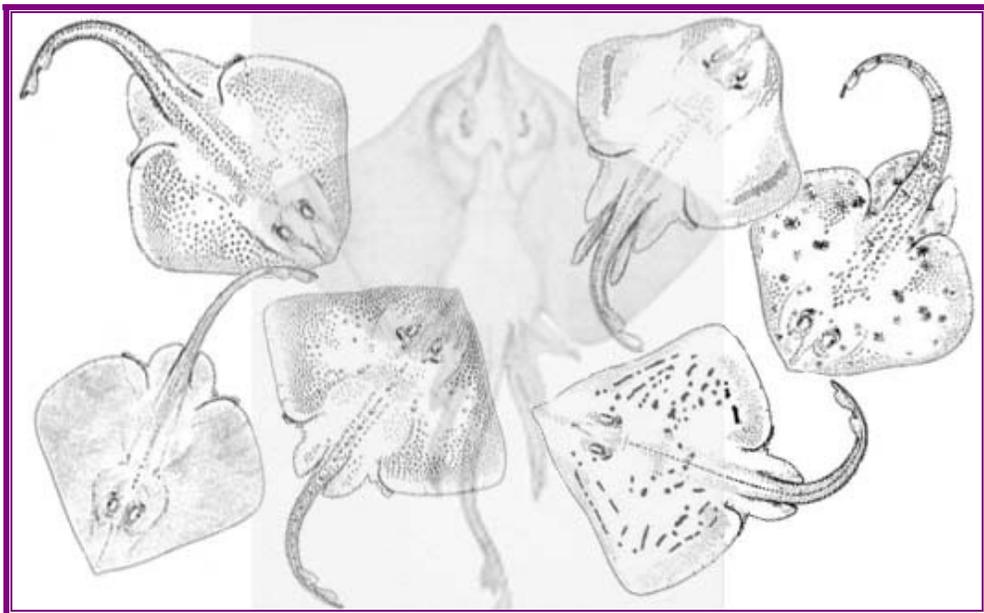


FINAL
SKATE ANNUAL REVIEW



Prepared by the
New England Fishery Management Council
in consultation with
National Marine Fisheries Service

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1.0 INTRODUCTION AND BACKGROUND

The Skate FMP was implemented on September 23, 2003. The final regulations require the Council to monitor the status of the fishery and the skate resources following implementation of the FMP (Section 648.320). The Skate Plan Development Team (PDT) has met to review the status of the species in the skate complex, and has updated the survey indices based on the most recent data available. According to the re-evaluated biomass indices, six of the seven skate species are now above the biomass thresholds identified in the Skate FMP (Table 3, Volume I). Barndoor skate biomass was below its biomass threshold until this year, but has been rebuilding since 1999, according to the most recent trawl survey index, and is no longer considered overfished. Thorny skate is still below its biomass threshold, and is not recovering at a rate as fast as barndoor. Overfishing¹ is no longer occurring for thorny skates, but this species is still considered overfished². However, the mean weight per tow average of the autumn trawl survey from 2004-2002 is higher than the previous mean weight per tow three-year average, thus it is assumed that the stock is rebuilding to target levels, according to the rebuilding program specified in the FMP.

The skate regulations identify what is required in an annual review (Section 648.320(a)).

(a) Annual review. The Council, its Skate Plan Development Team (PDT), and its Skate Advisory Panel shall monitor the status of the fishery and the skate resources following implementation of the Skate FMP.

(1) Starting 1 year after implementation of the Skate FMP, the Skate PDT shall meet at least annually to review the status of the species in the skate complex. At a minimum, this review shall include annual updates to survey indices and a re-evaluation of stock status based on the updated survey indices and the FMP's overfishing definitions.

(2) If new and/or additional information becomes available, the Skate PDT shall consider it during this annual review. Based on this review, they shall provide guidance to the Skate Committee and the Council regarding the need to adjust measures in the Skate FMP to better achieve the FMP's objectives. Any suggested revisions to management measures may be implemented through the framework process specified in §648.321, or through an amendment to the FMP.

(3) For overfished skate species, the Skate PDT and the Council will monitor the trawl survey index as a proxy for stock biomass. As long as the 3-year average of the appropriate weight per tow increases above the average for the previous 3 years, it is assumed that the stock is rebuilding to target levels. If the 3-year average of the appropriate survey mean weight per tow declines below the average for the previous 3 years, then the Council is required to take management action to ensure that stock rebuilding will continue to target levels.

¹ For thorny skate, overfishing occurs when the three-year moving average of the autumn survey mean weight per tow declines 20% or more, or when the autumn survey mean weight per tow declines for three consecutive years.

² Thorny skate is in an overfished condition when the three-year moving average of the autumn survey mean weight per tow is less than one-half of the 75th percentile of the mean weight per tow observed in the autumn trawl survey from the selected reference time series.

Based on the best available information, the Skate PDT recommends that no action is necessary at this time. Two species of skate were previously considered overfished, and according to the most recent biomass indices, barndoor skate is no longer considered overfished, therefore thorny skate is the only skate species remaining overfished. However, based on the rebuilding program defined in the FMP, thorny skate is assumed to be rebuilding to target levels based on the recent trawl survey index (as a proxy for stock biomass). Furthermore, the PDT does not believe that recent actions approved or proposed in other FMPs will have adverse impacts on skate mortality.

2.0 AFFECTED ENVIRONMENT

2.1 Skates and their Biological, Physical and Human Environment

The biological environment of the Northeast Skate Complex is described in Section 7.1 of the Skate FMP as well as Volume II (the SAFE Report) and Volume III (the Essential Fish Habitat Source Documents). The distribution of each skate species is different, but the NMFS bottom trawl survey encounters skates in most regions and depths that it samples (from Maine to North Carolina).

The physical environment where skates live and consequently, where the fishery takes place is very diverse, due to the distribution of the seven skate species that make up the Northeast Skate Complex. Skates are found throughout the Northeast Shelf Ecosystem. The physical features within this ecosystem are described in Section 7.2 of the Skate FMP and Volume III. Appendix B of the FMP describes the marine habitats of the Northeastern Shelf Ecosystem. Since skates are found in such a diverse area, the habitat types found in those areas vary from mud to boulders, according to the USGS substrate data (Poppe, 1987).

The Human Environment is described in Section 7.3 of the Skate FMP. The skate fishery affects numerous fishing industries and communities both directly and indirectly. There is a skate bait fishery and a skate wing fishery. The bait fishery is more historical and is a more directed skate fishery than the wing fishery. Vessels that participate in the bait fishery are primarily from Southern New England and direct primarily on little (90%) and winter skate (10%). The wing fishery is primarily an incidental fishery that takes place throughout the region, but New Bedford is the leader in production of landed and processed skate wings. Prior to the FMP landed skate wings were seldom identified to species. Since the FMP, reporting skates by species is now required. Table 1 is a summary of skate landings and revenues by month from the dealer database from September 2003 when the Skate FMP was implemented through April 2004. After April 2004, NMFS implemented a new electronic dealer database—Standard Atlantic Fisheries Information System (SAFIS). SAFIS is a real-time, web-based reporting system for commercial landings on the Atlantic coast. Table 2 is a summary of skate landings and revenues by month from the new electronic dealer database from May 2004 through December 2004. Note that about half of the total landings in the new database are defined as skate(s), or unclassified skates (approximately 4.4 million pounds).

The PDT was recently made aware that dealers are reporting thorny and barndoor skate in this new database. For instance, about 8,000 pounds of barndoor skate were reported in the electronic database, as well as approximately 887,000 pounds of smooth, and about 85,000 pounds of thorny were reported. These species of skates are not legal to possess or purchase in or from Federal waters—smooth is only prohibited in the Gulf of Maine Regulated Mesh Area. In addition, rosette skate are showing up in dealer reports from Massachusetts, and this species is found primarily south of Long Island (Table 5). The PDT recommends that NMFS’ Fishery Statistics Office, and if necessary Enforcement, look into this reporting issue further, to determine the nature of the problem (e.g., misreporting/ misrepresentation of catch/ illegal landings). In addition, there may be a need to provide additional training to dealers and fishermen, to highlight the species level information that is being required for skate species that are landed, and the size categories that are supposed to be reported for skate discards at sea. It may be necessary to revise the field identification guides that were distributed last year to include distinguishing characteristics for skates that are not landed in whole condition (i.e., skate wings).

Table 3 is a summary of the total landings and revenues for calendar year 2004 (note some of that year was collected under the old dealer reporting system, and the later half of the year was reported under the new SAFIS electronic dealer reporting system). These landings are lower than annual totals reported in the FMP for fishing years 1997-2000, yet the value of the landings remained about the same. In 2000, approximately 15 million pounds of skates were reported, and annual revenues were about 3 million for fishing year 2000.

		Little Skate	Winter Skate (BIG)	Skate	TOTAL
September 2003	Sum of Landings			2,725,551	2,725,551
	Sum of Revenue			491,931	491,931
October 2003	Sum of Landings			2,142,607	2,142,607
	Sum of Revenue			413,499	413,499
November 2003	Sum of Landings		12,950	2,096,214	2,109,164
	Sum of Revenue		5,061	426,028	431,089
December 2003	Sum of Landings		13,206	1,246,443	1,259,649
	Sum of Revenue		7,259	285,672	292,931
January 2004	Sum of Landings		4,930	780,393	785,323
	Sum of Revenue		3,150	260,461	263,611
February 2004	Sum of Landings		4,286	1,218,777	1,223,063
	Sum of Revenue		2,701	380,222	382,923
March 2004	Sum of Landings		604	1,347,522	1,348,126
	Sum of Revenue		395	439,195	439,590
April 2004	Sum of Landings	2,080	7,530	1,620,870	1,630,480
	Sum of Revenue	250	3,398	351,466	355,114
Total Pounds (September 2003 – April 2004)		2,080	43,506	13,178,377	13,223,963
Total Value (September 2003 – April 2004)		250	21,964	3,048,474	3,070,688

Table 1 – Summary of skate landings by month from the NMFS Dealer weighout database from September 2003 through April 2004.

