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## ON THE DISTRIBUTION AND ABUNDANCE OF YOUNG REDFISH AT ICELAND 1974

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*By*

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## INTRODUCTION

It is known from the fisheries and from research cruises in the past that young redfish is widely spread in Icelandic waters, particularly off the west and north coasts.

However, though the knowledge of the abundance of young redfish over the Icelandic shelf area was there, it has not been subject to a thorough investigation until now.

In 1974, a programme was initiated to study the abundance of bottom stages of young redfish around Iceland, with the aim to value the importance of Icelandic waters as nursery grounds for redfish.

Very little has been published on the young redfish at Iceland (Friðriksson 1953, 1954; Magnússon 1957; McIntyre 1957), but several authors have dealt with the bottom stages of young redfish from other areas. Some of these papers are special studies on the age composition and growth. But there are relatively few dealing with the distribution and abundance of the bottom stages of young redfish which is the main purpose of this paper. Studies on the distribution and abundance of young redfish have been done, e.g. for the Barents Sea (Surkova 1960; Baranenkova and Khokhlina 1961; Berger and Cheremisina 1974), Baffin Land and Labrador (Templeman 1961; Zakharov and Chekhova 1972) and to some extent off the coast of the U.S.A. (Kelly and Barker 1961).

The authors wish to thank Mr. Albert Stefánsson for his help in working up the material and in drawing the figures.

## MATERIAL AND METHODS

The material here discussed was obtained from a cruise in August/September 1974 with the research vessel "Bjarni Sæmundsson" and supplemented by young redfish from the by-catch of other cruises which had different purposes and were carried out in July and October 1974.

The main cruise was a multipurpose one and only a limited number of hauls was dedicated to the special purpose of collecting young stages of redfish. However, a considerable part of the material was obtained from other hauls of this cruise.

The material consisted exclusively of the *Sebastes marinus* type. *Sebastes mentella* did not occur in the catches at all in the areas off the western to the eastern coasts.

Length measurements were carried out on board and partly in the laboratory. The total length of the fish was measured to the nearest centimeter. A total of 9839 young redfish was obtained from 76 stations (see table 1) and 7889 were measured. On all cruises, the common commercial type of otter trawl was used (head line 105 feet and bobbings 18 to 24 inches in diameter). The cod-end was lined with a fine-meshed net (35 mm). The towing time was from 30 to 90 minutes, usually around 60 minutes. Temperature measurements were carried out with the reversed thermometer and the X.B.T. Consequently, the temperature measurements are given in the text either with one or two decimals.

For the presentation of the material, the area has been divided into subareas, as shown in fig. 1.

When discussing young redfish, it is essential to draw a size limit since commonly big and small redfish occur in the same catches. The term "young redfish" is widely used rather liberally. Thus e.g. BERGER and CHEREMISINA (1974) discuss redfish up to 10 years of age under the term "young redfish". Others use it for the pelagic stages (e.g. KELLY and BARKER 1961).

As to the material here discussed, we decided to draw the line at 32 cm. At this size, redfish in Icelandic waters is still immature. Besides, this size limit is also in accordance with Icelandic regulations on the minimal marketable size of redfish which is about 32 cm, i.e. redfish of 500 gr in weight. This should be a similar margin as used by USSR scientists for the young redfish of the Barents Sea (SURKOVA 1960; BERGER and CHEREMISINA 1974) and by ZAKHAROV and CHEKHOVA (1972) for the young *S. mentella* of the Davis Strait where they put the upper size limit for small redfish at 29 cm fork length.

## DISTRIBUTION AND ABUNDANCE

For the distribution and the abundance of young redfish, see fig. 2. It shows clearly that young redfish is widely distributed and was found at almost all trawling stations off all coasts except the south coast though in variable quantities. It should be pointed out that the sampling off the south coast was very scarce. Thus, it does not give any basis for conclusions for that area.

As can be seen from table 1, the greatest densities of young redfish were found at the W and E areas with 283 and 223 specimens resp. per trawling hour. The smallest catches were obtained off the SW coast. The relatively low abundance of the N coast indicated in the table might not be relevant because in that area in particular, most of the hauls were made for other purposes than

