

NEW ENGLAND FISHERY MANAGEMENT COUNCIL

Joint Dogfish Committee

I. STATUS

A. Meetings:

- The Joint Dogfish Committee met on October 17, 2007 to review recommendations from the Dogfish Monitoring Committee and develop recommendations regarding the spiny dogfish specifications for the 2008 fishing year.
- The Mid-Atlantic Council met on October 18, 2007 to review the Monitoring Committee and Joint Committee recommendations and develop Council recommendations regarding the spiny dogfish specifications for the 2008 fishing year.

II. COUNCIL ACTION

- A. Develop NE Council recommendations regarding the spiny dogfish specifications (quotas and trip limits) for the 2008 fishing year

Joint Committee Motions:

- That the spiny dogfish commercial quota be increased from 4 million pounds to 8 million pounds for the 2008 fishing year.
Quota Period 1: 57.9% of 8.0 million lbs. quota (4,632,000 lbs)
Quota Period 2: 42.1% of 8.0 million lbs. quota (3,368,000 lbs)
The specified quota will be for one year only.
(Mid-Atlantic Council approved this motion)
- That the trip limit for harvest period I and harvest period II be 3,000 pounds or a level consistent with that specified by the ASMFC. The specified trip limits will be for one year only.
(Mid-Atlantic Council changed this motion to recommend that the trip limit for harvest period I and harvest period II be 600 pounds, for one year only)
- That the Councils initiate Framework Action 2 to address issues with spiny dogfish biological reference points, primarily the biomass target.
(Mid-Atlantic Council approved this motion)
- That the Councils initiate Framework Action 3 or Amendment 1 to allow for allocation of quota for male fisheries.
(Mid-Atlantic Council approved this motion)

III. INFORMATION

- A. Monitoring Committee Document: *Update of Stock Status Based on the 2007 NEFSC Spring Bottom Trawl Survey*
- B. Dogfish Monitoring Committee Memo to Joint Committee, October 15, 2007
- C. October 19, 2007 Letter from Dan Furlong re. MAFMC Spiny Dogfish Motions

Spiny Dogfish

/

An Update of Stock Status Based on the 2007 NEFSC Spring Bottom Trawl Survey

Summary

The swept-area biomass estimate for mature female spiny dogfish in the 2007 NEFSC spring bottom trawl survey is 158,000 mt. The swept-area biomass estimate for mature female spiny dogfish in the 2006 NEFSC spring bottom trawl survey was 253,400 mt. The estimated mature female biomass in 2007 is consistent with biomass forecasts made in 2003 at SARC 27 (151,000 mt in 2007) and in 2006 at SARC 43 (139,000 mt in 2007).

The 3-yr arithmetic average of swept-area biomass estimates for mature female spiny dogfish from the 2005 to 2007 spring bottom trawl surveys is 155,800 mt, 34% higher than the 2004 to 2006 3-yr average of 116,600 mt.

Recruitment was once again very low during 2007, continuing a decade of poor recruitment. The effects of this sustained low recruitment are now evident in average sizes and in sex ratio. The decade-long reduction in recruitment will induce an oscillation in future stock abundance levels, as the weak cohorts enter the mature stock over the next 10 years. Female spawning stock biomass should continue to increase until 2010 and decline afterward, when the smallest year classes on record enter the mature component of the population. Total stock abundance should increase after this, if survival of pups returns to average levels.

Individuals of either sex smaller than 60 cm are uncommon. About 80% of the female stock is between 65 and 85 cm. About 80% of the male stock is between 65 and 80 cm. The observed increases in the average size of mature female dogfish are also consistent with the reductions in fishing mortality since 2001, which have allowed more females to reach larger sizes. The overall ratio of mature males to mature females, which exceeded 6:1 during 2000-2004, declined in 2006 and 2007 to about 4:1 but remained higher than the 2:1 ratio observed prior to the directed fishery.

Extensive analyses of the spatial distribution of sex ratios shows females to be consistently more abundant than males from shore to about 40 nm offshore. Farther than 40 nm from shore, males are more abundant in both the spring and fall bottom trawl surveys. The spring surveys show males to be more abundant from 40 to 120 nm offshore, particularly south of 40:30:00° latitude. These results are consistent with the observations of commercial and recreational fishermen, and help to explain the predominance of mature females in the directed fishery that was concentrated in nearshore waters in the 1990s. Analyses of 1989-2007 fishery observer data corroborate the trends in the NEFSC bottom trawl surveys. Economic prospects for a male-only fishery are constrained to the extent that most of the high concentrations of males are located far from shore.

It has not been possible to associate the high abundance estimates in the spring 2006 and 2007 surveys with any particular oceanographic condition. The stratum-specific means and variances that constitute the overall averages in 2006 and 2007 are consistent with the long-term patterns observed since 1968.

The present (2005-2007) 3-yr average swept-area biomass estimate of 155,800 mt for mature females is 78% of the rebuilding target of 200,000 mt adopted by the Mid-Atlantic Fishery Management Council. Projection model forecasts indicate that median estimate of female biomass will peak in about 2010 at just short of 200,000 mt. However, the variability associated with the projections is high, and thus there is a good chance that the rebuilding target could be exceeded within the next 3 years. An abundance estimate of 189,600 mt in 2008 would be sufficient to increase the simple 3-year average to 200,000 mt overall. While every indicator suggests that the population should decline after this momentary peak, external pressure to reopen the fisheries and relax regulations may be intense.

Background

Management of spiny dogfish is highly controversial. Total stock abundance remains high, but the abundance of mature females declined in response to a directed fishery conducted during 1989 to 2000. Nearly 250,000 metric tons of mature females were removed from the stock during this period. Beginning about 1997, recruitment markedly declined, and 9 of the 11 lowest values in the 40-yr time series have been recorded in the last decade. Harvests of male spiny dogfish have been negligible. The numerical abundance of mature male to mature female dogfish is presently about 4:1, higher than the expected 2:1 ratio that was observed prior to the directed fishery. Size compositions of both male and female dogfish populations are characterized by few fish smaller than 60 cm, owing to low recruitment. The decade-long reduction in recruitment will induce an oscillation in future stock abundance levels, as the weak cohorts enter the mature stock over the next 10 years. Female spawning stock biomass should continue to increase until 2010 and decline afterward, when the smallest year classes on record enter the mature component of the population. Total stock abundance should increase after this, if survival of pups returns to average levels.

A biomass target for mature female spiny dogfish has not been collaboratively agreed upon by the New England and Mid-Atlantic Fishery Management Councils. A swept-area biomass target of 200,000 mt has been proposed and accepted by the Mid-Atlantic Council but not the New England Council.

Biomass Trends

Females

The 3-year average swept-area biomass of mature female dogfish (≥ 80 cm) in the population increased steadily from the mid-1980s to 1990, but declined by nearly 200,000 mt between 1990 and 2000 (Table 1; Fig 1, top). Subsequently, mature female biomass stabilized and then increased, coincident with the restrictions in the commercial fishery. The high swept area biomass values in spring 2006 and spring 2007 exert a strong influence on the trend, suggesting that annual estimates in 2002-2005 were too low, given the changes in overall abundance. The swept-area biomass estimate for mature female spiny dogfish in the 2007 NEFSC spring bottom trawl survey is 158,000 mt. While this value is less than the estimate of 253,400 mt in the spring 2006 survey, the 3-yr arithmetic average for 2005 to 2007 increased to 155,800 mt, 34% higher than the 3-yr average in 2006 (*i.e.*, 116,600 mt). The 2007 estimated swept-area biomass for mature females is consistent with biomass forecasts made in 2003 at SARC 27 (151,000 mt in 2007) and in 2006 at SARC 43 (139,000 mt in 2007).

The present 3-yr average mature female swept-area biomass estimate of 158,000 mt is 79% of the rebuilding target of 200,000 mt adopted by the Mid-Atlantic Fishery Management Council. Projection model forecasts indicate that the median estimate of female biomass will peak in about 2010 at just short of 200,000 mt. However, the uncertainty associated with the projections is high, and thus there is a good chance that the rebuilding target could be exceeded within the next 3 years. An abundance estimate of 189,600 mt in 2008 would be sufficient to increase the simple 3-year average to 200,000 mt overall. While every indicator suggests that the population should decline after this momentary peak, external pressure to reopen the fisheries and relax regulations may be intense.

Biomass of immature females (36-79 cm) has declined by about 50% since 1994 (Fig. 1, bottom). The decline is attributed to modest harvesting during the 1990s, growth of the larger individuals in this size range into the mature size range (≥ 80 cm), and the poor recruitment since 1997 (Table 1; Fig. 2). The decline in this size range component has implications for the biomass recovery of mature female dogfish in the future as these immature females will grow and recruit to the spawning stock. Hence, a declining trend in the biomass of immature females presages a future declining trend in the biomass of mature female dogfish.

Males

Since 1980, biomass of large males (≥ 80 cm) has averaged about 32,000 mt, with a peak during 1990-1991, a slight decline from 1992 until 2000, and afterward a modest increase (Table 1; Fig. 3, top).

Biomass of immature and mature male dogfish (36-79 cm) more than doubled between 1980 and 1993, and has exceeded 200,000 mt since the early 1990s (Fig. 3, bottom). A slight increase is evident since 2001, a pattern consistent with commercial effort and landings restrictions.

Size Composition

The directed fishery that occurred during the early and mid-1990 targeted larger females, such that by 1999, the size frequency of large females in the stock was severely truncated (Fig. 4). Coincident with this reduction in mature spawning biomass, recruitment sharply declined beginning in 1997. A decade of low recruitment resulted in a progressive reduction of immature females; by 2006-2007, only a very small fraction of the immature female stock is smaller than 60 cm. Overall, about 80% of the female stock is between 65 and 85 cm.

Although changes in the size composition of large male spiny dogfish (> 80 cm) have been minimal over time (Fig. 5), the same progressive reduction of smaller size-classes is evident for males as for females. Overall, about 80% of the males in the stock are between 65 and 80 cm in body length.

The simultaneous and progressive reductions in abundance of both male and female dogfish smaller than 60 cm suggest that the low recruitment estimates for 1997-2007 are not sampling artifacts. Instead, these changes imply low production and a decreased survival rate of pups. Previous assessments have hypothesized a joint maternal effect of both (a) a reduced number of offspring and (b) a smaller average size of offspring. An indirect, but incompletely understood, mechanism may be the highly skewed sex ratio for mature dogfish (Fig. 6). Because males mature earlier than females, the expected ratio of mature males to mature females in a lightly exploited spiny dogfish population is about 2:1. This ratio existed in the stock until about 1991 when it then began to increase, exceeding 6:1 during 2000-2005. The sex ratio declined in 2006 and 2007 to about 4:1, but remains higher than the 2:1 ratio found in a lightly exploited population.

