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**CHANGES IN SIZE COMPOSITION, INDICATIVE OF STOCK
CONDITIONS IN THE NEW SOUTH WALES TRAWL FISHERY,
FROM 1945/46 TO 1966/67**

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ABSTRACT

Over a million measurements of the principal species in the New South Wales demersal net ("trawl") fishery, namely tiger flathead, morwong and redfish, were made over a 22-year period. Temporal changes in size-composition of the catch of those species are shown by the measurements. The principal changes indicate differences in fishing mortality and show the expected relations to changes in intensity of fishing. Stocks of the three species improved after the period of most intense fishing which occurred from about 1948 to 1958, by better representation of large fish and greater abundance by weight of all fish. The recovery was only partial for tiger flathead, for which the fishing intensity declined much less than for the other species. It is attributed to a regulation which had the effect of increasing net mesh size. Comparison of size-composition data is shown to be useful in assessing changes in the stocks, by giving information not available from catch and effort records.

INTRODUCTION

Demersal net or "trawl" fisheries off New South Wales began from steam otter trawlers in 1915. Danish seiners appeared in 1937 and became significant about 1941. The steam trawlers fished mostly along the outer part of the continental shelf from Crowdy Head (New South Wales) to Babel Island (Tasmania), and landed all catches in Sydney. The Danish seiners operated along the shelf from Crowdy Head to Gabo Island (Victoria), in areas of less average depth than those fished by trawlers. Their catches were landed at various New South Wales ports but much of the fish was sold in Sydney. The following papers give a history of these fisheries up to 1953/54, with special reference to changes in abundance of the principal species: Colefax (1934), Fairbridge (1948, 1952) and Houston (1955). The species discussed were tiger flathead (*Neoplatycephalus richardsoni*, previously known as *N. macrodon*), morwong or jackass fish (*Nemadactylus macropterus*) and redfish or nannygai (*Centroberyx affinis*), especially tiger flathead. Further biological information on tiger flathead was given by Colefax (1938), Dakin (1939) and Fairbridge (1951). Some biological information on morwong exists in unpublished form (Han, MS).

In 1941 the CSIR Division of Fisheries established a research programme on species taken in the demersal net fishery of New South Wales. Special attention was given to tiger flathead, which was then the principal species caught. Regular large-scale measuring of random samples at the Sydney fish market was an important part of the programme, especially after the war. It was facilitated by the New South Wales Fisheries Department, which had no research organisation of its own and wanted to support the CSIR programme. The Department made Mr John Woore available to measure fish of demersal and other species in the market and give them to CSIR. Mr Woore's work began in 1941 but was very soon suspended because of the war. He resumed his measuring duties in 1945 and continued them until he retired in 1967. The measuring programme was then discontinued.

The length frequency distributions from the market measuring gave useful information on the life history of tiger flathead and temporal changes in the flathead stock. Some of it was published by Fairbridge (1948, 1951, 1952) and Houston (1955). No use has been made of tiger flathead measurements since 1953/54, however, or of any measurements of morwong and redfish. The purpose of this paper is to present all the measurements of those three species from 1945/46 to 1966/67 that could have scientific value, and to interpret temporal changes in size-composition of the samples. Other investigators may find additional uses for the data. Over one million measurements are available, approximately 601,000 for tiger flathead, 285,000 for morwong and 214,000 for redfish. They were distributed fairly evenly over the 22-year period, and all were made by the same person in the same way.

Fairbridge (1951) gave reasons for considering the tiger flathead from all localities mentioned above as a single population. He also found that differences in size-composition and growth rate were small between those localities. In any case it is necessary to combine market measurements from all localities, because all samples from steam trawlers and many samples from Danish seiners were not identifiable by locality. An exception is made for the Danish seine fishery at Lakes Entrance, Victoria, which began in 1947. CSIRO investigators collected data there between 1953 and 1956 to see if the tiger flathead were

part of the New South Wales stock. The results have not been analysed but it is hoped they soon will be. Samples of Lakes Entrance flathead that were sent to the Sydney market and measured there are neglected in this study. Nothing is known about the number and range of populations of morwong and redfish in the area of the New South Wales fishery. Samples from all localities except Lakes Entrance have been combined from necessity, as with tiger flathead. Lakes Entrance samples are ignored. Samples trawled in the Great Australian Bight and sent to Sydney market are excluded.

METHODS

All measurements were made to the nearest cm; for example fish from 32.5 to 33.4 cm inclusive were recorded as 33 cm. Measurements of tiger flathead are total lengths. Those of morwong and redfish are lengths to caudal fin fork.

For tiger flathead the measurer strove to make 4,000 measurements from randomly chosen samples each month, although he rarely reached that total. Monthly numbers of measurements for morwong and redfish were usually lower. Measurements from steam trawler samples were separated from those of other samples. The other samples were from Danish seiners or small motor trawlers. The small motor trawlers began to appear in the fishery about 1954. The measurements given here are grouped by type of boat (steam trawler or other) and by quarter-year, commencing July-September 1945. Measuring of morwong and redfish did not start until 1947/48. Fairbridge (1948, 1952) discussed some tiger flathead measurements obtained from various sources in 1937/38, 1938/39, 1941/42 and 1944/45, but only for part of the year in each case. They are ignored here because it is shown later that size-composition of flathead can vary with time of year, and also the type of boat was not always known. About 7,000 flathead measurements for 1945/46 are also disregarded because the type of boat was unknown.