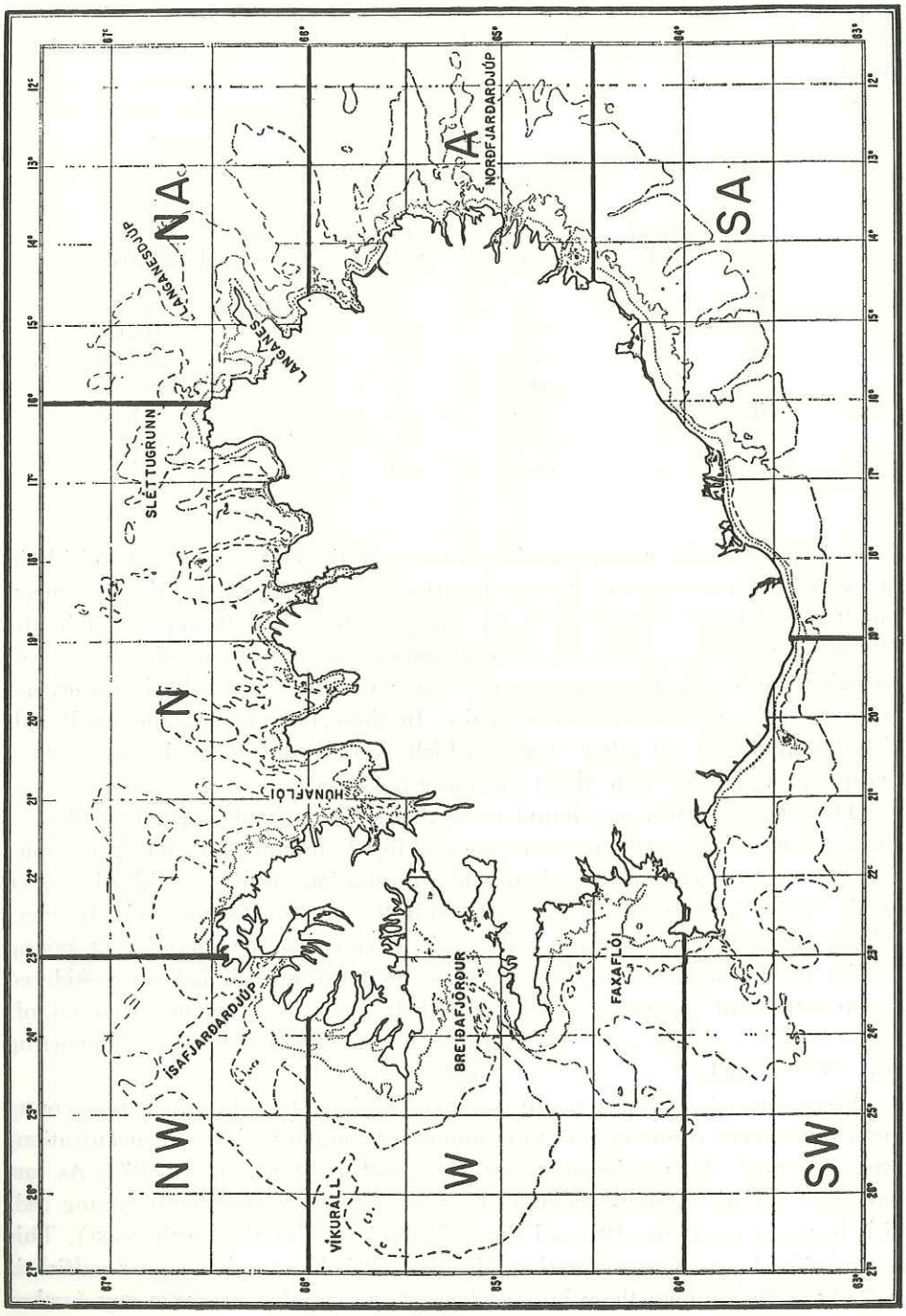


Fig. 1. *Division of the waters around Iceland into subareas with local names mentioned in the text.*

for young redfish. This effects of course the mean number per trawling hour. However, young redfish is also abundant in the N area as can be seen from fig. 2.

TABLE 1.

*Young Redfish at Iceland 1974*

| Area | No. of stat. | No. of spec. | Av. per stat. | Av. per tr. hour | Mean length (cm) |
|---|---|---|---|---|---|
| SW | 4 | 79 | 20 | 26 | 25.41 |
| W | 8 | 1695 | 212 | 283 | 21.54 |
| NW | 20 | 3148 | 157 | 144 | 20.95 |
| N | 27 | 2051 | 76 | 89 | 20.13 |
| NE | 11 | 1855 | 169 | 175 | 17.73 |
| E | 6 | 1011 | 169 | 223 | 15.73 |
| Total | 76 | 9839 | 130 | 142 | |

It is particularly worth pointing out the findings of very small redfish in quantities off the east and the north-east coast as reflected by the low mean length, see table 1. Thus, e.g. in the Langanesdjúp (st. 70, app.) and in the Norðfjarðardjúp (st. 83, app.), pronounced concentrations of very small redfish were found. The extension of these concentrations could, however, not be examined any further on this cruise. In these two catches, the small redfish outnumbered all other species which were rather scarcely represented except for long rough dab which was quite numerous.

The young redfish was found to be densest in a haul at Breiðafjörður at the west coast (st. 7, 1019 pr.tr.hr., see also fig. 2 and app.). This is in good accordance with earlier observations and informations from the fisheries since small redfish (immature) is very common in the catches of commercial trawlers within the Víkuráll area and south of it. Because of the quantity of young redfish in the catches in the shelf area off Breiðafjörður, it has been considered as an important nursery ground for redfish at Iceland and our findings off Breiðafjörður as well as in the northern part of the Faxaflói are supporting this view strongly.

From the Víkuráll area north- and eastwards to the Húnaflói area, young redfish was very common and quite numerous though no heavy concentrations were observed, the maximum being 211 per trawling hour (st. 27). As one can see from fig. 2, there seems to be a gap in the abundance of young redfish between about the 19° and the 18° longitude (of the north coast). This is probably due to scarce sampling. However, it is known that young redfish is usually quite common there but the lack of information prevents any further comment. On the western slope of the Sléttugrunn, redfish is sometimes caught commercially during the summer season. On the Sléttugrunn itself, close to

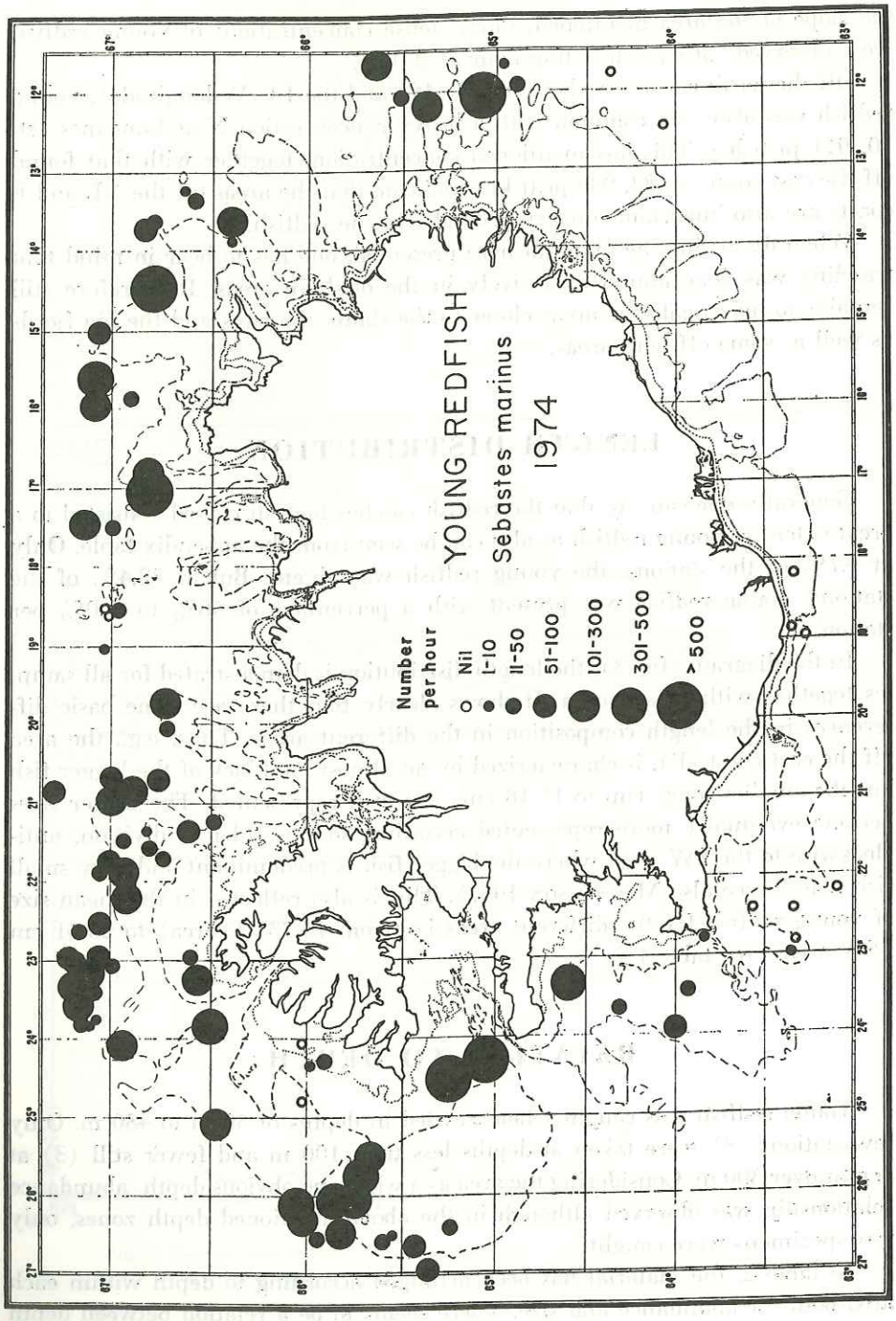


Fig. 2. *Distribution and abundance of young redfish around Iceland, based on number per trawling hour.*

the slope of the area mentioned, fairly dense concentrations of young redfish were observed (567 per trawling hour at st. 62).

