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EVALUATION OF THE SOUTHERN NEW ENGLAND/MID-ATLANTIC SEASONAL AREA CLOSURE IN REDUCING FISHING MORTALITY AND ENHANCING SPAWNING OPPORTUNITIES FOR YELLOWTAIL FLOUNDER

AN HISTORICAL ASSESSMENT

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INTRODUCTION

The Fishery Management Plan for the Northeast Multispecies Fishery (FMP), implemented on 19 September 1986, provides for a seasonal area closure in the Southern New England/Mid-Atlantic region "to provide reduced mortality and enhanced spawning opportunity for yellowtail flounder" (FMP, p 7.81). The FMP established an area west of 69 40'W longitude to be seasonally closed to bottom trawl fishing (Figure 1). The portion of the area east of 71 30'W longitude is to be closed on 1 March, and the portion west of 71 30'W longitude and extending to 72 20'W longitude is to be closed on 1 April. The total area will remain closed as far into May as the Regional Director of the Northeast Region, National Marine Fisheries Service, determines is necessary to achieve the appropriate spawning level for yellowtail flounder.

Establishment of the closed area was based on examination (by the staff of the New England Fishery Management Council) of NMFS interview landings data for 1983 for yellowtail flounder "which supported the concept that the prime yellowtail grounds in SNE [Southern New England] are comprised of those areas on the continental shelf which are within the 25-35 fathom depth interval" (NEFMC response to the Regional Director's Comments on the FMP, paragraph 13). Testimony accumulated at public hearings, as well as analyses of yellowtail flounder behavior patterns from NMFS bottom trawl survey data, were also used to define the closure area and time period. The Council recognized, however, that "the efficiency of this closed area approach in meeting the percent MSP target for SNE yellowtail depends on many factors, [and] it is clearly an appropriate subject for scrutiny by the Technical Monitoring Group after Plan implementation" (Supplemental FMP, EIS, RIR, Part 4, p 7).

The analytical approach taken by the NEFMC staff in determining how the size and duration of the SNE yellowtail closure was determined during FMP development was reviewed at the 18 December 1986 of the Technical Monitoring Group. During the TMG discussions, it was noted that the the closed area evaluations assumed that fishing effort would not be significantly displaced in either time or area as a result of the closure.

This report re-examines the Southern New England/Mid-Atlantic seasonal area closure relative to the expected reductions in yellowtail landings from the Southern New England and Mid-Atlantic stocks that would have occurred during 1982-1986 had the area closure been in effect in these years. By inference, the analytical results are taken to be indicative of the expected reduction in future landings levels (ie., 1987 and beyond) ensuing from the time/area closure. Like the analyses conducted by the NEFMC staff, the present analyses assume that no transfer or displacement of yellowtail fishing activity occurs as a result of the closure. Since this is an unrealistic scenario, the

calculated landings reductions presented herein are too liberal; that is, actual landings reductions resulting from the seasonal area closure would be expected to be lower than the calculated values.

No attempt has been made to relate the calculated landings reductions to reductions in fishing mortality needed to achieve specific target SSB/R levels for yellowtail flounder (ie., 20% maximum spawning potential). Such an analysis requires knowledge of the **absolute amount of foregone catch** due to implementation of the closure. Since effort shifts could actually maintain or even increase total catch from the stock (by increasing catch in areas outside the closure), the realized impacts of the closure on stock abundance and fishing mortality cannot be accurately estimated.

The present analyses simply provide an upper bound (maximum landings reduction) on the effectiveness of the closure area in reducing stock catch levels on an annual basis.

METHODS OF ANALYSIS

The boundaries of the Southern New England/Mid-Atlantic closure area developed by the NEFMC are specified in terms of LORAN C lines. However, USA commercial yellowtail flounder landings data are summarized by statistical reporting region (3-digit statistical areas), with landings from interviewed trips summarized by 10-minute squares of latitude and longitude. Hence, to evaluate the closed area relative to the spatial distribution of landings it was necessary to define the closed area in terms of 10-minute squares. For the present analyses, the closed area was considered to be comprised of 42 10-minute squares (Figure 2). Although the LORAN C lines bounding the closed area often transected individual 10-minute squares, there was no objective way to partition the landings within the transected squares to inside or outside of the closed area. Accordingly, all of the yellowtail landings in the transected 10-minute squares were considered to have been taken **within the closed area**. To the extent that the actual landings in these transected squares occurred outside of the closed area, the calculated reductions in yellowtail catches due to the closure will be overestimated (again the results will be liberal, rather than conservative).

The geographic expanse of the closed area encompasses portions of four statistical reporting areas for landings: Area 526 (4 10-minute squares), Area 537 (26 10-minute squares), Area 539 (2 10-minute squares), and Area 613 (10 10-minute squares). Landings from Area 526, 537, and 539 are considered to be taken from the **Southern New England yellowtail flounder stock** (as well as landings from Area 538 which is not part of the closed area). Landings from Area 613 are considered to be from the **Mid-Atlantic stock of yellowtail flounder**. Hence, the impacts of the closed area on

yellowtail landings will affect two different stocks. To account for this, analyses were performed on the combined stocks, and on each stock separately.

The following steps were taken in the analyses:

1. Annual Southern New England and Mid-Atlantic landings of yellowtail during 1982-1986 were summarized by statistical area and month (Table 1). Since otter-trawl catches constituted 99 % of the total yellowtail landings from these areas, the spatial and temporal distribution patterns of the landings (Tables 2 and 3) were considered representative of the otter-trawl fishery for yellowtail. For the Mid-Atlantic stock, only landings from Area 613 were analyzed. However, since Area 613 landings of yellowtail accounted for more than 86% of the total Mid-Atlantic yellowtail catch during 1982-1986, the impact of the closure area on Area 613 landings was considered to be the impact on the Mid-Atlantic stock.

2. To assign the landings within each statistical area to 10-minute squares in each month during each year, the interviewed yellowtail catches were retrieved and summarized by 10-minute square for each month within each statistical area during each year. Since the monthly interviewed catches within each statistical area represented unequal fractions of the total monthly catches taken in each statistical area (Table 4), the interviewed landings were prorated upward by the ratio of the total monthly catch in each statistical area to the monthly interviewed catch in each statistical area. For example, the January 1982 interviewed landings from Area 526 comprised 59.3% of the total January 1982 yellowtail landings from Area 526 (85.8 tons interviewed/144.7 tons landed). Hence, interviewed 10-minute square landings during this month were multiplied by 1.686 (144.7/85.8) to "raise" the interviewed catch to the total catch. Prorated catches in each 10-minute square were then summed over months to provide an annual distribution of landings, by 10-minute square, within each statistical area (Figures 3-7).

3. The monthly and annual 10-minute square distributions of yellowtail flounder landings were subsequently used to evaluate the quantity of catch taken in the closure area during the entire year and during the period of the closure proper. In the latter case, it was assumed that the closure period extended from **March through May** in the closure area east of 71 30'W and from **April through May** in the closure area west of 71 30'W. However, the FMP only requires that the closure remain in effect as far into May as the Regional Director determines is appropriate. Thus, to the extent that the closure would not encompass all of May, calculated catches in the closed area during the closure period are overestimates. Hence, the calculated values will again be too liberal in depicting the reduction in landings that would have resulted during 1982-1986 had the closure scheme been in effect.

4. To assess the impacts of other time periods of closure (but using the same closure area as in the FMP), two alternative schemes were evaluated:

a) Closure of the entire area (east and west of 71 30′ W) during March through May; and

b) Closure of the entire area (east and west of 71 30′ W) during February through May.

In evaluating all of the schemes, landings from the closure area were divided by the annual stock landings to estimate the percentage reduction in yield that would have occurred in each stock as a result of closure.

RESULTS

Distributional Patterns of Yellowtail Flounder Landings

Yellowtail landings from both the Southern New England and Mid-Atlantic stocks exhibit pronounced seasonal and spatial patterns. Landings from Southern New England peak during the winter months (Table 2); during 1982-1986, December-March landings accounted for 42% of the annual catch. This seasonal pattern is consistent among statistical areas within the Southern New England region except for Area 538 in which landings peak in May and June (about 60% of the Area 538 landings are taken in these two months). Southern New England landings during March-May (the closure time period) only accounted for 21% of the 1982-1986 catch [the 1982-1986 percentages in all cases refer to the mean of monthly percentages during the five-year period to adjust for the differential quantity of landings in each year].

Within the Southern New England region, there are also marked spatial patterns in yellowtail landings. Most of the landings in the region are taken from Area 526 (45.9% of the 1982-1986 total) and Area 537 (40.5% of the 1982-1986 total)(Table 3). During the March-May period in which 21% of the annual Southern New England catch is taken, Area 521 landings account for half of the harvest (10.5% of the 21%), while landings from Area 537 and 539 together account for the other half of the catch.

In Area 613 of the Mid-Atlantic, yellowtail landings are highest during January - April. Catches during these four months accounted for 56% of the 1982-1986 total landings from this statistical area. During April-May (the time period of closure for those portions of the closed

area west of 71 30'W), only 23% of the annual Area 613 yellowtail catch is taken.

Clearly, for both the Southern New England and Mid-Atlantic stocks, the timing of the closure occurs during a period when less than 25% of the annual landings are taken. The efficacy of the closure in reducing fishing mortality (by reducing catches) during April-May is thus markedly constrained since most of the landings are taken at other times of the year.

Calculated Landings in the Closed Area During the Closure Period

Based on the prorated monthly 10-minute square catch data, the quantity and distribution of yellowtail landings caught in the closed area during the closure period were calculated for each year during 1982-1986. Results are presented in Figure 8-12 and summarized in Table 5.

Over the 5-year period, landings taken in the closure area during the closure period amounted to 7.7% of the combined Southern New England and Area 613 yellowtail flounder landings (Table 5). If the closure period in all five years extended from March through May, closure area landings would have represented 9.5% of the overall Southern New England-Area 613 total catch. Had the closure been in effect during February through May in each of the past five years, landings from the closure area would have accounted for 15.5% of the combined Southern New England-Area 613 catch. These values can be considered as the maximum percentage reductions in landings that would have occurred had these closure schemes been in effect during the previous half-decade. By comparison, if the closed area had remained closed throughout the year in all years, yellowtail landings would have been reduced by half (47.7% for both areas combined; 48.1% for the Southern New England stock; 41.2% for Area 613) (Table 5).

For the Southern New England stock, increasing the time duration of closure from the present March-May/April-May period to March-May and February-May closure intervals resulted in a modest increase in foregone landings (7.3% to 8.3% and 14.1%, respectively). In Area 613, landings reductions of 9.6% increased to 17.8% and 24.0%, respectively, under the two alternative closure schemes.

DISCUSSION

Analyses of Southern New England and Mid-Atlantic yellowtail flounder landings patterns during the recent past suggest that, had the seasonal area closure provided for in the current Northeast Multispecies Fishery Management

Plan been in effect during 1982-1986, annual yellowtail landings would have been reduced by no more than 3 to 13 percent. Over the five-year period, closed area catches during the FMP closure period amounted to less than 8% of the Southern New England/Area 613 landings. Since these percentage reductions would be lower if effort shifts, "transected closed area squares", and the actual May closure period were taken into account, the impact of the Southern New England/Mid-Atlantic seasonal area closure in reducing yellowtail catches (ie., fishing mortality) appears to be minimal. If the fishery patterns observed in the past are maintained in the future there is likely to be little (if any) benefit gained from implementing the current area closure scheme.

