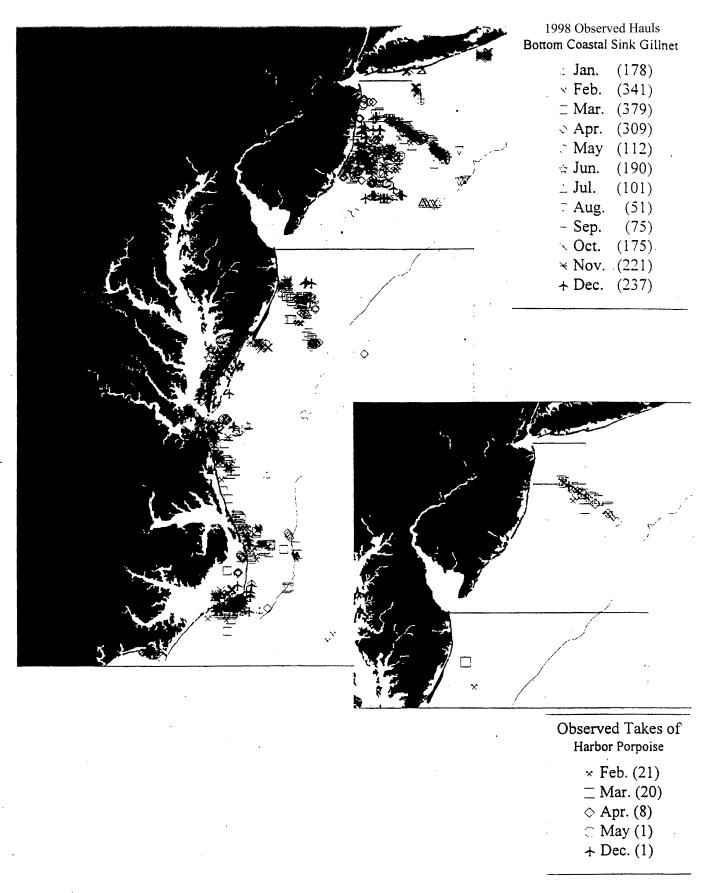◇ Apr. (8)
⊂ May (1)
✛ Dec. (1)

Figure 8.   Observed Mid-Atlantic bottom coastal sink gillnet fishery hauls and harbor porpoise
takes during the 1998 NEFSC Fisheries Sea Sampling Program.

1998 Observed Hauls
Drift Coastal Gillnet

⊐ Mar. (11)
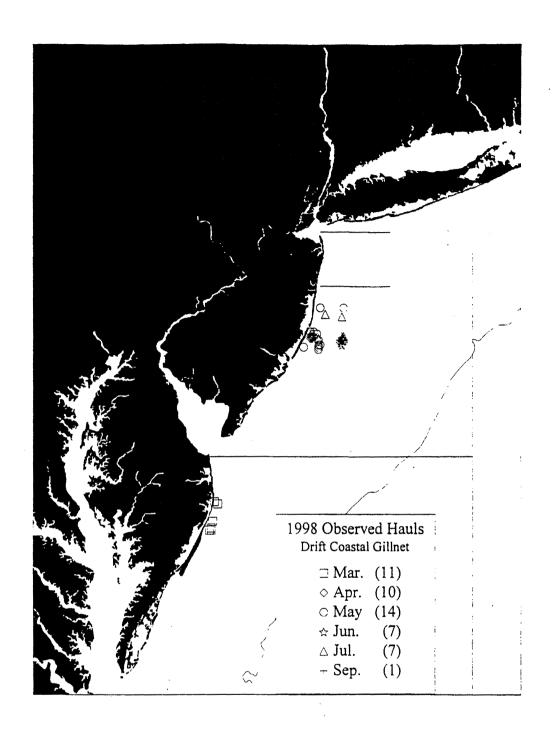◇ Apr. (10)
○ May (14)
☆ Jun. (7)
△ Jul. (7)
+ Sep. (1)

Figure 9. Observed Mid-Atlantic drift coastal gillnet fishery hauls during the 1998 NEFSC Fisheries Sea Sampling Program. No harbor porpoise takes were observed.