The fleet of steam trawlers began to decline about 1951 and disappeared in 1961. As a result, measurements of steam trawled tiger flathead after 1954/55 appear too scanty to be useful and are not given here. The same applies to steam trawled samples of morwong after 1957/58 and redfish after 1958/59.

TIGER FLATHEAD

Table A gives the length frequencies from steam trawler and other boat samples for the years 1945/46 through 1954/55. Table B gives them for the other boats for the following 12 years. These tables appear at the end of the paper. The smallest flathead measured was 20 cm and the largest 64 cm. The largest on record was 67 cm, measured about 1930 (Fairbridge 1952). The legal minimum size in New South Wales is 33 cm (13 inches). The principal mode in length frequency distributions for large samples generally occurs at 32, 33 or 34 cm (Tables A and B). Thus recruitment of juveniles to the fishable stock is probably almost complete at the legal minimum size, and changes in size-composition of legal-sized fish may validly be compared.

Table 1 shows for steam trawled samples in each year the total number measured, the number and percentage at legal size, and the percentage of the legal-sized in successive 5-cm groups. The same information for samples from the other boats appears in Table 2. The percentage below legal size varies with

year and is often quite high. These changes probably reflect the rigour with which the regulations were obeyed and enforced, rather than changes in the stock. The size-composition of the legal-sized fish is variable between and within the two types of boat samples, and the annual changes within each type probably have biological significance. It is likely that they denote changes in mortality, resulting in higher or lower survival to the larger sizes and ages. According to Fairbridge (1951) the mean ages of tiger flathead at 35 and 55 cm for example are about three and six years respectively; according to Houston (1955) they are about four and seven years.

Before further considering Tables 1 and 2 it is desirable to investigate variation in size-composition by time of year. Tables 3 and 4 show the quarter-year totals of legal-sized flathead dissected by percentages in the same groups as in Tables 1 and 2. The percentage in the 33-37 cm group is generally the highest. Comparison of percentages in that group for quarter-years shows trends as follows in the majority of years. For 7 of the 10 years of steam trawler samples the percentage at 33-37 cm was maximal in July-September. In those years the same percentage was minimal in April-June (1 year), January-March (5 years) and October-December (1 year). For 13 of the 22 years of samples from other boats the percentage was again highest in July-September. It was lowest in those years in April-June (6 years), January-March (5 years) and October-December (2 years). Another case in Table 4 (1950/51) is not very different: the percentage is slightly higher in the last quarter than the first, and lowest in the second quarter. This all suggests a tendency for fish over 37 cm to be relatively scarce in July-September each year and more abundant later in the year. Sometimes this abundance increases throughout the latter part of the year (percentage at 33-37 cm minimal in April-June) and sometimes it declines again.

This pattern is consistent with the following findings of Colefax (1938) and Fairbridge (1951) about the biology of tiger flathead. Spawning occurs from October to April and the fish become concentrated and more vulnerable to fishing at spawning times. Most males over 30 cm and females over 35 cm are sexually mature in the spawning season. Thus the fishermen's opportunities for catching the larger fish are relatively low in July-September, relatively high in October-April, and relatively low again in May-June. In May-June the larger fish would be scarcer because of the previous months' fishing, and the survivors of them would be more dispersed, than in October-April. All this is consistent with the trend by quarter-years noted above, except that the relative abundance of larger fish did not always decline in the last quarter in the measured samples. It did not do so in the samples of Table 4 for the years 1945/46 to 1947/48, 1960/61 to 1962/63, 1965/66 and 1966/67. It also did not do so in the samples of Table 3 for 1946/47, probably not in 1945/46, and probably not very much in 1947/48. One possible explanation is that there was little sampling after April in those years, but the original records do not show that. Another explanation, discussed later, is that a greater proportion than usual of the fish over 37 cm survived the fishing in the earlier part of each year.

It is clear anyway that size-composition of the sampled catch can vary considerably between quarters of the year. Therefore changes in size-composition between years should be studied from data for entire years as in Tables 1 and 2. Another reason for utilising material of the combined seasons is to give fairly equal weighting to each area of the fishery. The spawning season is earlier in northern areas than southern, and the season of best fishing varies with area in a broadly similar way (Fairbridge 1951).

From Tables 1 and 2, it is seen that steam trawler samples contained relatively more large fish than the other samples did in every year. Fairbridge (1951, 1952) and Houston (1955) discussed this difference but the reasons for it are not exactly known. It is necessary to consider the two types of samples separately.

The size-composition for 1945/46 is discussed later. The steam trawler samples for the other years fall into two groups on the basis of percentage of legal-sized over 37 cm, namely the first three years and the following six years (Table 1). In the samples from other boats after 1945/46 three groups of years can be distinguished, the same two as above and a third group of twelve years (Table 2). Table 5 summarises the differences.