Off the north-east coast (between the 16° and the 13° W longitude), young redfish was also very common with a heavy concentration N of Langanes (st. 70, 911 pr.tr.h.). This last mentioned concentration, together with that found off the east coast (st. 83, 936 pr.tr.hr.) indicate that the areas off the NE and E coasts are also important nursery grounds for the redfish.

When discussing the material here presented, one has to bear in mind that trawling was done almost exclusively in the offshore areas. It therefore still remains to investigate the areas closer to the shore, the bays and the big fjords as well as some offshore areas.

## LENGTH DISTRIBUTION

Generally one can say that the redfish catches here discussed consisted to a great extent of young redfish as also can be seen from the appendix table. Only at 4.7% of the stations, the young redfish was absent. But at 82.4% of the stations, young redfish was present with a percentage of 50% to 100% per station.

In the diagram (fig. 3), the length distribution is demonstrated for all samples together within each area. It shows clearly that there are some basic differences in the length composition in the different areas. Thus, e.g., the area off the east coast (E), is characterized by an almost total lack of the bigger fish but the smallest ones (up to 17-18 cm) are well represented. The bigger sizes become eventually more represented according to this subarea division, anticlockwise to the SW coast where the bigger fish is predominant and very small fish scarce (see also MAGNÚSSON 1957). This is also reflected in the mean size of young redfish for the different areas i.e. from 15.73 (E area) to 25.41 cm (SW area), see table 1.

## RELATION TO DEPTH

Young redfish was caught when trawled in depths of 50 m to 480 m. Only few stations (8) were taken at depths less than 100 m and fewer still (3) at depths over 300 m. Considering the area as a whole, no obvious depth- abundance relationship was observed although in the above mentioned depth zones, only few specimens were caught.

In table 2, the material has been arranged according to depth within each area both for abundance and size. There seems to be a relation between depth and abundance within each area. This is particularly true for the NW and N areas where we have a fairly good number of stations covering a wide range of

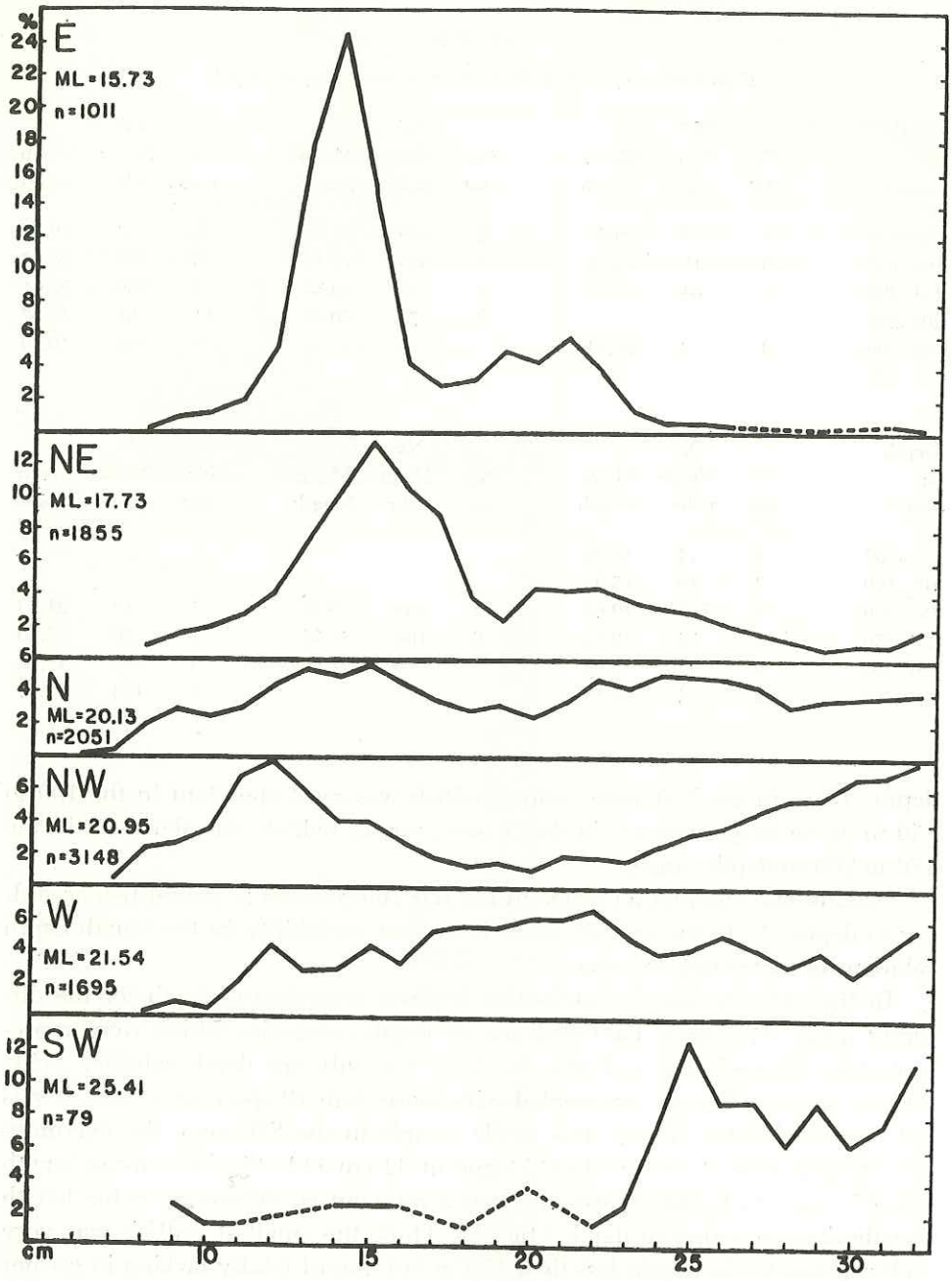


Fig. 3. *Length distribution of young redfish according to areas. Also given the mean length (ML) and total number (n) per area.*

TABLE 2.