A large portion of the Southern New England yellowtail stock (that segment in Area 526 east of 69 40′W longitude) occurs within the "large mesh" area. As a result, some of the stock is managed by use of mesh size while the remainder of the stock is managed through a seasonal area closure. Evaluating the equivalency of these measures in attaining management targets for yellowtail is problematical. Since it appears that the seasonal area closure will have an insignificant impact on reducing fishing mortality in the Southern New England area, it seems prudent to extend the large mesh area westward to cover the entire Southern New England stock. In effect, this would extend the large mesh area to 71 40′ W longitude. The New England Fishery Management Council has already noted that, for the Southern New England stock in particular, "a larger mesh size or a reduction in F would clearly be beneficial from the standpoint of increasing the number of year classes supporting the fishery (and would coincidentally result in an increase in the spawning potential)" (NEFMC response to the Regional Director's comments on the FMP, paragraph 13, p 5). Since the seasonal area closure is not expected to reduce F, extending the large mesh area to cover the entire Southern New England yellowtail stock area would be consistent with the Council's strategy in using mesh size to achieve management objectives.

It is recognized that there are certain small mesh fisheries prosecuted in the Southern New England area which would be affected by extending the large mesh area to 71 40′ W longitude. To accommodate these fisheries, it would be appropriate to establish a Southern New England exempted fishery program similar to that developed in the FMP for the Gulf of Maine.

Table 1. USA commercial landings (metric tons, live) of yellowtail flounder from Southern New England (Stat Areas 526 & 537-539) and from Statistical Area 613 in the Mid-Atlantic region, by month, 1982 - 1986.

YEAR	STATISTICAL AREA	MONTH JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1982														
	526	145	198	213	238	472	332	309	682	539	679	802	99	4708
	537	309	234	186	59	173	398	438	610	436	558	545	921	4867
	538	<1	<1	3	11	30	1	<1	<1	0	<1	1	2	48
	539	264	227	232	156	192	94	275	21	38	123	42	211	1875
	613	85	112	97	81	125	189	185	36	18	41	26	96	1091
	TOTAL	803	771	731	545	992	1014	1207	1349	1031	1401	1416	1329	12589
	SNE TOTAL	718	659	634	464	867	825	1022	1313	1013	1360	1390	1233	11498
1983														
	526	1176	572	473	227	617	263	298	880	447	1104	584	496	7137
	537	650	593	923	537	453	757	1370	922	308	201	234	1452	8400
	538	0	0	3	2	16	27	1	1	1	2	4	2	59
	539	293	394	316	547	249	197	96	10	52	22	31	108	2315
	613	187	155	233	203	102	112	102	32	5	18	20	44	1213
	TOTAL	2306	1714	1948	1516	1437	1356	1867	1845	813	1347	873	2102	19124
	SNE TOTAL	2119	1559	1715	1313	1335	1244	1765	1813	808	1329	853	2058	17911
1984														
	526	738	448	271	312	438	210	551	326	138	318	137	82	3969
	537	682	407	201	116	266	379	398	254	33	43	89	385	3253
	538	<1	1	1	<1	8	3	1	1	1	1	1	1	19
	539	258	278	185	162	58	168	23	49	4	4	13	27	1229
	613	233	451	400	265	268	175	36	25	9	26	51	22	1961
	TOTAL	1911	1585	1058	855	1038	935	1009	655	185	392	291	517	10431
	SNE TOTAL	1678	1134	658	590	770	760	973	630	176	366	240	495	8470
1985														
	526	103	147	167	103	145	83	222	106	81	100	41	52	1350
	537	349	261	69	34	30	90	193	42	12	14	46	121	1261
	538	0	<1	0	0	2	2	1	<1	<1	0	<1	1	6
	539	110	80	68	46	29	59	20	66	13	4	8	61	564
	613	52	57	42	56	40	72	44	2	5	6	9	51	436
	TOTAL	614	545	346	239	246	306	480	216	111	124	104	286	3617
	SNE TOTAL	562	488	304	183	206	234	436	214	106	118	95	235	3181

Table 1. Continued.

YEAR	STATISTICAL AREA	MONTH JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1986														
	526	160	106	159	111	127	34	237	56	96	381	160	304	1931
	537	146	167	83	14	36	44	246	66	20	81	131	108	1142
	538	0	0	1	1	3	2	<1	<1	<1	2	<1	5	14
	539	17	43	42	29	6	2	4	1	5	1	10	12	172
	613	50	31	25	32	10	9	9	0	<1	5	10	32	213
	TOTAL	373	347	310	187	182	91	496	123	121	470	311	461	3472
	SNE TOTAL	323	316	285	155	172	82	487	123	121	465	301	429	3259
1982-1986														
	526	2322	1471	1283	991	1799	922	1617	2050	1301	2582	1724	1033	19095
	537	2136	1662	1462	760	958	1668	2645	1894	809	897	1045	2987	18923
	538	0	1	8	14	59	35	3	2	2	5	6	11	146
	539	942	1022	843	940	534	520	418	147	112	154	104	419	6155
	613	607	806	797	637	545	557	376	95	37	96	116	245	4914
	TOTAL	6007	4962	4393	3342	3895	3702	5059	4188	2261	3734	2995	4695	49233
	SNE TOTAL	5400	4156	3596	2705	3350	3145	4683	4093	2224	3638	2879	4450	44319

Table 2. Monthly percentage distribution of USA commercial landings (metric tons, live) of yellowtail flounder, within Statistical Areas, in Southern New England (areas 526 & 537-539) and statistical area 613 in the Mid-Atlantic region, 1982 - 1986.

YEAR	STATISTICAL AREA	MONTH JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1982														
	526	3.1%	4.2%	4.5%	5.1%	10.0%	7.1%	6.6%	14.5%	11.4%	14.4%	17.0%	2.1%	100.0%
	537	6.3%	4.8%	3.8%	1.2%	3.6%	8.2%	9.0%	12.5%	9.0%	11.5%	11.2%	18.9%	100.0%
	538	<0.1%	<0.1%	6.3%	22.9%	62.5%	2.1%	<0.1%	<0.1%	0.0%	<0.1%	2.1%	4.2%	100.0%
	539	14.1%	12.1%	12.4%	8.3%	10.2%	5.0%	14.7%	1.1%	2.0%	6.6%	2.2%	11.3%	100.0%
	613	7.8%	10.3%	8.9%	7.4%	11.5%	17.3%	17.0%	3.3%	1.6%	3.8%	2.4%	8.8%	100.0%
	TOTAL	6.4%	6.1%	5.8%	4.3%	7.9%	8.1%	9.6%	10.7%	8.2%	11.1%	11.2%	10.6%	100.0%
	SNE TOTAL	6.2%	5.7%	5.5%	4.0%	7.5%	7.2%	8.9%	11.4%	8.8%	11.8%	12.1%	10.7%	100.0%
1983														
	526	16.5%	8.0%	6.6%	3.2%	8.6%	3.7%	4.2%	12.3%	6.3%	15.5%	8.2%	6.9%	100.0%
	537	7.7%	7.1%	11.0%	6.4%	5.4%	9.0%	16.3%	11.0%	3.7%	2.4%	2.8%	17.3%	100.0%
	538	0.0%	0.0%	5.1%	3.4%	27.1%	45.8%	1.7%	1.7%	1.7%	3.4%	6.8%	3.4%	100.0%
	539	12.7%	17.0%	13.7%	23.6%	10.8%	8.5%	4.1%	0.4%	2.2%	1.0%	1.3%	4.7%	100.0%
	613	15.4%	12.8%	19.2%	16.7%	8.4%	9.2%	8.4%	2.6%	0.4%	1.5%	1.6%	3.6%	100.0%
	TOTAL	12.1%	9.0%	10.2%	7.9%	7.5%	7.1%	9.8%	9.6%	4.3%	7.0%	4.6%	11.0%	100.0%
	SNE TOTAL	11.8%	8.7%	9.6%	7.3%	7.5%	6.9%	9.9%	10.1%	4.5%	7.4%	4.8%	11.5%	100.0%
1984														
	526	18.6%	11.3%	6.8%	7.9%	11.0%	5.3%	13.9%	8.2%	3.5%	8.0%	3.5%	2.1%	100.0%
	537	21.0%	12.5%	6.2%	3.6%	8.2%	11.7%	12.2%	7.8%	1.0%	1.3%	2.7%	11.8%	100.0%
	538	<0.1%	5.3%	5.3%	<0.1%	42.1%	15.8%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	100.0%
	539	21.0%	22.6%	15.1%	13.2%	4.7%	13.7%	1.9%	4.0%	0.3%	0.3%	1.1%	2.2%	100.0%
	613	11.9%	23.0%	20.4%	13.5%	13.7%	8.9%	1.8%	1.3%	0.5%	1.3%	2.6%	1.1%	100.0%
	TOTAL	18.3%	15.2%	10.1%	8.2%	10.0%	9.0%	9.7%	6.3%	1.8%	3.8%	2.8%	5.0%	100.0%
	SNE TOTAL	19.8%	13.4%	7.8%	7.0%	9.1%	9.0%	11.5%	7.4%	2.1%	4.3%	2.8%	5.8%	100.0%
1985														
	526	7.6%	10.9%	12.4%	7.6%	10.7%	6.1%	16.4%	7.9%	6.0%	7.4%	3.0%	3.9%	100.0%
	537	27.7%	20.7%	5.5%	2.7%	2.4%	7.1%	15.3%	3.3%	1.0%	1.1%	3.6%	9.6%	100.0%
	538	0.0%	<0.1%	0.0%	0.0%	33.3%	33.3%	16.7%	<0.1%	<0.1%	0.0%	<0.1%	16.7%	100.0%
	539	19.5%	14.2%	12.1%	8.2%	5.1%	10.5%	3.5%	11.7%	2.3%	0.7%	1.4%	10.8%	100.0%
	613	11.9%	13.1%	9.6%	12.8%	9.2%	16.5%	10.1%	0.5%	1.1%	1.4%	2.1%	11.7%	100.0%
	TOTAL	17.0%	15.1%	9.6%	6.6%	6.8%	8.5%	13.3%	6.0%	3.1%	3.4%	2.9%	7.9%	100.0%
	SNE TOTAL	17.7%	15.3%	9.6%	5.8%	6.5%	7.4%	13.7%	6.7%	3.3%	3.7%	3.0%	7.4%	100.0%

Table 2. Continued.

YEAR	STATISTICAL AREA	MONTH JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1986														
	526	8.3%	5.5%	8.2%	5.7%	6.6%	1.8%	12.3%	2.9%	5.0%	19.7%	8.3%	15.7%	100.0%
	537	12.8%	14.6%	7.3%	1.2%	3.2%	3.9%	21.5%	5.8%	1.8%	7.1%	11.5%	9.5%	100.0%
	538	0.0%	0.0%	7.1%	7.1%	21.4%	14.3%	<0.1%	<0.1%	<0.1%	14.3%	<0.1%	35.7%	100.0%
	539	9.9%	25.0%	24.4%	16.9%	3.5%	1.2%	2.3%	0.6%	2.9%	0.6%	5.8%	7.0%	100.0%
	613	23.5%	14.6%	11.7%	15.0%	4.7%	4.2%	4.2%	0.0%	<0.1%	2.3%	4.7%	15.0%	100.0%
	TOTAL	10.7%	10.0%	8.9%	5.4%	5.2%	2.6%	14.3%	3.5%	3.5%	13.5%	9.0%	13.3%	100.0%
	SNE TOTAL	9.9%	9.7%	8.7%	4.8%	5.3%	2.5%	14.9%	3.8%	3.7%	14.3%	9.2%	13.2%	100.0%
1982-1986[1]														
	526	10.8%	8.0%	7.7%	5.9%	9.4%	4.8%	10.7%	9.2%	6.4%	13.0%	8.0%	6.1%	100.0%
	537	15.1%	11.9%	6.7%	3.0%	4.5%	8.0%	14.9%	8.1%	3.3%	4.7%	6.4%	13.4%	100.0%
	538	0.0%	1.1%	4.7%	6.7%	37.3%	22.3%	4.7%	1.4%	1.4%	4.6%	2.8%	13.0%	100.0%
	539	15.4%	18.2%	15.5%	14.0%	6.9%	7.8%	5.3%	3.6%	2.0%	1.8%	2.4%	7.2%	100.0%
	613	14.1%	14.7%	14.0%	13.1%	9.5%	11.2%	8.3%	1.5%	0.7%	2.1%	2.7%	8.1%	100.0%
	TOTAL	12.9%	11.1%	8.9%	6.5%	7.5%	7.0%	11.3%	7.2%	4.2%	7.8%	6.1%	9.5%	100.0%
	SNE TOTAL	13.1%	10.6%	8.2%	5.8%	7.2%	6.6%	11.8%	7.9%	4.5%	8.3%	6.4%	9.7%	100.0%

[1]Mean of annual percentages.