		May	June	July	August	Sept	Oct	Nov	Dec	TOTAL
BRND	Landings	2,291	4,560	103	43		960	480	1,018	9,455
	Value	997	1,926	50	12		580	233	466	4,263
"BIG"	Landings	35,644	25,764	2,764	230	1,166	1,414	9,843	10,338	87,163
	Value	5,660	6,263	1,039	109	406	508	2,888	2,680	19,553
CLEAR	Landings	20,806	500					2,480		23,786
	Value	3,977	5					124		4,106
ROSETTE	Landings	108	441			50	506		1,475	2,580
	Value	50	118			18	177		516	879
SMOOTH	Landings	51,863	143,921	291,789	165,756	160,694	48,710	15,550	8,739	887,022
	Value	18,211	49,708	88,048	52,743	51,338	17,422	6,163	3,554	287,187
THORNY	Landings	15,565	20,268	19,449	10,239	9,073	4,230	3,232	8,655	90,711
	Value	6,436	7,915	7,913	4,802	4,429	2,404	1,929	4,248	40,078
SKATE(S)	Landings	444,411	567,375	962,572	544,650	541,843	375,638	570,116	414,986	4,421,523
	Value	149,093	193,461	314,640	175,643	188,875	152,382	252,663	150,595	1,577,333
LITTLE		395,272	308,969	315,706	275,258	281,736	218,510	231,856	281,939	2,309,246
		33,939	24,312	22,289	19,446	18,078	14,402	15,692	18,917	167,075
Total Landings		965,960	1,071,798	1,592,383	996,176	994,562	649,968	833,557	727,150	7,831,554
Total Value		218,364	283,708	433,978	252,755	263,144	187,876	279,692	180,977	2,100,494

Table 2 – Summary of skate landings and value by month from the NMFS Electronic Dealer database (SAFIS) from May 2004 through December 2004. "Big" = Winter skate

	Total Landings	Total Revenues
January through April 2004	4,986,992	1,441,238
May through December 2004	7,812,404	2,100,494
Calendar Year 2004	12,799,396	3,541,732

Table 3 – Summary of skate landings and revenues for calendar year 2004 (NMFS Dealer database)

Table 4 and Table 5 summarize total landings and revenues for calendar year 2004 by state. Massachusetts and Rhode Island dealers report significantly more skate landings than the other Atlantic states. According to the earlier database (Table 4), most skates were reported as unclassified; this is still the case with the new electronic dealer database (Table 5) however, more landings are reported by species. Following unclassified skates, Little and Smooth skates (prohibited in the GOM) are the species with the greatest reported landings from May – December 2004. The state of Rhode Island reported significantly more Little skate landings than any other state, while Massachusetts reported the majority of total Smooth skate landings. For calendar year 2004, the majority of "big" or winter skate landings were reported from dealers in Rhode Island as well.

		Little Skate	Winter Skate (BIG)	Skate	TOTAL
CT	Sum of Landings			191,859	191,859
	Sum of Revenue			18,721	18,721
MA	Sum of Landings			6,088,319	6,088,319
	Sum of Revenue			2,326,728	2,326,728

		Little Skate	Winter Skate (BIG)	Skate	TOTAL
MD	Sum of Landings			33,349	33,349
	Sum of Revenue			3,582	3,582
ME	Sum of Landings			15,915	15,915
	Sum of Revenue			6,948	6,948
NC	Sum of Landings			456	456
	Sum of Revenue			85	85
NH	Sum of Landings			4,915	4,915
	Sum of Revenue			1,856	1,856
NJ	Sum of Landings	2,080	41,731	97,286	141,097
	Sum of Revenue	250	21,378	46,805	68,433
NY	Sum of Landings			125,477	125,477
	Sum of Revenue			57,607	57,607
RI	Sum of Landings		1,775	6,596,412	6,598,187
	Sum of Revenue		586	581,737	582,323
VA	Sum of Landings			24,389	24,389
	Sum of Revenue			4,405	4,405
Total Sum of Landings		2,080	43,506	13,178,377	13,223,963
Total Sum of Revenue		250	21,964	3,048,474	3,070,688

Table 4 – Summary of skate landings and revenue by state from the NMFS Dealer weighout database from September 2003 through April 2004.

		BRN	BIG	CLEAR	LITTLE	ROSETTE	SMOOTH	THORNY	SKATE(S)	Total
CT	Landings								26,256	26,256
	Value								8,782	8,782
MA	Landings		1,252		215,000	75	884,606	78,867	3,694,290	4,874,090
	Value		536		14,940	38	286,211	35,972	1,334,279	1,671,976
MD	Landings				300				903	1,203
	Value				21				164	185
ME	Landings								244	244
	Value								56	56
NC	Landings								22	22
	Value								55	55
NH	Landings							85	2,703	2,788
	Value							26	1,073	1,099
NJ	Landings				224,968			88	109,643	334,699
	Value				27,452			57	46,635	74,144
NY	Landings	8,583	2,208		1,542		2,416	11,671	173,880	200,300
	Value	3,854	996		664		976	4,022	60,014	70,594
RI	Landings		83,703		1,867,436	2,505			408,058	2,361,722
	Value		18,022		123,999	841			123,866	266,727
VA	Landings	872		23,786					5,592	30,250
	Value	409		4,106					2,430	6,945
Total Landings		9,455	87,163	23,786	2,309,246	2,580	887,022	90,711	4,421,523	7,831,554
Total Value		4,263	19,553	4,106	167,075	879	287,187	40,078	1,577,333	2,100,494

Table 5 - Summary of skate landings and revenue by state from the NMFS Electronic Dealer database (SAFIS) from May 2004 through December 2004

2.2 Update of stock status

An annual update of stock status includes several factors: 1) the new mean weight per tow value for each skate species from the most recent NEFSC Trawl Survey; 2) an updated biomass index, which is based on the current three-year moving average of mean weight per tow; and 3) for overfished species, the PDT will monitor the rebuilding programs by comparing the current three-year average weight per tow versus the average weight per tow for the three previous years.

Table 6 describes the biomass indices for each species from 1992 through 2004. The 1999-2001 three-year average is the index that was used in the FMP (Table 3 – Volume I) and this value is what was compared to the biomass threshold in order to determine whether stocks were overfished at the time of implementation (2003). At that time, barndoor and thorny skates were considered overfished because their most recent three-year moving average was lower than the biomass threshold. The 2002-2004 three-year average weight per tow is now the most updated biomass index for each species. In order to determine which species are now considered overfished, this row is compared with the biomass threshold. Since the updated biomass index for barndoor is 0.88 (for 2002-2004), this species is no longer considered overfished. Thorny skate is the only skate species that is still overfished at a trawl survey index of 0.63.

In order to determine whether overfishing is occurring, the FMP implemented specific criteria for each species. The most recent three-year moving average is compared to the three-year moving average from the year before, and each species has a specific percent change value assigned to it. The 2002-2004 three-year moving average is compared to the 2001-2003 average, and if the difference is greater than the percent change identified for a specific species, then overfishing is occurring for that stock (Table 6). For example, if the 2002-2004 average is 30% less than the 2001-2003 average for barndoor skate, then overfishing is occurring for that species. In fact, the 2002-2004 moving average is +40.7% greater than the 2001-2003 average for barndoor skates. Overfishing is not occurring for the rest of the species; however, clearnose skate is relatively close (-27.3% rather than -30%).

The Council is also required to monitor the rebuilding programs of overfished skate species. The FMP states that:

For overfished skate species, the Skate PDT and the Council will monitor the trawl survey index as a proxy for stock biomass. As long as the three-year average of the appropriate weight per tow increases above the average for the previous three years, it is assumed that the stock is rebuilding to target levels. If the three-year average of the appropriate survey mean weight per tow declines below the average for the previous three years, then the Council would be required to take management action to ensure that stock rebuilding will continue to target levels.

The only two species that are currently in a rebuilding program are barndoor and thorny skates. For barndoor, the 2002-2004 three-year average is 0.88, and the 1999-2001 three-year average was 0.38, so this species is assumed to be rebuilding to target levels (it actually surpassed the target of 0.81) (Table 6). For thorny, the 2002-2004 three-year

average is 0.63 and the 1999-2001 three-year average was 0.55, so this species is assumed to be rebuilding to target levels. The target biomass level for thorny skate is 2.20, so this stock is rebuilding slower than barndoor, but it is rebuilding.