What Caused the Large Increases in Abundance in 2006 and 2007?

The increased abundance of spiny dogfish observed in the spring 2006 and 2007 NEFSC spring surveys is generally consistent with forecasts made in the 2003 and 2006 stock assessments, which were based on patterns of growth, recruitment, and the expected reductions in fishing mortality as a result of management regulations. It is equally important to examine the lower-than-expected abundance estimates for the years 2003, 2004 and 2005 and to try to identify their causes. Why were the estimates in these years so low?

Although availability is often cited as a cause for such disparities, a variety of mechanisms could be responsible, including temperature and salinity changes, availability of forage, or simply a shift in the spatial distribution of the stock to be more concentrated in survey sampling strata having greater areas, and therefore higher weighting factors. Analyses of oceanographic factors must be undertaken with considerable care to avoid spurious correlations. Given the magnitude of the changes in dogfish abundance during the last five years, the probability of detecting an environmental correlate affecting abundance (or densities) is at least modest. However, more collaborative research on biological oceanography is needed.

Excessive survey sampling variability does not appear to be the responsible cause. Comparison of the mean-variance relationship for survey strata during the 1968-2005 period with these same strata during 2006-2007 revealed no change in the underlying pattern of variability. In fact, more detailed statistical analyses (using smoothed regressions and confidence ellipses) indicate a remarkably coherent pattern during these two time-intervals. Hence, the marked changes in the survey abundance and biomass indices do not appear to be driven by a small number of aberrant tows.

Differential spatial distribution patterns of male and female spiny dogfish, however, may be a factor. To assess this, weight-based estimates of sex ratios were computed from the NEFSC fall, winter and spring bottom trawl surveys for 2001-2005. Figure 7 shows the data from NEFSC spring surveys during 2001 to 2005. In all of the surveys, a strong gradient of decreasing female population fraction with distance from shore. The same pattern was also observed during the 2006-2007 spring surveys (Fig. 8).

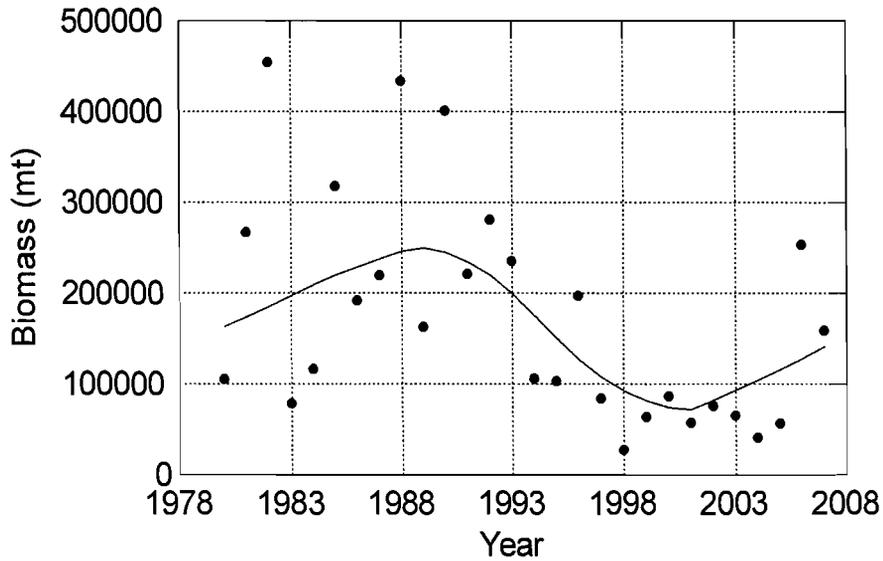
Further examination of fall and spring survey tow-based sex ratios (by weight), separated north and south of $40^{\circ} 30'$ revealed a remarkably consistent pattern. Females were consistently more abundant than males from shore to about 40 nm offshore. Beyond 40 nm, males were more abundant in the spring and fall bottom trawl surveys (Fig. 9), especially so south of $40^{\circ} 30'$ latitude in the spring. These results are consistent with the observations of commercial and recreational fishermen, and help to explain the predominance of mature females in the directed fishery that was concentrated in nearshore waters in the 1990s. Additional analyses of 1989-2007 at-sea observer data corroborate the trends in the NEFSC bottom trawl surveys (Fig. 10). Economic prospects for a male-only fishery are therefore constrained to the extent that most of the high concentrations of males are located far from shore.

Table 1. Biomass estimates for spiny dogfish (thousands of metric tons) based on area swept by NEFSC trawl during spring surveys, 1968-2007.

Year	Lengths >= 80 cm			Lengths 36 to 79 cm			Length <= 35 cm			All Lengths	Females >= 80 cm, 3-yr Moving Average
	Females	Males	Total	Females	Males	Total	Females	Males	Total		
1968			41.4			110.4			1.52	153.3	
1969			27.4			69.3			0.66	97.3	
1970			36.7			33.0			3.19	72.9	
1971			103.8			27.6			2.76	134.2	
1972			126.6			145.9			1.55	274.1	
1973			178.7			165.3			2.58	346.5	
1974			221.9			179.6			2.66	404.1	
1975			105.1			125.0			3.97	234.0	
1976			96.3			120.8			1.20	218.3	
1977			77.3			68.0			0.53	145.9	
1978			87.4			131.2			1.24	219.8	
1979			52.3			18.6			1.82	72.7	
1980	104.7	15.3	168.1	16.8	72.2	123.5	0.32	0.39	0.84	292.4	
1981	266.5	24.4	293.8	25.5	75.1	100.6	2.14	2.80	5.06	399.5	
1982	454.0	34.6	488.6	61.6	143.3	204.9	0.48	0.69	1.17	694.6	275.1
1983	77.7	30.1	107.8	36.7	98.5	135.3	3.09	3.95	7.03	250.1	266.1
1984	115.6	27.5	143.1	33.4	88.0	121.4	0.14	0.21	0.35	264.9	215.8
1985	317.0	125.5	442.6	102.5	502.5	605.0	4.01	5.10	9.10	1056.7	170.1
1986	191.3	3.5	194.8	51.9	29.6	81.5	0.84	1.11	1.96	278.2	208.0
1987	219.1	90.5	309.6	61.5	171.7	233.1	2.46	4.76	7.22	550.0	242.5
1988	433.1	26.2	459.4	93.3	153.6	247.0	0.89	1.09	1.98	708.4	281.2
1989	162.1	40.5	202.6	100.4	158.2	258.6	1.14	1.54	2.68	463.9	271.5
1990	400.3	70.7	471.0	163.5	303.1	466.6	0.68	1.03	1.71	939.3	331.8
1991	220.4	30.0	250.3	108.4	186.3	294.7	0.98	1.43	2.41	547.4	260.9
1992	280.5	41.9	322.4	179.9	231.9	411.8	0.73	1.00	1.73	735.9	300.4
1993	234.6	27.8	262.5	104.1	198.5	302.6	0.55	0.65	1.21	566.3	245.2
1994	105.3	37.1	142.4	108.3	254.2	362.5	4.28	5.54	9.82	514.8	206.8
1995	102.4	29.5	131.9	154.0	174.5	328.5	0.25	0.35	0.59	460.9	147.5
1996	196.5	33.4	229.9	201.7	334.8	536.4	0.98	1.14	2.12	768.5	134.7
1997	83.7	17.5	101.2	205.2	209.1	414.3	0.05	0.05	0.10	515.5	127.5
1998	26.7	22.9	49.7	69.0	236.4	305.4	0.05	0.08	0.13	355.2	102.3
1999	62.7	20.4	83.1	140.8	256.4	397.2	0.02	0.03	0.05	480.4	57.7
2000	85.8	11.7	97.5	91.5	166.2	257.7	0.07	0.09	0.16	355.4	58.4
2001	56.7	16.7	73.4	71.4	160.5	231.9	0.04	0.03	0.07	305.4	68.4
2002	75.2	19.0	94.2	131.5	246.3	377.8	0.06	0.06	0.12	472.1	72.5
2003	64.5	22.5	87.1	125.5	256.3	381.8	0.13	0.14	0.27	469.1	65.5
2004	40.4	10.0	50.3	46.9	126.2	173.1	0.66	0.91	1.56	225.0	60.0
2005	55.8	30.8	86.6	59.8	294.7	354.5	0.28	0.42	0.69	441.9	53.6
2006	253.4	29.0	282.5	141.6	406.5	548.1	0.10	0.17	0.27	830.8	116.6
2007	158.0	18.9	176.9	73.6	227.6	301.1	0.23	0.32	0.56	478.6	155.8

Notes: Total equals sum of males and females plus unsexed dogfish. Data for dogfish prior to 1980 are currently not available by sex.

Female Spawning Stock (≥ 80 cm) (mt)



Immature Female Stock (36-79 cm) (mt)

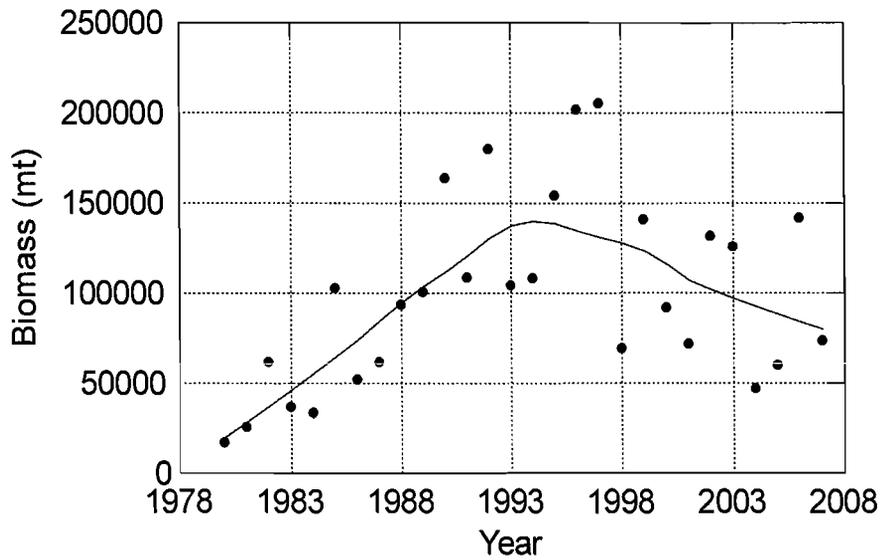


Fig. 1. Swept area biomass of female dogfish 80 cm and greater (top) and biomass of female dogfish 36-79 cm (bottom), based on NEFSC Spring Bottom Trawl Survey, 1980-2007. Lines represent LOWESS smooth with tension factor=0.5.