Table 3. Percentage distribution, among months and Statistical Areas, of annual USA yellowtail flounder landings (metric tons, live) from Southern New England (Areas 526 & 537-539) and from Statistical Area 613 in the Mid-Atlantic region, 1982 - 1986.

YEAR	STATISTICAL AREA	MONTH													TIME PERIOD		
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL[2]	MAR-MAY	APR-MAY	FEB-MAY
1982																	
	526	1.3%	1.7%	1.9%	2.1%	4.1%	2.9%	2.7%	5.9%	4.7%	5.9%	7.0%	0.9%	40.9%	8.0%	6.2%	9.7%
	537	2.7%	2.0%	1.6%	0.5%	1.5%	3.5%	3.8%	5.3%	3.8%	4.9%	4.7%	8.0%	42.3%	3.6%	2.0%	5.7%
	538	<0.1%	<0.1%	0.0%	0.1%	0.3%	0.0%	<0.1%	<0.1%	0.0%	<0.1%	0.0%	0.0%	0.4%	0.4%	0.4%	0.4%
	539	2.3%	2.0%	2.0%	1.4%	1.7%	0.8%	2.4%	0.2%	0.3%	1.1%	0.4%	1.8%	16.3%	5.0%	3.0%	7.0%
	SNE TOTAL	6.2%	5.7%	5.5%	4.0%	7.5%	7.2%	8.9%	11.4%	8.8%	11.8%	12.1%	10.7%	100.0%	17.1%	11.6%	22.8%
	613 TOTAL	7.8%	10.3%	8.9%	7.4%	11.5%	17.3%	17.0%	3.3%	1.6%	3.8%	2.4%	8.8%	100.0%	27.8%	18.9%	38.0%
	OVERALL TOTAL	6.4%	6.1%	5.8%	4.3%	7.9%	8.1%	9.6%	10.7%	8.2%	11.1%	11.2%	10.6%	100.0%	18.0%	12.2%	24.1%
1983																	
	526	6.6%	3.2%	2.6%	1.3%	3.4%	1.5%	1.7%	4.9%	2.5%	6.2%	3.3%	2.8%	39.8%	7.4%	4.7%	10.5%
	537	3.6%	3.3%	5.2%	3.0%	2.5%	4.2%	7.6%	5.1%	1.7%	1.1%	1.3%	8.1%	46.9%	10.7%	5.5%	14.0%
	538	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.1%	0.1%	0.1%
	539	1.6%	2.2%	1.8%	3.1%	1.4%	1.1%	0.5%	0.1%	0.3%	0.1%	0.2%	0.6%	12.9%	6.2%	4.4%	8.4%
	SNE TOTAL	11.8%	8.7%	9.6%	7.3%	7.5%	6.9%	9.9%	10.1%	4.5%	7.4%	4.8%	11.5%	100.0%	24.4%	14.8%	33.1%
	613 TOTAL	15.4%	12.8%	19.2%	16.7%	8.4%	9.2%	8.4%	2.6%	0.4%	1.5%	1.6%	3.6%	100.0%	44.4%	25.1%	57.1%
	OVERALL TOTAL	12.1%	9.0%	10.2%	7.9%	7.5%	7.1%	9.8%	9.6%	4.3%	7.0%	4.6%	11.0%	100.0%	25.6%	15.4%	34.6%
1984																	
	526	8.7%	5.3%	3.2%	3.7%	5.2%	2.5%	6.5%	3.8%	1.6%	3.8%	1.6%	1.0%	46.9%	12.1%	8.9%	17.3%
	537	8.1%	4.8%	2.4%	1.4%	3.1%	4.5%	4.7%	3.0%	0.4%	0.5%	1.1%	4.5%	38.4%	6.9%	4.5%	11.7%
	538	<0.1%	0.0%	0.0%	<0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%	0.1%	0.1%
	539	3.0%	3.3%	2.2%	1.9%	0.7%	2.0%	0.3%	0.6%	0.0%	0.0%	0.2%	0.3%	14.5%	4.8%	2.6%	8.1%
	SNE TOTAL	19.8%	13.4%	7.8%	7.0%	9.1%	9.0%	11.5%	7.4%	2.1%	4.3%	2.8%	5.8%	100.0%	23.8%	16.1%	37.2%
	613 TOTAL	11.9%	23.0%	20.4%	13.5%	13.7%	8.9%	1.8%	1.3%	0.5%	1.3%	2.6%	1.1%	100.0%	47.6%	27.2%	70.6%
	OVERALL TOTAL	18.3%	15.2%	10.1%	8.2%	10.0%	9.0%	9.7%	6.3%	1.8%	3.8%	2.8%	5.0%	100.0%	28.3%	18.1%	43.5%

Table 3. Continued.

YEAR	STATISTICAL AREA	MONTH												TOTAL[2]	TIME PERIOD		
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		MAR-MAY	APR-MAY	FEB-MAY
1985																	
	526	3.2%	4.6%	5.2%	3.2%	4.6%	2.6%	7.0%	3.3%	2.5%	3.1%	1.3%	1.6%	42.4%	13.0%	7.8%	17.7%
	537	11.0%	8.2%	2.2%	1.1%	0.9%	2.8%	6.1%	1.3%	0.4%	0.4%	1.4%	3.8%	39.6%	4.2%	2.0%	12.4%
	538	0.0%	<0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	<0.1%	<0.1%	0.0%	<0.1%	0.0%	0.2%	0.1%	0.1%	0.1%
	539	3.5%	2.5%	2.1%	1.4%	0.9%	1.9%	0.6%	2.1%	0.4%	0.1%	0.3%	1.9%	17.7%	4.5%	2.4%	7.0%
	SNE TOTAL	17.7%	15.3%	9.6%	5.8%	6.5%	7.4%	13.7%	6.7%	3.3%	3.7%	3.0%	7.4%	100.0%	21.8%	12.2%	37.1%
	613 TOTAL	11.9%	13.1%	9.6%	12.8%	9.2%	16.5%	10.1%	0.5%	1.1%	1.4%	2.1%	11.7%	100.0%	31.7%	22.0%	44.7%
	OVERALL TOTAL	17.0%	15.1%	9.6%	6.6%	6.8%	8.5%	13.3%	6.0%	3.1%	3.4%	2.9%	7.9%	100.0%	23.0%	13.4%	38.0%
1986																	
	526	4.9%	3.3%	4.9%	3.4%	3.9%	1.0%	7.3%	1.7%	2.9%	11.7%	4.9%	9.3%	59.3%	12.2%	7.3%	15.4%
	537	4.5%	5.1%	2.5%	0.4%	1.1%	1.4%	7.5%	2.0%	0.6%	2.5%	4.0%	3.3%	35.0%	4.1%	1.5%	9.2%
	538	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	<0.1%	<0.1%	<0.1%	0.1%	<0.1%	0.2%	0.4%	0.2%	0.1%	0.2%
	539	0.5%	1.3%	1.3%	0.9%	0.2%	0.1%	0.1%	0.0%	0.2%	0.0%	0.3%	0.4%	5.3%	2.4%	1.1%	3.7%
	SNE TOTAL	9.9%	9.7%	8.7%	4.8%	5.3%	2.5%	14.9%	3.8%	3.7%	14.3%	9.2%	13.2%	100.0%	18.8%	10.0%	28.5%
	613 TOTAL	23.5%	14.6%	11.7%	15.0%	4.7%	4.2%	4.2%	0.0%	<0.1%	2.3%	4.7%	15.0%	100.0%	31.5%	19.7%	46.0%
	OVERALL TOTAL	10.7%	10.0%	8.9%	5.4%	5.2%	2.6%	14.3%	3.5%	3.5%	13.5%	9.0%	13.3%	100.0%	19.6%	10.6%	29.6%
1982-1986[1]																	
	526	4.9%	3.6%	3.6%	2.7%	4.2%	2.1%	5.0%	3.9%	2.9%	6.1%	3.6%	3.1%	45.9%	10.5%	7.0%	14.1%
	537	6.0%	4.7%	2.8%	1.3%	1.8%	3.3%	6.0%	3.4%	1.4%	1.9%	2.5%	5.6%	40.5%	5.9%	3.1%	10.6%
	538	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.2%	0.1%	0.2%
	539	2.2%	2.3%	1.9%	1.7%	1.0%	1.2%	0.8%	0.6%	0.2%	0.3%	0.3%	1.0%	13.4%	4.6%	2.7%	6.8%
	SNE TOTAL	13.1%	10.6%	8.2%	5.8%	7.2%	6.6%	11.8%	7.9%	4.5%	8.3%	6.4%	9.7%	100.0%	21.2%	12.9%	31.7%
	613 TOTAL	14.1%	14.7%	14.0%	13.1%	9.5%	11.2%	8.3%	1.5%	0.7%	2.1%	2.7%	8.1%	100.0%	36.6%	22.6%	51.3%
	OVERALL TOTAL	12.9%	11.1%	8.9%	6.5%	7.5%	7.0%	11.3%	7.2%	4.2%	7.8%	6.1%	9.5%	100.0%	22.9%	14.0%	34.0%

[1]Mean of annual percentages.

[2]Totals may disagree slightly with sums due to rounding.

Table 4. Percentage of monthly USA commercial landings (metric tons, live) of yellowtail flounder from Southern New England (Stat Areas 526 & 537-539) and from Statistical Area 613 in the Mid-Atlantic region accounted for by interviewed interviewed trips, 1982 - 1986.

YEAR	STATISTICAL AREA	MONTH JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1982														
	526	59.3%	69.7%	82.2%	49.6%	35.3%	61.0%	67.2%	52.3%	59.4%	43.6%	79.7%	56.9%	58.7%
	537	57.3%	36.4%	40.8%	49.0%	35.3%	43.0%	17.1%	32.9%	43.2%	27.8%	48.3%	59.7%	41.7%
	539	14.7%	5.9%	12.2%	12.2%	9.8%	5.4%	10.1%	0.0%	2.1%	10.2%	9.2%	10.8%	10.2%
	SNE TOTAL	42.0%	35.9%	44.0%	35.7%	28.4%	45.9%	30.4%	42.5%	50.2%	34.1%	65.3%	51.0%	43.4%
	613 TOTAL	0.0%	1.4%	4.5%	4.2%	0.9%	17.6%	39.5%	18.2%	12.6%	1.7%	8.3%	10.3%	12.7%
	OVERALL TOTAL	37.6%	30.9%	38.8%	31.0%	24.9%	40.6%	31.8%	41.8%	49.6%	33.2%	64.2%	48.1%	40.7%
1983														
	526	68.4%	78.7%	78.5%	75.0%	77.1%	52.2%	73.0%	72.1%	52.9%	83.3%	76.4%	69.3%	72.9%
	537	61.9%	68.3%	54.6%	50.0%	60.9%	50.8%	48.2%	47.4%	53.6%	53.8%	43.5%	61.3%	54.8%
	539	24.0%	32.9%	38.3%	27.0%	29.7%	39.5%	37.4%	0.0%	16.4%	35.2%	20.3%	12.1%	29.9%
	SNE TOTAL	60.3%	63.1%	58.1%	44.7%	61.8%	48.2%	51.8%	59.1%	50.7%	77.9%	65.0%	60.6%	58.6%
	613 TOTAL	0.4%	0.8%	24.6%	52.3%	0.6%	41.3%	67.2%	3.1%	0.0%	1.1%	4.0%	2.0%	24.8%
	OVERALL TOTAL	55.4%	58.1%	54.1%	45.7%	57.8%	47.6%	52.6%	58.1%	50.4%	76.8%	63.6%	59.4%	56.5%
1984														
	526	89.9%	87.2%	91.2%	80.2%	78.5%	59.6%	70.4%	74.9%	65.5%	83.1%	89.4%	61.2%	80.1%
	537	51.1%	49.8%	40.9%	27.9%	41.6%	63.7%	49.0%	49.4%	12.4%	38.9%	49.3%	67.3%	51.1%
	539	17.2%	10.1%	23.4%	13.6%	15.5%	6.6%	18.8%	2.9%	27.0%	2.4%	9.6%	16.9%	13.9%
	SNE TOTAL	62.9%	54.9%	56.5%	51.5%	60.2%	49.8%	60.4%	59.0%	54.1%	76.8%	70.0%	63.4%	59.2%
	613 TOTAL	7.0%	16.2%	30.3%	36.9%	53.9%	57.7%	35.2%	10.1%	22.7%	3.5%	72.1%	6.4%	31.1%
	OVERALL TOTAL	56.1%	43.9%	46.6%	47.0%	58.6%	51.2%	59.5%	57.1%	52.6%	71.9%	70.4%	61.0%	53.9%

Table 4. Continued.