*Distribution of Young Redfish 1974 according to Depth.*

| Depth in meters | SW No. stat | SW No pr tr.hr | SW Mean length | W No. stat | W No pr tr.hr | W Mean length | NW No. stat | NW No pr tr.hr | NW Mean length |
|---|---|---|---|---|---|---|---|---|---|
| ≦ 100 | 1 | 2 | 20.00 | 2 | 656 | 21.70 | 3 | 33 | 19.84 |
| 101–150 | 1 | 10 | 13.00 | 1 | 610 | 18.19 | 3 | 299 | 24.67 |
| 151–200 | 1 | 64 | 27.72 | 2 | 27 | 30.30 | 3 | 189 | 21.61 |
| 201–250 | | | | 2 | 75 | 30.83 | 11 | 98 | 19.47 |
| 251–300 | 1 | 9 | 16.44 | | | | 6 | 156 | 19.79 |
| > 300 | | | | | | | | | |

| Depth in meters | N No. stat | N No pr tr.hr | N Mean length | NE No. stat | NE No pr tr.hr | NE Mean length | E No. stat | E No pr tr.hr | E Mean length |
|---|---|---|---|---|---|---|---|---|---|
| ≦ 100 | 2 | 14 | 18.06 | | | | | | |
| 101–150 | 2 | 19 | 15.92 | | | | | | |
| 151–200 | 6 | 215 | 19.63 | 2 | 204 | 19.56 | 1 | 13 | 21.23 |
| 201–250 | 11 | 75 | 19.84 | 6 | 168 | 15.97 | 1 | 20 | 17.20 |
| 251–300 | 4 | 42 | 17.42 | 3 | 170 | 18.06 | 3 | 340 | 15.04 |
| > 300 | 2 | 34 | 17.15 | | | | 1 | 164 | 19.15 |

depth. Thus, in the NW area, young redfish was most abundant in the 100 to 150 m depth range whereas in the N area, young redfish was abundant in the 150 to 200 m depth range.

Usually one observes a change in the size composition of young fish according to depth. As to the redfish, there is a great variability in the length-depth relationship according to areas.

In figs. 4-6, the length distribution is given according to depth for the different areas separately. Excluded are all depth categories which were represented by 10 specimens and less. As there was only one depth category (151-200 m) in the SW area represented with more than 10 specimens (64), it was not presented either. But in this single sample in the SW area, the maximun percentages were at 25 cm (15.6%) and at 32 cm (14.1%). The mean length was 27.7 cm. As to the W area, there is a pronounced difference in the length distribution according to depth (fig. 4). Thus, the smallest redfish was very well represented in depths less than 150 m but almost totally lacking in greater depths. It is also worth noticing that the bulk of the redfish in 101-150 m depth consisted of smaller fish than in depths less than 100 m. In this connection it should be pointed out that for depths less than 100 m, one station in Faxaflói has a considerable bearing on the size distribution for this depth category. The samples from the 101-150 m depth category are exclusively from the Breiða-

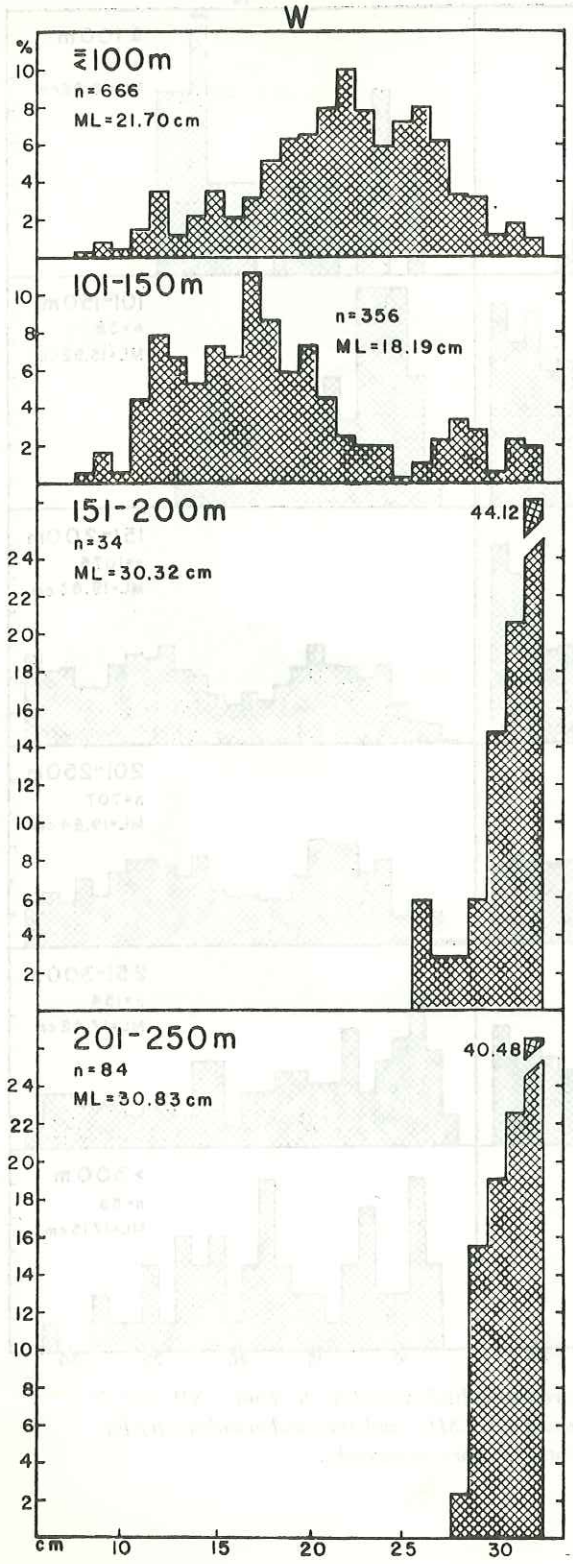


Fig. 4. *Length distribution of young redfish according to depth in the W area. The mean length is also given (ML) and the total number (n) for each depth category separately.*