Swept Area Biom., Pups, Nom. Footprint

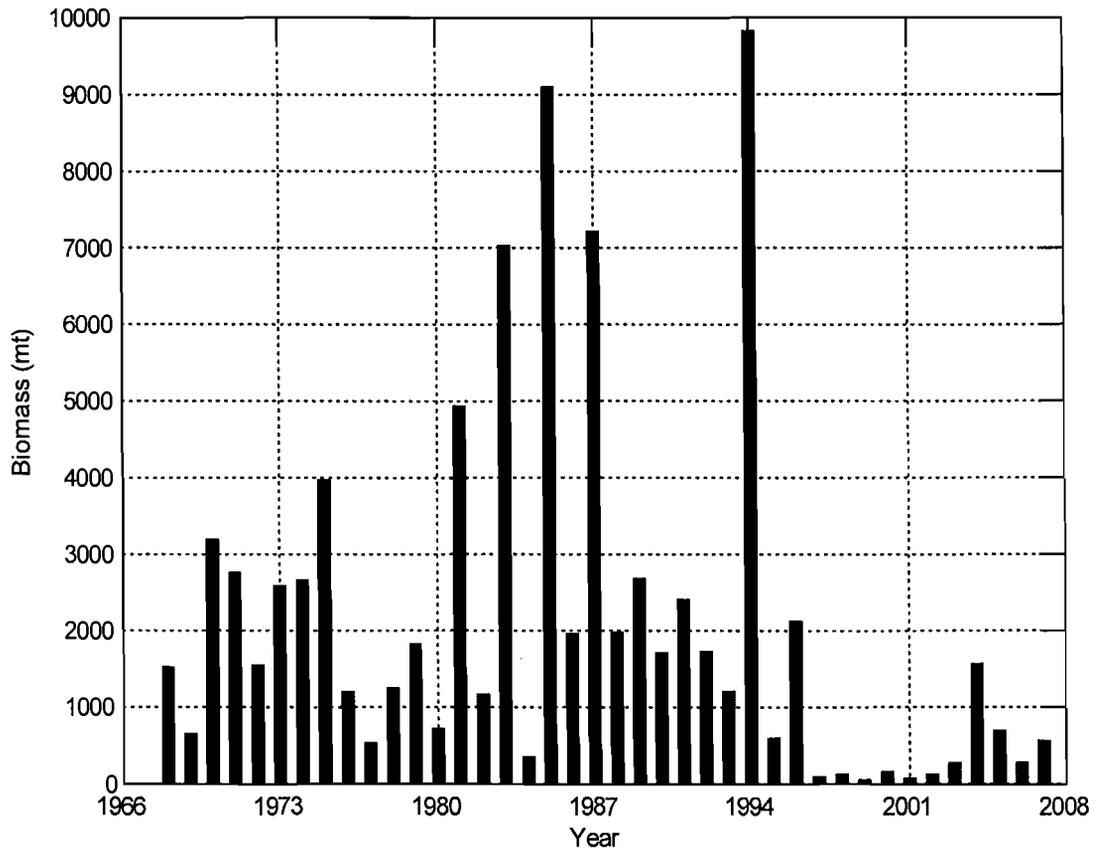
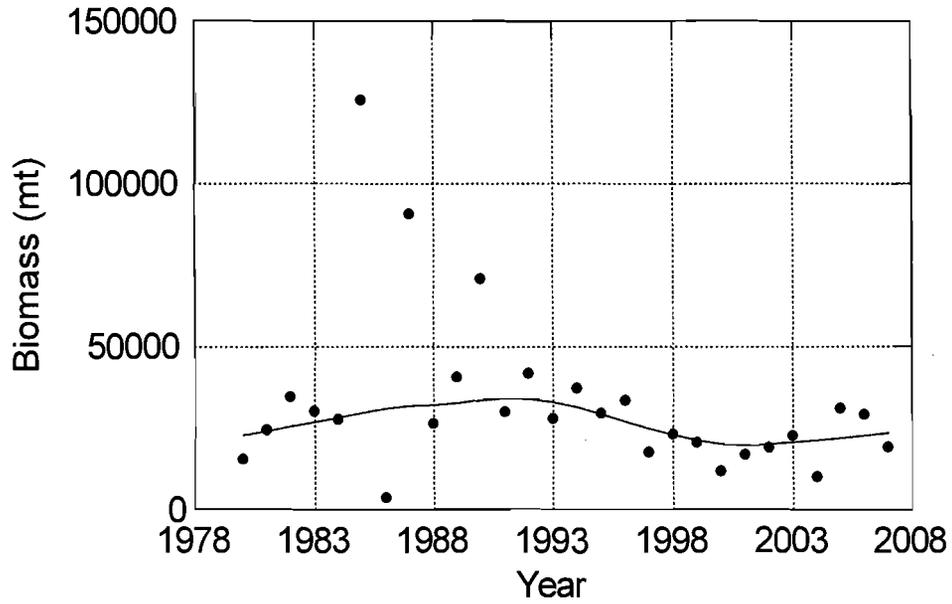


Fig. 2. Swept area biomass of spiny dogfish recruits (< 1 yr old and < 36 cm TL), based on NEFSC Spring Bottom Trawl Survey, 1968-2007, both sexes combined.

Male Stock (≥ 80 cm) (mt)



Male Stock (36-79 cm) (mt)

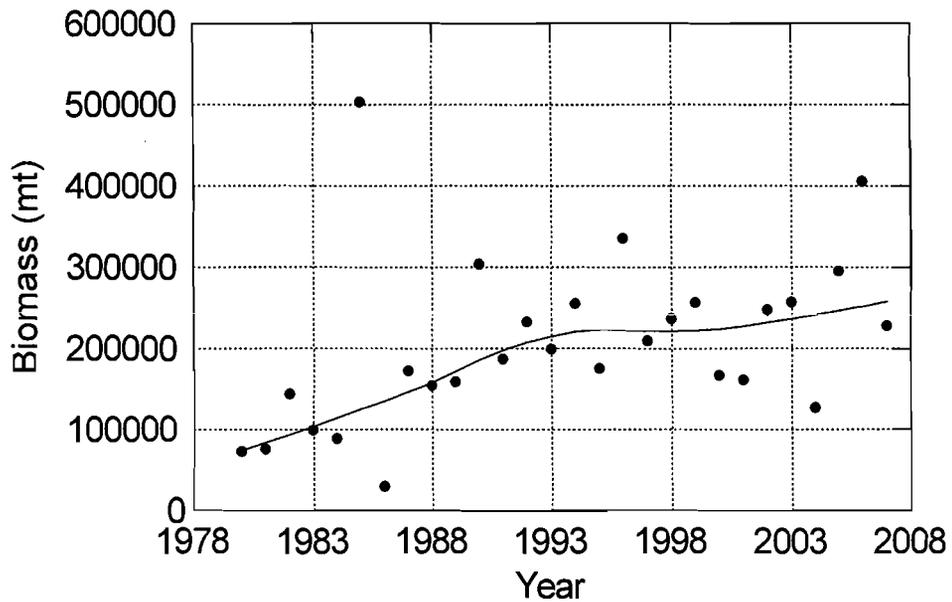


Fig. 3. Swept area biomass of male dogfish 80 cm and greater (top) and biomass of male dogfish 36-79 cm (bottom), based on NEFSC Spring Bottom Trawl Survey, 1980-2007. Lines represent LOWESS smooth with tension factor=0.5.

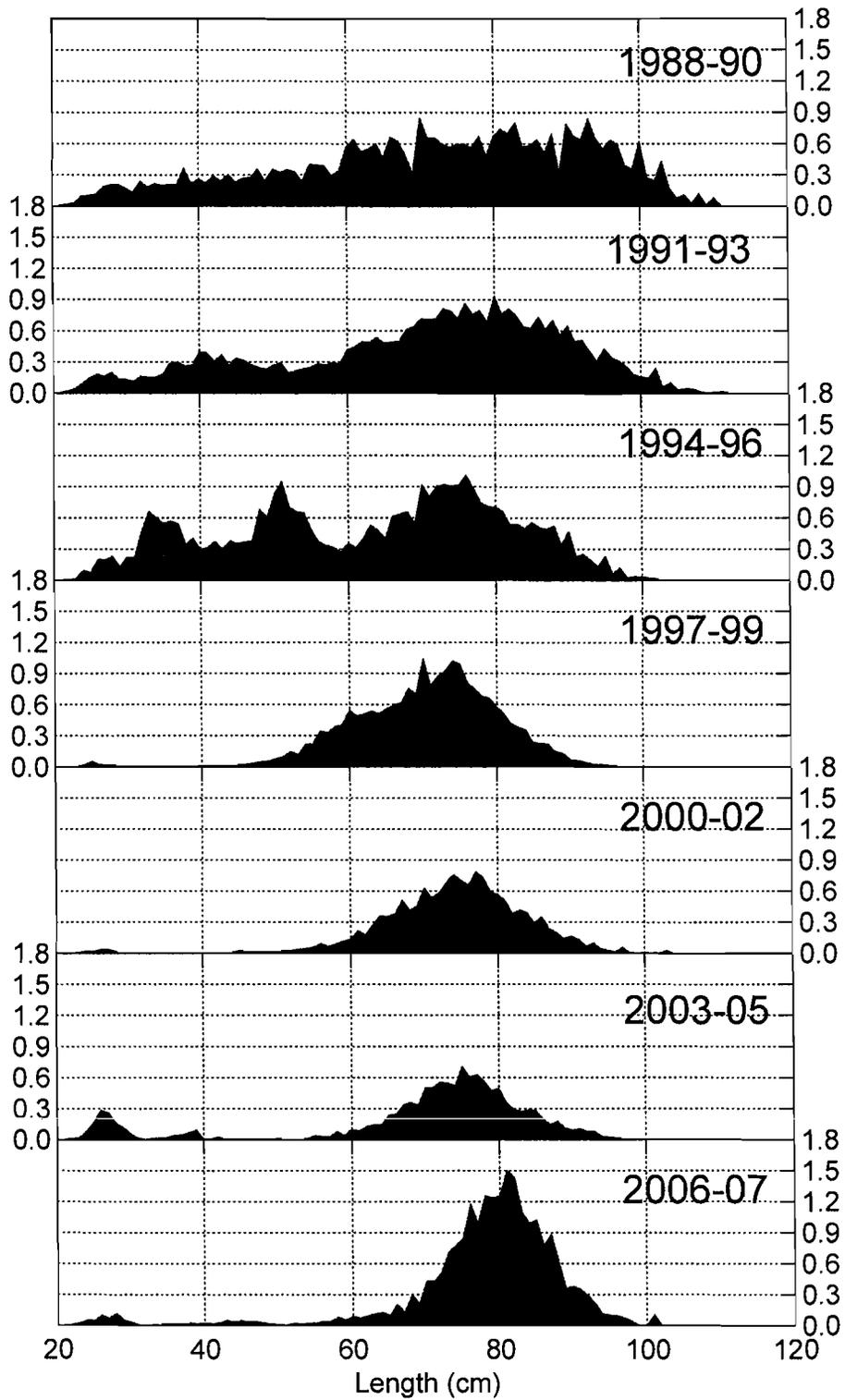


Fig. 4. Number of female spiny dogfish per tow by 1 cm length class in NEFSC Spring Bottom Trawl Survey by 3-yr period, 1988-2007.