YEAR	STATISTICAL AREA	MONTH JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1985														
	526	77.7%	98.7%	83.6%	82.4%	70.1%	54.1%	72.8%	80.1%	89.3%	90.6%	85.5%	54.3%	79.2%
	537	70.9%	71.1%	47.6%	31.3%	27.8%	47.9%	65.2%	21.2%	35.0%	36.1%	25.9%	37.8%	57.9%
	539	6.3%	10.5%	7.9%	5.6%	7.5%	5.5%	0.5%	15.1%	5.5%	2.3%	7.5%	8.0%	8.0%
	SNE TOTAL	59.4%	69.4%	58.5%	53.6%	54.3%	39.0%	66.0%	48.6%	73.0%	81.5%	49.8%	33.5%	58.0%
	613 TOTAL	10.2%	15.2%	3.5%	5.3%	4.2%	12.5%	43.4%	52.6%	30.6%	20.3%	29.5%	0.2%	12.5%
	OVERALL TOTAL	55.3%	63.7%	51.8%	42.3%	46.2%	32.7%	64.0%	48.6%	71.1%	78.5%	48.0%	27.6%	52.5%
1986														
	526	56.5%	61.7%	72.6%	86.3%	76.3%	77.4%	87.0%	65.5%	70.9%	79.7%	81.9%	69.9%	75.0%
	537	28.5%	37.6%	37.9%	23.1%	27.5%	28.2%	58.5%	32.1%	44.4%	43.2%	52.8%	43.7%	42.6%
	539	13.2%	17.1%	26.7%	22.4%	15.3%	13.6%	19.1%	9.1%	60.4%	87.5%	26.5%	29.4%	22.7%
	SNE TOTAL	41.6%	42.8%	55.5%	68.2%	62.8%	48.2%	72.0%	46.9%	65.9%	72.9%	67.3%	61.4%	46.0%
	613 TOTAL	12.9%	74.6%	43.2%	54.1%	14.9%	20.9%	53.9%	N/A	N/A	81.5%	9.8%	45.3%	40.3%
	OVERALL TOTAL	37.7%	45.8%	54.5%	65.6%	60.1%	45.4%	71.6%	46.9%	65.9%	73.1%	65.5%	60.3%	45.7%
1982-1986[1]														
	526	70.4%	79.2%	81.6%	74.7%	67.5%	60.9%	74.1%	69.0%	67.6%	76.1%	82.6%	62.3%	73.2%
	537	53.9%	52.6%	44.4%	36.3%	38.6%	46.7%	47.6%	36.6%	37.7%	40.0%	44.0%	54.0%	49.6%
	539	15.1%	15.3%	21.7%	16.2%	15.6%	14.1%	17.2%	5.4%	22.3%	27.5%	14.6%	15.4%	16.9%
	SNE TOTAL	53.2%	53.2%	54.5%	50.7%	53.5%	46.2%	56.1%	51.2%	58.8%	68.6%	63.5%	54.0%	53.0%
	613 TOTAL	6.1%	21.6%	21.2%	30.6%	14.9%	30.0%	47.8%	16.8%	13.2%	21.6%	24.7%	12.8%	24.3%
	OVERALL TOTAL	48.4%	48.5%	49.2%	46.3%	49.5%	43.5%	55.9%	50.5%	57.9%	66.7%	62.3%	51.3%	49.9%

[1]Mean of annual percentages.

Table 5. Evaluation of reduction in landings (metric tons, live) of yellowtail flounder from Southern New England (Stat Areas 526 & 537-539) and from Statistical Area 613 in the Mid-Atlantic region had the Southern New England/Mid-Atlantic seasonal area closure included in the Northeast Multispecies Management Plan (and variations on this closure scheme) been in effect during 1982 - 1986.

YEAR	STATISTICAL AREA	(A) ANNUAL LANDINGS	(B) ANNUAL CLOSURE LANDINGS	(C) CLOSURE PERIOD LANDINGS MAR/APR-MAY	(D) CLOSURE PERIOD LANDINGS MAR-MAY	(E) CLOSURE PERIOD LANDINGS FEB-MAY	% (B)/(A)	% (C)/(A)	% (D)/(A)	% (E)/(A)
1982										
	526	4708	1931	169	169	232	41.0%	3.6%	3.6%	4.9%
	537	4867	3345	310	310	475	68.7%	6.4%	6.4%	9.8%
	539	1875	1530	336	376	566	81.6%	17.9%	20.1%	30.2%
	SNE TOTAL	11450	6806	815	855	1273	59.4%	7.1%	7.5%	11.1%
	613 TOTAL	1091	270	0	47	47	24.7%	0.0%	4.3%	4.3%
	OVERALL TOTAL	12541	7076	815	902	1320	56.4%	6.5%	7.2%	10.5%
1983										
	526	7137	2193	215	215	435	30.7%	3.0%	3.0%	6.1%
	537	8400	6073	1469	1680	2070	72.3%	17.5%	20.0%	24.6%
	539	2315	1931	665	887	1224	83.4%	28.7%	38.3%	52.9%
	SNE TOTAL	17852	10197	2349	2782	3729	57.1%	13.2%	15.6%	20.9%
	613 TOTAL	1213	515	173	356	404	42.5%	14.3%	29.3%	33.3%
	OVERALL TOTAL	19065	10712	2522	3138	4133	56.2%	13.2%	16.5%	21.7%
1984										
	526	3969	850	151	151	250	21.4%	3.8%	3.8%	6.3%
	537	3253	1903	274	290	539	58.5%	8.4%	8.9%	16.6%
	539	1229	1052	200	318	569	85.6%	16.3%	25.9%	46.3%
	SNE TOTAL	8451	3805	625	759	1358	45.0%	7.4%	9.0%	16.1%
	613 TOTAL	1961	1044	217	500	894	53.2%	11.1%	25.5%	45.6%
	OVERALL TOTAL	10412	4849	842	1259	2252	46.6%	8.1%	12.1%	21.6%

Table 5. Continued.

YEAR	STATISTICAL AREA	(A) ANNUAL LANDINGS	(B) ANNUAL CLOSURE LANDINGS	(C) CLOSURE PERIOD LANDINGS MAR/APR-MAY	(D) CLOSURE PERIOD LANDINGS MAR-MAY	(E) CLOSURE PERIOD LANDINGS FEB-MAY	% (B)/(A)	% (C)/(A)	% (D)/(A)	% (E)/(A)
1985										
	526	1350	325	72	72	133	24.1%	5.3%	5.3%	9.9%
	537	1261	532	65	65	177	42.2%	5.2%	5.2%	14.0%
	539	564	373	46	58	118	66.1%	8.2%	10.3%	20.9%
	SNE TOTAL	3175	1230	183	195	428	38.7%	5.8%	6.1%	13.5%
	613 TOTAL	436	164	75	89	93	37.6%	17.2%	20.4%	21.3%
	OVERALL TOTAL	3611	1394	258	284	521	38.6%	7.1%	7.9%	14.4%
1986										
	526	1931	443	39	39	77	22.9%	2.0%	2.0%	4.0%
	537	1142	791	60	60	179	69.3%	5.3%	5.3%	15.7%
	539	172	73	7	10	33	42.4%	4.1%	5.8%	19.2%
	SNE TOTAL	3245	1307	106	109	289	40.3%	3.3%	3.4%	8.9%
	613 TOTAL	213	102	12	20	33	47.9%	5.6%	9.4%	15.5%
	OVERALL TOTAL	3458	1409	118	129	322	40.7%	3.4%	3.7%	9.3%
1982 - 1986[1]										
	526						28.0%	3.6%	3.6%	6.2%
	537						62.2%	8.5%	9.1%	16.1%
	539						71.8%	15.0%	20.1%	33.9%
	SNE TOTAL						48.1%	7.3%	8.3%	14.1%
	613 TOTAL						41.2%	9.6%	17.8%	24.0%
	OVERALL TOTAL						47.7%	7.7%	9.5%	15.5%

[1]Mean of annual percentages.