	BARNDOOR	CLEARNOSE	LITTLE	ROSETTE	SMOOTH	THORNY	WINTER
Survey (kg/tow)	Autumn	Autumn	Spring	Autumn	Autumn	Autumn	Autumn
1992	0.002	0.35	5.30	0.04	0.13	0.96	3.58
1993	0.14	0.50	7.52	0.02	0.23	1.66	1.91
1994	0.04	0.94	3.62	0.07	0.10	1.51	2.12
1995	0.11	0.33	2.87	0.04	0.19	0.78	1.99
1996	0.04	0.43	7.57	0.04	0.18	0.81	2.28
1997	0.11	0.61	2.71	0.01	0.23	0.85	2.46
1998	0.09	1.12	7.47	0.05	0.03	0.65	3.75
1999	0.30	1.05	9.98	0.07	0.07	0.48	5.09
2000	0.29	1.03	8.60	0.03	0.15	0.83	4.38
2001	0.54	1.61	6.84	0.12	0.29	0.33	3.89
2002	0.78	0.89	6.44	0.05	0.11	0.44	5.60
2003	0.55	0.66	6.49	0.03	0.19	0.74	3.39
2004	1.30	0.71	7.22	0.05	0.21	0.71	3.88
1999-2001 3-year average	0.38	1.23	8.47	0.07	0.17	0.55	4.45
2001-2003 3-year average	0.62	1.06	6.59	0.07	0.20	0.50	4.27
2002-2004 3-year average	0.88	0.75	6.72	0.04	0.17	0.63	4.29
Percent change 2002-2004 compared to 2001-2003	+40.7	-27.3	+1.9	-35.4	-12.4	+25.0	-0.1
Percent change for overfishing status determination in FMP	-30	-30	-20	-60	-30	-20	-20
Biomass Threshold	0.81	0.28	3.27	0.01	0.16	2.20	3.23
CURRENT STATUS	<u>Not Overfished</u> Overfishing is <u>Not Occurring</u>	<u>Overfished</u> Overfishing is <u>Not Occurring</u>	<u>Not Overfished</u> Overfishing is <u>Not Occurring</u>				

Table 6 – Summary of NEFSC biomass indices for all skate species from 1992 through 2004, including 3-year moving averages for several time periods, as well as updated stock status.

Skate Complex Biomass Indices

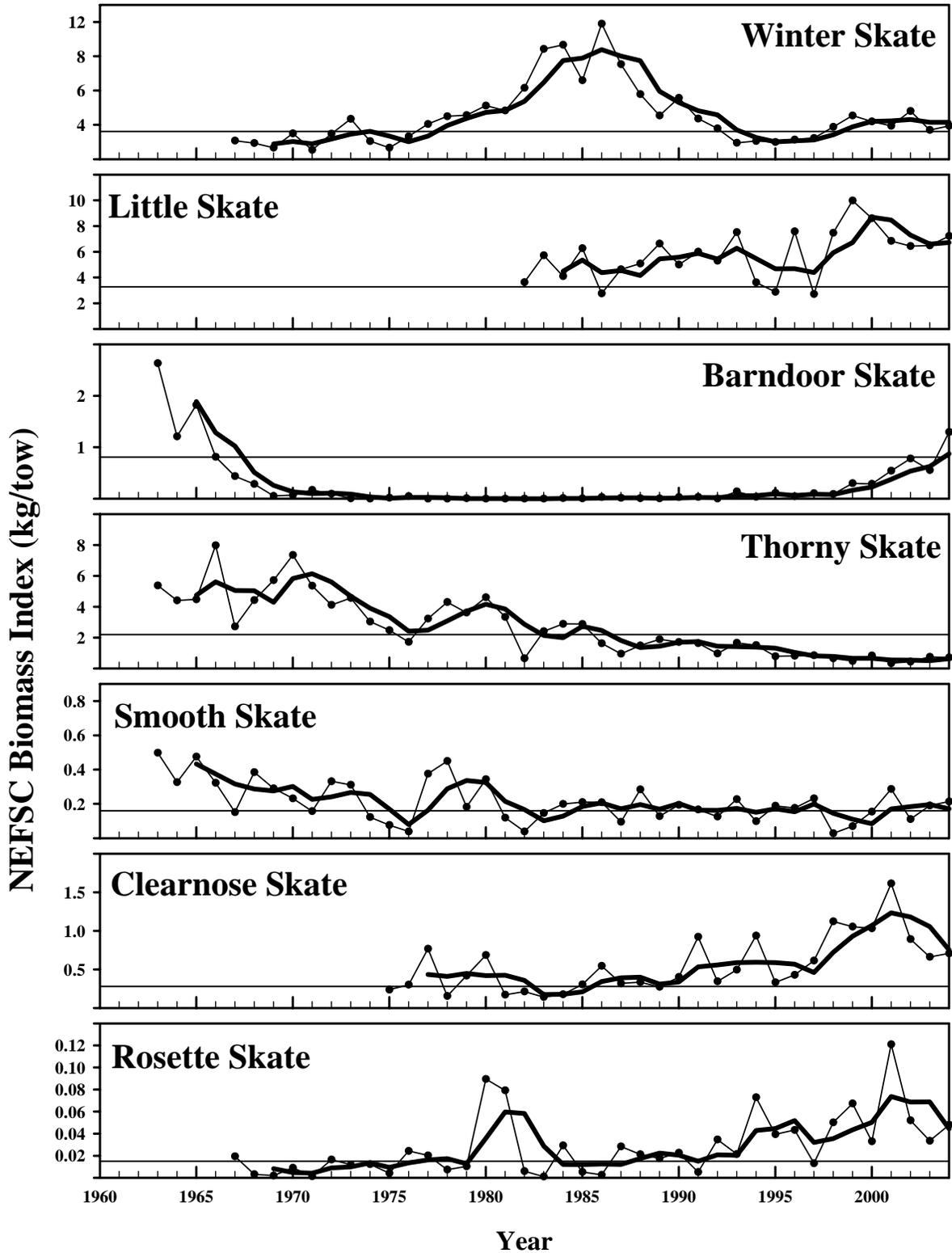


Figure 1 – NEFSC Biomass Indices (kg/tow). Thin lines with symbols are annual indices, thick lines are 3-year moving averages, and the thin horizontal lines are the biomass thresholds.

2.3 New skate research

Since implementation of the FMP there has been some additional research on skates in this region. This section is not a complete summary of all research conducted in recent years, but includes some of the more relevant work.

Casey and Myers (1998) reported that the barndoor skate was facing potential overfishing in parts of its range due to overfishing. However, barndoor stocks do seem to be rebounding according to recent NMFS' trawl surveys and recent studies suggest that the conclusions in the Casey and Myers (1998) study may have significantly overstated the potential threat to the species. Kulka et al. (2002) examined survey and commercial data and found that the distribution of barndoor skate extends much farther north than indicated by the survey data alone. They also found that barndoor skates were most common at depths greater than sampled by the annual survey and conclude that the data set used by Casey and Myers (1998) poorly sampled barndoor skate throughout its range, and underestimated the size of the population. One study in the US examined the life history of barndoor skate on Georges Bank (Gedamke, et al, 2004). A preliminary analysis of vertebrae growth and age of female maturation was conducted on 2,310 specimens caught from commercial scallop dredges in the southern half of Closed Area II. This study found that the life history of the barndoor skate is more resilient to fishing pressure than assumed in the Casey and Myers (1998) study. The observed rate of population increase over the past decade is consistent with these results.

While there are still few studies on the life history of most skate species, one study recently measured the maturity of the seven skate species in the Northwest Atlantic based on various research cruises from 2000 through 2002 (Sosebee, 2004). An estimate of size at first maturity was employed from measurements of total length and body morphometry (clasper length for males and cloaca length for females). Most male skates were found to mature at smaller sizes than females, with the exception of smooth and thorny skates. Rosette skates matured at the smallest size compared to the other species, males at 39cm and females between 40 and 48 cm. Barndoor skates matured at the longest size, females ranged from 96 to 105 cm, and males were less variable and their size at maturity was estimated to be 100cm. Furthermore, the second set of estimates from Gedamke et al., 2004 show male maturity at 108 cm/~6yrs and female at 116 cm/~6.5-7yrs.

There have also been several recent studies that focused on winter skates. Sulikowski et al. (2003) estimated age and growth estimates from over 300 winter skates collected from November 1999 to May 2001 off the coast of New Hampshire. Total length and weight were recorded as well as growth rings from vertebral samples. The study suggests that females grow more slowly, which has also been found by various other researchers for a host of skate species. Furthermore, winter skates grow slowly in general, thus the researchers suggest that they may be more susceptible to overexploitation. Sulikowski et al. (2003) also researched the reproductive cycle of winter skate. Based on samples taken off the coast of New Hampshire from November 2000 to October 2001, plasma concentrations of several sex steroids were collected monthly. There are three basic types of reproductive cycles: reproduction throughout the year, partially defined annual cycle (with one or more peaks), and a well-defined annual or biennial cycle. This

research concludes that winter skates seem to have a partially defined reproductive cycle with a single peak.

Sulikowski, et al. (2005) estimated age and growth from 224 thorny skates (*Amblyraja radiata*) collected on 42 trips from June 2001 through May 2002. The samples were taken from locations off the New Hampshire coast (30-40 km) and ranged in depth from 100 and 120 m. The vertebral band counts (from central vertebrae) were from thorny skates within a small portion of its range. However, the researchers believe they are representative of the species throughout its range, because they correspond with thorny skate samples collected in NEFSC surveys in the Gulf of Maine and Georges Bank. Morphological characteristics included, total length (TL), total wet weight, and disc width. This study suggests that the relationship between TL and central vertebrae (centrum) diameter was linear ($r^2 = 0.93$; $P < 0.05$) and there was no significant difference noted when comparing males to females. Skates were combined due to the lack of gender specific growth traits, and a total of 120 skates were used to distinguish trends in monthly incremental growth (comparing growth rings). An incremental growth analysis of thorny skates, ≤ 80 cm (juveniles), supported the hypothesis of annual band formation (between August and September) in this species. The study also found that as thorny skates matured, their growth rate slowed as evidenced by the compression of the band counts and the difficulty in discerning monthly growth patterns. The oldest age of thorny skates (male and female) obtained for this study was 16 years. In summary, these data corroborate earlier findings that larger batoids, such as *A. radiata*, are long living and grow slower than smaller species, which makes them more vulnerable to overexploitation. Moreover, these findings emphasize the importance of collecting species level information, in order to accurately detect fluctuations in stock size.