1999 Observed Hauls
Bottom Coastal Sink Gillnet

∴ Jan. (256)
⨯ Feb. (163)
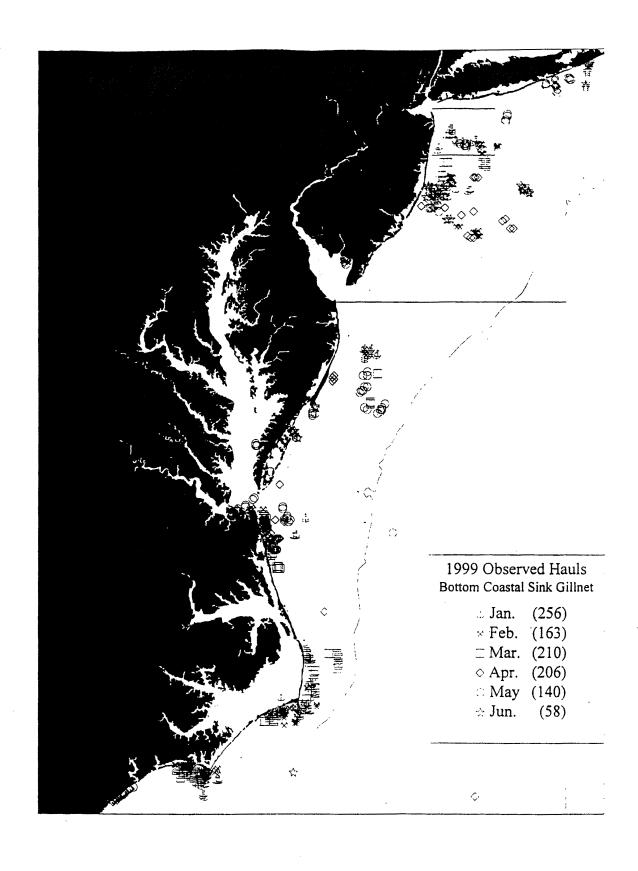⊐ Mar. (210)
◇ Apr. (206)
⌣ May (140)
☆ Jun. (58)

Figure 10. Observed Mid-Atlantic bottom coastal sink gillnet fishery hauls during the 1999 NEFSC Fisheries Sea Sampling Program. No harbor porpoise takes were observed.

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1999 Observed Hauls
Drift Coastal Gillnet

× Feb.  (9)
☐ Mar.  (31)
◇ Apr.  (41)
○ May  (2)
☆ Jun.  (1)

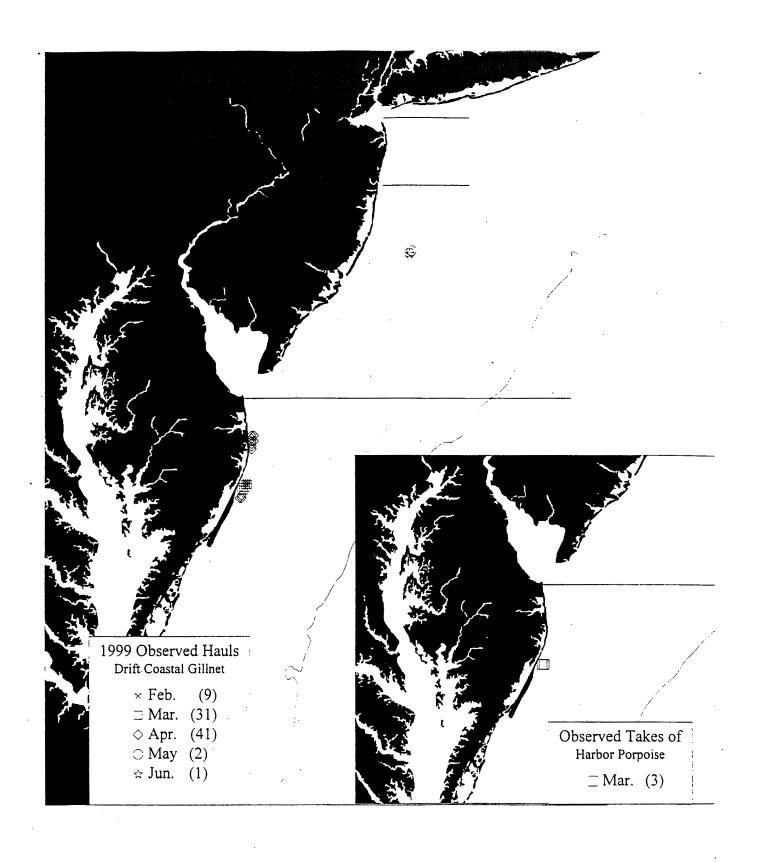Observed Takes of
Harbor Porpoise

☐ Mar.  (3)