Tables 1 and 2 show that the percentages of legal-sized always declined from the 38-42 cm group to the 58-62 cm group. In most years they declined from the 33-37 cm group as well. They indicate mortality from age-group to age-group, but cannot measure it because the age-composition of the samples is not known. As mentioned earlier at least three age-groups are represented in the legal-sized, commencing with age three or four. In view of the evidence of over-fishing of tiger flathead presented by Fairbridge (1948, 1952) and Houston (1955), it is likely that the changes in mortality between years largely represent changes in fishing mortality. These changes, roughly identified from the percentage of legal-sized at over 37 cm, are now discussed.

The lowest mortalities indicated in Tables 1 and 2 are for the years 1946/47 to 1948/49. There were also more large fish surviving at the end of each of those years than there were in later years (Tables 3 and 4). Fairbridge (1948, 1952) considered that the tiger flathead stock had then been partially restored as a result of the wartime reduction in fishing effort, which is shown later in Table 6. Data on size-composition of the catch from before and during the war are not really comparable with those of post-war years as already mentioned. They do however indicate some increase in proportion of larger fish from 1941 to 1946 (Fairbridge 1948). Size data from the best years of the fishery (about 1930) are even less satisfactory, but show that large fish were more abundant than has ever been recorded since (Colefax 1934).

The size data for 1945/46 suggest a higher mortality than in the next three years, especially for steam trawled fish, but lower than in any other year for which data are given (Tables 1, 2 and 5). Fairbridge (1948, 1952) noted this with surprise, expecting that the benefits of the wartime reduction in fishing would have been more apparent in 1945/46. It is however, almost certain that the data for that year in Tables 1 and 2 show too few large fish. According to Tables 3 and 4 the samples of the April-June quarter had high percentages of legal-sized flathead at over 37 cm for both kinds of boats, but relatively few fish were measured in that quarter. The mortality in 1945/46 was probably closer to that of the next three years than Tables 1, 2 and 5 indicate. Houston (1955) suggested that the boats, especially steam trawlers, were relatively inefficient at catching large fish when they returned after the war.

For the six years commencing 1949/50 the annual mortality of the tiger flathead was much higher than in the previous three years. It fell slightly in the following twelve years (Tables 1, 2 and 5). As noted earlier there were several years during that 12-year period in which large fish remained abundant

in the April-June quarter, although not to the same extent as in 1946/47 to 1948/49. It seems clear that fish over 37 cm were particularly scarce from about 1949/50 to 1954/55, forcing the boats to catch more of the small flathead. During the first three years of that period the percentage of fish in the catch below legal size was very high for both kinds of boats (Tables 1 and 2).

Fairbridge (1952) and Houston (1955) summarised the catch and effort history of the fishery for tiger flathead up to 1953/54. It is of interest to update that record to 1966/67, to see how it agrees with the observed changes in mortality. Table 6 gives Houston's data (in a modified form for effort) for years commencing 1938/39, followed by data of the same kind which were obtained from published annual reports of the New South Wales Fisheries Department. The years 1928 and 1934 are included to exemplify conditions in the best years of the fishery. The catch as given in the Fisheries Department report for 1975/76 (the latest available at this writing) is included for interest, but the effort data in that report seem not to be comparable with those in Table 6.

Fairbridge and Houston used the trawler-ton as a unit of fishing effort with each Danish seiner given a value of 30 trawler-tons. The tonnages of steam trawlers ranged from 200 to 324 (Fairbridge, unpublished). Any attempt to relate fishing power of the other boats to that of steam trawlers must however allow for the fact that the other boats catch some species more efficiently than others, as is shown later. For tiger flathead, by taking values from the second last and third last columns of Table 6 and averaging the annual ratios (omitting years with one steam trawler or less), it is found that a steam trawler caught on average about as much as 7 other boats. On that basis the total fishing effort each year can be estimated in vessel units as shown in Table 6. The other boats were Danish seiners and small motor trawlers, which appeared first in 1937 and 1954/55 respectively. Catches by the other boats before 1942/43 are unknown. Records of catches of "sand flathead" have been assumed to refer to tiger flathead in the case of steam trawlers, but not in the case of other boats.

From Table 6, the annual catch per steam trawler fell to about 25 per cent of the best recorded rate (that of 1928) in 1941/42. This probably reflected the rather intense fishing just before the war. Fishing effort was reduced during the war, especially in 1942/43 and 1943/44. There was an increase in catch per trawler during those years and an increase in catch per other boat from 1942/43 to 1944/45. It is curious that the catch per trawler did not also continue to rise until 1944/45, and perhaps those vessels were inefficient at the end of the war as suggested by Houston (1955). By the period 1946/47 to 1948/49 the fishing effort (vessel units) was higher and the catch per vessel unit lower than at any previous time.