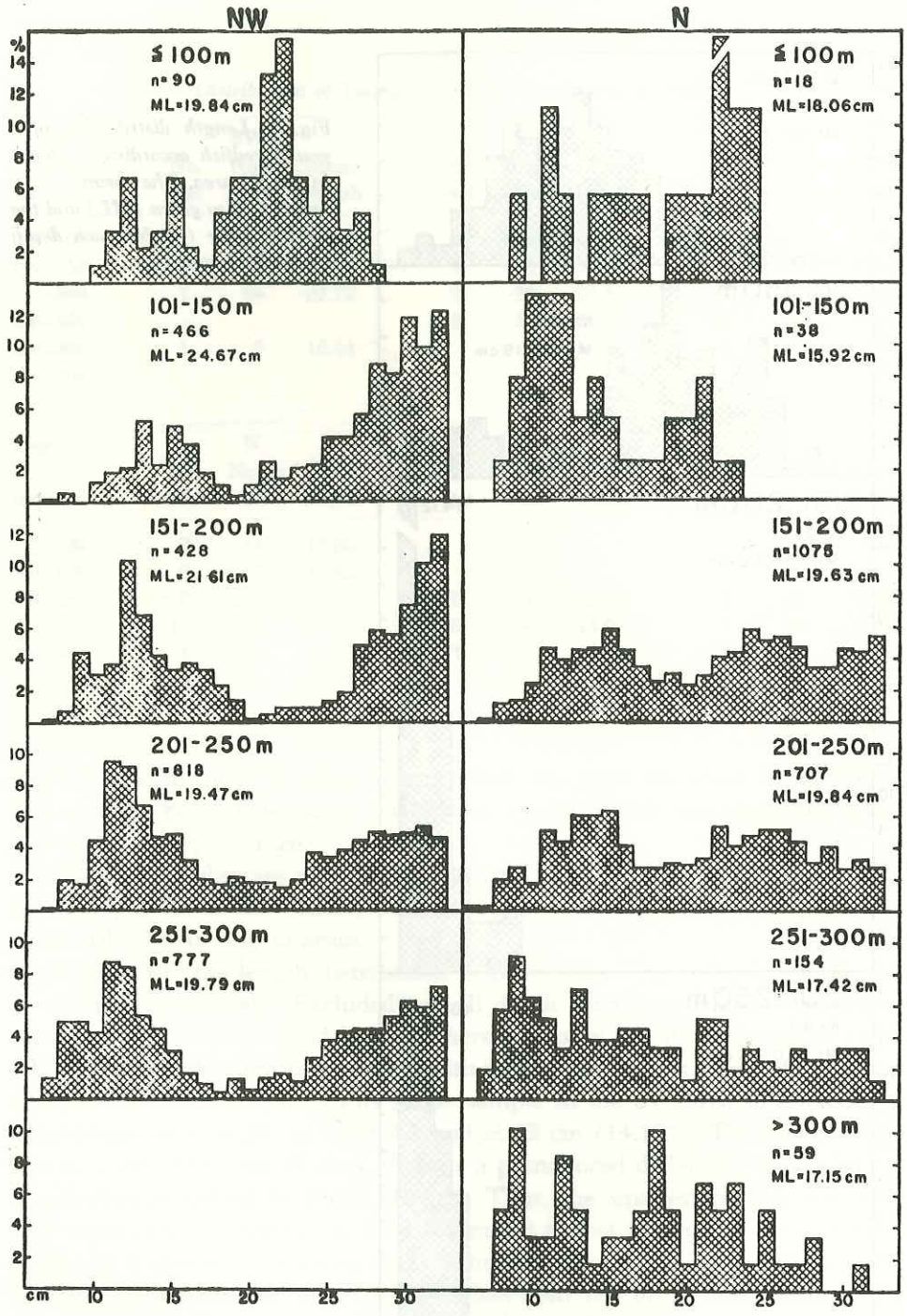


Fig. 5. *Length distribution of young redfish according to depth (NW and N areas). The mean length is also given (ML) and the total number (n) for each depth category separately.*

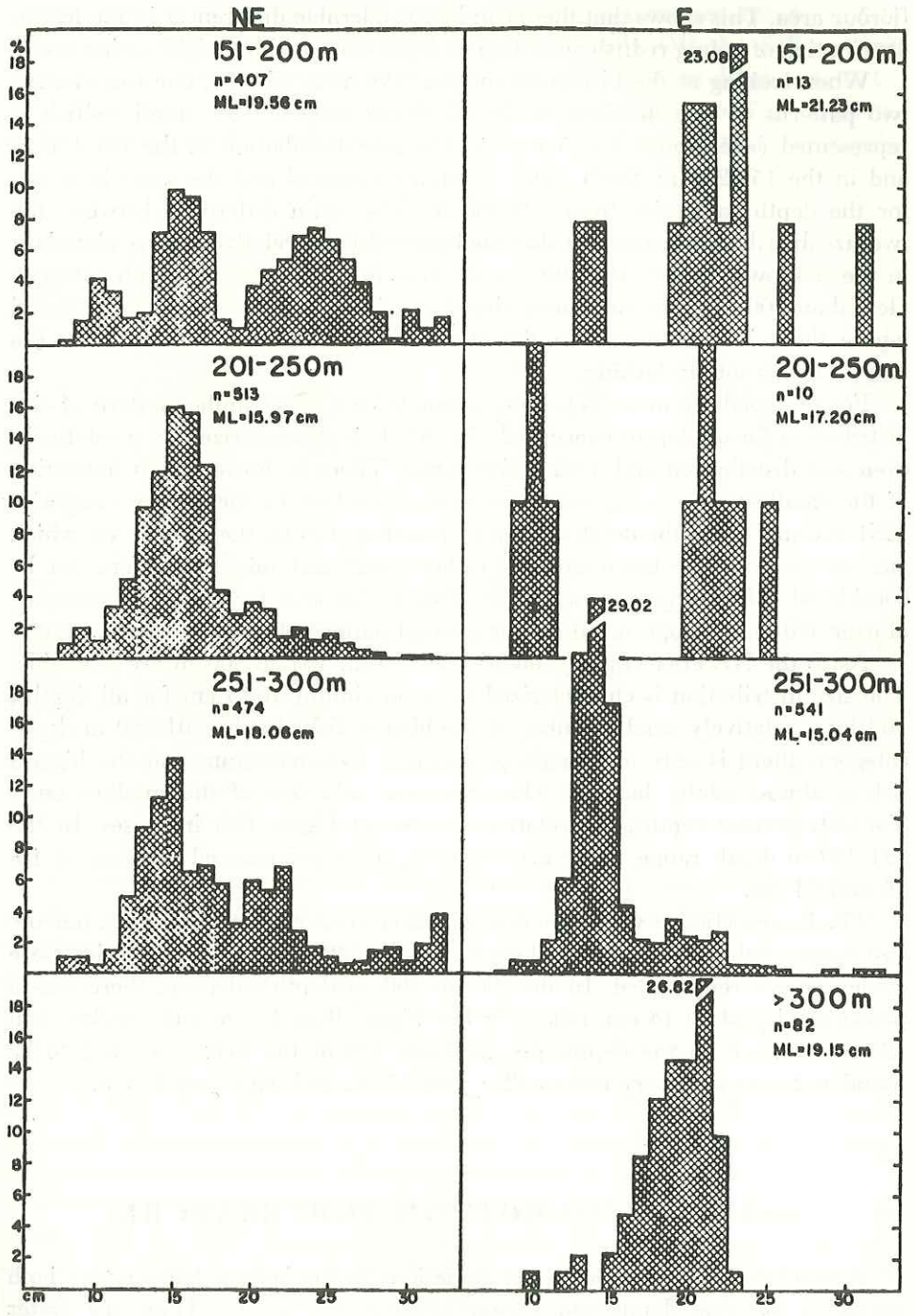


*Fig. 6. Length distribution of young redfish according to depth (NE and E areas). The mean length is also given (ML) and the total number (n) for each depth category separately.*

fjörður area. This shows that there can be considerable differences in the length distribution of young redfish according to depth even within neighbouring areas.