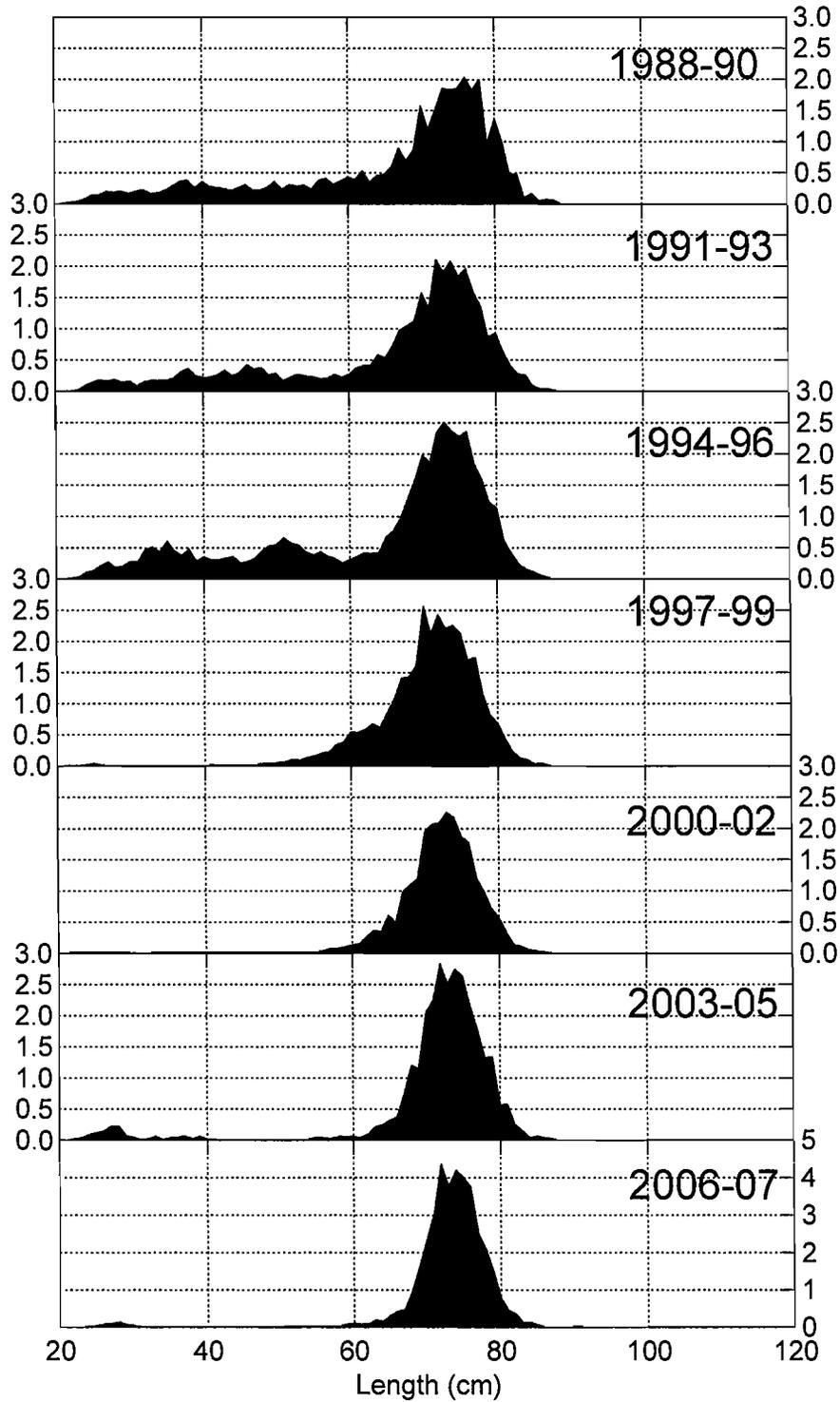


Fig. 5. Number of male spiny dogfish per tow by 1 cm length class in NEFSC Spring Bottom Trawl Survey by 3-yr period, 1988-2007. Note the scale change for 2006-07.

Mature Male to Female Ratio, Spring Survey, 1980-2007

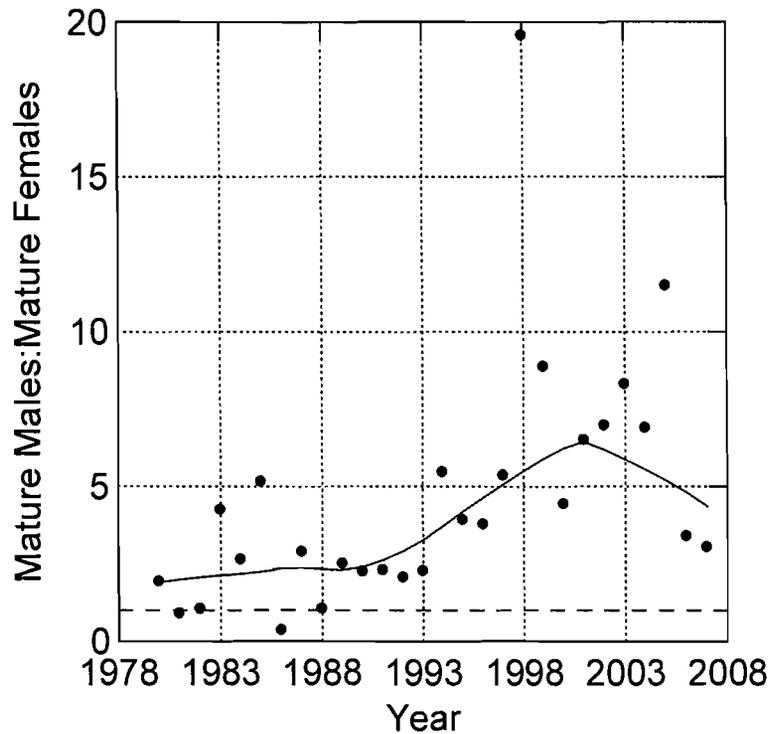


Fig. 6. Ratio of number of mature male (>60 cm) to mature female (>80 cm) spiny dogfish in NEFSC Spring Bottom Trawl Surveys, 1980-2007. Line represents LOWESS smooth with tension=0.5.

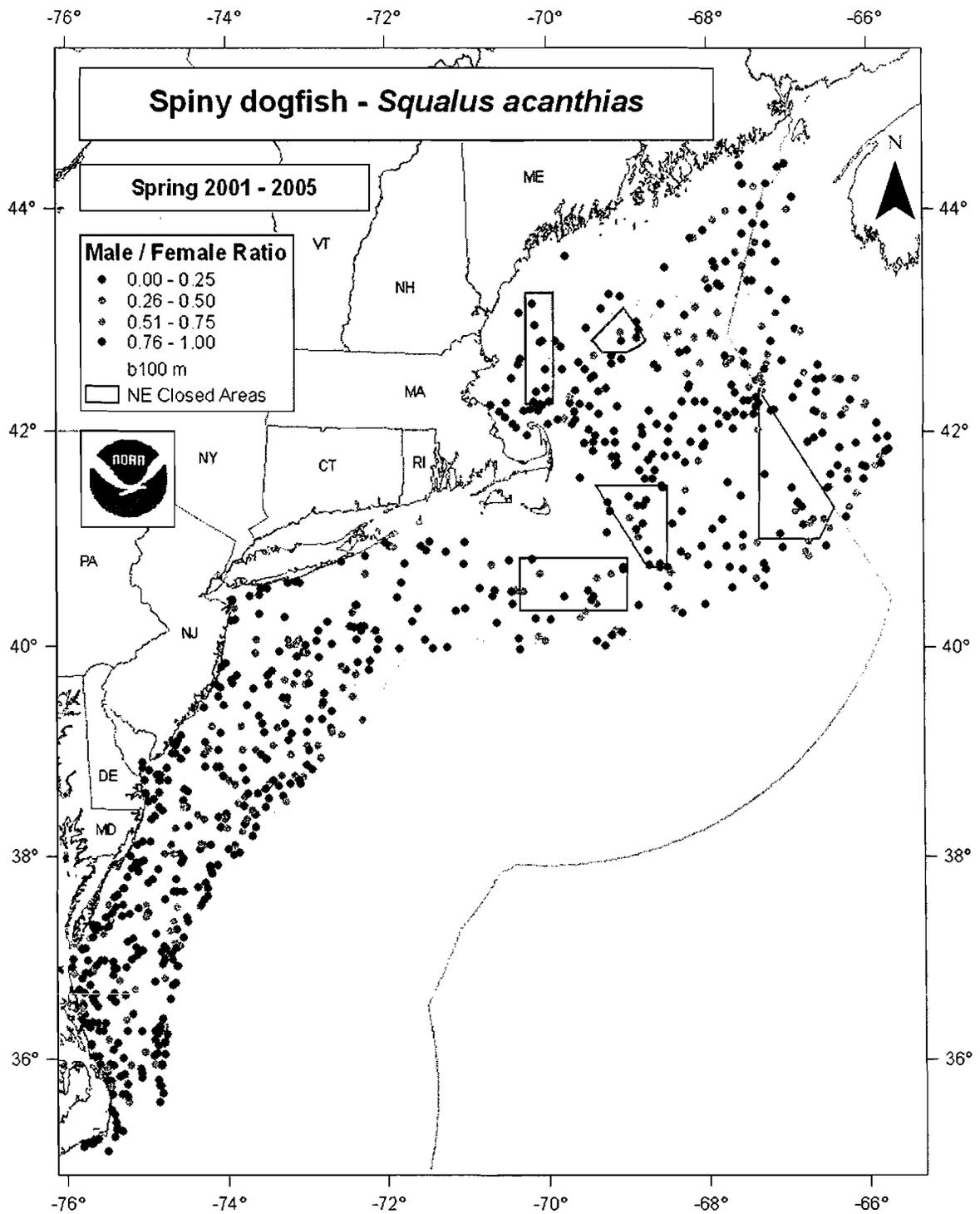


Fig. 7. Female fraction of total weight by tow for NEFSC Spring Bottom Trawl Survey for 2001 to 2005. Dark red dots represent tows with 75% or more females; dark blue dots represent tows with 75% or more males.