Figure 11. Observed Mid-Atlantic drift coastal gillnet fishery hauls and harbor porpoise takes
during the 1999 (Jan.-Jun.)NEFSC Fisheries Sea Sampling Program.

NEFSC fisheries sea sampling program coverage of the 1998 Mid-Atlantic bottom coastal gillnet fishery and the 1999 (Jan.-Apr.) drift coastal gillnet fishery.

NEFSC Fisheries Sea Sampling program coverage of the 1998 Mid-Atlantic coastal gillnet fishery.

| State | County | Month | Landings (mt) | Observed (mt) | Coverage |
|---|---|---|---|---|---|
| Connecticut | New London | 1 | 21.40 | | |
| | | 2 | 6.06 | | |
| | | 4 | 1.79 | | |
| | | 5 | 35.05 | | |
| | | 6 | 17.05 | | |
| | | 7 | 3.95 | | |
| | | 10 | 3.23 | | |
| | | 11 | 13.12 | | |
| | | 12 | 2.44 | | |
| Maryland | Worcester | 1 | 317.26 | 61.46 | 0.19 |
| | | 2 | 180.10 | 14.68 | 0.08 |
| | | 3 | 440.99 | 47.74 | 0.11 |
| | | 4 | 159.97 | 17.37 | 0.11 |
| | | 5 | 178.30 | | |
| | | 6 | 37.17 | | |
| | | 7 | 37.57 | | |
| | | 8 | 0.16 | | |
| | | 9 | 0.04 | | |
| | | 10 | 3.18 | | |
| | | 11 | 102.89 | 5.67 | 0.06 |
| | | 12 | 142.45 | 6.90 | 0.05 |
| | St. Marys | 1 | | | |
| | | 2 | | | |
| | | 3 | | | |
| | | 11 | | | |
| | | 12 | | | |
| | Charles | 1 | | | |
| | | 2 | | | |
| | | 3 | | | |
| | | 11 | | | |
| | | 12 | | | |
| New Jersey | Atlantic | 2 | | | |
| | | 3 | | | |
| | | 4 | | | |
| | | 5 | 10.37 | | |
| | | 10 | 4.21 | | |
| | | 11 | 1.67 | | |
| | Cape May | 1 | 9.98 | | |
| | | 2 | 2.67 | | |
| | | 3 | 3.71 | | |
| | | 4 | 13.02 | | |
| | | 5 | 33.94 | | |
| | | 6 | 30.32 | | |
| | | 7 | 0.02 | | |
| | | 9 | 1.22 | | |
| | | 10 | | | |
| | | 11 | 17.30 | | |
| | | 12 | 34.86 | | |
| | Cumberland | 1 | | | |
| | | 2 | | | |
| | | 3 | | | |
| | | 4 | 42.64 | | |
| | | 5 | | | |
| | Essex | 3 | | | |
| | Ocean | 1 | 278.57 | 19.09 | 0.07 |
| | | 2 | 192.90 | 35.59 | 0.18 |
| | | 3 | 72.48 | 20.63 | 0.28 |
| | | 4 | 214.87 | 32.13 | 0.15 |
| | | 5 | 222.18 | 44.76 | 0.20 |
| | | 6 | 154.49 | 13.40 | 0.09 |
| | | 7 | 19.89 | 5.58 | 0.28 |
| | | 8 | 7.93 | 4.15 | 0.52 |
| | | 9 | 23.07 | 3.59 | 0.16 |
| | | 10 | 190.82 | 29.39 | 0.15 |
| | | 11 | 693.47 | 11.21 | 0.02 |
| | | 12 | 644.45 | 51.06 | 0.08 |