When looking at the histogram for the NW area (fig. 5), one can observe two patterns of size distribution. In all depth ranges, very small redfish is represented (age groups 2 to 5 years). The size distribution in the 101-150 m and in the 151-200 m depth range is almost identical and the same is to say for the depth categories from 200-300 m. The main difference between the two size distribution patterns is that the bigger fish are relatively more abundant in the shallower zones (101-200 m) whereas in the shallowest depth category (less than 100 m), the maximum abundance in the size groups is to be found where there is a minimum in the other depth categories. In this zone, the biggest fish is totally lacking.

For the northern area (N), there seems to be a very similar pattern of size distribution for all depths concerned (fig. 5). It is characterized by a relatively even size distribution and a wide size range. There is, however, an indication of the smallest ones being relatively more abundant in the deeper categories (251-300 m). As to the depth categories less than 150 m, the number on which our observations are based upon is rather small and might therefore not be considered sufficiently representative. This is also true for the depth category of over 300 m, although it follows the general pattern of the other depth ranges.

As to the NE area (fig. 6), observations from 151 to 300 m are available. The size distribution is characterized by a maximum at 15 cm for all depths, and by a relatively small number of the biggest fish. In the 201-250 m depth category, there is only one single pronounced size maximum and the biggest fish is almost totally lacking. Also there are only few of the smallest ones. Towards greater depths, the relative number of bigger fish increases. In the 151-200 m depth range, there are however, three pronounced maxima at 10, 15 and 24 cm.

The E area (fig. 6) was more than all other areas characterized by a narrow size range within each depth category. The 151-250 m depth categories were rather poorly represented. In the 251 to 300 m depth category, there was a pronounced peak at 14 cm, relatively few bigger than 15 cm and smaller than 12 cm, whereas in the depths greater than 300 m the maximum was to be found at 21 cm with very few smaller than 15 cm and none over 23 cm.

## RELATION TO BOTTOM TEMPERATURE

Around Iceland, there are great variations in the bottom temperature both according to area, depth and season (Stefánsson 1974). Thus, the water temperature at the S and the W coast is relatively warm down to considerable

depths, whereas off the N and E coasts, the temperatures are relatively low and usually drop very rapidly with increasing depth. Off the SW to NW coasts e.g., the bottom temperature at less than 100 to 220 m depth was 10.0° to 6.0°C. But off the N coast, we met a bottom temperature of 7.3° to 0.3°C at 60 to 480 m depth and off the E coast, 2.5° to –0.1°C at 266 to 317 m depth.

TABLE 3.

*Average Bottom Temperature (C°) by Area and Depth.*

| Depth in meters | SW No. obs. | SW Range | SW Average | W No. obs. | W Range | W Average | NW No. obs. | NW Range | NW Average |
|---|---|---|---|---|---|---|---|---|---|
| ≦ 100 | 1 | 9.99 | 9.99 | 1 | 7.90 | 7.90 | 4 | 6.89–8.20 | 7.40 |
| 101–150 | 1 | 7.60 | 7.60 | 1 | 8.40 | 8.40 | 1 | 7.30 | 7.30 |
| 151–200 | 1 | 7.50 | 7.50 | | | | 1 | 6.50 | 6.50 |
| 201–250 | | | | | | | 2 | 6.00–6.20 | 6.10 |
| 251–300 | 1 | 7.46 | 7.46 | | | | 2 | 6.20–6.30 | 6.25 |
| > 300 | | | | | | | | | |

| Depth in meters | N No. obs. | N Range | N Average | NE No. obs. | NE Range | NE Average | E No. obs. | E Range | E Average |
|---|---|---|---|---|---|---|---|---|---|
| ≦ 100 | 2 | 5.30–7.25 | 6.28 | | | | | | |
| 101–150 | 4 | 4.98–6.48 | 5.67 | | | | | | |
| 151–200 | 6 | 2.17–6.45 | 4.52 | 5 | 4.19–4.90 | 4.65 | 1 | 2.41 | 2.41 |
| 201–250 | 10 | 0.51–6.34 | 3.68 | 7 | 3.92–4.58 | 4.16 | 2 | 2.21–2.49 | 2.35 |
| 251–300 | 13 | 1.01–6.28 | 2.95 | 2 | 2.29–3.39 | 2.84 | 2 | 0.52–2.50 | 1.51 |
| > 300 | 3 | 0.30–5.08 | 1.97 | | | | 2 | ÷0.06–0.28 | 0.11 |

In table 3, the mean bottom temperature based on measurements carried out during the young redfish survey, has been calculated for different depth categories according to areas which in this case do not follow strictly the division into areas as shown in fig. 1 since all measurements north of Ísafjarðardjúp are here included in area N. Further, the temperature range within each depth category is given. It should be borne in mind that in some of the areas (particularly SW, W and E), the mean values for each depth category are based on only very few measurements and for the SW and W areas, there were only single measurments at hand. On the other hand, for the N area, the mean values are based on a fairly good number of observations.

Although the temperature range within some of the depth categories is considerable, the table demonstrates very clearly the great differences in bottom temperatures in given depths from one area to another. Thus, e.g. the difference in the bottom temperature at 150-250 m depth (most of the sampling was carried out at that depth) was over 5°C between the SW and E areas.

## DISCUSSION

From the bottom temperature, it is obvious that young redfish at Iceland grow up both in warm and relatively cold waters since high concentrations were found both off the W and E coast. Thus, young redfish was obtained where the bottom temperatures ranged from –0.06°C (E area) to 9.99°C (SW area) and in depths from 50 to 480 m.

The greatest catches were, however, made as previously stated, in depths of 76 to 300 m and in temperatures from 2.0°C to 8.9°C. For comparison, TEMPLEMAN (1961) reported the greatest quantities of young *S. mentella* in the Davis Strait in a temperature of 1.13°C at a depth of 274-293 m, and ZAKHAROV and CHEKHOVA (1972) for the same area and also for young *S. mentella* in a temperature range of 1.8° to 3.8°C at a depth of 230-400 m, especially for the fry in the first and second year of life. In the Barents Sea, the young redfish was mostly caught in the warmer parts of it at 100-400 m (SURKOVA 1960).

It is obvious that the conditions at Iceland differ considerably from those in the Davis Strait not to mention that it is *S. mentella* in the Davis Strait and and *S. marinus* in Icelandic waters. However, the eastern area of Iceland resembles to some extent that of the Davis Strait, and for this area separately we find following ranges in depth and temperature: 180 to 320 m and –0.06° to 2.50°C, but the biggest catch was made at 256 m depth and 2.20°C (936 sp. per trawling hour).

As to the size composition, there is a basic difference between the W and E area. In the eastern area (E and NE), there are relatively few redfish in the higher size groups of young redfish. Similarly it has been observed for the Barents Sea (SURKOVA 1960) that the smallest redfish is more abundant in the eastern part of it. But in the other areas, the part of these size groups in the catches is relatively big and dominates in the SW area where the total number of young redfish was low. In the W, NW and N areas, very few of the bigger young redfish was found in the shallowest waters. In greater depths, however, it forms a substantial part of the catches and is dominating in the W area. According to fig. 4, the smallest redfish is completely lacking in the depths from 150-250 m but one can assume that there was a small percentage of the youngest redfish present which did not show due to a sampling procedure during that particular cruise from which these samples were gathered. In the NE and E area, this incrase of bigger young redfish with increasing depth could not be established.