2.3.1 Research in other fisheries that catch skates

In terms of recent information about skates found inshore, the state of Rhode Island has conducted an inshore survey every year since 1979. While the skates are being recorded as “unclassified” in catch reports, the vast majority of skates found inshore in this area are either little or winter skates. The length and number of skates caught in both 2003 and 2004 are summarized in Figure 2. The majority of the skates caught in this survey range from 23 to 28 inches. The total weight of unclassified skates caught in 83 tows in 2003 was 810 pounds, and the total weight caught in 79 tows conducted in 2004 was 903 pounds. The inshore skate fishery in Rhode Island continues to be an important fishery for that state.

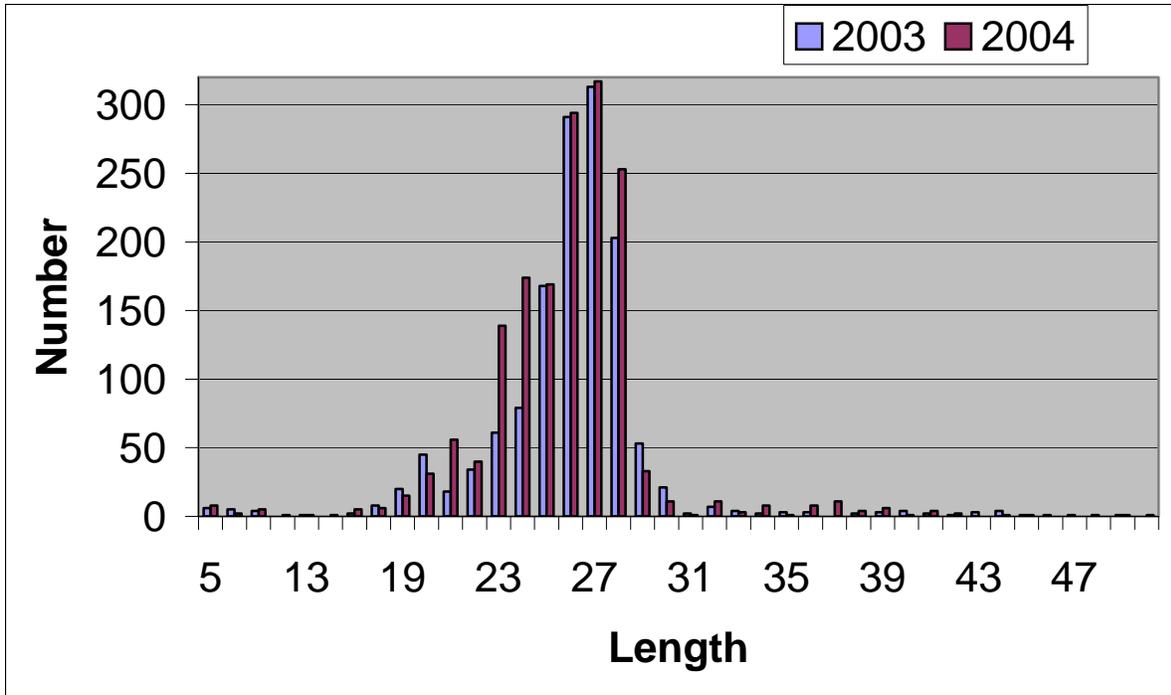


Figure 2 – Number and length of unclassified skates caught on the Inshore Rhode Island survey in 2003 and 2004.

In terms of recent information about skates found in offshore waters deeper than the NEFSC survey typically samples, a Monkfish Cooperative Survey was conducted in 2004. Figure 3 displays where those samples were taken, and Table 7 describes the total number of skates caught on the survey by species. The vast majority of tows taken on this survey had at least one species of skate present. Figure 4 depicts the location of tows on the survey that caught the individual skate species. The larger the station location, the more skates were caught on each tow. For example, a substantial number of barndoor skates were caught in offshore stations along the southern flank of Georges Bank in depths between 100 and 500 fathoms (deeper than the NEFSC trawl normally samples). In addition, several tows on the edge of the continental shelf south of Rhode Island and Connecticut caught a number of thorny skates in depths greater than 200 fathoms; thorny skates are rare in this area from the NEFSC surveys. Several tows off the coast of Maine report clearnose skate, an area that is not included in their normal distribution area (coastal Mid-Atlantic from NJ to NC); these were likely misidentified. The distributions for Little, Winter, and Rosette seem consistent with results from the annual NEFSC trawl survey.

Skate Species	Number of skates recorded
Barndoor	278
Clearnose	485
Little	21,187
Rosette	549
Smooth	377
Thorny	254
Winter	1,810

Table 7 – Number of skate species recorded on the 2004 Monkfish Cooperative Survey