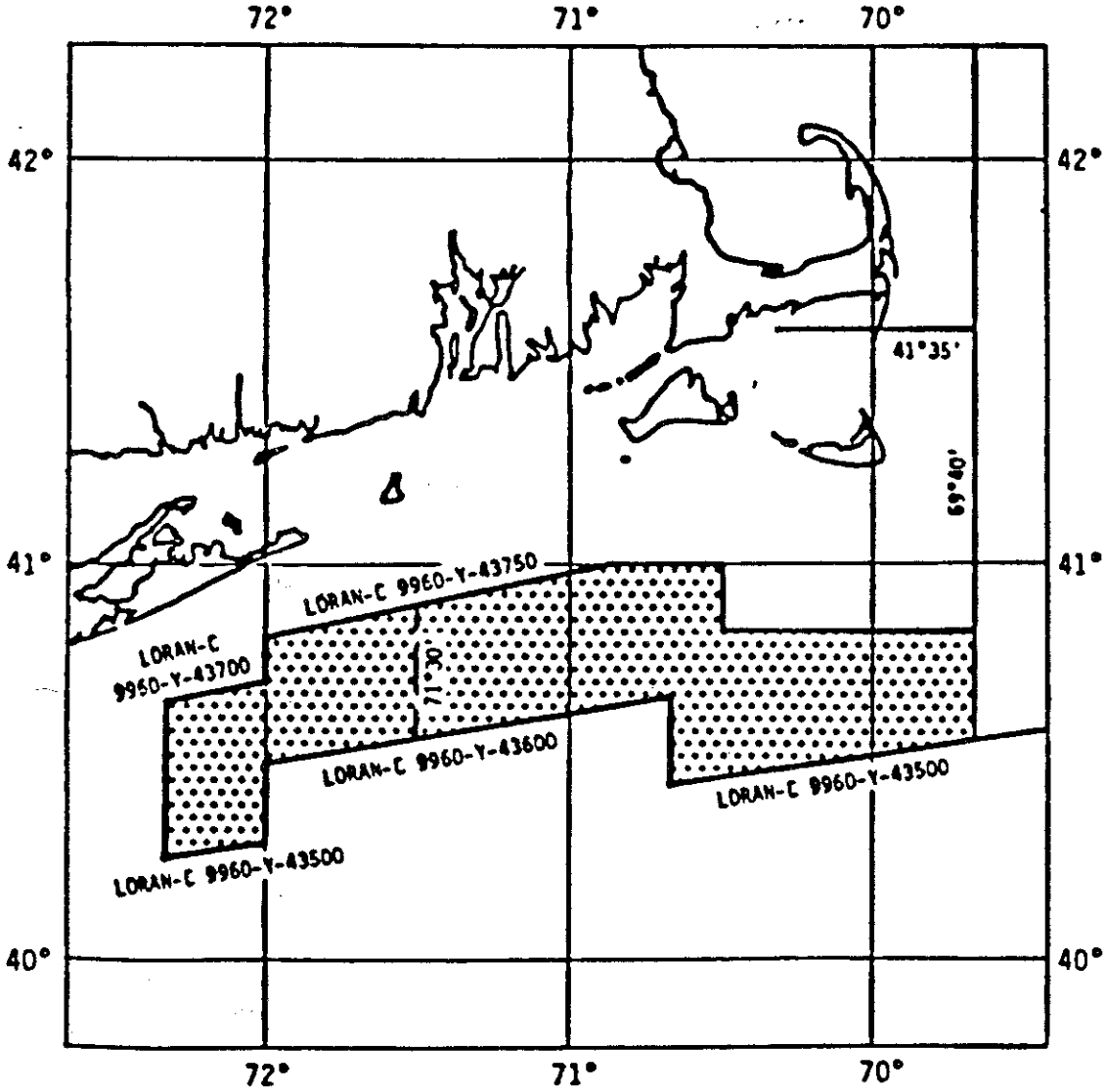


Figure 1. Southern New England/Mid-Atlantic Closure Area implemented under the Northeast Multispecies Fishery Management Plan. This area is to be seasonally closed to mobile fishing gear to provide reduced mortality and enhanced spawning opportunity for yellowtail flounder. The portion of the area east of 71°30'W longitude will close on March 1; whereas the portion west of 71°30'W will close on April 1. The entire area will be reopened by the Regional Director [Northeast Region, NMFS] on or after May 1 when he determines that the closure has achieved the appropriate spawning level for yellowtail flounder.

Figure 2. Ten-minute squares of latitude and longitude comprising the Southern New England/Mid-Atlantic Closure Area implemented under the Northeast Multispecies Management Plan. For evaluation of historical yellowtail flounder landings taken in the Closure Area, the Closure Area was considered to be comprised of 42 ten-minute squares. Each square is identified by a six-digit label.

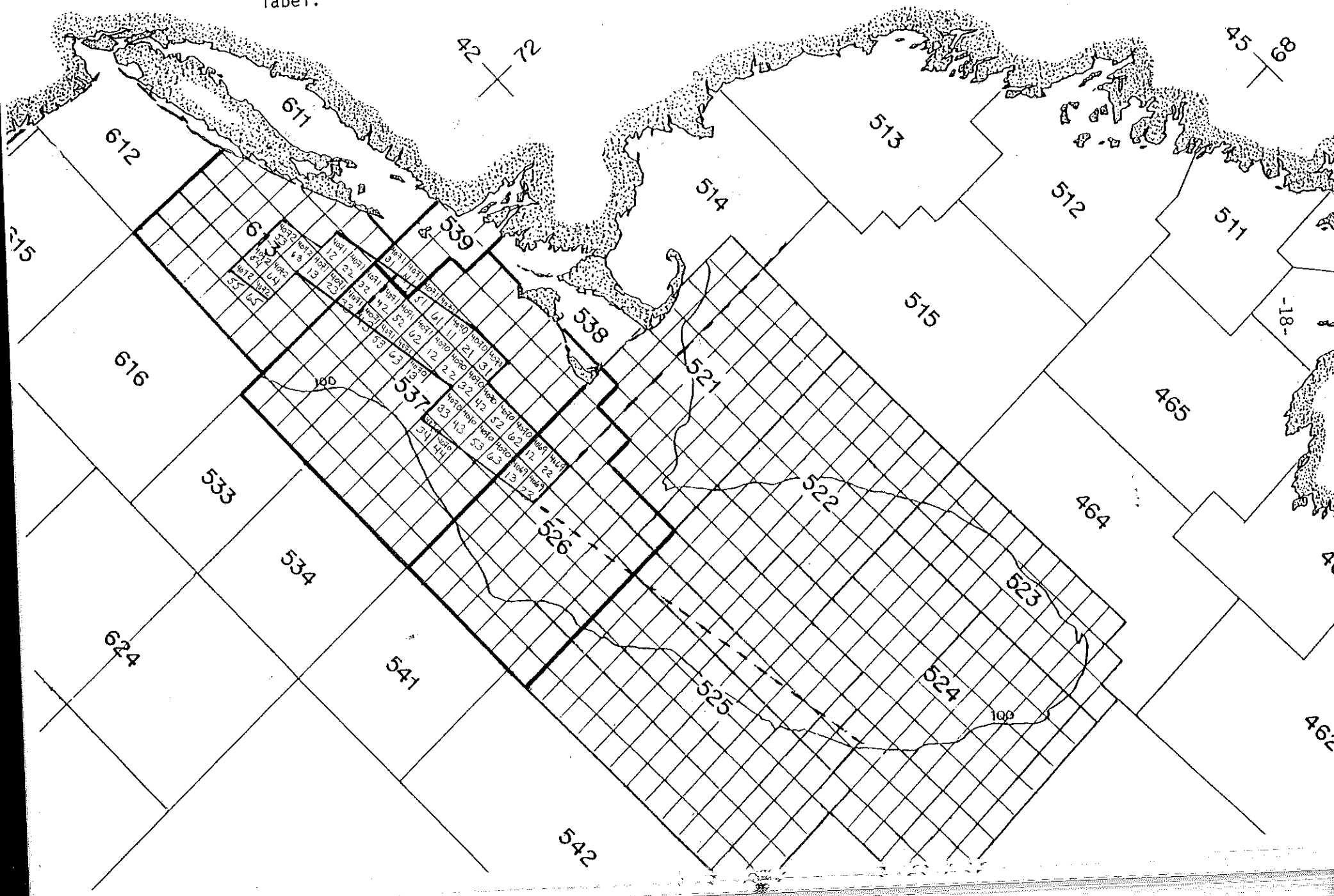
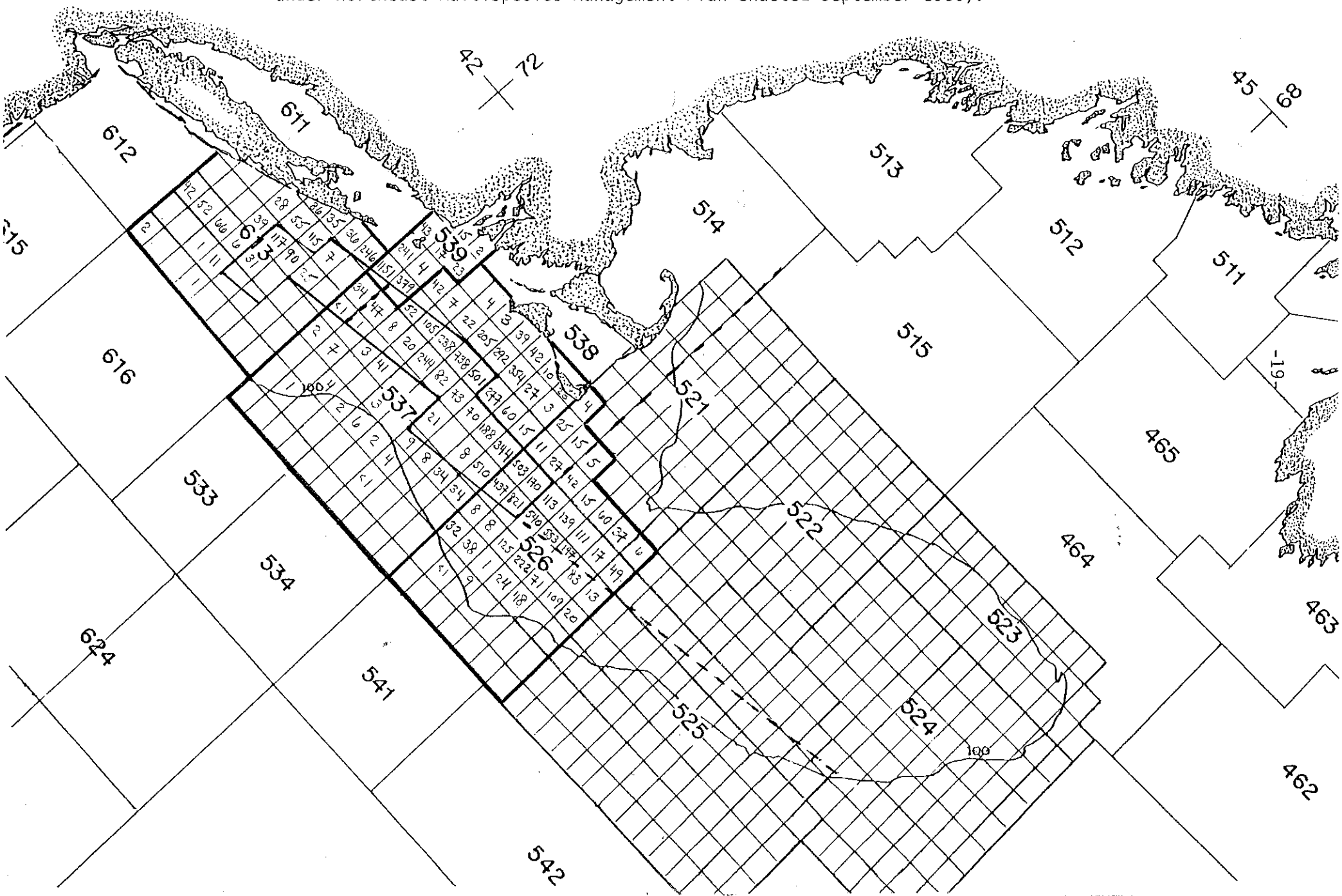
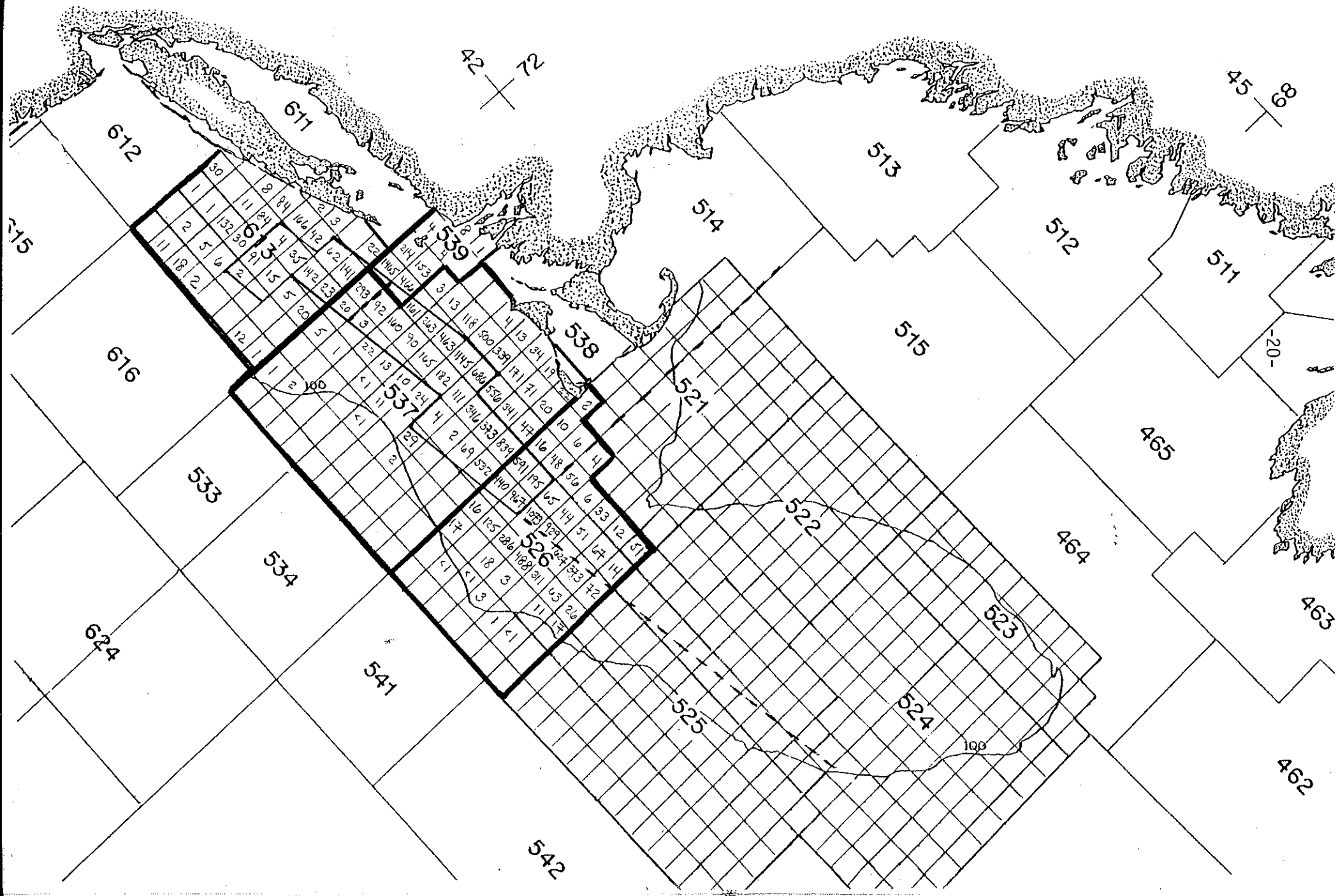