From 1949/50 the number of vessel units generally went on rising until about 1963/64, although the steam trawlers had all disappeared by 1961/62. The catch per vessel unit (as recorded) continued to fall until about 1960/61, after which it rose slightly. There is, however, a major difficulty about the effort data after about 1950. From that time onwards many Danish seiners and small motor trawlers devoted substantial and increasing amounts of time to activities not connected with demersal fish, namely trawling for prawns and hook fishing for tuna. Also some of the Danish seiners spent part of their time in the demersal fishery at Lakes Entrance, Victoria. In addition there were changes in the mesh size of nets as mentioned later. Thus in Table 6 the numbers of vessel

units and catches per unit after 1950 are not comparable with the earlier figures. This is where the size-composition data have value as indicators of changes in fishing intensity.

For instance, it is not possible to say from Table 6 when the fishing intensity was maximal, but Tables 1, 2 and 5 show that it probably was between 1949/50 and 1954/55. Since the differences in size-composition between that period and the following 12-year period are small, the intensity might have remained maximal a little later than 1954/55. The best indication of the time of minimum abundance of flathead comes from the catches per steam trawler, which indicate greatest scarcity in 1957/58 and 1958/59. There is no reason to doubt the indications in Table 6 of a subsequent improvement in the flathead stock during the 1960's which is also shown by the size data. The main difficulty is to make an assessment of how much the stock had recovered by 1966/67, since it was almost certainly more than that indicated in Table 6. Tables 2 and 5 show the mortality still much higher in the mid-1960's than in the period 1946/47 to 1948/49, when the mean catch per vessel unit was about 25,000 lb. The corresponding catch per unit effort in the mid-1960's was probably lower than that but more than the 15,000 lb shown in Table 6. Assuming it was about 20,000 lb, the abundance of tiger flathead in the mid-1960's was about 15 percent of the best levels recorded (1928) and about 35 percent of the fairly good levels before and just after the war. The most interesting thing is that a modest recovery, the first since the war, did occur after the late 1950's.

What caused the recovery? One explanation is that the number of comparable vessel units declined. As shown above, it is impossible to affirm or deny this from the data of Table 6. If the number did decline the reduction was probably not great. Another explanation is that a change in mesh size permitted more small fish to escape and so reduced the fishing mortality. According to annual reports of the New South Wales Fisheries Department, the minimum mesh size of codends was legally fixed at about one $\frac{1}{2}$ -inch more than the size previously used, in January 1956. This followed a recommendation by the CSIRO Division of Fisheries which was based on tests made by Houston (1955). Several Danish seiners evaded the regulation, and in January 1961 the Fisheries Department made it more effective by making the new mesh size applicable to all parts of nets. The regulation seems to have had value in reducing the proportion of undersized fish (less than 33 cm) caught. Table 2 shows that the percentage at and over 33 cm rose slightly in 1955/56, and more in later years. As noted earlier an improvement in the size-composition within the legal-sized part of the stock began about 1955/56 and has persisted (Tables 2, 4 and 5). It could have resulted from the better protection given to the undersized fish, and it could have caused a rise in the catch per vessel unit as was observed. It seems more reasonable to ascribe the partial stock recovery to change in mesh size than to reduction in vessel units, unless evidence of actual reduction in the units can be produced. In any case the mesh change should have had some beneficial effect.

MORWONG

Table C gives the length frequencies from steam trawler and other boat samples for the years 1947/48 through 1957/58. Table D gives them for the other boats for the following nine years. These tables appear at the end of the paper. The smallest and largest morwong measured were 15 and 48 cm. The legal minimum

size in New South Wales is 11 inches total length, equivalent to 23.5 cm length to caudal fork (Han, MS). Tables C and D show that percentages of fish measuring 23 cm or less are negligible in large samples. They also show that the principal mode in length frequency distributions generally occurs at 30, 31 or 32 cm. Thus recruitment of juveniles to the fishable stock is probably complete at 33 cm, and changes in size-composition of samples of fish measuring 33 cm and more may validly be compared.

Table 7 shows for steam trawled samples in each year the total number measured, the number and percentage at 33 cm or over, and the percentages of those in successive 5-cm groups. The same information is given for samples from the other boats in Table 8. Fish below 33 cm predominate in both sets of samples. There are fairly consistent small differences in percentage size-composition between samples from the two kinds of boats, which are therefore considered separately. The steam trawlers caught slightly more fish under 33 cm and slightly less at 33-37 cm, than did the other boats.

Large samples of morwong were not always available for each quarter of a year, as shown in Tables C and D. For years in which they were available for all quarters, tables corresponding to Tables 3 and 4 were prepared to investigate possible variation in size-composition by quarter-year. No consistent pattern of variation was detectable, so the tables are not given here. It is assumed that seasonally uneven sampling did not affect the major differences in size-composition between years as shown in Tables 7 and 8.

The changes in size-composition of the samples at and over 33 cm probably indicate mortality from age-group to age-group. According to Han (MS) the mean ages of morwong at 34 and 42 cm for example are about five and nine years. The highest mortalities seem to have occurred from 1947/48 to 1949/50 (Tables 7 and 8) and the lowest from 1958/59 to 1963/64 (Table 8). Table 8 suggests a low mortality also in 1953/54, but the sample for that year is small. Elsewhere in each table the differences in size-composition are minor.