| State | County | | | | |
|---|---|---|---|---|---|
| | Salem | 4 | | | |
| New York | Kings | 4 | | | |
| | | 10 | 2.21 | | |
| | Nassau | 4 | 4.36 | | |
| | | 5 | 3.75 | | |
| | | 6 | 3.42 | | |
| | | 7 | 2.09 | | |
| | | 8 | 6.37 | | |
| | | 9 | 25.25 | | |
| | | 10 | 3.88 | . | . |
| | | 11 | 0.30 | | |
| | Rockland | unknown | | | |
| | Suffolk | 1 | 8.70 | 1.64 | 0.19 |
| | | 2 | 1.67 | | |
| | | 3 | 1.43 | | |
| | | 4 | 61.53 | | |
| | | 5 | 439.76 | | |
| | | 6 | 363.86 | | |
| | | 7 | 123.54 | 0.03 | 0.00 |
| | | 8 | 87.21 | | |
| | | 9 | 116.10 | | |
| | | 10 | 112.19 | 6.99 | 0.06 |
| | | 11 | 179.25 | 2.56 | 0.01 |
| | | 12 | 70.51 | | |
| | | unknown | | | |
| | Westchester | unknown | | | |
| North Carolina | Beaufort | 11 | 0.11 | | |
| | Brunswick | 10 | | 2.87 | |
| | | 11 | | 3.07 | |
| | Carteret | 1 | 0.91 | | |
| | | 2 | | | |
| | | 3 | 23.80 | 1.52 | 0.06 |
| | | 4 | 10.19 | 1.63 | 0.16 |
| | | 5 | 8.10 | | |
| | | 6 | 1.79 | | |
| | | 7 | 1.21 | 0.38 | 0.32 |
| | | 8 | 3.23 | 0.44 | 0.14 |
| | | 9 | 5.01 | 0.30 | 0.06 |
| | | 10 | 20.30 | 0.35 | 0.02 |
| | | 11 | 2.46 | 0.70 | 0.28 |
| | | 12 | | 1.80 | |
| | Cumberland | 11 | | 0.05 | |
| | Currituck | 12 | | 0.04 | |
| | Dare | 1 | 344.71 | 20.17 | 0.06 |
| | | 2 | 627.78 | 55.38 | 0.09 |
| | | 3 | 1092.19 | 56.35 | 0.05 |
| | | 4 | 4012.47 | 11.98 | 0.00 |
| | | 5 | 77.32 | 0.60 | 0.01 |
| | | 6 | 23.62 | | |
| | | 7 | 9.99 | | |
| | | 8 | 10.00 | 0.20 | 0.02 |
| | | 9 | 16.43 | 0.05 | 0.00 |
| | | 10 | 135.46 | 1.52 | 0.01 |
| | | 11 | 51.81 | 5.98 | 0.12 |
| | | 12 | 150.55 | 17.94 | 0.12 |
| | Hyde | 1 | 36.85 | | |
| | | 2 | 98.45 | | |
| | | 3 | 56.42 | 1.21 | 0.02 |
| | | 4 | 0.58 | 5.68 | 9.72 |
| | | 5 | 2.46 | 1.97 | 0.80 |
| | | 6 | 0.23 | | |
| | | 7 | | | |
| | | 8 | 0.12 | | |
| | | 9 | 5.14 | | |
| | | 10 | 29.52 | 0.46 | 0.02 |
| | | 11 | 38.76 | 1.05 | 0.03 |
| | | 12 | 12.71 | 0.43 | 0.03 |
| | Onslow | 4 | | 0.63 | |
| | | 11 | | 0.52 | |
| | Pamlico | 1 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | 2 | | | |
| | | 3 | | | |
| | | 4 | 0.08 | | |
| | | 8 | 0.03 | | |
| | | 10 | 0.13 | | |
| | | 11 | 0.00 | | |
| | | 12 | 0.00 | | |
| Virginia | Accomac | 1 | 63.24 | | |
| | | 2 | 46.46 | | |
| | | 3 | 54.55 | | |
| | | 4 | 45.08 | | |
| | | 5 | 276.41 | 3.29 | 0.01 |
| | | 6 | 51.04 | 16.06 | 0.31 |
| | | 7 | 4.61 | ·1.89 | 0.41 |
| | | 8 | 4.02 | | |
| | | 9 | 5.27 | | |
| | | 10 | 4.11 | 1.69 | 0.41 |
| | | 11 | 38.98 | 0.61 | 0.02 |
| | | 12 | 123.48 | 0.16 | 0.00 |
| | Charles City | 3 | | | |
| | | 4 | | | |
| | Newport News | 1 | | | |
| | | 2 | 0.03 | | |
| | | 3 | | | |
| | | 4 | 0.61 | | |
| | | 5 | | | |
| | | 6 | 0.00 | | |
| | | 7 | 0.27 | | |
| | | 8 | 0.53 | | |
| | | 9 | 0.30 | | |
| | | 10 | 0.08 | | |
| | | 11 | 0.12 | | |
| | | 12 | 0.27 | | |
| | Norfolk | 1 | | 5.94 | |
| | | 2 | | 0.11 | |
| | | 3 | 0.01 | | |
| | | 4 | 0.04 | 3.93 | 106.32 |
| | | 5 | 0.77 | 0.18 | 0.23 |
| | | 6 | 0.02 | 1.36 | 61.90 |
| | | 7 | 0.09 | 0.18 | 2.06 |
| | | 8 | 0.20 | | |
| | | 9 | 0.43 | 0.59 | 1.37 |
| | | 10 | 0.13 | | |
| | | 11 | 0.00 | 5.44 | 5436.50 |
| | | 12 | | 0.34 | |
| | Portsmouth | 1 | | | |
| | | 2 | | | |
| | | 3 | | | |
| | | 4 | 0.05 | | |
| | | 5 | 0.40 | | |
| | | 6 | | | |
| | | 7 | | | |
| | | 8 | 0.03 | | |
| | | 9 | | | |
| | | 10 | | | |
| | | 11 | | | |
| | | 12 | | | |
| | Essex | 1 | 0.01 | | |
| | | 3 | | | |
| | | 4 | | | |
| | | 5 | | | |
| | | 9 | 0.01 | | |
| | | 10 | 0.01 | | |
| | | 11 | | | |
| | | 12 | | | |
| | Chesapeake | 11 | 0.05 | | |
| | Fairfax | 10 | | | |
| | | 11 | | | |
| | Hampton | 1 | | | |
| | | 2 | | | |

