

20. Fishery Removals (pelagic fisheries, demersal fisheries, discards)

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Landings

Commercial Landings

Data on U.S. and (where appropriate) Canadian landings (live weight in metric tons) of demersal and pelagic managed species from the years 1996-2000 were obtained from five general sources. Priority was given to sources that already compiled data into the ecoregion geographic classification. In some cases, various Stock Assessment Workshop (SAW) documents (<http://www.nefsc.noaa.gov/nefsc/saw>) and the related Groundfish Assessment Review Meeting (GARM) report (NEFSC 2002) provided data in the exact form necessary (e.g., Atlantic sea scallop from the 39th SAW and American plaice from the GARM report). In most cases, however, the available information was reported either for combinations of ecoregions (GARM [2002] and SAW documents) or for spatial units other than ecoregions (i.e., by Statistical Region or by State in the NMFS commercial database, including the small pelagic species, squids, and the remainder of the megabenthos). In either case, expert opinion from staff in the Population Dynamics Branch was used to allocate the values to the ecoregions. When only total regional landings were available, the expert opinion of one of the team members was relied on to allocate landings (bluefish, cusk, red hake, silver hake, white hake, offshore hake, river herring, black sea bass, American shad, striped bass, tilefish, Atlantic wolfish, and red crab). Landings for squid and the pelagic commercial group were obtained from NMFS data sources (CFDBS). These estimates were averaged over 1996-2000 and apportioned to the four areas by using area fished from the NMFS database. Commercial landings of large pelagic species were obtained from International Commission for the Conservation of Atlantic Tunas Standing Committee on Research and Statistics (ICCAT SCRS) reports. These data were apportioned by using distribution maps and making some assumptions about the percentage landed on the continental shelf.

Recreational Landings

Annual data (1996-2000) on the Type A (number of fish landed), Type B1 (number of fish discarded), and combined weight of both these categories were downloaded from the Marine Recreational Fisheries Statistics Survey (MRFSS) (<http://www.st.nmfs.gov/st1/recreational>) for the “all ocean combined” area of the Northeast Region (i.e., excluding bays and inland waters which lie outside the ecoregions). Given an assumption of equal size fish in both categories, Type A landings in weight (metric tons) were approximated by species. Species landings were allocated to the Gulf of Maine, Southern New England, and Mid-Atlantic Bight ecoregions in proportion to the length of each state’s contiguous shoreline. These results were aggregated by taxa.

Integrated Landings

Estimates of landings by the commercial and recreational fisheries were combined by ecoregion and averaged over 1996-2000 (Table 20.1).

Discards

Commercial Discards

Commercial discards for butterfish were obtained from the most recent stock assessment and included in the pelagic - commercial node (NEFSC 2004). No estimates of discards for herring and mackerel are available, but they are thought to be relatively small. Discard estimates for the large pelagic node were obtained from ICCAT SCRS documents. Discards for all the other groups were estimated as percentages of the landings, for example, discards for the demersal species were assumed to be 30% of landings during 1996-2000 (Alverson 1997). Discard estimates for megabenthos were assumed to be 0.0001 of biomass; gelatinous zooplankton, mesopelagics, and larval fish were assumed to be 0.000001 of biomass; and seabirds were 0.01 of biomass. Data for discards were summarized by group (node) and averaged over 1996-2000 (Table 20.2).

Recreational Discards

Total discards by the recreational fisheries is comprised of the Type B1 discard category mentioned above and mortality of Type B2 fish that are released alive (<http://www.st.nmfs.gov/st1/recreational>). Based on the same species-specific weights calculated above for Type B1 fish and the assumption of a 30% discard mortality for Type B2 fish, total discards were calculated by species for the recreational sector (metric tons). A fourth component of the MRFSS database is Type B2 fish that are released alive. Discards were allocated to ecoregion and aggregated by taxa as described above for landings.

Integrated Discards

Estimates of discards by the commercial and recreational fisheries were combined by ecoregion and averaged over 1996-2000 (Table 20.2).

References

- Alverson, DL. 1997. Global assessment of fisheries bycatch and discards: a summary overview. *In*: Pikitch, EK; Huppert, DD; and Sissenwine, MP, (eds). *Global Trends: fisheries management*. American Fisheries Society Symposium Vol. 20. p. 115-125
- Groundfish Assessment Review Meeting (GARM). 2002. Assessment of 20 Northeast groundfish stocks through 2001. A report of the Groundfish Assessment Review Meeting (GARM), Northeast Fisheries Science Center, Woods Hole, Massachusetts, October 8-11, 2002. *Northeast Fish. Sci. Cent. Ref. Doc.* 02-16; 511 p.
- Northeast Fisheries Science Center (NEFSC). 2004. Report of the 38th Northeast Regional Stock Assessment Workshop (38th SAW): Stock Assessment Review Committee (SARC) consensus summary of assessments. *Northeast Fish. Sci. Cent. Ref. Doc.* 04-03; 246 p.

Table 20.1. Average annual landings (mt) for nodes used in the Ecopath-EcoNetwrk analysis.

Node	Landings in mt			
	GOM	GB	SNE	MAB
Shrimp <i>et al.</i>	4924	0	0	0
Mesopelagics	0	0	0	0
Macrobenthos - polychaetes	0	0	0	0
Macrobenthos - crustaceans	0	0	0	0
Macrobenthos - molluscs	0	0	0	0
Macrobenthos - other	0	0	0	0
Megabenthos - filterers	7255	28287	106876	177728
Megabenthos - other	27320	1443	9788	860
Larval fish - all	0	0	0	0
Small Pelagics - commercial	69171	13056	28218	10770
Small Pelagics - other	1	0	1951	54770
Small Pelagics -anadromous	444	148	445	1377
Small Pelagics - squid	1095	1430	15865	12509
Medium Pelagics - (piscivores and other)	800	443	4137	3549
Demersals - benthivores	11274	11535	5336	1933
Demersals - omnivores	569	232	935	1680
Demersals - piscivores	23831	23206	18656	21297
Sharks - coastal	0	0	777	1460
Sharks - pelagics	19	35	74	62
Highly Migratory Species	144	149	487	607

Table 20.2. Average annual discards (mt) for nodes used in the Ecopath-Econetwrk analysis.

Node	Discards in mt			
	GOM	GB	SNE	MAB
Gelatinous ZP	<1	<1	<1	<1
Shrimp <i>et al.</i>	1540	0	616	561
Mesopelagics	<1	<1	<1	<1
Macrobenthos- polychaetes	11	2	23	7
Macrobenthos- crustaceans	1	7	4	0
Macrobenthos- molluscs	15	5	28	0
Macrobenthos- other	57	36	25	0
Megabenthos- filterers	2387	8486	33280	54192
Megabenthos- other	8199	433	3358	524
Larval fish- all	<1	<1	<1	0
Small Pelagics- commercial	10369	1306	10556	2919
Small Pelagics - other	12	0	1808	5556
Small Pelagics -anadromous	44	15	45	138
Small Pelagics- squid	1322	143	2540	1347
Medium Pelagics (piscivores and other)	240	133	1241	1106
Demersals- benthivores	3401	3460	1625	734
Demersals- omnivores	180	70	643	1100
Demersals- piscivores	7149	6962	5597	6389
Sharks-coastal	0	0	233	438
Sharks-pelagics	6	10	22	19
Highly Migratory Species	43	45	146	182
Sea Birds	5	6	4	