Figure 3. Distribution of 1985 yellowtail flounder landings (metric tons, live weight), by 10-minute squares, from Southern New England (Statistical Areas 526, 537, 539) and the Mid-Atlantic (Statistical Area 613) in relation to Southern New England Closure Area and Georges Bank Large Mesh Area (management measures implemented under Northeast Multispecies Management Plan enacted September 1986).



[illegible] 10-minute [illegible] squares from Southern New England (Statistical Areas 526, 537, 539) and the Mid-Atlantic (Statistical Area 613) in relation to Southern New England Closure Area and Georges Bank Large Mesh Area (management measures implemented under Northeast Multispecies Management Plan enacted September 1986).



[illegible] (metric tons; live weight), by 10-minute squares, from Southern New England (Statistical Areas 526, 537, 539) and the Mid-Atlantic (Statistical Area 613) in relation to Southern New England Closure Area and Georges Bank Large Mesh Area (management measures implemented under Northeast Multispecies Management Plan enacted September 1986).

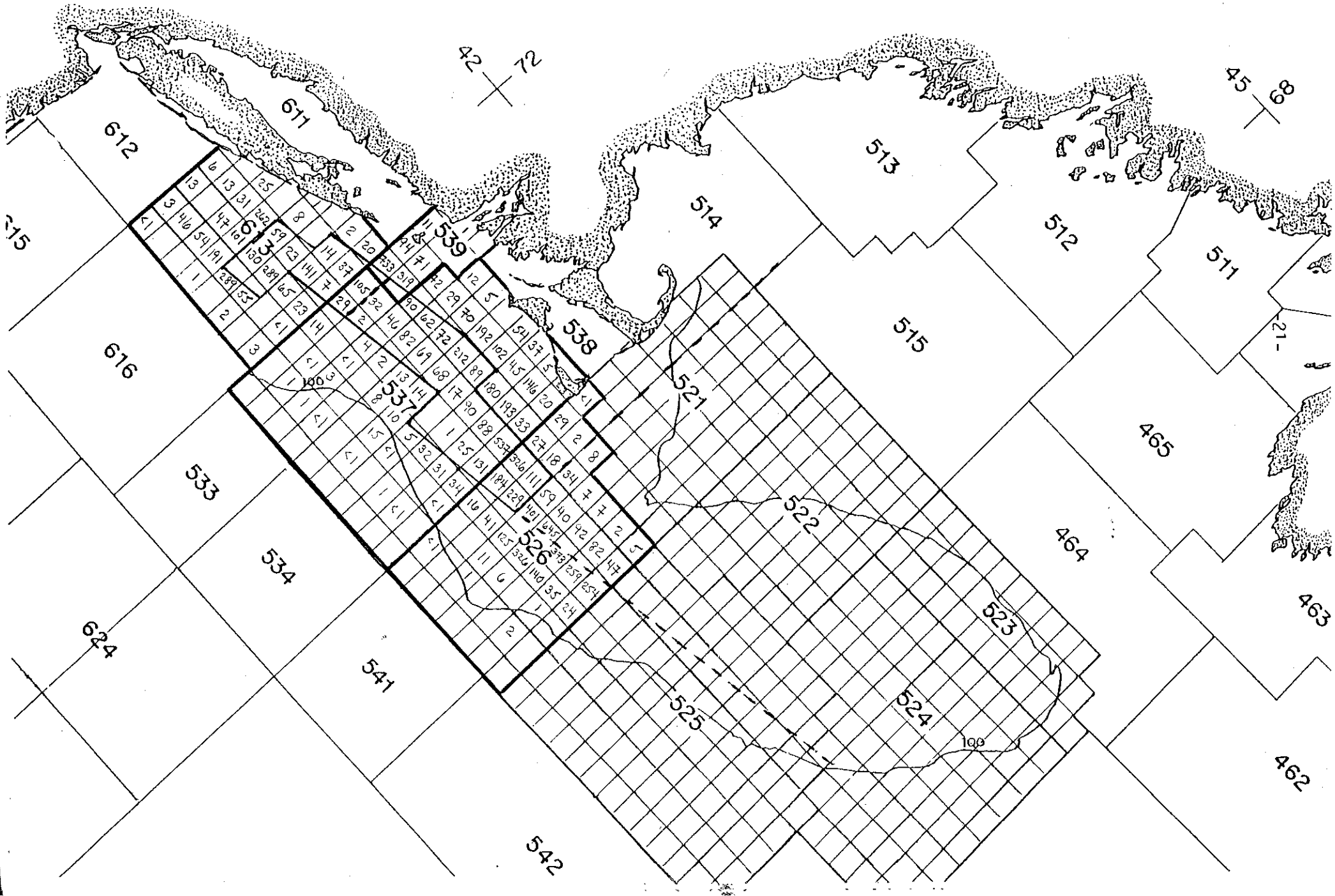


Figure 6. Distribution of 1985 yellowtail flounder landings (metric tons, live weight), by 10-minutes squares, from Southern New England (Statistical Areas 526, 537, 539) and the Mid-Atlantic (Statistical Area 613) in relation to Southern New England Closure Area and Georges Bank Large Mesh Area (management measures implemented under Northeast Multispecies Management Plan enacted September 1986).

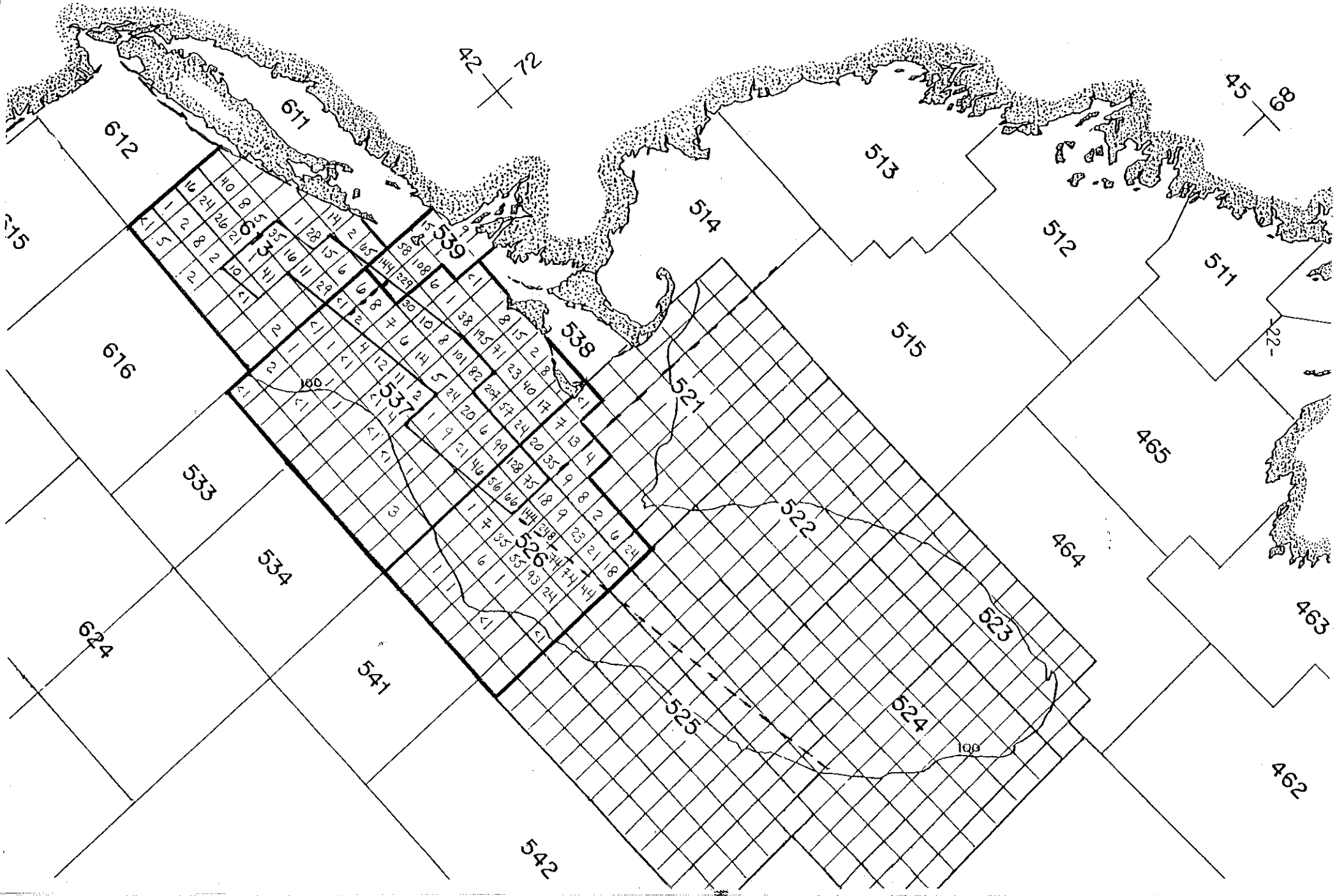


Figure 7. Distribution of 1986 yellowtail flounder landings (metric tons, live weight), by ten-minute squares, from Southern New England (Statistical Areas 526, 537, 539) and the Mid-Atlantic (Statistical Area 613) in relation to Southern New England Closure Area and Georges Bank Large Mesh Area (management measures implemented under Northeast Multispecies Management Plan enacted September 1986).