| County | # | | | |
|---|---|---|---|---|
| | 3 | 0.02 | | |
| | 4 | 4.79 | | |
| | 5 | 2.06 | 0.41 | 0.20 |
| | 6 | 0.47 | | |
| | 7 | 1.62 | 0.55 | 0.34 |
| | 8 | 0.75 | 1.00 | 1.33 |
| | 9 | 2.52 | 0.58 | 0.23 |
| | 10 | 2.62 | | |
| | 11 | 4.41 | 0.21 | 0.05 |
| | 12 | 1.10 | | |
| Gloucester | 1 | | | |
| | 2 | | | |
| | 3 | 0.75 | | |
| | 4 | 5.54 | | |
| | 5 | 2.23 | | |
| | 6 | 2.26 | | |
| | 7 | 0.15 | | |
| | 8 | 0.76 | | |
| | 9 | 2.68 | | |
| | 10 | 4.08 | | |
| | 11 | 2.68 | | |
| | 12 | 0.60 | | |
| Isle of Wight | 1 | | | |
| | 2 | | | |
| | 3 | | | |
| | 4 | | | |
| | 5 | | | |
| | 6 | | | |
| | 8 | 0.00 | | |
| | 11 | | | |
| | 12 | 0.04 | | |
| James City | 1 | | | |
| | 2 | 0.10 | | |
| | 3 | 0.53 | | |
| | 4 | 0.02 | | |
| | 5 | | | |
| | 6 | | | |
| | 9 | | | |
| | 10 | | | |
| | 11 | 0.00 | | |
| | 12 | 0.20 | | |
| King & Queen | 1 | | | |
| | 2 | | | |
| | 3 | | | |
| | 4 | | | |
| | 10 | | | |
| | 11 | 0.01 | | |
| | 12 | 0.00 | | |
| King George | 1 | | | |
| | 2 | | | |
| | 3 | | | |
| | 4 | | | |
| | 11 | | | |
| | 12 | | | |
| King William | 1 | | | |
| | 2 | | | |
| | 3 | 0.02 | | |
| | 4 | 0.12 | | |
| | 7 | | | |
| | 10 | | | |
| Lancaster | 1 | | | |
| | 2 | | | |
| | 3 | 0.01 | | |
| | 4 | 1.37 | | |
| | 5 | 0.82 | | |
| | 6 | 0.62 | | |
| | 7 | 0.26 | | |
| | 8 | 1.29 | | |
| | 9 | 2.28 | | |
| | 10 | 3.44 | | |