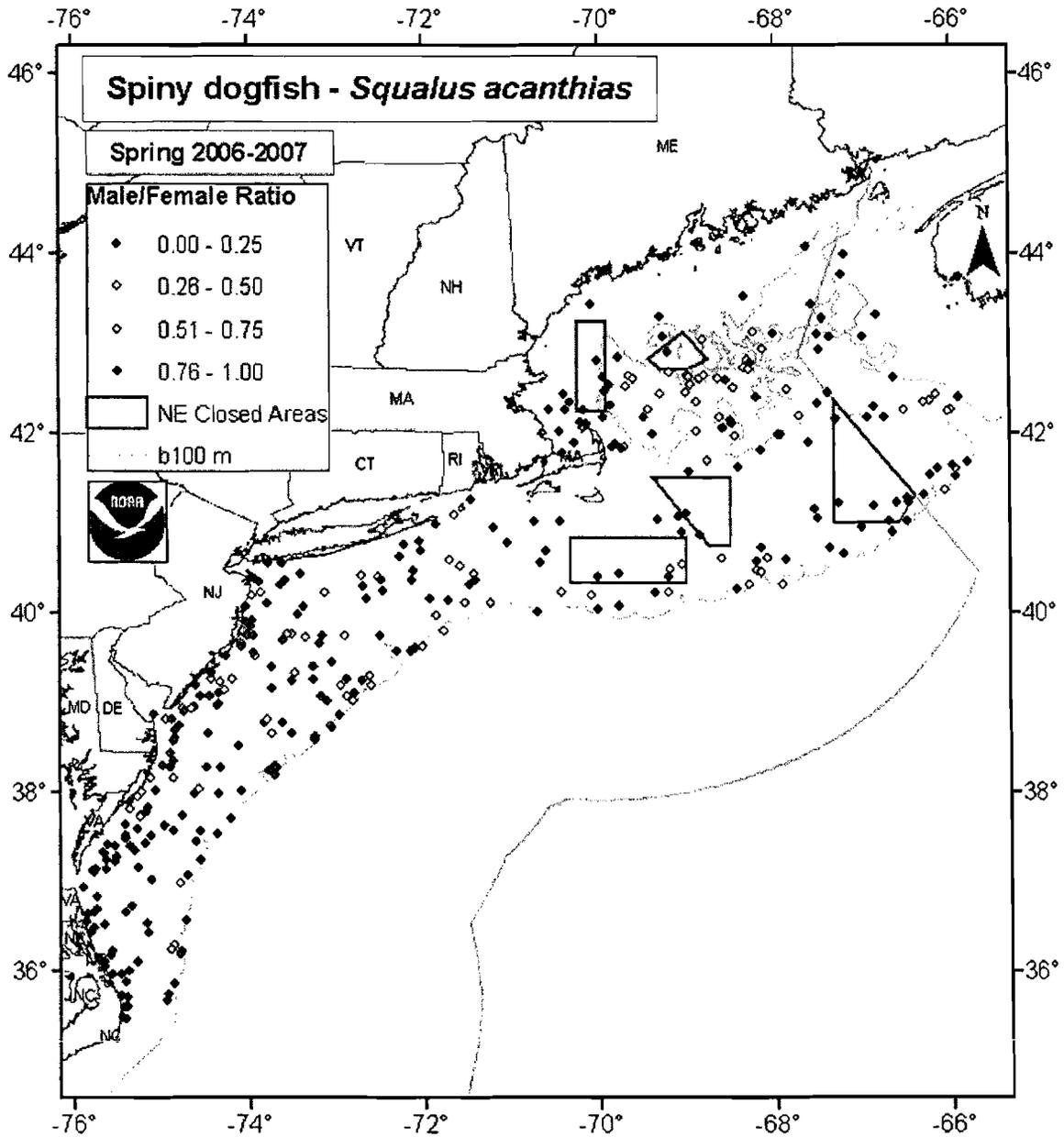


Fig. 8. Female fraction of total weight by tow for NEFSC Spring Bottom Trawl Survey for 2006 and 2007. Dark red dots represent tows with 75% or more females; dark blue dots represent tows with 75% or more males.

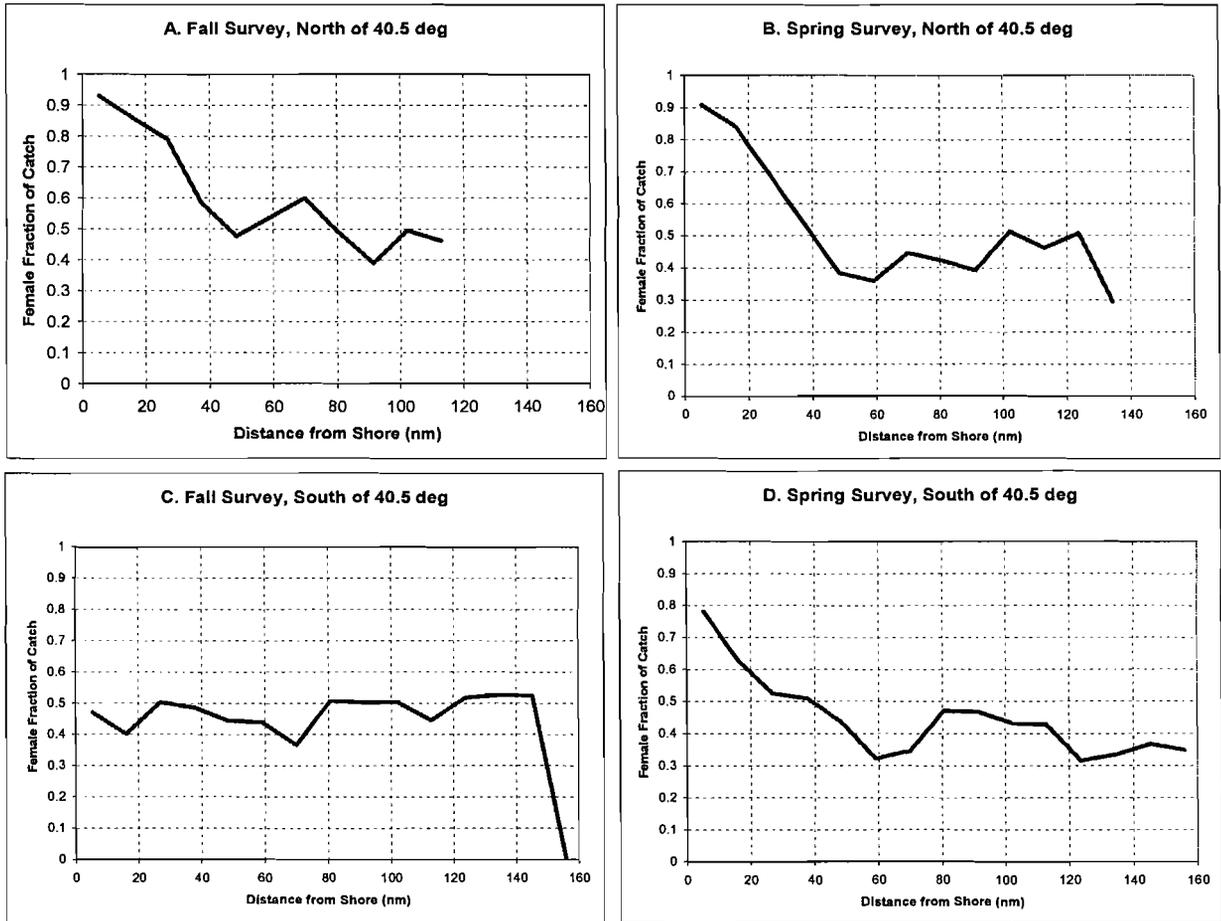


Fig. 9. Fraction female by weight for NEFSC Fall (A, C) and Spring (B, D) Bottom trawl survey tows for 1980 to 2006 (fall) and 1980-2007 (spring) versus distance from shore (nm). To examine effects of seasonal migration, ratios are estimated for north (A, B) and south (C, D) of 40.5 degrees north latitude.