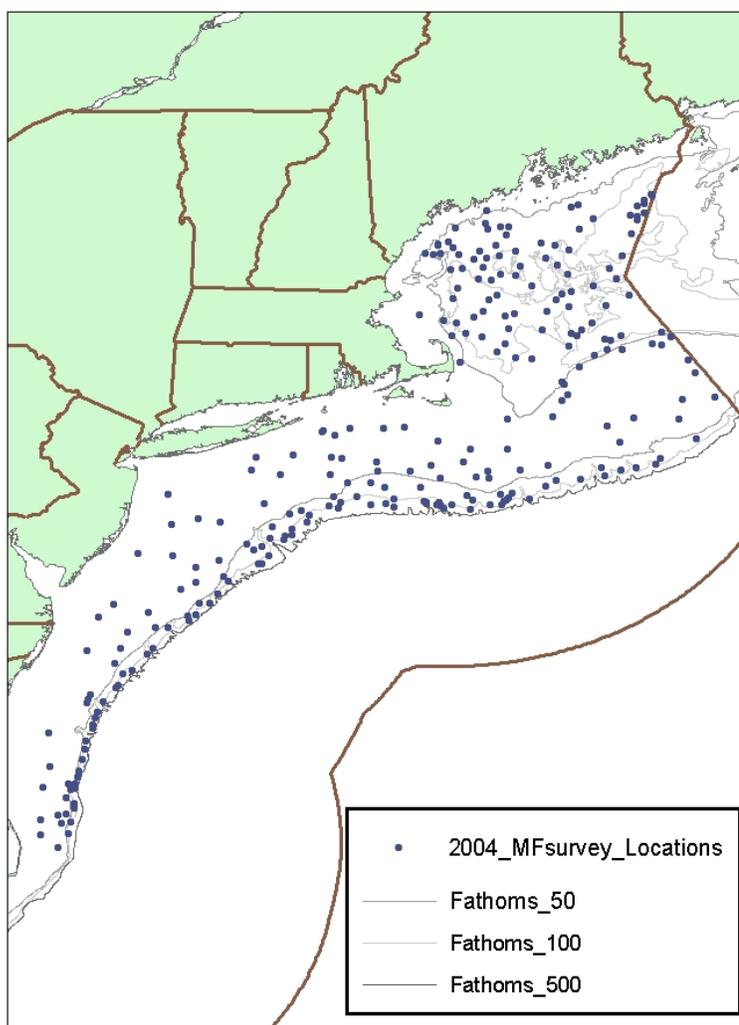
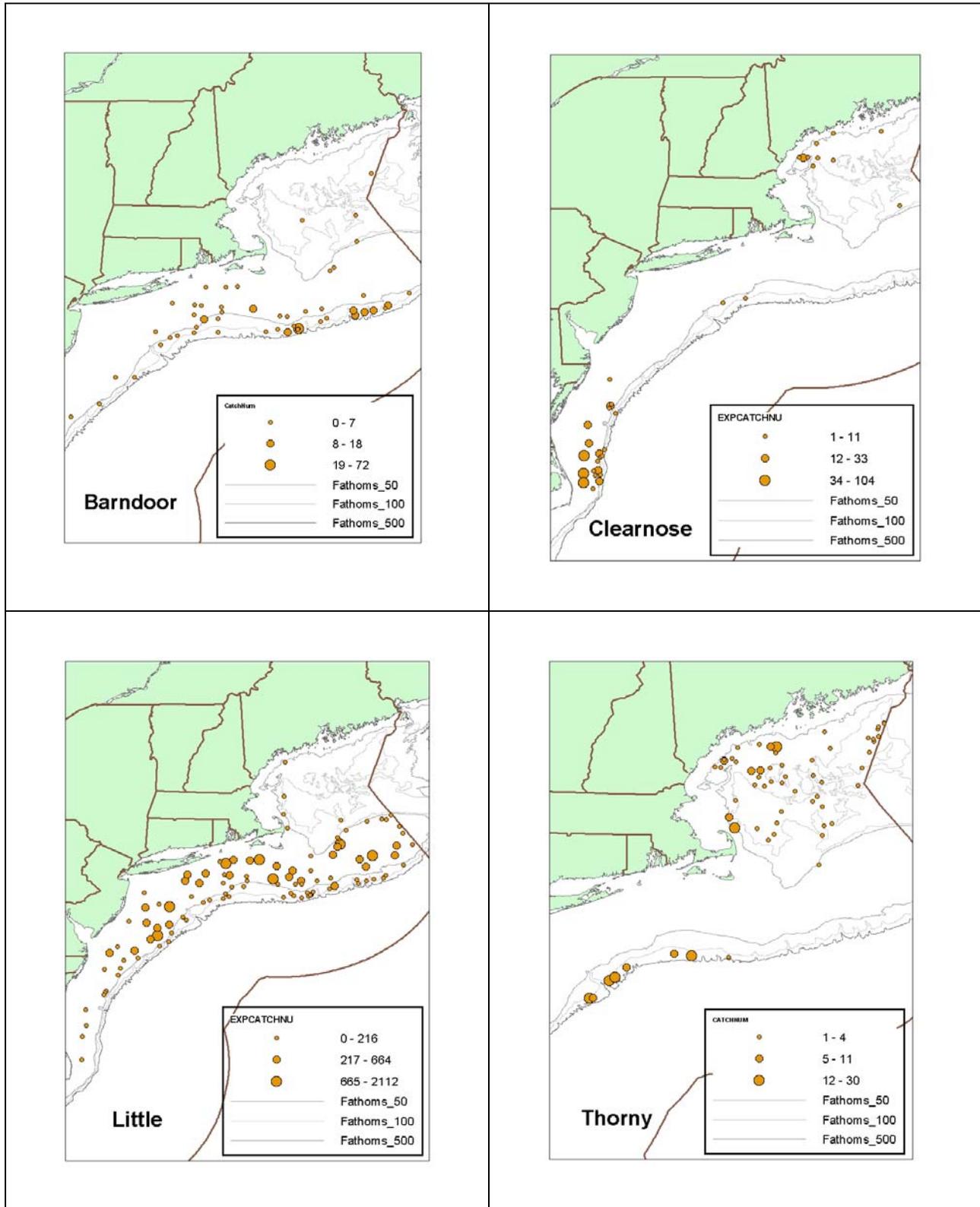
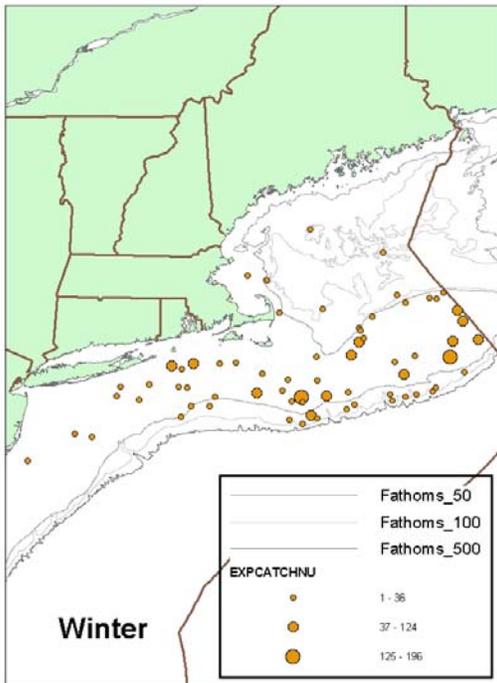
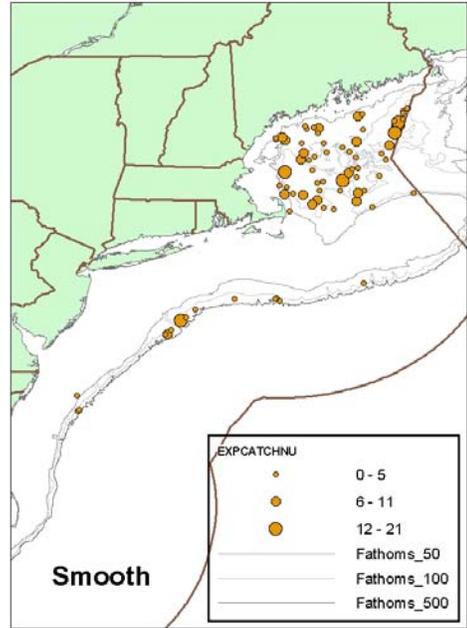
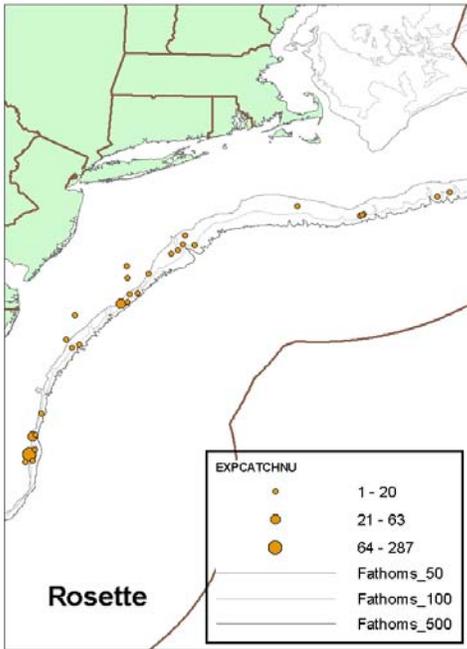


Figure 3 – Station locations from the 2004 Cooperative Monkfish Survey

Figure 4 – Distribution of skate by species on the 2004 Cooperative Monkfish Survey (measured in expanded number per tow)





There is a recent report about bycatch in the Sea scallop fishery comparing ten inch and six inch twine tops. This gear was recently implemented (July 23, 2004) for all scallop dredges, regardless of area or permit type, to reduce bycatch and bycatch mortality of finfish species that occur in the Sea scallop fishery. During October 2003, four research trips were conducted on Georges Bank to evaluate the ten-inch twine tops in reducing bycatch. A total of 16 paired-tows were made in both open and closed areas. There are several issues to keep in mind when considering these research result; the patchiness of skate distribution in comparison to these research stations, the small number of tows takes, and the researchers note that these results are based on the gear being rigged a specific way; therefore, the results may not be the same for the entire fleet. Overall, skate discards ranged from a reduction of 65.7% to an increase of -11.1%. This increase in skate bycatch (species undetermined) was the result of one observed case in all 16 tows. Overall median and mean percent catch reductions of skates as per the Student's and Wilcoxon tests ranged from 38.4% to 47.7%. The study also examined the amount of barndoor skate bycatch in particular, which ranged from a reduction of 16-56%. Therefore, while there were several outliers with higher skate bycatch in the ten-inch twine top dredge, in general, the researchers concluded that there was "moderately strong evidence" that ten-inch twine tops would reduce barndoor skate catches substantially.

2.4 Recent actions that could affect skate mortality

The Skate FMP identified and characterized a baseline of management measures in other fisheries that provide additional conservation benefits to skate species. The FMP requires that if the Council initiates an action in another FMP that changes one or more of the baseline measures such that the change is likely to have an effect on the overall mortality for a species of skate in a formal rebuilding program, then a baseline review is required. Of the seven skate species managed under the Northeast Skate Complex FMP, only two species are in a formal rebuilding program: thorny and barndoor. Several actions recently implemented in the region have triggered a skate baseline review and the potential impacts on skate mortality are summarized below. There are also several actions currently being considered that have triggered a skate baseline review. The Skate PDT has evaluated the impacts of all these actions on skates, and the cumulative impacts of all these actions is described in Section 2.6.

2.4.1 Amendment 10 to the Scallop FMP

The baseline of scallop effort described in the Skate FMP is 34,000 DAS, and is based on the total number of allocated DAS from the fishing years 1999-2002. Since implementation of the Skate FMP, scallop management has evolved to a rotational area management scheme. In particular, Amendment 10 recently (June 2004) implemented a rotational area management strategy, which allocates a certain number of DAS to vessels for use inside specific rotational access areas, and a separate number of DAS that can be used outside identified access areas. Prior to Amendment 10, DAS were charged against a vessel's allocation regardless of area (i.e., -fishermen were not given the option of using days in certain areas in exchange for a DAS tradeoff³). Furthermore, Amendment 10

³ DAS tradeoffs are DAS credits that help to compensate vessels fishing in approved access areas.

implements additional restrictions associated with DAS use in the Hudson Canyon scallop access area, such as gear requirements (e.g., minimum twine top mesh size), scallop possession limits, broken trip provisions, and trip allocations/DAS charges, that are designed to further limit harvest levels and may reduce the levels of skate bycatch that would normally be encountered in the scallop fishery.

Within the 2004 fishing year (immediately after implementation of Amendment 10), total allocated scallop DAS increased to approximately 35,800 DAS; however, in the long term under rotational area management, total allocated DAS is expected to be around 27,000 DAS, 7,000 less DAS than under the baseline in the Skate FMP. The projected amount of DAS used remains significantly below the level used in the baseline 2002 fishing year (about 30,065 DAS). Therefore, while total allocated Scallop DAS is expected to increase slightly above the skate baseline in 2004, allocated DAS will decrease within the second year of the program; therefore, the impacts on skate mortality are expected to be minimal.

2.4.2 Amendment 13 to the Multispecies FMP

The Skate FMP's baseline of management measures with respect to multispecies DAS was established according to the effort level prescribed in the interim action (about 62,000 DAS available to the entire fleet). Amendment 13 to the Multispecies FMP categorized DAS into A, B (regular and reserve), and C DAS. This change in designating DAS into several different categories is an important shift in management, especially when you consider the restrictions on their use. For example, Amendment 13 allocated about 43,000 Category A DAS, which are DAS that can be fished anywhere in open areas. Amendment 13 also allocated a specific number of Category B DAS that can only be used to target healthy stocks through programs like special access programs (SAPs⁴). Amendment 13 allocated about 14,500 Category B regular and about 14,500 Category B reserve DAS. Amendment 13 also allocated Category C DAS, which do not represent actual effort because these DAS were established according to the level of latent effort that existed during the qualifying time frame; therefore, they are unavailable for use at this time. Overall, the level of effort available to the groundfish fleet is greatly reduced as compared to the DAS available under the skate baseline. Category B DAS programs, and the added restrictions on DAS use (i.e. separator trawl requirements) are expected to result in fewer impacts on skates and less overall mortality to skates under formal rebuilding.