| | | | | | |
|---|---|---|---|---|---|
| | | 11 | 0.84 | | |
| | | 12 | 0.37 | | |
| Mathews | | 2 | | | |
| | | 3 | 0.02 | | |
| | | 4 | 1.99 | | |
| | | 5 | 1.81 | | |
| | | 6 | 1.05 | | |
| | | 7 | 0.25 | | |
| | | 8 | 2.16 | | |
| | | 9 | 3.93 | | |
| | | 10 | 2.40 | | |
| | | 11 | 0.15 | | |
| | | 12 | 0.28 | | |
| Middlesex | | 1 | | | |
| | | 2 | 1.43 | | |
| | | 3 | 0.03 | | |
| | | 4 | 0.84 | | |
| | | 5 | 0.87 | | |
| | | 6 | 0.50 | | |
| | | 7 | 1.35 | | |
| | | 8 | 0.35 | | |
| | | 9 | 2.27 | | |
| | | 10 | 1.54 | | |
| | | 11 | 0.68 | | |
| | | 12 | 0.09 | | |
| C. Suffolk | | 1 | | | |
| | | 2 | | | |
| | | 3 | | | |
| | | 4 | 0.00 | | |
| | | 5 | 0.01 | | |
| | | 6 | | | |
| | | 7 | | | |
| | | 8 | 0.04 | | |
| | | 9 | 0.01 | | |
| | | 10 | 0.05 | | |
| | | 11 | 0.01 | | |
| | | 12 | | | |
| New Kent | | 4 | 0.15 | | |
| Northampton | | 1 | | | |
| | | 2 | 0.18 | | |
| | | 3 | 0.30 | | |
| | | 4 | 0.82 | | |
| | | 5 | 2.84 | | |
| | | 6 | 7.25 | 1.04 | 0.14 |
| | | 7 | 0.12 | | |
| | | 8 | 0.16 | | |
| | | 9 | 3.24 | | |
| | | 10 | 3.77 | | |
| | | 11 | 1.43 | | |
| | | 12 | 1.33 | | |
| Northumberland | | 1 | | | |
| | | 2 | | | |
| | | 3 | 0.18 | | |
| | | 4 | 0.77 | | |
| | | 5 | 1.49 | | |
| | | 6 | 0.51 | | |
| | | 7 | 0.20 | | |
| | | 8 | 0.15 | | |
| | | 9 | 0.46 | | |
| | | 10 | 0.98 | | |
| | | 11 | 0.33 | | |
| | | 12 | 0.00 | | |
| Prince George | | 2 | | | |
| | | 3 | | | |
| | | 10 | | | |
| | | 11 | | | |
| | | 12 | | | |
| Virginia Beach | | 1 | 891.35 | | |
| | | 2 | 326.53 | 4.79 | 0.01 |
| | | 3 | 76.81 | 16.28 | 0.21 |