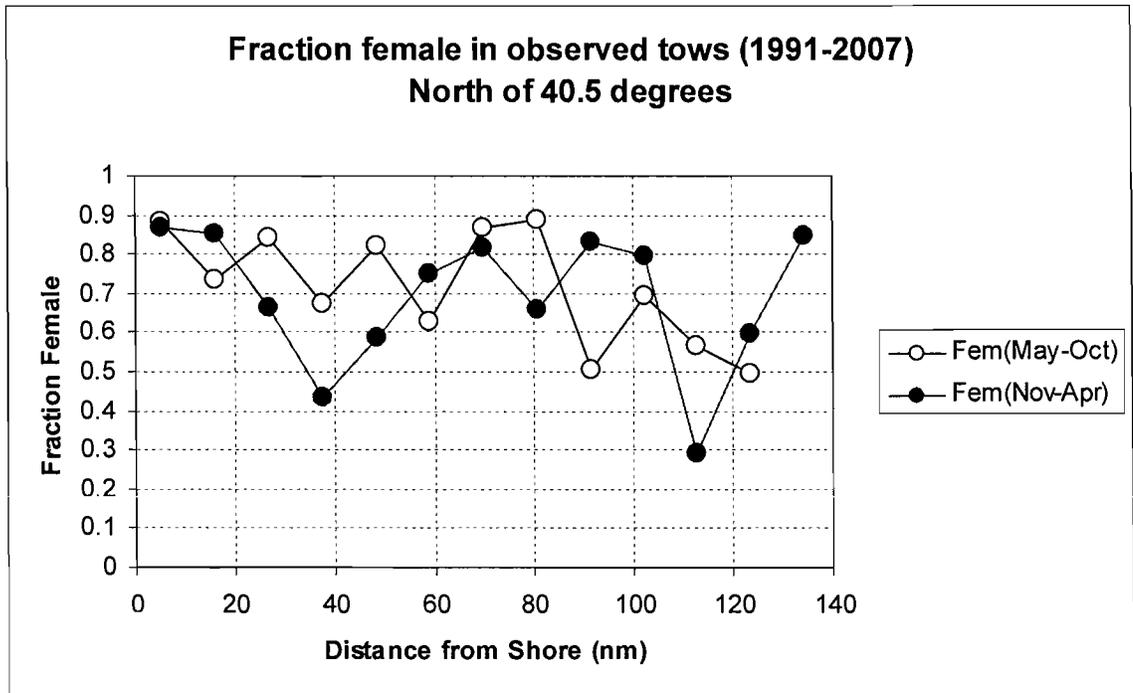
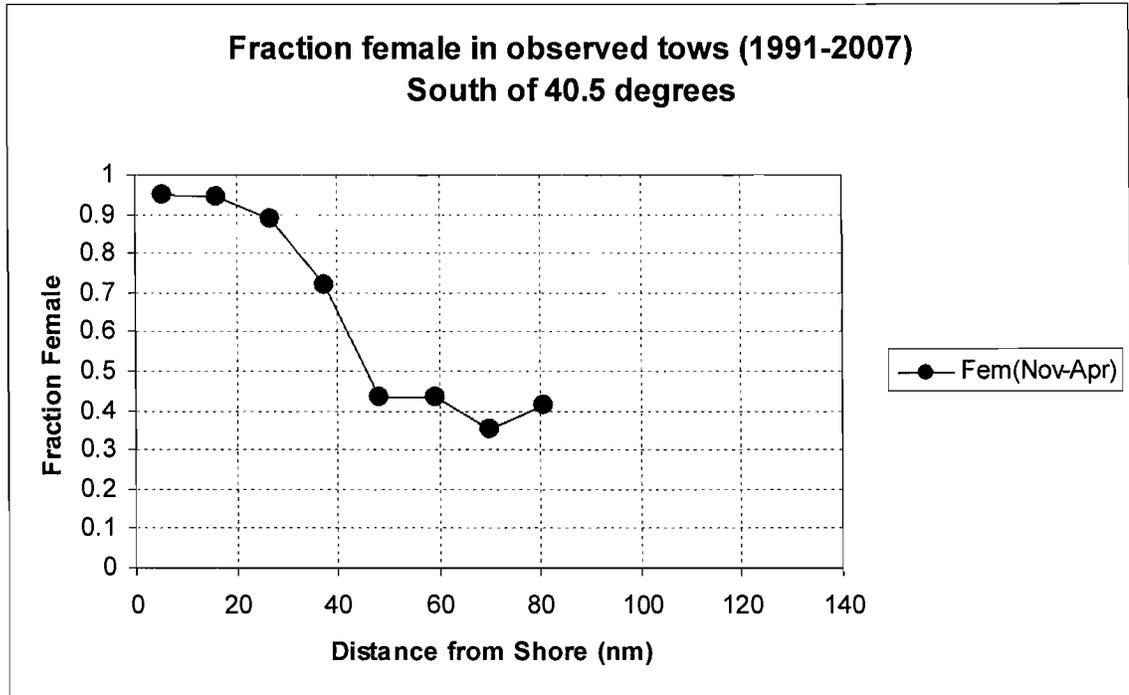


Fig. 10. Fraction of female spiny dogfish biomass per tow versus distance from shore (nm) for observed tows on commercial vessels, 1991-2007. Observation periods correspond to Period 1 and Period 2 of the Spiny Dogfish FMP. Selectivity of commercial gear for larger fish is expected to increase the fraction of females in the tows.

#2

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

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Chairman

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Vice Chairman

M E M O R A N D U M

TO: Joint Spiny Dogfish Committee

FROM: Jim Armstrong (Monitoring Committee Chair)

DATE: October 15, 2007

SUBJECT: Spiny Dogfish Monitoring Committee management recommendations based on updated spiny dogfish stock status

A meeting of the Spiny Dogfish Monitoring Committee (MC) was held on September 19, 2007 in Providence, RI. Seven of the eleven members of the Monitoring Committee were present:

Jim Armstrong (Chair, MAFMC staff)
Lori Steele (NEFMC staff)
Paul Rago (NEFSC)
Hannah Goodale (NERO)
Angel Bolinger (MD DNR)
Dan McKiernan (MA DMF)
Paul Parker (CCCHFA, Industry rep)

Also present:
Red Munden (NCDMF, MAFMC)
Chris Vonderweidt (ASMFC staff)
Kathy Sosebee (NEFSC)
Clare McBane (NH Fish & Game)
Matthew Gates (CT DMF)
Eric Brazer (CCCHFA, Industry rep)

Because there is significant overlap in committee membership, the meeting was held such that it served the purposes of both the MC and the ASMFC's Spiny Dogfish Technical Committee (TC). For both Committees, follow-up conference calls were held on Oct 2nd and 4th, 2007 to review short-term projections of harvest scenarios. Participation in those discussions was as follows:

MC Participants in the October 2, 2007 conference call:

Jim Armstrong (Chair, MAFMC staff)
Lori Steele (NEFMC staff)
Paul Rago (NEFSC)
Hannah Goodale (NERO)
Angel Bolinger (MD DNR)
Dan McKiernan (MA DMF)
Chris Hickman (NC Industry rep)

Also present:
Chris Vonderweidt (ASMFC staff)
Kathy Sosebee (NEFSC)
Clare McBane (NH Fish & Game)
Matthew Gates (CT DMF)
Eric Brazer (CCCHFA, Industry rep)
Hugh Carberry (NJDFW)

MC Participants in the October 4, 2007 conference call:

Jim Armstrong (Chair, MAFMC staff)
Lori Steele (NEFMC staff)
Hannah Goodale (NERO)
Angel Bolinger (MD DNR)
Dan McKiernan (MA DMF)
Chris Hickman (NC Industry rep)
Jack Musick (VIMS)

Also present:
Chris Vonderweidt (ASMFC staff)
Kathy Sosebee (NEFSC)
Clare McBane (NH Fish & Game)
Matthew Gates (CT DMF)
Eric Brazer (CCCHFA, Industry rep)
Bob Beal (ASMFC Staff)
Sonja Fordham (Observer)

Review and discussion by both Committees was technical in nature and the corresponding management recommendations are meant to achieve biologically-based targets for the spiny dogfish stock. Because of this, there is general consistency in the recommendations made by the two Committees.

A report compiled by the NEFSC - "Spiny Dogfish... An Update of Stock Status Based on the the 2007 NEFSC Spring Bottom Trawl Survey" - was distributed for review by the MC in August, 2007, prior to the Providence meeting and is included as a separate attachment. The updates and management recommendations presented here are based on that report as well as information presented by Dr Paul Rago at the MC meeting and follow-up conference call.

Condition of the stock:

The most recent stochastic estimate of mature female biomass indicates that the spiny dogfish stock is *not overfished* (probability that $B_{2006} > B_{\text{threshold}} \approx 97\%$). Incorporating the 2007 spring bottom trawl survey results into the calculation of mature female biomass generates an estimate of 141,350 mt (312 million lbs) for 2006 that is greater than the biomass threshold of 100,000 mt. The stochastic estimate of biomass in 2004 was around 48,000 mt and in 2005 was 106,385 mt. A near tripling of mature female biomass (48,000 mt \rightarrow 141,350 mt) in only two years is biologically unrealistic given the growth rate for this species. Nevertheless, the updated 2006 biomass estimate is in the range of projected 2006 values from the last two assessments (SARC 37 in 2003; SARC 43 in 2006). As explained in the NEFSC's status update, it appears that distributional shifts and a potential variety of environmental correlates may have contributed to underestimates of biomass in 2003 - 2005. While measures of within-year sampling variability have remained fairly stable throughout the survey time series, inter-annual variability in survey-based biomass estimates require smoothing across years in order to characterize population trends. In light of the inherent uncertainty in estimating population biomass in a given year, the MC recommends a cautious management response in this or any other specification setting exercise.

The most recent stochastic estimate of fishing mortality for spiny dogfish stock indicates that *overfishing is not occurring* (probability that $F_{2006} < F_{\text{threshold}} \approx 100\%$). Total removals in 2006 were approximately 9,182 mt (20.242 million lb) corresponding to an F estimate of 0.109, well below the overfishing threshold of $F = 0.39$ and essentially equivalent to the F target of $F_{\text{rebuild}} = 0.11$. Among the sources of removals, U.S. commercial landings comprised 2,363.9 mt (5.212 million lb), Canadian commercial landings were 2,352 mt (5.186 million lb), U.S. commercial discards were 3,814 mt (8.408 million lb), and U.S. recreational landings plus dead discards were 652 mt (1.437 million lb).

The biomass estimate of pups (length \leq 35 cm) from the 2007 trawl survey was low (560 mt) compared to the historic average (2,780 mt; 1968-1996). This is consistent with the generally low catches of pups that have been observed in the survey for the past ten years (mean 1997-2007 survey-based Biomass_{pups} = 362 mt). The recent decadal "stanza" is the lowest in the survey time series and suggests that the removal of much of the mature female biomass during the fishery of the 1990s has depressed productivity. Weak pup production is further supported by low survey catches of spiny dogfish in the larger size categories that these cohorts have grown into. A potentially important factor in the survival of pups under current conditions is that the male to female sex ratio is skewed strongly toward males (4:1) compared to the 2:1 ratio expected in a lightly exploited population. The mechanism by which an over-abundance of males may be constraining either the production and/or survival of spiny dogfish pups is not well understood.

Monitoring Committee Recommendations

As per the Federal Spiny Dogfish FMP, the MC's management recommendations are intended for consideration by the Joint Spiny Dogfish Committee and the Councils at their meetings in October and November 2007.

In accordance with the mandates established in the Spiny Dogfish FMP, the MC recommends a commercial harvest quota for the upcoming fishing year that will "assure that target F will not be exceeded." During the ongoing rebuilding period, target F is based on $F_{\text{rebuild}} = 0.11$, an update from SAW 43 to the previous $F_{\text{rebuild}} = 0.03$. For the purposes of satisfying the precautionary charge of "assuring" this will not be exceeded, the recommended commercial quota is based on stock projections that include measures of uncertainty. Projections were run for the upcoming fishing year, such that the average bootstrap estimate of total removals reflected a commercial quota set in a range that included status quo (~5.2 million lbs), as well as 6.0 million lbs, and 8.0 million lbs under assumptions about the apportionment of landings compared to other sources of mortality. *Projections using quotas greater than 8.0 million lb were unnecessary since the corresponding F for an 8.0 million lb was known to be in excess of target F.*

Note that total removals, not just U.S. commercial landings are considered in the projection exercise. Other sources of removals include U.S. commercial discards, Canadian harvest, and U.S. recreational catch. Because the commercial quota is the remainder of total removals after other sources have been accounted for, the recommended quota is greatly influenced by assumptions about the magnitude of these other removals. There was ample discussion of this issue by the MC.

One scenario that was considered assumes that the magnitude of other removals will remain constant in upcoming years. Alternatively, other removals could be assumed to increase proportionally with landings.