Table 9 summarises the catch and effort history of the fishery for morwong in the same way as Table 6 for tiger flathead, utilising the same sources of data. There is no catch information prior to 1942/43, although it is known that morwong were caught. According to Fairbridge (1952) morwong were often discarded by the fishermen in years when flathead were plentiful. Numbers of steam trawlers and other boats are the same in Table 9 as in Table 6, but the estimation of vessel units is different. The mean ratio for morwong of catch per steam trawler: catch per other boat, obtained in the same way as for tiger flathead, is 33:1. It is well known that the other boats were much less successful in catching morwong than tiger flathead, whereas the steam trawlers were good at catching both. Vessel units in Table 9 are counted at 33 per trawler and one per other boat.

According to Table 9 the morwong catches per boat or vessel unit were low during the last three war years, probably because the reduced fleet was doing well with tiger flathead. Abundance of morwong was high in 1945/46 and 1946/47, no doubt because the stock or stocks had been well rested during the war. The contemporaneous decline in abundance of flathead (Table 6) encouraged fishermen to catch morwong. Beginning in 1947/48 the abundance of morwong (as measured by catch per boat or vessel unit) gradually declined, simultaneously with an increase in fishing effort, until 1953/54. From about 1955/56 it began to

regain the immediate post-war level, and from about 1961/62 onwards it was higher than ever before. For reasons discussed under tiger flathead, relating to other kinds of fishing activity pursued by the other boats, the high catches per vessel unit in the last few years of Table 9 are probably too low. There was certainly a very considerable recovery in the stock or stocks of morwong in the late 1950's and 1960's.

Close agreement should not be expected between the mortality changes in Tables 7 and 8 and the changes in abundance in Table 9. The former ignore the large part of the stock that measures under 33 cm. Also there was no significant measuring during the two years of high abundance just after the war. However the years of highest mortality fall in the period of intense fishing and declining abundance as expected, and the years of lowest mortality fall in the period of final recovery. The latter would be expected if the recovery was associated with decreased fishing intensity, and it is quite clear that it was. The number of vessel units began to decline in 1955/56 and later fell much further, a consequence of the winding down of steam trawling operations. The effort after 1957/58 was lower than at any time since the war years.

There can be no doubt that the large reduction in effort resulted in better survival of fish and hence an increase in their abundance on a weight basis. It also increased the apparent abundance by leaving fewer effort units to divide the fish available. The increase in mesh size mentioned earlier, which was to $3\frac{1}{4}$ inches for Danish seiners, probably had very little effect on the morwong catch. The body depth of morwong is about 35 percent of its length to caudal fork. A morwong 23 cm long, about 8 cm deep, might barely escape through a $3\frac{1}{4}$ -inch mesh, but few fish in the commercial catch are as small as 23 cm (Tables C and D). Percentages of fish at and over 33 cm were not consistently higher after the mesh change than before (Table 8).

REDFISH

Length frequencies from steam trawler and other boat samples are given in Table E for the years 1947/48 through 1958/59. Table F shows them for the other boats for the following eight years. These tables are at the end of the paper. The smallest and largest redfish measured were 12 and 37 cm. There is no legal minimum size. Tables E and F show that the principal mode in length frequency distributions generally occurs at 22, 23 or 24 cm. Thus recruitment of juveniles to the fishable stock is probably complete at 24 cm, and changes in size-composition of samples of fish measuring 24 cm and over should be comparable.

Tables 10 and 11 show for each year the total number of redfish measured, the number and percentage at 24 cm or over, and the percentage of those in successive 5-cm groups, for samples from steam trawlers and other boats. Data from other boats in 1947/48 are too scanty to be useful. In the years for which both kinds of samples are available the steam trawler catch had a higher mean percentage of fish at and over 24 cm than the catch of the other boats, although the percentages for individual years were very variable. The two sets of data are considered separately.

Large samples were generally not available for each quarter of a year, as shown in Tables E and F. There were particularly few of them in the January-

March quarter, which seems to reflect reduced availability or marketability of redfish at that season. Monthly total catches, listed in annual reports of the New South Wales Fisheries Department, were generally low in those months. For the few years for which large samples were available from all quarters (steam trawlers only), a table like Table 3 was drawn up to investigate possible variation in size-composition by quarter-years. No consistent pattern of variation was apparent and the data are not given here. It is assumed that the seasonally uneven sampling did not affect the major differences in size-composition between year as shown in Tables 10 and 11.

The age-composition of the stock or stocks of redfish is unknown. Most length frequency distributions in Tables E and F are skewed in a way that suggests the existence of more than one age-group at sizes above the mode. Assuming such an age-composition, the changes in size-composition at and over 24 cm in Tables 10 and 11 probably indicate mortality from age-group to age-group. The highest mortalities are indicated by highest percentages in the third last column of Tables 10 and 11. Those from the trawler samples were in 1948/49 and 1949/50, and those from the other samples were in the same years and the next three. In Table 11 all mortalities after 1957/58 were lower than those of all previous years.