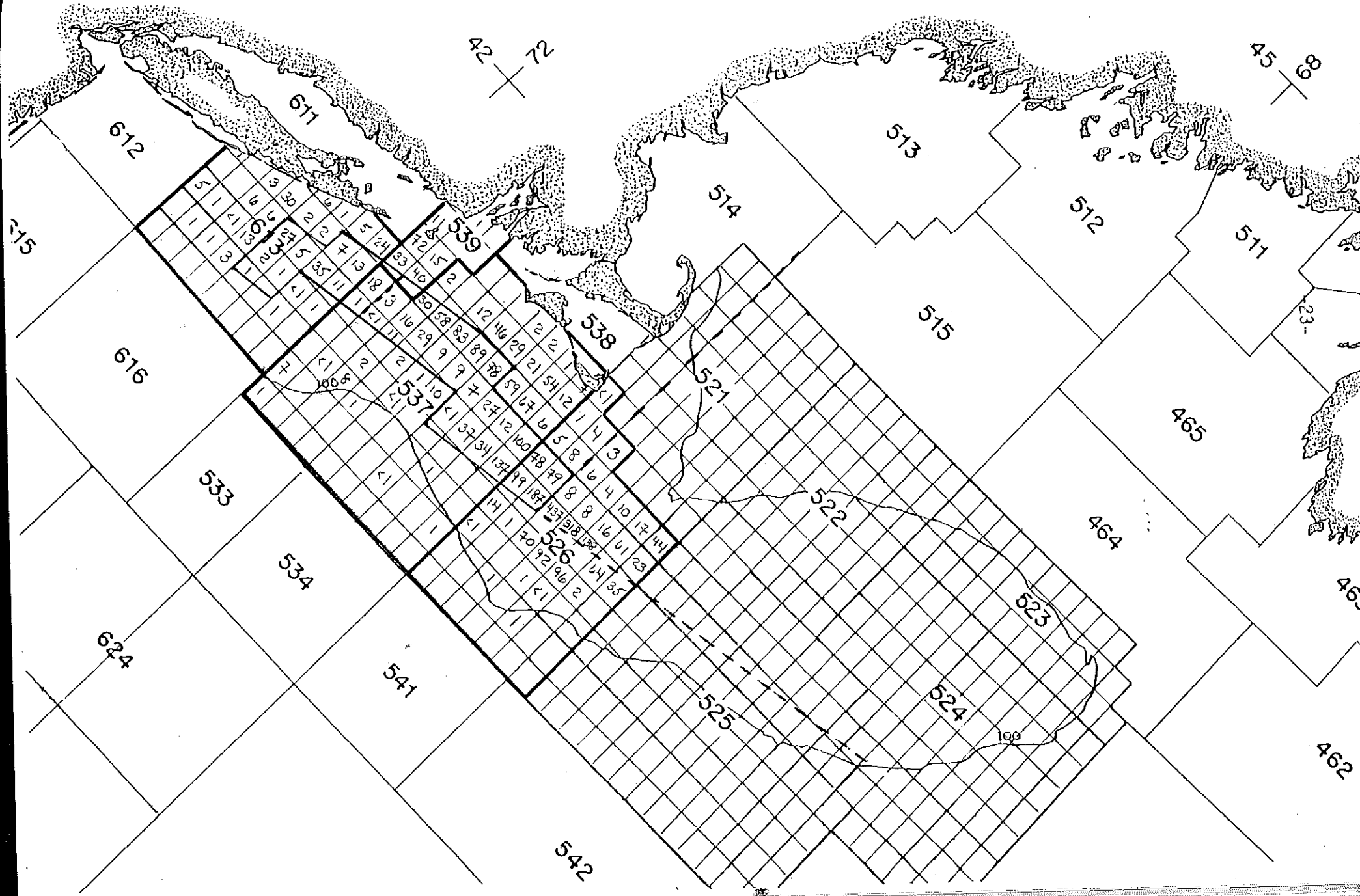


Figure 8. Distribution of 1982 yellowtail flounder landings (metric tons, live weight), by 10-minute squares, caught in proposed Southern New England Closure Area during March-May 1982. Landings east of 70°31'W represent catches taken during March-May; landings west of 71°30'W represent catches taken during April-May.

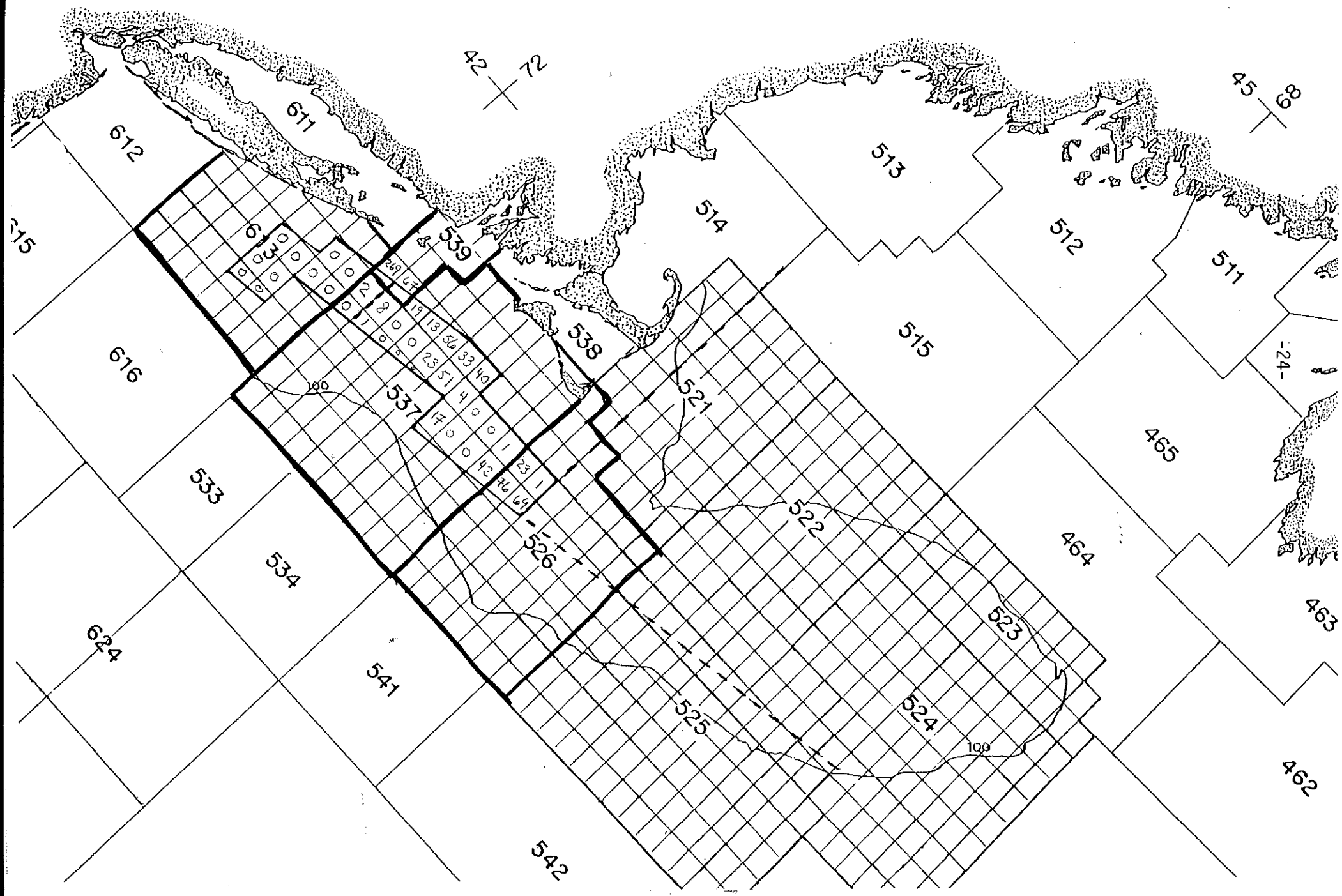


Figure 8. Distribution of 1983 yellowtail flounder landings (metric tons) by 10-minutes squares, caught in proposed Southern New England Closure Area during March-May 1983. Landings east of 71°30'W represent catches taken during March-May; landings west of 71°30'W represent catches taken during April-May.

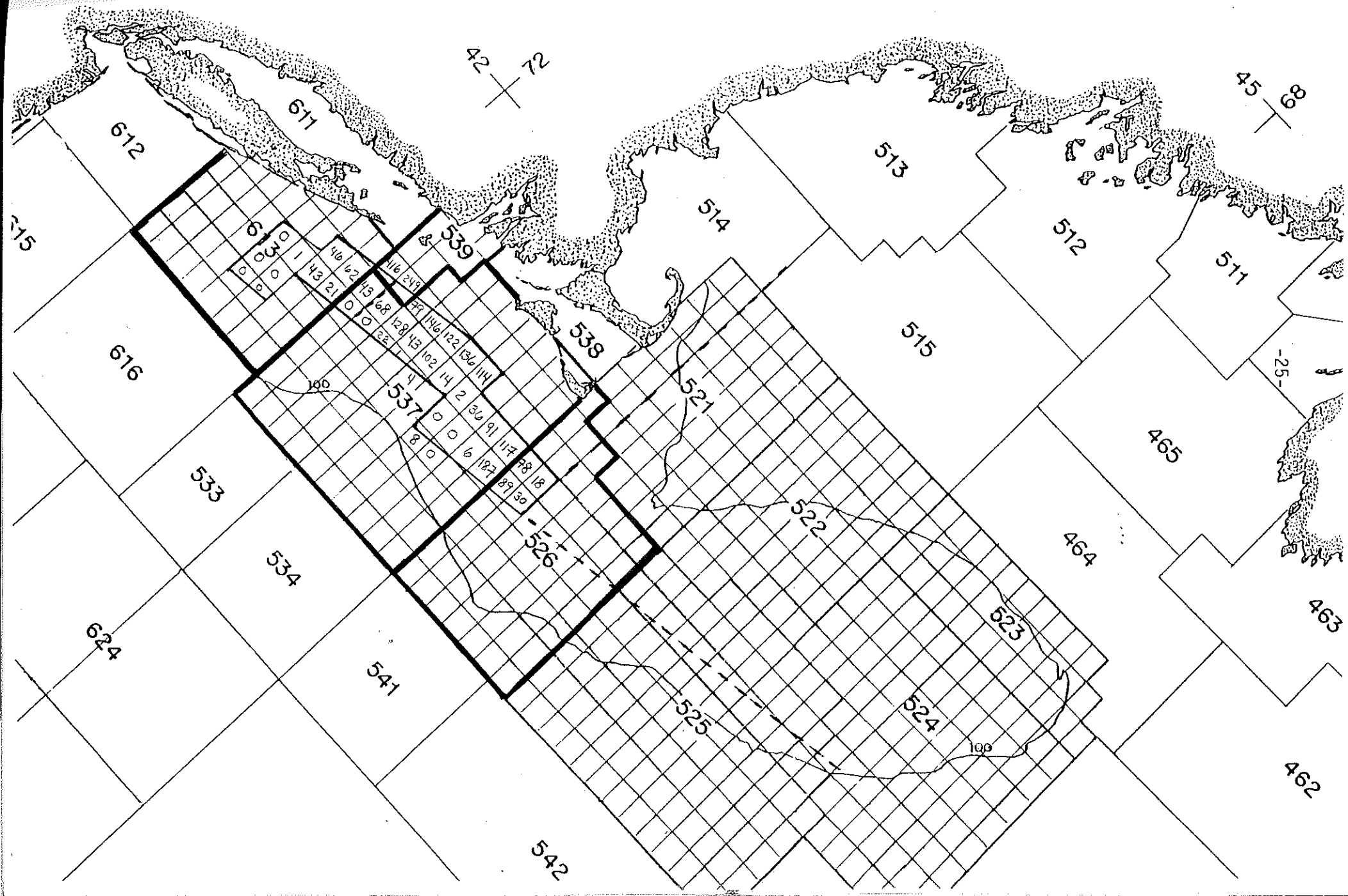


Figure 10. Distribution of 1984 yellowtail flounder landings (metric tons, live weight), by 10-minute squares, caught in proposed Southern New England Closure Area during March-May, 1984. Landings east of 71°30'W represent catches taken during March-May; landings west of 71°30'W represent catches taken during April-May.