| | | | | | |
|---|---|---|---|---|---|
| | | 4 | 33.03 | 3.87 | 0.12 |
| | | 5 | 16.43 | | |
| | | 6 | 14.57 | | |
| | | 7 | 0.42 | | |
| | | 8 | 2.34 | 0.01 | 0.00 |
| | | 9 | 9.28 | | |
| | | 10 | 5.40 | | |
| | | 11 | 18.86 | 2.94 | 0.16 |
| | | 12 | 95.29 | 8.29 | 0.09 |
| | Princ William | 1 | | | |
| | | 2 | | | |
| | | 3 | | | |
| | | 4 | | | |
| | | 11 | | | |
| | | 12 | | | |
| | Richmond | 1 | 0.11 | | |
| | | 2 | 0.12 | | |
| | | 3 | 0.06 | | |
| | | 4 | 0.40 | | |
| | | 5 | 0.03 | | |
| | | 6 | 0.00 | | |
| | | 7 | | | |
| | | 8 | | | |
| | | 9 | 0.02 | | |
| | | 10 | 0.04 | | |
| | | 11 | 0.09 | | |
| | | 12 | 0.00 | | |
| | Stafford | 1 | | | |
| | | 2 | | | |
| | | 3 | 0.10 | | |
| | | 4 | | | |
| | | 10 | | | |
| | | 11 | | | |
| | | 12 | | | |
| | Surry | 1 | | | |
| | | 2 | | | |
| | | 3 | | | |
| | | 4 | 0.16 | | |
| | | 5 | | | |
| | | 6 | | | |
| | | 7 | | | |
| | | 11 | | | |
| | | 12 | | | |
| | Westmoreland | 1 | | | |
| | | 2 | | | |
| | | 3 | 0.39 | | |
| | | 4 | 0.50 | | |
| | | 5 | 0.93 | | |
| | | 6 | 0.01 | | |
| | | 7 | 0.01 | | |
| | | 8 | 0.30 | | |
| | | 9 | 0.89 | | |
| | | 10 | 0.53 | | |
| | | 11 | 0.02 | | |
| | | 12 | ·1.51 | | |
| | York | 1 | | | |
| | | 2 | | | |
| | | 3 | 0.17 | | |
| | | 4 | 3.01 | | |
| | | 5 | 5.50 | | |
| | | 6 | 0.16 | | |
| | | 7 | 1.15 | | |
| | | 8 | 0.58 | | |
| | | 9 | 1.97 | | |
| | | 10 | 2.24 | | |
| | | 11 | 2.37 | | |
| | | 12 | 0.28 | | |

NEFSC Fisheries Sea Sampling Program coverage of the 1999 (Jan.-Apr.) Mid-Atlantic Coastal drift gillnet fishery.

| State | County | | | | |
|---|---|---|---|---|---|
| Delaware | Sussex | 4 | | 0.63 | |
| | Unknown | 3 | 0.22 | | |
| Maryland | Worcester | 1 | 1.52 | | |
| | | 2 | 1.73 | 0.25 | 0.15 |
| | | 3 | 15.76 | 0.89 | 0.06 |
| | | 4 | 16.37 | 0.65 | 0.04 |
| | Not Specified | 1 | 19.53 | | |
| | | 2 | 10.59 | | |
| | | 3 | 5.66 | | |
| | | 4 | 7.93 | | |
| | St. Marys | 1 | 0.61 | | |
| | | 2 | 1.52 | | |
| | | 3 | 5.73 | | |
| | Charles | 1 | 7.95 | | |
| | | 2 | 7.47 | | |
| | | 3 | 45.70 | | |
| New Jersey | Atlantic | 4 | 8.58 | | |
| | Cape May | 1 | | | |
| | | 2 | | | |
| | | 3 | 0.44 | | |
| | | 4 | 7.95 | | |
| | Cumberland | 1 | 1.23 | | |
| | | 3 | 2.83 | | |
| | | 4 | 0.00 | 0.11 | |
| | Essex | 3 | | | |
| | Ocean | 1 | 15.87 | | |
| | | 2 | 0.51 | | |
| | | 3 | 0.03 | | |
| | | 4 | 53.06 | | |
| New York | Kings | 4 | 0.07 | | |
| | Nassau | 4 | 0.16 | | |
| | Suffolk | 1 | | | |
| | | 2 | | | |
| | | 3 | 2.13 | | |
| | | 4 | 3.01 | | |
| North Carolina | Carteret | 1 | 57.47 | | |
| | | 2 | 45.95 | | |
| | | 3 | 0.15 | | |
| | | 4 | | | |
| | Dare | 1 | 410.66 | | |
| | | 2 | 391.75 | | |
| | | 3 | 581.42 | | |
| | | 4 | 136.95 | | |
| | Hyde | 1 | 100.68 | | |
| | | 2 | 119.69 | | |
| | | 3 | 119.86 | | |
| | | 4 | 18.90 | | |
| | Pamlico | 1 | 0.02 | | |
| | | 2 | | | |
| | | 3 | | | |
| | | 4 | | | |
| Virginia | Accomac | 1 | 1.85 | | |
| | | 2 | 19.24 | | |
| | | 3 | 62.01 | | |
| | | 4 | 75.75 | | |
| | Charles City | 3 | 0.84 | | |
| | | 4 | 1.17 | | |
| | Newport News | 1 | 0.25 | | |
| | | 2 | 8.76 | | |
| | | 3 | 15.34 | | |
| | | 4 | 2.05 | | |
| | Norfolk | 3 | 1.17 | | |
| | | 4 | 0.95 | | |
| | Portsmouth | 4 | 0.10 | | |
| | Essex | 3 | 0.95 | | |