2.4.3 Joint Framework 16/39 to the Scallop and Multispecies FMPs

The purpose of this framework action was to develop management measures to control scallop fishing effort in re-opened portions of the Georges Bank closed areas, and to correct the inconsistencies between the habitat closed areas proposed in Scallop Amendment 10 and Multispecies Amendment 13. The baseline review of Framework 16/39 evaluated whether limited access into portions of the Groundfish mortality closed

⁴ A SAP is a narrowly defined NE Multispecies fishery that is prosecuted in such a way as to avoid or minimize impacts and bycatch on groundfish stocks of concern, as well as impacts on Essential Fish Habitat.

areas by the scallop fleet and increases in allocated scallop DAS beyond what was included in the skate baseline would have adverse impacts on overall skate mortality.

The Skate PDT concluded that Framework 16/39 was not expected to have negative impacts on either barndoor or thorny skate mortality, as compared to the baseline defined in the Skate FMP. In fact, the action will have very little, if any, impact on thorny skate mortality because the primary objective of the access program is to concentrate scallop effort in the access areas on Georges Bank, which are on the periphery of thorny skate distribution, and all DAS associated with an area in which a vessel does not fish are forfeited (Figure 5). Furthermore, thorny skate distribution in open areas rarely overlaps with the distribution of scallop fishing effort in open areas. In terms of barndoor skate, there is greater overlap of scallop effort and barndoor skate distribution (Figure 6). However, there is a significant portion of barndoor skates contained within the habitat closed areas and groundfish mortality closed areas that are not proposed as access areas. These areas will remain closed indefinitely, therefore the barndoor skates that live in these areas will benefit. The primary justification for inferring that the proposed scallop access program would not substantially increase barndoor skate mortality is that the trend has been one of species recovery, even acceleration, during and after the last access programs. For example, barndoor biomass has increased steadily since 1998 despite the two scallop access programs (in 1999 and 2000). In addition, due to the new stipulations on DAS in Amendment 10 and Framework 16/39, DAS use is more restricted compared with the scallop effort that was attributed to controlling skate mortality under the Skate FMP baseline.

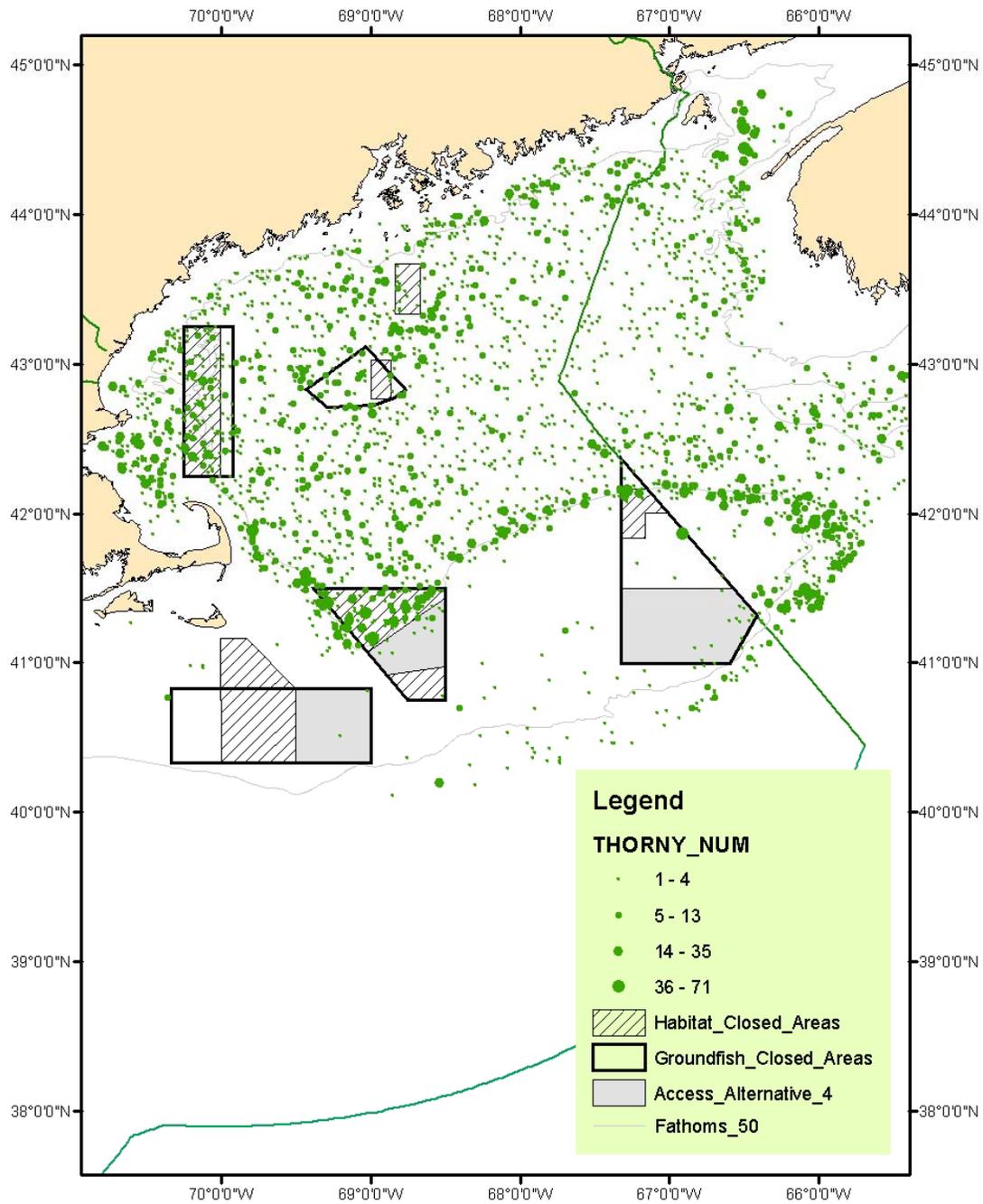


Figure 5 - Distribution of Thorny skate from NMFS Autumn trawl survey data (1963–2003).

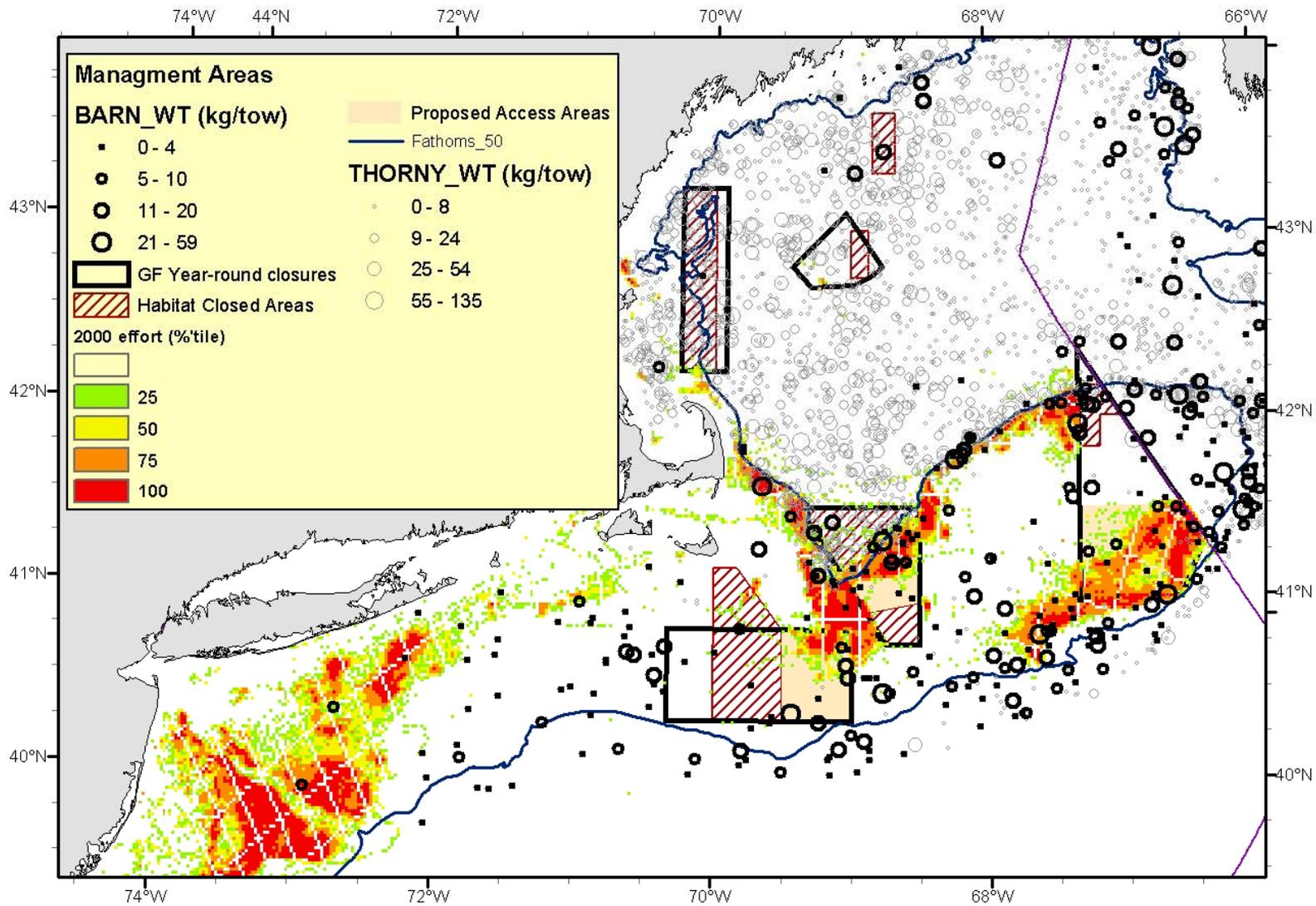


Figure 6 - Distribution of barndoor (in black) and thorny (in gray) skate overlapped with scallop effort from 2000 VMS data