Considering the wide range of depth and temperature in which the smallest redfish was found, one could assume that the youngest stages of redfish have a great tolerance of depth and temperature. It has been shown that commercially

sized cod and redfish was only met in minor quantities in temperatures less than 2°C off the N and E coasts of Iceland (HALLGRÍMSSON 1955; MAGNÚSSON 1955). This seems to be the case for young redfish, too. The number of young redfish caught in temperatures less than 2°C never exceeded 200 and only on 4 occasions, the number exceeded 100 specimens per hour of trawling. The bigger young redfish on the other hand seems to become more selective towards both depth and temperature which would explain its almost complete absence in the eastern area. Thus, we conclude that the eastern areas serve as a very important nursery ground for the youngest stages of redfish but that the bigger redfish leaves these areas for those with more favourable conditions. Very likely the most important factor in this respect is the temperature as the bigger redfish seems to prefer warmer areas, when moving to deeper waters. These conditions are obviously not at hand at the east coast where temperatures are low and decrease with increasing depth, and are much lower than in the corresponding depths e.g. off the west coast.

In general, pelagic stages of young redfish have been scarce off the N, NE and E coasts of Iceland (e.g. EINARSSON 1960; BARANENKOVA et.al. 1961; MAGNÚSSON 1966; ANONYM 1971-1974). The few findings of pelagic redfish fry in these areas cannot account for the quantities and density of the bottom stages of young redfish found in these waters. The invasion of the young redfish must take place after the fry is no more accessible to the pelagic gear.

Earlier findings of bottom stages of young redfish e.g. in 1955 (MAGNÚSSON 1957) indicate that the abundance of these stages in 1974 is not exceptional. The question from which spawning stock or stocks the young redfish off the east and northeast coasts originate is still left to be answered.

## SUMMARY

This paper is based on material which was mainly collected on one cruise around Iceland in August–September, 1974, using bottom trawl. It deals with the distribution and abundance of young redfish (*Sebastes marinus* L., 32 cm and smaller) as well as with the relation to depth and bottom temperature. It also deals with the size distribution.

Young redfish was found to be abundant off all coasts except the S coast where, however, sampling was scarce. The greatest densities were observed off the W, NE and E coasts. No direct relationship was found between the abundance and depth for the area as a whole but there is apparently a relationship between depth and temperature at one side and abundance on the other side, as a comparison between areas indicates. The mean size of the young redfish is highest off the SW coast (25.41 cm) and smallest off the E coast (15.73 cm). This is mainly due to the lack of bigger young redfish off the E coast. It becomes more abundant in other areas.

It is pointed out that the abundance of young redfish off the N and E coasts does not seem to correspond with the scarcity of pelagic stages of redfish fry in these areas.

# ÁGRIP Á ÍSLENSKU

Ritgerð þessi fjallar um útbreiðslu og magn á smákarfa veiddan í botnvörpu við Ísland, en smákarfi er hér skilgreindur sem karfi, 32 sm og minni. Hún er einkum byggð á gögnum, sem safnað var í leiðangri rs. Bjarna Sæmundssonar í ágúst-september 1974.

Athugað var samband magns annars vegar og hitastigs sjávar við botn og dýpis hins vegar. Ennfremur var stærð karfans athuguð eftir svæðum, dýpi og hitastigi sjávar.

Mjög fáar athuganir voru gerðar fyrir suðurströndinni, en enginn smákarfi fékkst þar. Annars var smákarfi mjög algengur úti fyrir öðrum landshlutum. Mesta magn á togtíma fékkst út af Breiðafirði, í Þistilfjarðardýpi og í Norðfjarðardýpi. Ekki virtist vera beint samband milli magns af smákarfa og dýpis ef litið er á allt svæðið í heild. Hins vegar virtist samspil hita og dýpis hafa áhrif á magnið. Fyrir Austurlandi var nær eingöngu mjög smár karfi (meðallengd 15,73 sm) en stærri karfi varð meir áberandi eftir því sem vestar dró fyrir Norðurlandi og mest um hann í aflanum út af SV-landi (meðallengd 25,41 sm). Smákarfi fannst á ýmsum dýpum allt frá 50 m niður á 480 m, sem var mesta dýpi, sem togað var á. Ennfremur fannst smákarfi í allt frá 0,3-10,0°C sjávarhita við botn. Yfirleitt var lítið magn af smákarfa, þar sem botnhiti var undir 2°. Bent er á hinn mikla hitamun (5°), þar sem mjög smár karfi var þéttur út af Breiðafirði og í Norðfjarðardýpi.

Hið tiltölulega mikla magn af smákarfa úti fyrir Norður og Austurlandi virðist ekki standa í beinu sambandi við magn karfaseiða á þessum svæðum, því mjög lítið hefur fengist af þeim í uppsjávarveiðarfæri.

Mikilvæg uppeldissvæði eru því fyrir karfa á ýmsum svæðum á landgrunninu fyrir vestan, norðan og austan land, en aðeins fyrir allra yngstu árgangana fyrir austan land.