As to which of these scenarios is more plausible, Figure 1 indicates that from 2001 - 2006, "other removals" are generally trendless and not highly variable. The major single source of removals is U.S. commercial discards (range: 3,700-5,700 mt; mean = 4,602 mt). Canadian commercial landings have ranged from 1,900 mt (2003) to 3,500 mt (2001). A less important but, not discountable source of removals is the U.S. recreational fishery, where removals occur primarily through discarding (range: 500-800 mt; mean = 640 mt).

For the purposes of recommending a quota for 2008, the Monitoring Committee accepted the scenario with no increase in other removals, most importantly, discarding in 2008 relative to 2006. The Committee's acceptance of this scenario was based on the observation of no overall trend in discards since 2001. Given that discards do vary somewhat from year to year, discards in 2008 are unlikely to be exactly equivalent to those estimated for 2006. However the Committee could find no compelling reason to expect a shift in any particular direction. *Under the constant discard scenario, the commercial quota that corresponded to $F = 0.11$ in 2008 was 6.0 million lbs. As such, the consensus recommendation by the Committee is a commercial quota be specified at 6.0 million lbs for the upcoming specification year(s).*

As to trip limits, the MC discussed this issue at considerable length, but could not reach complete consensus. There was support on the MC for maintaining the current 600 lb Federal trip limits. As of the writing of this memo, the supplementary information supporting that position, and the opposing opinions were still being gathered. If no agreement on this issue can be resolved by the MC, JC, and Councils, a carry over provision will extend the status quo trip limits into the upcoming year.

Framework Adjustment 1 to the Spiny Dogfish FMP allows the Councils to specify management measures for as many as five years. The MC recommends that the Councils use the multi-year specification option for the next three years, and further recommends that the quota and trip limit recommended for FY2008 be applied to FY2009-FY2010.

Summary of Spiny Dogfish Monitoring Committee Recommendations:

Commercial Quota (FY2008).

The commercial quota specified for fishing year 2008 (4.0 million lbs) can be increased to 6.0 million lbs with a reasonable expectation that target F ($F_{\text{rebuild}} = 0.11$) will not be exceeded. As per the FMP, the quota will be divided into two semi-annual quota periods:

Quota period 1: 57.9% of 6.0 million lb quota (3,474,000 lbs)

Quota period 2: 42.1% of 6.0 million lb quota (2,526,000 lbs)

Trip Limits (FY2008).

Quota period 1 (May 1 - October 31) = 600 pounds*

Quota period 2 (November 1 – April 30) = 600 pounds*

Multi-year Specifications.

Yes – three years, quota and trip limit consistent with recommended management measures for 2008.

* not a consensus recommendation.

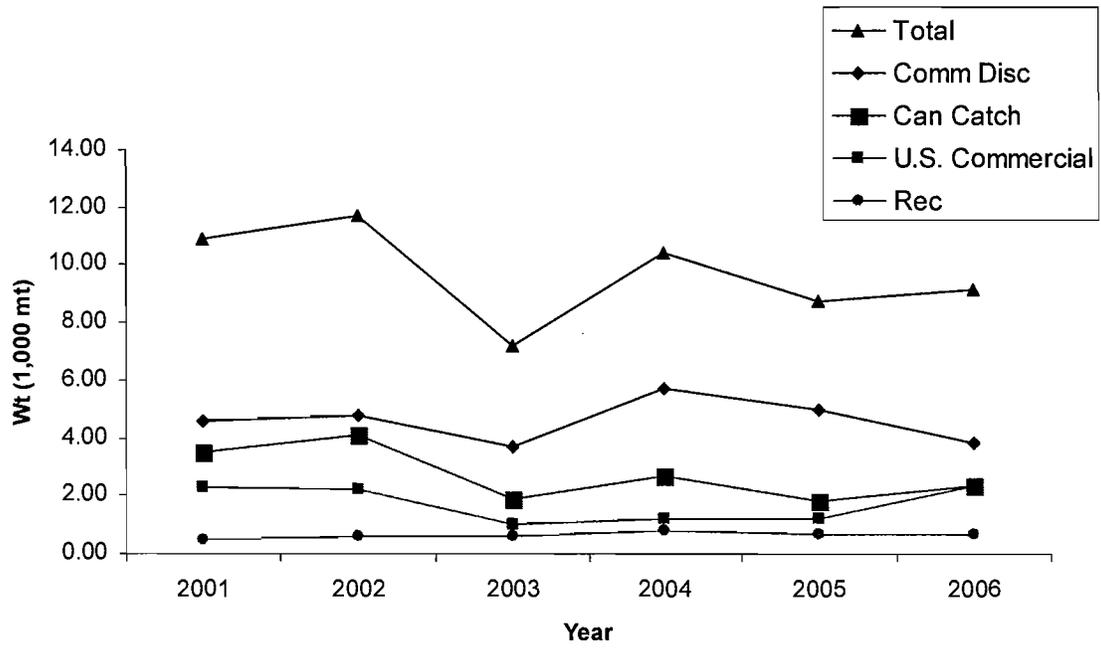


Figure 1. Recent trends in the various sources contributing to estimated fishing mortality for spiny dogfish.

Trip Limit Addendum to the Oct 5, 2007 Spiny Dogfish Monitoring Committee memo to the Joint Spiny Dogfish Committee that addresses spiny dogfish management recommendations based on updated stock status information.

The MC discussed the issue of trip limits at considerable length, but could not reach complete consensus. The following issues are directly or indirectly relevant to the issue of trip limits and reflect Council staff interpretation of the major points discussed by the Committee.

- The NEFSC spring survey catch of mature female spiny dogfish has increased markedly in the past two years such that updated biomass estimates are consistent with projections from the last two SAW assessments. According to current projections, biomass of mature females may exceed the nominal biomass target (200,000 mt) within the next couple of years.
- Thereafter, biomass of mature females is expected to decline such that sustained "recovery" of mature female biomass occurs around 2020. The reason for the projected decline is a decade of low pup production that has created a "hole" in the size composition of the stock. Following a near-term peak in biomass, females from the age classes born during the decade of low pup production will begin to recruit into the reproductive stock. The much lower than usual size of these maturing age classes and growth of existing mature age classes is projected to be insufficient to offset the loss in biomass from various sources mortality, hence a net decrease in mature female biomass. Following the decline, the projections show mature female biomass to begin increasing, however, the increase occurs because it is assumed that future (unobserved) year classes will return to average historic size. Projections that perpetuate recent recruitment levels ultimately result in depletion of the stock, however, this is an unlikely outcome.
- The goal of the Federal spiny dogfish plan during the rebuilding phase has been and will continue to be to recover mature female biomass to the nominal target level. From a management perspective this is done by discouraging fishing practices that hinder stock productivity, i.e., practices that compromise existing biomass of mature female dogfish. If the quota is set such that the fishing mortality rate for mature females is constrained to the target rebuilding F (0.11), then expansion of mature female biomass is expected to occur within the same projection horizon as with a zero quota.
- Although it is possible, under the current projection methodology, to calculate total removals that correspond to the target rebuilding F for the upcoming fishing year, there is currently no projection approach that directly relates spiny dogfish trip limits to fishing mortality.
- Lower trip limits (e.g., the existing 600 lb Federal daily trip limits) may be more likely to constrain total commercial landings of spiny dogfish than higher trip

limits (e.g., 3,000 lbs, the existing cap on state water trip limits). For example, in the 2004 fishing year, when trip limits ≤ 600 lbs were in place in both state and Federal waters, landings were about 2.5 million lbs, although the quota was 4.0 million lbs. There are regional differences in the probability that spiny dogfish will be landed over a range of trip limits, however. Using the 2004 fishing year as an example, total commercial landings from North Carolina were less than 2,500 lbs while landings in Massachusetts were over 1.2 million lbs.

- While a specified quota is more likely to be achieved as trip limits increase, the effect of trip limits on total discards, and hence total removals is unknown. Under certain conditions, total removals under status quo trip limits could be either equal to, less than or greater than, total removals under increased trip limits. The factors that would affect the outcome are not easily predicted.
- Long term rebuilding is not expected to be constrained by minor adjustments in either the quota or existing trip limits.
- From this perspective, there is no known biological benefit to the stock for the Federal trip limit to increase above the existing 600 lbs; however, there is also no known meaningful biological cost if trip limits were increased to the level currently in place in state waters (3,000 lbs).
- If however, total discards are assumed to remain constant in the upcoming year, as they are in the scenario that forms the basis for the recommended quota, and the likelihood of achieving the quota is greater under larger trip limits, then total removals are likely to be lower under existing trip limits than under an increase. In other words, the rebuilding target $F = 0.11$ under uniform implementation of a 600 lb trip limit (i.e., in state and Federal waters) is less likely to be exceeded than if the trip limit was increased in Federal waters.
- For the upcoming fishing year(s), there was support on the MC for maintaining the current 600 lb Federal possession limit, however it was not sufficient to form a consensus recommendation.
- The dissenting opinions on the MC tended to reflect the lack of a strong biological or technical basis with which the Committee could recommend specific trip limits. Rather, trip limits were seen as predominantly an allocation issue best left to the Joint Committee and Councils, which are not constrained to a biological perspective in developing their recommendations.

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

#3

W. Peter Jensen
Chairman

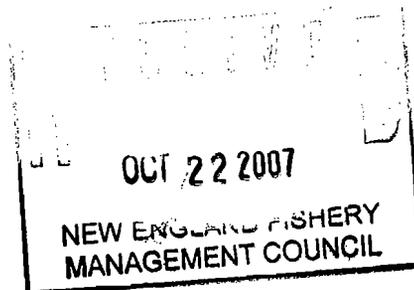
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Daniel T. Furlong
Executive Director

Dr. Gene Kray
Vice Chairman

October 22, 2007

Paul Howard, Executive Director
New England Fishery Council
50 Water Street, The Tannery - Mill 2
Newburyport, MA 01950



Dear Paul:

At the Mid-Atlantic Fishery Management Council's October meeting in New Bern, NC the Council passed the following motions regarding Spiny Dogfish:

- 1) Move that the spiny dogfish commercial quota be increased from 4 million pounds to 8 million pounds for the 2008 fishing year.
 - Quota period 1: 57.9% of 8.0 million lbs quota (4,632,000 lbs)
 - Quota period 2: 42.1% of 8.0 million lbs quota (3,368,000 lbs)
 - The specified quota will be for one year only.
- 2) Move that the trip limit for harvest period I and harvest period II be 600 pounds. The specified trip limits will be for one year only.
- 3) Move that the Councils initiate Framework Action 2 to address issues with spiny dogfish Biological Reference Points, primarily the biomass target.
- 4) Move that the Councils initiate Framework Action 3 or Amendment 1 to allow for allocation of quota for male fisheries.