The catch and effort history of the redfish fishery, as far as it can be established from the same sources of data as for flathead and morwong, is summarised in Table 12. There is no information on catch for years before 1942/43, although it is known that redfish were caught. Redfish have generally commanded a lower price than tiger flathead or morwong. For that reason they were seldom deliberately sought, and were sometimes discarded by the fishermen when flathead or morwong were plentiful. Numbers of steam trawlers and other boats in Table 12 are the same as in Tables 6 and 9, but the estimation of vessel units is again different. The mean redfish ratio of catch per steam trawler: catch per other boat, obtained as for flathead and morwong, is 82:1. The other boats were obviously very poor at catching redfish, for technical, climatic or economic reasons.

The catch of redfish per steam trawler in Table 12 was fairly low during the last three war years, as it was for morwong. Presumably the small fleet concentrated upon tiger flathead. After the war the catch per trawler gradually rose, reaching a maximum in 1948/49 and 1959/60. Probably there were plenty of redfish available in all those years, but the trawlers did not fish them intensively until both flathead and morwong had declined in abundance. After 1949/50 the redfish catch per trawler gradually declined, although the effort did not increase further. The catch per other boat and per vessel unit changed in almost the same way. The catch per vessel unit never recovered to the highest levels, although the number of units fell considerably after the steam trawlers withdrew.

The highest mortalities indicated in Tables 10 and 11 occurred at the period of greatest catches per boat, rather than later as for flathead and morwong. They were however contemporaneous with the highest annual amounts of fishing effort, and can reasonably be attributed to the fishery. Another feature in the comparison of size-composition with catch per boat (or unit) is more peculiar. Table 11 shows an improvement in size-composition after 1957/58 which can well be attributed to the reduced fishing effort. It should have resulted

in a more abundant stock by weight on the grounds, but the catch per vessel unit remained the same at a very low level (Table 12).

The explanation for the lack of increase in catch per unit is probably that the trawlers had disappeared and the other boats did not fully avail themselves of the improved abundance of redfish. They were never very good at catching that low-priced species, and were undoubtedly more interested in the stocks of morwong and flathead which were recovering at the same time. In addition some of them were increasingly engaged in fishing for prawns and tuna as mentioned earlier. Thus the size-composition data seem to give a more complete picture of temporal changes in the redfish stock than the data on catch per effort do, as was also the case with tiger flathead.

Although the change in size-composition after 1957/58 was most probably the result of the contemporaneous decline in fishing effort, it was possibly affected by the change in mesh size as well. The redfish has a body depth about 40 percent of its length to caudal fork. Thus a redfish 20 cm long, about 8 cm deep, might just pass through a 3½-inch mesh. Fish of that length and under are a small but significant proportion of the catches (Tables E and F). Table 11 shows that the percentage of redfish at and over 24 cm increased after 1957/58. This is consistent with a reduced killing of small fish but could possibly be explained otherwise.

DISCUSSION

Major differences have been observed between years in the size-composition of the fully recruited parts of the stocks of tiger flathead, morwong and redfish. The period was 1945/46 to 1966/67 for flathead and 1947/48 to 1966/67 for the other species. The differences are associated with groups of years rather than individual years, and appear to represent changes in mortality from age-group to age-group. The periods of presumed higher and lower mortality agree closely with periods at which fishing intensity (including effects of changes in mesh size) was relatively high and low for each species. Thus the principal changes in size-composition reflect changes in fishing mortality, although the actual mortality rates cannot be estimated from the data available. Minor changes in size-composition between individual years could represent vagaries of sampling or the passing of numerically different year-classes through the stocks.

Specifically, fishing mortality of tiger flathead was relatively low from 1945/46 to 1948/49, then higher, and low again (but not as low as in the first period) from 1955/56 onwards. For morwong it was highest in 1947/48 to 1949/50 and then declined, being lowest about 1958/59 to 1963/64. For redfish it was highest in 1948/49 and 1949/50 and then fell, being lowest from 1957/58 onwards. Each of these periods of high mortality agrees closely with the period of most intense fishing (highest number of vessel units) for the species. Regarding the periods of lower mortality, the first one for tiger flathead represents a time of moderate fishing on a stock that had been little exploited for some years because of the war. Those for morwong and redfish follow a reduction in fishing effort due to the withdrawal of steam trawlers. The second one for tiger flathead represents either an effect of reduction in fishing effort or an increase in the mesh size of nets, with the latter more likely, or both. The increase in mesh size may also have contributed to the decline in mortality of redfish.