34

| | | 4 | 0.60 | | |
|---|---|---|---|---|---|
| | Chesapeake | 3 | 0.01 | | |
| | | 4 | 0.01 | | |
| | Hampton | 2 | 7.05 | | |
| | | 3 | 19.46 | | |
| | | 4 | 64.33 | | |
| | Gloucester | 1 | 0.35 | | |
| | | 2 | 12.78 | | |
| | | 3 | 100.80 | | |
| | | 4 | 35.32 | | |
| | Isle of Wight | 2 | 1.49 | | |
| | | 3 | 3.93 | | |
| | James City | 1 | 0.49 | | |
| | | 2 | 24.42 | | |
| | | 3 | 16.82 | | |
| | | 4 | 3.18 | | |
| | King & Queen | 4 | 2.63 | | |
| | King George | 1 | 10.84 | | |
| | | 2 | 5.44 | | |
| | | 3 | 14.86 | | |
| | | 4 | 4.17 | | |
| | King William | 1 | 0.01 | | |
| | | 2 | 0.01 | | |
| | | 3 | 0.06 | | |
| | | 4 | 0.03 | | |
| | Lancaster | 1 | 0.79 | | |
| | | 2 | 0.19 | | |
| | | 3 | 5.02 | | |
| | | 4 | 10.25 | | |
| | Mathews | 2 | 0.07 | | |
| | | 3 | 6.54 | | |
| | | 4 | 12.66 | | |
| | Middlesex | 1 | 0.37 | | |
| | | 2 | 2.84 | | |
| | | 3 | 13.86 | | |
| | | 4 | 14.63 | | |
| | C. Suffolk | 2 | 1.33 | | |
| | | 3 | 3.22 | | |
| | New Kent | 4 | 0.44 | | |
| | Northampton | 1 | | | |
| | | 2 | 2.46 | | |
| | | 3 | 5.09 | | |
| | | 4 | 4.16 | | |
| | Northumberland | 1 | 0.16 | | |
| | | 2 | 0.33 | | |
| | | 3 | 6.36 | | |
| | | 4 | 2.32 | | |
| | Prince George | 2 | 0.55 | | |
| | | 3 | 0.61 | | |
| | Virginia Beach | 1 | 3.04 | | |
| | | 2 | 115.17 | | |
| | | 3 | 130.05 | | |
| | | 4 | 65.32 | | |
| | Princ William | 1 | 0.24 | | |
| | | 2 | 1.43 | | |
| | | 3 | 3.36 | | |
| | Richmond | 1 | 4.84 | | |
| | | 2 | 5.97 | | |
| | | 3 | 11.00 | | |
| | | 4 | 3.09 | | |
| | Spotsylvania | 3 | 0.89 | | |
| | Stafford | 1 | 4.31 | | |
| | | 2 | 12.99 | | |
| | | 3 | 47.62 | | |
| | | 4 | 13.18 | | |
| | Surry | 1 | 6.17 | | |
| | | 2 | 2.48 | | |
| | | 3 | 1.77 | | |
| | Westmoreland | 1 | 1.90 | | |
| | | 2 | 10.27 | | |

| | | | 3 | 51.16 | | |
|---|---|---|---|---|---|---|
| | | | 4 | 4.46 | | |
| | | York | 1 | 0.02 | | |
| | | | 2 | 0.25 | | |
| | | | 3 | 2.88 | | |
| | | | 4 | 11.19 | | |