Sincerely,

Daniel T. Furlong
Executive Director

cc: Pete Jensen, MAFMC Chairman
John Pappalardo, NEFMC Chairman
Red Munden, MAFMC, Joint Spiny Dogfish Committee Chairman
Frank Blount, NEFMC Liaison

MAFMC Council Motions
October 16-18, 2007
New Bern Convention Center
New Bern, NC

4

Pete Jensen was elected Chairman.
Dr. Gene Kray was elected Vice Chairman.

Monkfish

Move to support New England Council to develop Framework 5 to the Monkfish FMP.
Ruhle/Augustine 14/0/0
Motion carries

Dogfish

Move that the spiny dogfish commercial quota be increased from 4 million pounds to 8 million pounds for the 2008-fishing year.
Quota period 1: 57.9% of 8.0 million lbs quota (4,632,000 lbs)
Quota period 2: 42.1% of 8.0 million lbs quota (3,368,000 lbs)
The specified quota will be for one year only.
Munden for Committee (12/5/3 were absent - by roll call vote)
Motion carries

Amend above that the spiny dogfish commercial quota be increased from 4 million pounds to 7 million pounds for the 2008-fishing year.
Quota period 1: 57.9% of 7.0 million lbs quota
Quota period 2: 42.1% of 7.0 million lbs quota
Robins/Travelstead 3/12/1
Motion fails

Move to table above motion until after trip limit motion and discussion.
Travelstead/Ruhle 17/0
Motion passes

Move that the trip limit for harvest period I and harvest period II be 3,000 pounds or at a level that is consistent with the trip limits established by the Atlantic States Marine Fisheries Commission. The specified trip limits will be for one year only.
Munden for Committee

Substitute above motion to change trip limit to 600 pounds per quota period.
Robins/Ruhle 13/3/0
Motion carries

Substitute motion becomes main motion
14/3/1
Motion carries

Move that the Councils initiate Framework Action 2 to address issues with spiny dogfish Biological Reference Points, primarily the biomass target.

Munden/Ruhle (17/0/0)

Motion carries

Move that the Councils initiate Framework Action 3 or Amendment 1 to allow for allocation of quota for male fisheries.

Munden/Ruhle (16/0/0)

Motion carries

Business Session

Move to approve August 2007 minutes.

Motion carries

Law Enforcement

Move to maintain both awards (Ricks E Savage and FAA) and as appropriate give awards not more frequently than 12 months.

Goldman for Committee

Motion carries

Move to accept the nomination of Stewart McMaster-Tweed for the Fishery Achievement Award.

Goldman for committee (17/0/0)

Motion carries

Executive Committee

Move to accept the nomination of Dr. Jim Gilford to receive the Ricks E Savage Award.

Simns/Augustine

Motion carries

Squid, Mackerel, Butterfish

Move to approve Amendment 10 to the Squid, Mackerel, and Butterfish FMP for public hearing with no preferred alternative.

Augustine/Kray

Move to postpone above action.

Ruhle/Berg (13/4/0)

Motion passes

Move to advise the Director of the observer program that the existing database pertaining to mesh size across all fisheries not be provided to any sources for the purpose of analysis to determine escapement of target species or bycatch reduction until such time that the appropriate tool (mesh gauge or wedge), training for use of this tool and protocols are established consistent with law enforcement mesh measurement procedures.

Ruhle/Berg

Move to table above motion indefinitely.

Augustine/Kurkul (8/9/0)
Motion fails

Substitute motion to recommend to Science Director that she and the appropriate staff meet with industry and Council members to discuss problems with the database with regard to mesh size measurements.

Munden/Kray (17/0/0)
Motion carries

Substitute motion becomes the main motion.
(15/0/1)
Motion carries

Move to approve Amendment 10 to the Squid, Mackerel, and Butterfish FMP for public hearing with no preferred alternative.
Augustine/Kray (16/0/0)
Motion passes

Butterfish Rebuilding Action Approved

The Council met in New Bern, NC October 16-18, 2007 and approved Amendment 10 to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan (FMP) for the purpose of taking it to public hearing. Amendment 10 is designed to develop a rebuilding program that will allow the butterfish stock to rebuild in the shortest amount of time possible (but not to exceed ten years) and permanently protect the long-term health and stability of the rebuilt stock; and, to minimize both bycatch and the fishing mortality of unavoidable bycatch. To achieve these goals, proposed management actions include:

- Developing a butterfish mortality cap program for the *Loligo* fishery to allow the butterfish stock to rebuild to B_{MSY} and protect the long-term health and stability of the rebuilt stock;
- Adjusting *Loligo* minimum codend mesh size to reduce discards of butterfish and other non-targeted fish;
- Eliminating some exemptions for *Illex* vessels from *Loligo* minimum codend mesh requirements (so as to reduce discards of butterfish and other fish); and
- Establishing seasonal gear restricted areas (GRAs) to reduce the discarding of butterfish and other non-target fish.

Each management action has a number of alternatives associated with it to achieve the desired outcome, but at this point in time the Council has not selected preferred alternatives for any of the four management actions. Public hearings will be held in early 2008 for this Amendment.

Based on an update of the Spiny Dogfish stock status, the Council reviewed and approved specifications for the May 1, 2008 through April 30, 2009 fishing year only. The Council approved and will recommend to the National Marine Fisheries Service (NMFS) an incidental take allowance of 8 million pounds of Spiny Dogfish to be sub-allocated into two six-month periods, i.e., 4,632,000 pounds for the period May 1 through October 31, and 3,368,000 pounds for the November 1 through April 30 period. A trip limit of 600 pounds for both periods was approved and will likewise be recommended to NMFS.

In addition to the Council's actions on butterfish and spiny dogfish, by acclamation the Council re-elected its current officers for the new Council year. Pete Jensen will continue as the Council's Chairman and Dr. Gene Kray will continue as its Vice-Chairman. In addition to the election of officers, three individuals were sworn in as new Council members. Dr. Lee Anderson will occupy the obligatory seat for Delaware (replacing Ron Smith), Erling Berg will occupy an at-large seat for New Jersey (replacing Fran Puskas), and Rick Robbins will also occupy an at-large seat for Virginia (replacing Michelle Peabody). Further, Larry Simms of Maryland was reappointed to an at-large seat for his third term.

Four of the Council's Committees also met during this meeting, i.e., Joint Spiny Dogfish, Research Set-aside, Law Enforcement and Executive, to review and develop issues pertaining to their respective charges.

On Wednesday, October 17 the Council received an oral report from Dr. Jim Weinberg of NMFS' Northeast Fisheries Science Center on the recent Monkfish stock assessment. Following this presentation, the Council discussed the need for adjustments to the current plan and recommended that the New England Council be notified that the Mid-Atlantic Council supports their initiation and development of Framework 5 to the Monkfish FMP.

The Council also received oral reports from Dr. Mike Fogarty of NMFS' Northeast Fisheries Science Center on the Center's current activities in support of developing an ecosystems based approach to fisheries management, and Preston Pate, Chairman of the Marine Recreational Information Program (MRIP) Operations Team, regarding NMFS' activities in support of developing a MRIP to improve recreational data collection and analyses. Elements of the current Marine Recreational Fisheries Statistics Survey (MRFSS) program will likely be replaced by the MRIP.

#6

FOR IMMEDIATE RELEASE, OCTOBER 30, 2007
PRESS CONTACT, TINA BERGER 202/289-6400

ASMFC Spiny Dogfish Board Sets 2008/2009 Fishing Year Quota at 8 Million Pounds

Annapolis, MD - The Commission's Spiny Dogfish and Coastal Shark Management Board approved a eight million pound quota for the 2008/2009 fishing year (May 1, 2008 - April 30, 2009), with 58% of the quota allocated to states from Maine through Connecticut and 42% allocated to New York through North Carolina. A trip limit of up to 3,000 pounds was also established.

The 2007 assessment update indicates that the spiny dogfish biomass has continued to increase. Though the stock has not rebuilt to its target spawning stock biomass, it is not overfished and overfishing is not occurring. The Technical Committee recommended a precautionary quota of six million pounds with a 600-pound trip limit due to continued poor pup recruitment that will cause the stock to decline after 2010.

In mid-October, the Mid-Atlantic Fishery Management Council approved and will recommend to the National Marine Fisheries Service (NMFS) a spiny dogfish quota of eight million pounds to be sub-allocated into two six-month periods (4,632,000 pounds for May 1 through October 31, and 3,368,000 pounds for November 1 through April 30). A trip limit of 600 pounds for both periods was approved and will likewise be recommended to NMFS.

For more information, please contact Christopher Vonderweidt, Spiny Dogfish Fishery Management Plan Coordinator, at (202)289-6400 or <cvonderweidt@asmfc.org>.

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MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

#7

W. Peter Jensen
Chairman

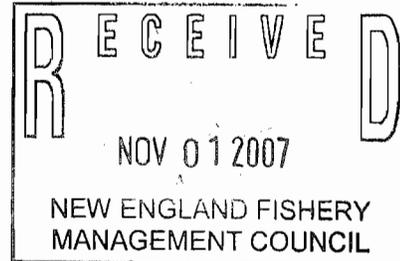
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Daniel T. Furlong
Executive Director

Dr. Gene Kray
Vice Chairman

October 30, 2007

Sonja Fordham, Director, Shark Conservation Program
The Ocean Conservancy
2029 K Street, NW
Washington, D.C. 20006



Dear Sonja:

Thank you for your letter of October 17, 2007. It was received at our Council's meeting location (New Bern, NC) shortly before the Council began deliberation on spiny dogfish. Nonetheless, it was distributed to all Council members present prior to any action on the 2008 / 2009 specification setting session for spiny dogfish.

As you are probably aware, half of your suggested measures came to pass, i.e., trip limits were maintained at the current level of 600 pounds for both fishing periods. However, given the remarkable increases in mature female biomass over the past two years, the incidental catch allowance recommended by the Council was increased from 4,000,000 to 8,000,000 pounds. As I understand it, yesterday the Atlantic States Marine Fisheries Commission adopted this same allowance level in its specification process for the 2008 / 2009 fishing year, but it established a higher trip limit (3,000 pounds). Assuming the New England Council adopts the same measures we recommended and assuming the National Marine Fisheries Service proposes and implements our measures as final regulations, then the incidental take of dogfish in federal waters (Exclusive Economic Zone) would be governed using a 600 pound trip limit whereas the incidental take of spiny dog in state waters could be as much as 3,000 pounds per trip.

Sincerely,

Daniel T. Furlong
Executive Director

cc: Pete Jensen, MAFMC Chairman
Red Munden, Chairman, Joint Spiny Dogfish Committee
Vince O'Shea, ASMFC
Paul Howard, NEC