Abundance of the species as measured by catch per boat or per vessel unit generally changed as expected, being lower when fishing intensity and mortality were high and higher when they were low. The only important exception was a failure of the catch of redfish per vessel unit to rise after the number of units fell. This can be attributed to poor fishing power and motivation as regards that species on the part of the smaller boats, which may however have changed after 1966/67. From that example and others mentioned, it is evident that catch per boat and per vessel unit became increasingly unreliable as measures of fish abundance during the period of study, because of changes in the way the smaller boats operated. In particular they spent more time in activities not concerned with demersal fish. It is known that other changes have occurred since 1966/67, especially the transfer of many boats from Danish seining to motor trawling. New measures of fishing effort, related quantitatively to the old, are probably needed. However, since changes in the size-composition of the catch generally parallel changes in the amount of effort and catch per unit of effort, the former could be a valuable source of data on temporal changes in the demersal net fishery. They could confirm the principal changes shown by the catch and effort information, and bridge deficiencies in that information. The market measuring programme should therefore be resumed if possible. Ideally, otoliths or scales should also be collected so that the length frequency distributions can be converted to frequency distributions of age, as Fairbridge (1951, 1952) and Houston (1955) did.

It is shown that by 1966/67 the stocks of the three species had recovered to some extent from the results of the period of most intense fishing, which occurred from about 1948 to 1958. The recovery was large for morwong and redfish but only moderate for flathead. The total catches for 1975/76 in Tables 6, 9 and 12 suggest that conditions may still be about the same, but changes can eventually be expected from actions by government or industry. Monitoring of size-composition data should form part of the assessment of those changes. This paper shows types of size-compositions that indicate favourable and unfavourable stock conditions.

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REFERENCES

- Colefax, A.N. (1934). A preliminary investigation of the natural history of the tiger flathead (*Neoplatycephalus macrodon*) on the south-eastern Australian coast. I. Distribution and supply; length statistics. *Proc. Linn. Soc. N.S.W.* 59, 71-91.
- Colefax, A.N. (1938). A preliminary investigation of the natural history of the tiger flathead (*Neoplatycephalus macrodon*) on the south-eastern Australian coast. II. Feeding habits; breeding habits. *Proc. Linn. Soc. N.S.W.* 63, 55-64.
- Dakin, W.J. (1939). The age determination of the tiger flathead (*Neoplatycephalus (Colefaxia) macrodon* (Ogilby), by means of otoliths, *Rec. Aust. Mus.* 20, 282-292.
- Fairbridge, W.S. (1948). The effect of the war on the east Australian trawl fishery. *J. Coun. Sci. Ind. Res.* 21, 75-98.
- Fairbridge, W.S. (1951). The New South Wales tiger flathead, *Neoplatycephalus macrodon* (Ogilby). I. Biology and age determination. *Aust. J. Mar. Freshwater Res.* 2, 117-178.
- Fairbridge, W.S. (1952). The New South Wales tiger flathead, *Neoplatycephalus macrodon* (Ogilby). II. The age composition of the commercial catch, over-fishing of the stocks and suggested conservation. *Aust. J. Mar. Freshwater Res.* 3, 1-31.
- Han, V.C.F. (MS). Studies on the biology and fishery of the jackass fish, *Nemadactylus macropterus* (Bloch and Schneider 1801) in eastern Australia.
- Houston, T.W. (1955). The New South Wales trawlfishery: review of past course and examination of present condition. *Aust. J. Mar. Freshwater Res.* 6, 165-208.

TABLE 3: PERCENTAGES OF TIGER FLATHEAD \geq 33 CM IN 5-CM GROUPS FOR QUARTER-YEARS, IN SAMPLES TAKEN BY STEAM TRAWLERS. NUMBERS IN HEADINGS ARE CM, BLANK MEANS ZERO, * MEANS $< 0.1\%$