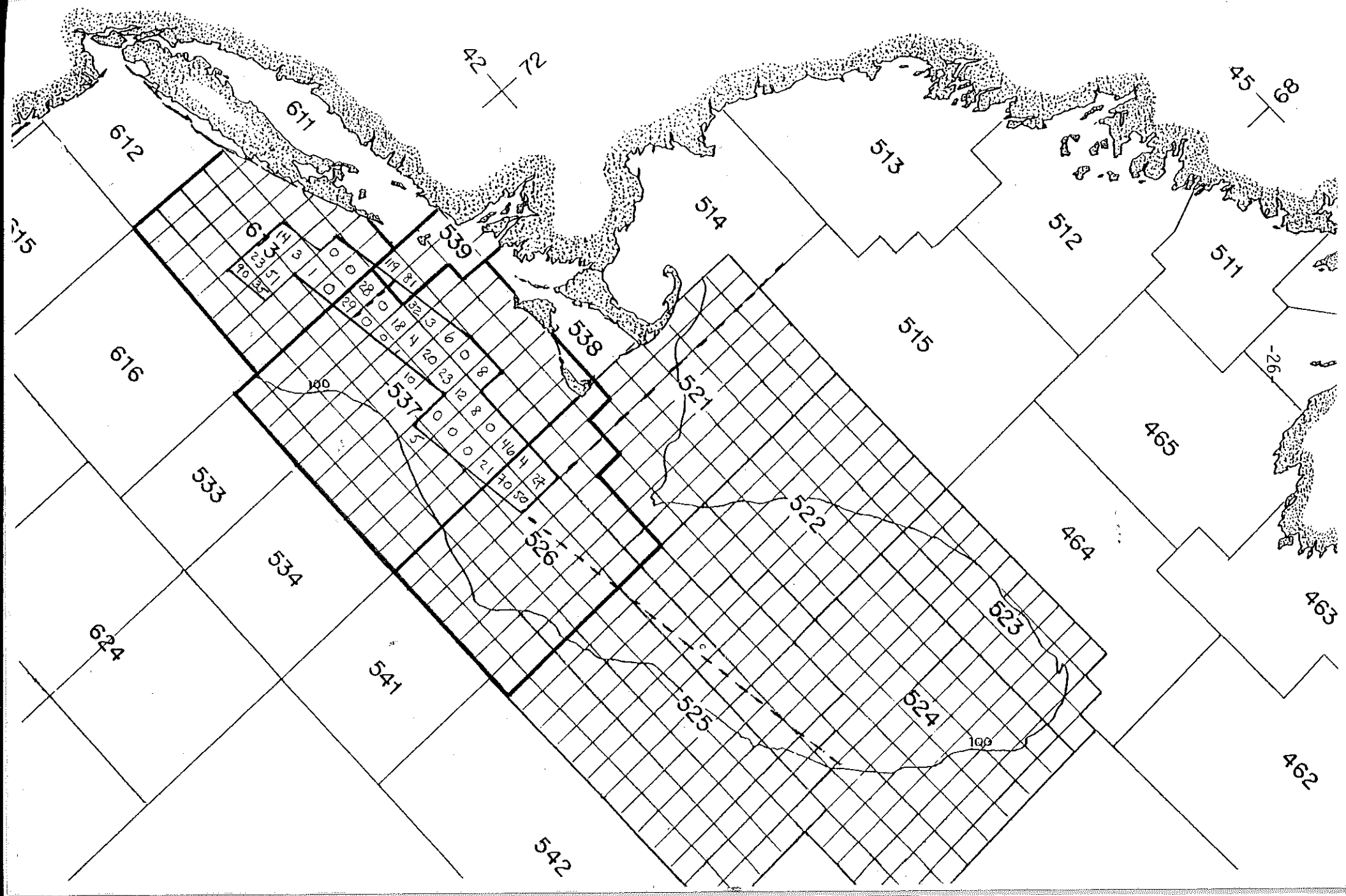


Figure 2. Yellowtail flounder landings (metric tons live weight) by 10-minute squares, caught in proposed Southern New England Closure Area during March-May 1985. Landings east of 71°30'W represent catches taken during March-May; landings west of 71°30'W represent catches taken during April-May.

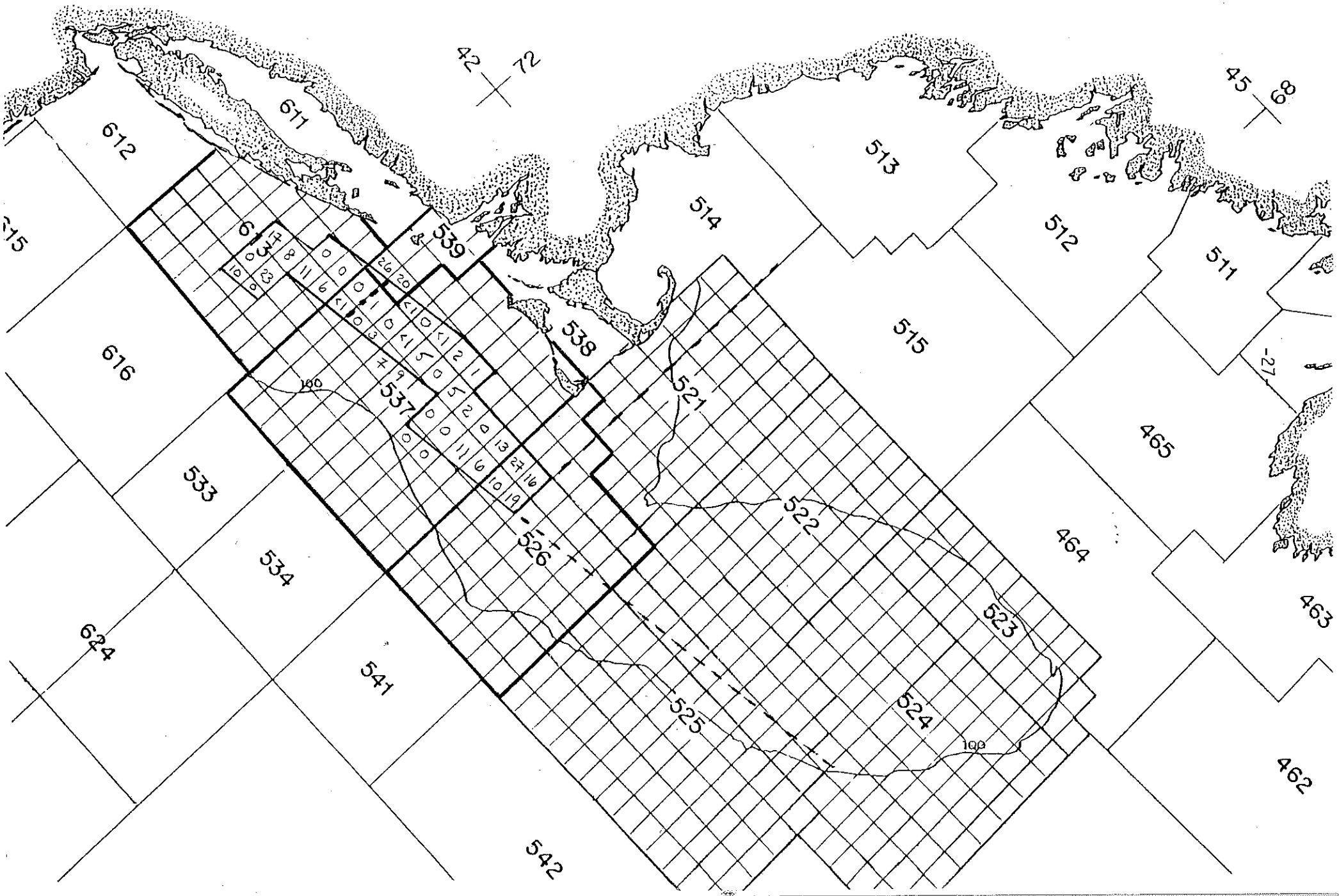
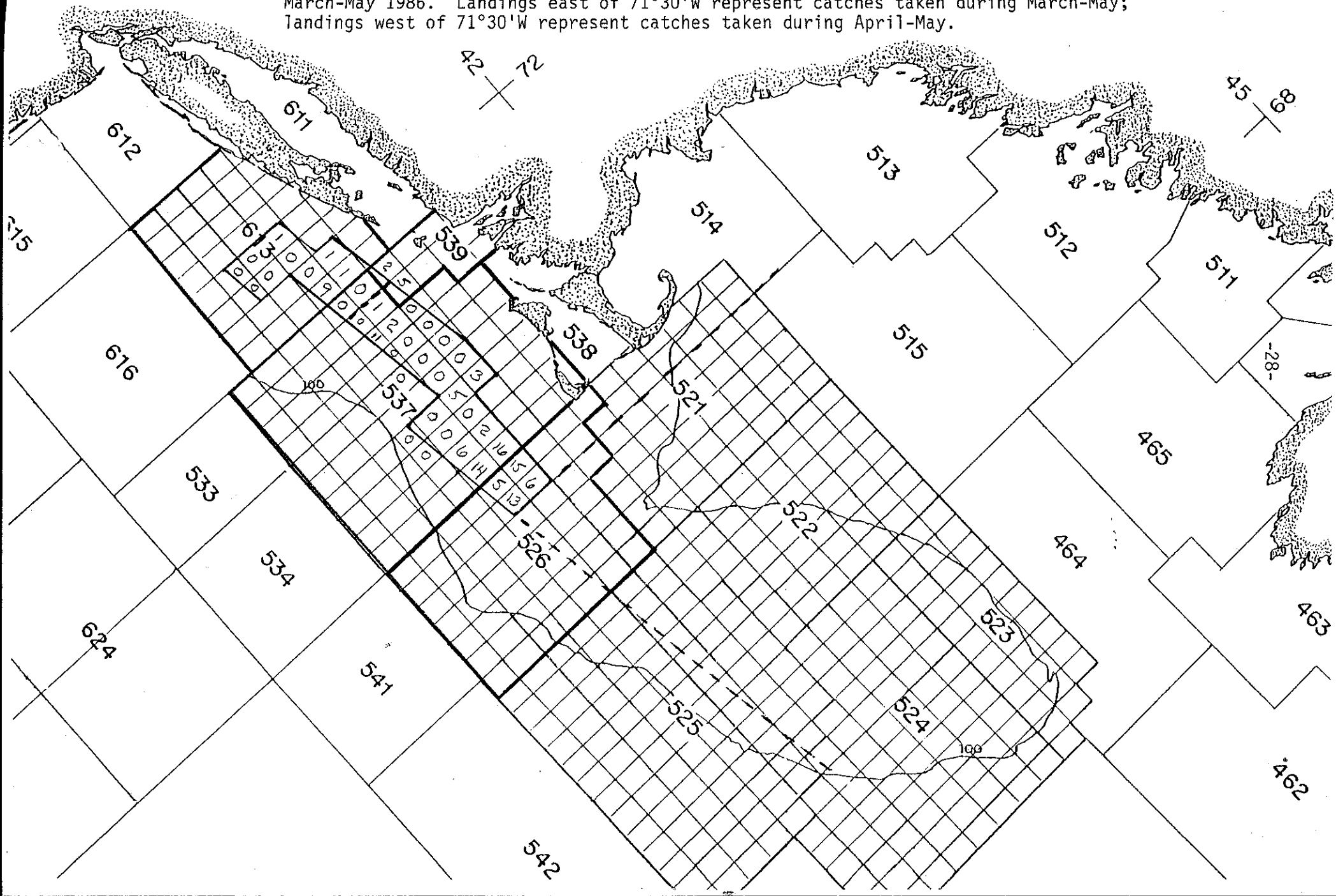



Figure 12. *Distribution of 1986 yellowtail flounder landings (metric tons, live weight), by ten-minute squares, caught in proposed Southern New England Closure Area during March-May 1986. Landings east of 71°30'W represent catches taken during March-May; landings west of 71°30'W represent catches taken during April-May.*