Darker areas represent more intense fishing effort

2.4.4 Framework 40a to the Multispecies FMP

Framework 40a allowed access for multispecies vessels into portions of the groundfish mortality closed areas for two different special access programs (SAPs). The impacts on overall skate mortality from both proposed SAPs is expected to be minimal. The access area in and around Closed Area II is not expected to have significant impacts on skate mortality, because the distribution of thorny and barndoor skates in this area is low, and the relevant impacts on skate mortality is limited to the small area within CAII, not the entire SAP (Figure 7). Furthermore, vessels will be required to use a haddock separator trawl, which has been shown to effectively reduce skate bycatch. An experiment conducted by the Canadian Department of Fisheries and Oceans in 1992 noted an almost complete absence of skate species in the top end of a separator trawl net, thus it can be assumed that the actual level of skate bycatch will be lower than the estimates based on regular trawls. As for the second SAP implemented by this framework, there is some overlap of skate distribution and the haddock/hook gear SAP in Closed Area I (Figure 7). While this access may increase interactions with skates found in that area, the overall level of effort available to the fleet (due to restrictions on DAS in Amendment 13) is greatly reduced as compared to the level assessed in the skate baseline review. Furthermore, recent experiments have demonstrated that haddock can be effectively targeted by this gear sector (See Framework 40a for the details of the experimental hook fishery taken place during September and October of 2003). Therefore, none of the measures proposed in this action are expected to have negative impacts on skate mortality.

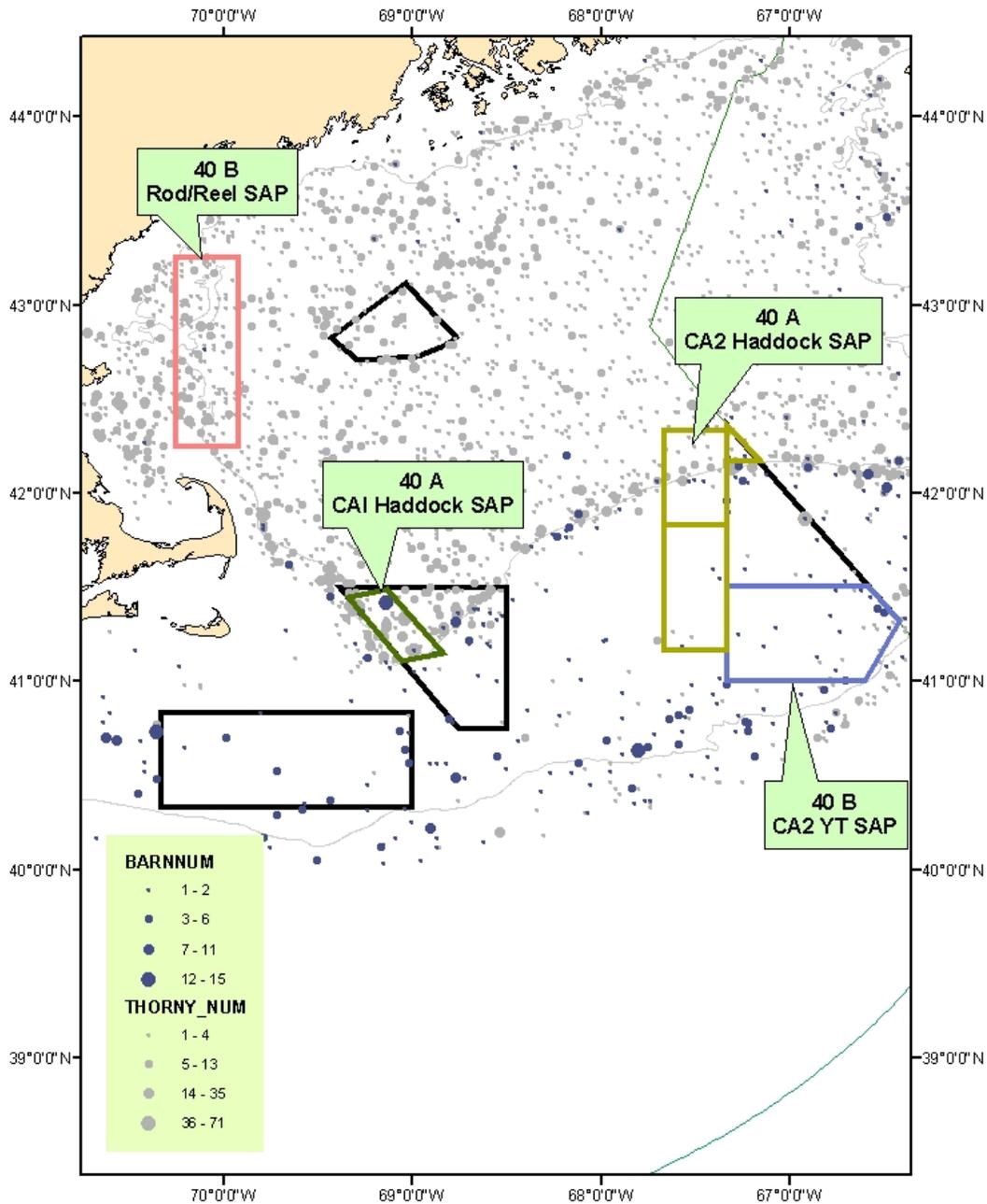


Figure 7 – SAPs approved in Framework 40A (CAI and CAII Haddock SAPs) as well as two SAPs proposed in Framework 40B, which have not been approved by NMFS yet (WGOM Rod/Reel SAP and CA2 YT SAP).

2.5 Proposed actions that could affect skate mortality

2.5.1 Amendment 2 to the Monkfish FMP

The only measure considered in Amendment 2, which triggered a skate baseline review, is the alternative to decouple Monkfish DAS from Multispecies and Scallop DAS. Since this measure was not selected as part of the proposed action, none of the measures currently proposed in Amendment 2 are expected to have impacts on overall skate mortality. The New England Council submitted the FSEIS for Amendment 2 to NMFS in December 2004, and the Amendment is expected to be implemented before the start of the 2005 fishing year. There are no measures proposed in this action that are expected to have negative impacts on skate mortality.

2.5.2 Framework 40b to the Multispecies FMP

Framework 40b is considering several measures that trigger a skate baseline review, including changes to the year-round mortality closed areas, changes to the NE Multispecies DAS restrictions, and changes to the gillnet gear restrictions for trip gillnet vessels. The Council recently selected final recommendations for this Framework in November 2004, and plans to submit the final framework document to NMFS in January 2005. It is unclear which measures will ultimately be approved for implementation; however, none of the measures that were recommended for approval by the Council are expected to have negative impacts on skate mortality. The final proposed action, as approved by the Council, included several SAP programs; see Figure 7 for a description of the proposed SAPs. The CAII Yellowtail flounder SAP has been approved already under Amendment 13, this action only proposes to change the start date, total number of trips, and number of trips per month, and those adjustments are not expected to impact overall skate mortality of barndoor and thorny skates. The other proposed access program is the Western Gulf of Maine (WGOM) rod/reel Haddock SAP, and the impacts on overall skate mortality from this proposed SAP are expected to be minimal, based on an assessment of the party/charter trips reported to the VTR database in calendar year 2003. Of the 5,420 trips reported in 2003, only 53 unclassified skates were reported as discards, out of about 208,000 fish that were reported as discards on the same trips. None of the 53 skates reported as discards were during the months of March and April, the time period this SAP is being proposed. While these data are not specific to the proposed area, or commercial fishery that will participate in this SAP, they do indicate that the level of skate bycatch from rod and reel gear is expected to be low due to the selectivity of this gear type. As for the observer database, there were fewer than ten observed trips for vessels using handline gear in 2002 and 2003, and no skate records were reported on those trips.

In addition to the SAP measures being proposed, another measure that triggers a skate baseline review is the proposed removal of the restriction on the number of nets a trip gillnet vessel may carry. The removal of this restriction is not expected to have negative impacts on skate mortality; however, it is unknown whether removing this restriction will actually translate into more nets in the water. If past behavior can be used to infer future use, it is possible that more nets could be used in the Gulf of Maine (GOM) according to VTR reports from trip gillnet vessels in FY2001. However, according to the species

reported as discards in the VTR database from 2001-2003, skates were not a major component of reported discards from gillnet trips in the GOM. It should be noted that the Skate PDT does not consider VTR records an accurate estimate of skate discards, because skate species are often under-reported – and/or not reported to the species level. Now that the Skate FMP is in place, the PDT is hopeful that reporting of skate discards will improve (see Research Needs Section 4.0). Lastly, the two measures that considered changing the NE Multispecies DAS allocations are not expected to have negative impacts on overall skate mortality because these measures do not allocate DAS free from restrictions on their use (i.e., they propose to allocate additional B DAS, which will be conditioned by hard TACs and trip limits). One additional measure being proposed in Framework 40b could actually decrease the amount of DAS allocated based on a conservation tax on DAS leasing and DAS transfers.