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# APPENDIX

| Month Cruise | Station No. | Pos. Lat. ° ′ | Pos. Long. ° ′ | Depth in meters | Tot. no. pr. tr.h. | Young Redfish No. pr. tr.h. | Young Redfish % |
|---|---|---|---|---|---|---|---|
| JULY | | | | | | | |
| B 7/74 | 57 | 65 48 | 26 28 | 247 | 317 | 275 | 86.73 |
| | 59 | 66 04 | 26 09 | 255 | 497 | 424 | 85.27 |
| | 60 | 66 02 | 26 15 | 268 | 338 | 190 | 56.21 |
| | 61 | 65 51 | 26 03 | 235 | 450 | 388 | 86.22 |
| | 62 | 65 45 | 26 03 | 155 | 328 | 310 | 52.44 |
| | 63 | 65 42 | 25 45 | 140 | 548 | 432 | 68.65 |
| | 64 | 65 40 | 25 31 | 106 | 190 | 156 | 82.11 |
| AUGUST | | | | | | | |
| B 9/74 | 1 | 63 50 | 22 45 | 80 | 6 | 2 | 33.33 |
| | 2 | 63 56 | 23 25 | 138–142 | 30 | 10 | 33.33 |
| | 3 | 64 00 | 23 52 | 154 | 206 | 64 | 31.07 |
| | 4 | 64 18 | 23 37 | 173 | 148 | 16 | 10.81 |
| | 5 | 64 37 | 23 21 | 105–95 | 457 | 383 | 84.00 |
| | 6 | 65 03 | 24 17 | 106 | 651 | 610 | 93.68 |
| | 7 | 65 16 | 24 32 | 76 | 1019 | 1019 | 100.00 |
| | 9 | 65 54 | 24 20 | 50 | 11 | 11 | 100.00 |
| | 11 | 65 59 | 24 23 | 68–72 | 2 | 2 | 100.00 |
| | 12 | 66 34 | 23 13 | 80 | 105 | 105 | 100.00 |
| | 13 | 66 36 | 22 57 | 55–60 | 20 | 20 | 100.00 |
| | 20 | 66 57 | 24 04 | 230 | 159 | 145 | 91.19 |
| | 22 | 67 08 | 23 36 | 250 | 164 | 164 | 100.00 |
| | 23 | 67 11 | 23 22 | 258 | 142 | 142 | 100.00 |
| | 25 | 67 03 | 22 58 | 246 | 61 | 52 | 85.25 |
| | 27 | 66 56 | 22 13 | 168 | 215 | 211 | 98.14 |
| | 32 | 67 02 | 21 43 | 225 | 87 | 77 | 89.23 |
| | 33 | 66 57 | 21 53 | 196 | 188 | 167 | 88.54 |
| | 34 | 66 48 | 21 35 | 112–154 | 16 | 16 | 100.00 |
| | 35 | 66 43 | 21 42 | 124 | 22 | 22 | 100.00 |
| | 36 | 66 49 | 21 22 | 96 | 10 | 10 | 100.00 |
| | 39 | 67 16 | 20 50 | 278 | 65 | 65 | 100.00 |
| | 42 | 67 01 | 20 41 | 214 | 84 | 75 | 88.89 |
| | 43 | 66 53 | 20 52 | 210 | 111 | 103 | 92.21 |
| | 44 | 66 48 | 20 42 | 305 | 56 | 56 | 100.00 |
| | 45 | 66 37 | 21 20 | 153–130 | 108 | 95 | 87.96 |
| | 46 | 66 28 | 21 14 | 246–275 | 48 | 46 | 95.83 |
| SEPTEMBER | | | | | | | |
| B 9/74 | 52 | 66 43 | 20 05 | 162–158 | 35 | 30 | 85.37 |
| | 53 | 66 46 | 19 44 | 204–174 | 111 | 109 | 98.46 |

| Month Cruise | Station No. | Lat. Pos. ° ′ | Long. ° ′ | Depth in meters | Tot. no. pr. tr.h. | Young Redfish No. pr. tr.h. | % |
|---|---|---|---|---|---|---|---|
| SEPTEMBER | | | | | | | |
| B 9/74 | 54 | 67 02 | 19 00 | 480 | 4 | 4 | 100.00 |
| (cont.) | 57 | 66 58 | 18 32 | 195–210 | 29 | 28 | 96.30 |
| | 59 | 67 07 | 17 26 | 270–230 | 113 | 113 | 100.00 |
| | 60 | 67 00 | 17 28 | 255–240 | 36 | 28 | 77.78 |
| | 61 | 66 56 | 16 50 | 200–250 | 136 | 115 | 84.31 |
| | 62 | 66 50 | 16 54 | 168 | 793 | 567 | 71.43 |
| | 63 | 66 55 | 15 51 | 250–255 | 26 | 14 | 54.55 |
| | 64 | 67 07 | 16 00 | 280–296 | 216 | 152 | 70.37 |
| | 65 | 67 06 | 15 38 | 184–160 | 375 | 354 | 94.40 |
| | 68 | 67 04 | 15 00 | 200–175 | 55 | 53 | 96.36 |
| | 70 | 66 46 | 14 17 | 240–236 | 911 | 911 | 100.00 |
| | 74 | 66 50 | 13 42 | 250–226 | 61 | 56 | 91.80 |
| | 75 | 66 49 | 13 38 | 230–240 | 35 | 33 | 94.74 |
| | 76 | 66 39 | 13 12 | 200–215 | 6 | 6 | 100.00 |
| | 77 | 66 36 | 13 19 | 212–195 | 50 | 49 | 98.00 |
| | 78 | 66 24 | 13 50 | 195–218 | 13 | 7 | 57.14 |
| | 79 | 66 25 | 13 40 | 310–280 | 293 | 290 | 98.86 |
| | 80 | 65 38 | 11 34 | 290–320 | 164 | 164 | 100.00 |
| | 81 | 65 31 | 12 03 | 200–180 | 13 | 13 | 100.00 |
| | 82 | 65 23 | 12 12 | 272–278 | 204 | 194 | 94.96 |
| | 83 | 65 07 | 12 03 | 256 | 936 | 936 | 100.00 |
| | 86 | 64 59 | 11 38 | 280–230 | 12 | 10 | 86.67 |
| | 87 | 64 53 | 11 53 | 230–233 | 20 | 20 | 100.00 |
| B 10/74 | 2 | 63 20 | 22 59 | 247–274 | 89 | 9 | 10.11 |
| OCTOBER | | | | | | | |
| B 11/74 | 5 | 66 27 | 25 02 | 170–180 | 315 | 248 | 78.73 |
| | 7 | 66 59 | 20 55 | 170 | 238 | 213 | 89.50 |
| | 13 | 67 08 | 23 10 | 250–270 | 100 | 95 | 95.00 |
| | 14 | 67 07 | 23 28 | 240–250 | 46 | 34 | 73.91 |
| | 15 | 67 01 | 23 02 | 250–260 | 18 | 14 | 77.78 |
| | 16 | 67 01 | 21 48 | 220–210 | 32 | 22 | 68.75 |
| | 17 | 66 56 | 21 27 | 170–175 | 46 | 26 | 56.52 |
| | 20 | 66 30 | 23 51 | 155–120 | 719 | 309 | 43.08 |
| | 41 | 66 02 | 24 48 | 130–140 | 3 | — | — |
| | 44 | 65 57 | 26 32 | 290 | 136 | 42 | 30.88 |
| | 50 | 65 33 | 26 30 | 200–190 | 81 | 8 | 9.88 |
| | 51 | 65 36 | 26 34 | 200–210 | 134 | 36 | 26.87 |
| | 53 | 65 26 | 26 40 | 200–210 | 1452 | 72 | 4.96 |
| | 54 | 65 22 | 26 58 | 214–230 | 320 | 78 | 24.38 |
| | 55 | 67 05 | 23 43 | 245 | 15 | 8 | 53.33 |
| | 56 | 67 07 | 23 27 | 245–255 | 19 | 14 | 73.68 |
| | 57 | 67 08 | 23 44 | 240–255 | 30 | 24 | 80.00 |
| | 58 | 67 09 | 23 12 | 250–240 | 96 | 86 | 89.58 |
| | 59 | 67 10 | 22 37 | 300 | 16 | 16 | 100.00 |
| | 60 | 67 03 | 22 30 | 215–220 | 106 | 70 | 66.04 |
| | 61 | 67 07 | 23 45 | 240–250 | 4 | 4 | 100.00 |
| | 64 | 65 15 | 26 24 | 155–160 | 474 | 44 | 9.28 |