2.6 Cumulative impacts of approved and proposed actions in the region that may have adverse impacts on overall skate mortality

Based on the evidence before the PDT, none of the actions implemented or proposed since implementation of the Skate FMP are expected to have adverse impacts on overall skate mortality. Furthermore, the PDT does not expect these actions to have cumulative impacts on skates in a rebuilding program. According to the rebuilding status of both barndoor and thorny skates, neither species biomass index is declining; in fact, barndoor biomass is now above the biomass threshold and is no longer considered overfished.

It is too early for the survey indices to respond to these recent actions since they have only been adopted in the last year; however, given the recent upward trend in barndoor and thorny biomass the PDT does not believe additional action is warranted at this time. The biomass index for barndoor more than doubled from 2003 to 2004, and while thorny skate biomass is not rebounding at the same pace, it has increased since 2001, and remained steady between 2003 and 2004. The PDT will continue to monitor all skate stocks on an annual basis, as required by the regulations.

3.0 ISSUES RAISED BY THE SKATE PDT

The Skate PDT has completed numerous skate baseline reviews since the FMP was implemented in September 2003. During the process, several issues have come up related to the practicality of some of the baseline measures since most FMPs in this region have recently implemented major Amendments, which have altered the management strategies. In some instances, the Amendments have changed the management regime in such a way that some of the previously identified baseline measures like days-at-sea may not be valid, at least not in their former context.

The Skate FMP identified and characterized a baseline of management measures in other fisheries that provide additional conservation benefits to skate species. The FMP requires that if the Council initiates an action in another FMP that changes one or more of the baseline measures such that the change is likely to have an effect on the overall mortality for a species of skate in a formal rebuilding program, then a baseline review is required. A baseline review must be initiated if one of seven categories of management measures

are changed which have been identified as beneficial for skates. The seven categories of management measures identified in the Skate FMP are: (i) NE Multispecies year-round closed areas; (ii) NE Multispecies DAS restrictions; (iii) Gillnet gear restrictions; (iv) Lobster restricted gear areas; (v) Gear restrictions for small mesh fisheries; (vi) Monkfish DAS restrictions for monkfish only permit holders; and (vii) Scallop DAS restrictions (See Section 4.1.6 of the Skate FMP for more details).

The Skate PDT recommends that because groundfish, monkfish, and scallop management have changed substantially under recent Amendments, it may be necessary to re-assess the seven skate baseline measures originally identified in the Skate FMP. For example, Amendment 13 to the Multispecies FMP implements several DAS categories (Category A, B and C DAS), and as was noted earlier the conditions on B and C DAS use may affect the original baseline assessment. In addition, Amendment 10 to the Scallop FMP implements a rotational area management strategy that is fundamentally different than the management strategy assessed in the skate baseline review. Scallop vessels are only allowed to use a specific number of DAS in specific areas and seasons. Since the DAS programs are substantially different, the DAS triggers identified in the Skate FMP may no longer be the most appropriate values to assess impacts on skates. Because these baseline measures are defined specifically in the regulations, any adjustment in the baseline would have to be made through a framework action or amendment to the FMP. If the baseline measures do not reflect current fishing effort in other fisheries, then the skate baseline assessments become less reliable. The Skate PDT's ability to complete accurate baseline reviews is more difficult if the baseline measures are not set at the appropriate levels. This could result in assessments that do not adequately review the impacts of other actions on skate mortality. The PDT is not recommending that an action be initiated right away to adjust the baseline measures, but when the Council considers future priorities or skate management issues, this is an issue that the Skate PDT believes is worth further consideration. Some of the identified research needs (Section 4.0) could enable the skate PDT to clarify for the Council the extent to which the new measures are protecting skates relative to the baseline.

An additional issue came up during the development of this annual report related to recent skate landings reports. Section 2.1 describes the human environment of this fishery. According to landing records from the electronic dealer database (SAFIS) that was implemented in May 2004, there are recorded barndoor, smooth and thorny skate landings, and these species of skates are not legal to possess or purchase in or from Federal waters (smooth is only prohibited in the GOM RMA) (Table 2). In addition, rosette skate are showing up in dealer reports from Massachusetts, and this species is found primarily south of Long Island (Table 5). As was discussed earlier under Section 2.1 above the PDT has recommended that NMFS try to determine the nature of the reporting issue. In addition, it has been suggested that some additional outreach and species identification training may be necessary to alleviate potential problems in the future.

4.0 RESEARCH NEEDS

The Skate PDT does not expect overall negative impacts on skate mortality as a result of the measures being implemented or proposed in other FMP's. In fact, since implementation of the Skate FMP there have been several measures implemented through other FMP's that are expected to have additional benefits to some skate species, such as new habitat closed areas and specific gear requirements designed to reduce bycatch.

Previously, the Skate PDT submitted to the Research Steering Committee a list of nine research priorities for skates. This annual report highlights these needs by category and in the context of recent management measures; in particular, those that are not believed to adversely impact skates, but whose affects have not been truly quantified. This research will at a minimum allow for the gathering of additional information at a species level that has been lacking from skate stock assessments. For instance, the research that is suggested here may serve to corroborate recent findings on skate life history patterns (age-at-maturity, fecundity, habitat requirements, distribution, etc.), presented in this report, as well as to build upon these efforts. This research also has the potential to clarify the effectiveness of new management measures (SAPs, DAS tradeoffs, gear restrictions, trip allocations, rotational area access, etc.) that have been implemented in the multispecies and scallop fisheries, with regard to bycatch and discard rates, and more specifically, to help improve the forecasting of skate species abundance in the long term. Lastly, the results of this research may indicate the need to reevaluate the baseline measures that were originally chosen as providing protections for skates (i.e., the universe of known affects on skates that can attributed to certain fishing practices and their operations). This has ramifications for the potential recovery of skate species that are currently deemed "overfished," as well as preventing a decline or slowed rebuilding of skate species that have surpassed their thresholds, yet have not reached their respective biomass targets (e.g., barndoor skates).

Bearing in mind this focus on skates and the interconnectedness of surrounding fisheries that may influence the timelines associated with their recovery, the Skate PDT recommends the following research categories:

1). The effectiveness of bycatch reduction management measures in other fisheries:

- Conduct discard mortality studies (for example, a skate tagging program) to determine the actual mortality rates (survivability) of thorny and other skate species released as bycatch (i.e., regulatory discards). Until this information becomes available, it remains very difficult to predict skate mortality rates from bycatch, as well as the actual impacts of these new measures singularly or in some combination that are intended, in part, to reduce mortality of non-target species. This was previously listed as priority number 1 in the list of research priorities forwarded to the Research Steering Committee.
- Recognizing that the design, development, and implementation of a discard mortality study is a long-term project, the Skate PDT also recommends that observers collect additional information regarding skate bycatch. The Skate PDT requests that NMFS provide special instructions to the observers; specifically, that observers be trained to identify all skate species accurately, and, in addition to the

number of skates caught, the viability (or condition) of skates released as bycatch should be documented. This was previously listed as priority number 2 in the list of research priorities forwarded to the Research Steering Committee.

2) Monitoring of gear selectivity measures:

- Develop estimates of skate bycatch rates in other fisheries (e.g., Multispecies, scallop and monkfish fisheries) per area, season and gear type. Use reference areas (closed areas) and gear controls to compare catch rates and minimize patchiness. This was previously listed as priority number 3 in the list of research priorities forwarded to the Research Steering Committee.
- Conduct gear selectivity work to reduce regulatory discards of skates in other directed fisheries, especially with regard to juvenile skates (possibly to expand on gear work being performed in the monkfish, groundfish, and scallop fisheries). This was previously listed as part of priority number 3 in the list of research priorities forwarded to the Research Steering Committee.

3) Updating skate species assessments:

- Investigate 1948-1962 NEFSC survey data (if available) to determine long-term trends in skate biomass and distribution and over the shorter term explore the NEFSC survey data for stock-recruit relationships. This was previously listed as priority number 4 in the list of research priorities forwarded to the Research Steering Committee.
- Develop other techniques in addition to the skate species identification guide, to improve at-sea species identification by commercial vessel owners/operators participating in fisheries that catch skates. This was previously listed as priority number 5 in the list of research priorities forwarded to the Research Steering Committee.
- Collect samples and data on life history changes (e.g., age and growth studies, maturity, fecundity, and food habits) for each species in the complex. This was previously listed as priority number 6 in the list of research priorities forwarded to the Research Steering Committee.
- Tagging/recruitment surveys—species distribution, stock abundance, stock delineation, and survivability studies. This was previously listed as priority number 7 in the list of research priorities forwarded to the Research Steering Committee.

4) Integrated/Ecosystem management

- Investigate the influence of physical factors (including environmental changes) on shifts in range, distribution and depth where species are found within the skate complex. This was previously listed as priority number 8 in the list of research priorities forwarded to the Research Steering Committee.
- Studies of predator/prey interactions and trophic interactions between skate species in the complex and between skates and other bottom species that occupy the same habitats. This was previously listed as priority number 9 in the list of research priorities forwarded to the Research Steering Committee.

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6.0 LIST OF PREPARERS

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