Year	Quarter	33-37	38-42	43-47	48-52	53-57	58-62	Total
1945/46	Jul.-Sep.	52.3	30.7	11.7	4.2	1.1	*	2,441
	Oct.-Dec.	49.4	32.9	13.4	3.4	0.7	0.2	1,602
	Jan.-Mar.	61.3	28.4	2.8	5.2	2.3		599
	Apr.-Jun.	43.4	37.8	11.6	5.6	1.6		251
1946/47	Jul.-Sep.	38.0	36.2	17.6	5.7	2.3	0.2	3,779
	Oct.-Dec.	36.5	34.7	16.6	8.5	3.3	0.4	5,225
	Jan.-Mar.	36.7	38.1	15.2	7.8	2.1	0.1	5,582
	Apr.-Jun.	19.2	23.5	25.5	17.6	10.6	3.6	2,520
1947/48	Jul.-Sep.	39.8	41.8	13.8	3.6	1.0	*	3,765
	Oct.-Dec.	28.0	31.2	19.8	11.7	7.3	2.0	2,064
	Jan.-Mar.	30.0	39.9	20.1	8.3	1.6	0.1	6,993
	Apr.-Jun.	30.8	38.3	21.5	6.7	2.2	0.5	827
1948/49	Jul.-Sep.	35.6	40.4	18.6	5.0	0.4		480
	Oct.-Dec.	46.4	22.7	15.6	9.3	5.1	0.9	1,919
	Jan.-Mar.	29.5	36.5	23.4	8.7	1.7	0.2	2,848
	Apr.-Jun.	31.4	26.1	24.8	13.1	4.5	0.1	1,055
1949/50	Jul.-Sep.	45.6	23.7	20.7	8.8	1.2		410
	Oct.-Dec.	55.1	24.1	11.3	7.1	2.3	0.1	2,976
	Jan.-Mar.	46.3	26.6	17.3	8.4	1.4	*	2,315
	Apr.-Jun.	70.7	17.1	7.2	3.9	1.1		1,660
1950/51	Jul.-Sep.	64.2	24.0	6.8	3.6	1.2	0.2	2,645
	Oct.-Dec.	62.8	23.3	7.4	4.2	2.0	0.3	3,681
	Jan.-Mar.	52.7	25.6	11.9	8.2	1.6	*	3,836
	Apr.-Jun.	60.1	32.2	6.1	1.6			544
1951/52	Jul.-Sep.	70.7	20.8	4.9	2.3	1.3	*	4,537
	Oct.-Dec.	60.4	25.3	8.3	4.1	1.8	0.1	5,181
	Jan.-Mar.	48.6	29.8	11.7	8.2	1.6	0.1	7,408
	Apr.-Jun.	56.4	27.0	10.6	4.3	1.7	*	4,655
1952/53	Jul.-Sep.	67.9	22.0	6.0	2.4	1.5	0.2	6,569
	Oct.-Dec.	62.5	25.4	7.6	2.5	1.8	0.2	5,368
	Jan.-Mar.	39.9	33.5	15.2	8.2	3.1	0.1	4,370
	Apr.-Jun.	49.1	29.9	13.7	4.1	3.2		2,176
1953/54	Jul.-Sep.	66.5	22.1	7.6	2.4	1.3	0.1	2,389
	Oct.-Dec.	62.2	24.5	9.5	2.6	1.1	0.1	2,501
	Jan.-Mar.	45.7	29.1	15.0	7.6	2.4	0.2	3,218
	Apr.-Jun.	58.6	22.1	11.1	5.7	2.3	0.2	3,082
1954/55	Jul.-Sep.	61.7	22.7	9.1	4.7	1.6	0.2	2,263
	Oct.-Dec.	59.9	23.4	10.1	5.1	1.4	0.1	1,847
	Jan.-Mar.	53.4	25.7	13.5	5.6	1.7	0.1	894
	Apr.-Jun.	54.3	32.0	9.7	2.7	1.3		691

TABLE 4: PERCENTAGES OF TIGER FLATHEAD \geq 33 CM IN 5-CM GROUPS FOR QUARTER-YEARS, IN SAMPLES TAKEN BY OTHER BOATS. NUMBERS IN HEADINGS ARE CM, BLANK MEANS ZERO, * MEANS $< 0.1\%$

Year	Quarter	33-37	38-42	43-47	48-52	53-57	58-62	Total
1945/46	Jul.-Sep.	65.0	24.3	7.4	2.6	0.7	*	8,853
	Oct.-Dec.	58.2	29.9	8.7	2.5	0.6	0.1	7,391
	Jan.-Mar.	46.7	32.9	13.3	5.8	1.2	0.1	7,565
	Apr.-Jun.	35.2	40.8	18.1	4.9	1.0	*	1,867
1946/47	Jul.-Sep.	59.7	28.4	7.6	3.0	1.2	0.1	6,539
	Oct.-Dec.	41.2	31.6	17.0	7.2	2.7	0.3	6,154
	Jan.-Mar.	49.8	33.4	10.9	4.4	1.4	0.1	3,817
	Apr.-Jun.	34.8	32.8	19.8	7.7	4.2	0.7	1,616
1947/48	Jul.-Sep.	49.3	35.5	10.1	3.6	1.3	0.2	5,170
	Oct.-Dec.	42.4	33.9	15.1	5.5	2.7	0.4	4,143
	Jan.-Mar.	37.2	34.7	19.5	6.4	2.0	0.2	6,778
	Apr.-Jun.	35.9	32.7	22.5	7.0	1.7	0.2	2,629
1948/49	Jul.-Sep.	45.8	35.6	13.2	4.1	1.2	0.1	1,634
	Oct.-Dec.	43.2	23.4	21.9	8.0	3.3	0.2	2,802
	Jan.-Mar.	38.8	30.4	22.7	6.8	1.2	0.1	3,322
	Apr.-Jun.	40.0	29.4	22.6	6.8	1.1	0.1	3,640
1949/50	Jul.-Jun.	52.0	24.5	14.4	7.0	1.8	0.3	4,141
	Oct.-Dec.	54.8	22.1	13.9	7.1	2.0	0.1	2,977
	Jan.-Mar.	57.0	19.4	15.2	7.4	0.9	0.1	5,068
	Apr.-Jun.	74.9	16.0	6.6	2.1	0.4		1,703
1950/51	Jul.-Sep.	69.2	20.6	5.9	3.4	0.8	0.1	1,705
	Oct.-Dec.	57.5	21.6	9.2	7.6	3.5	0.6	1,060
	Jan.-Mar.	59.1	23.2	8.9	7.0	1.7	0.1	3,912
	Apr.-Jun.	70.8	20.0	5.1	3.4	0.6	0.1	3,447
1951/52	Jul.-Sep.	76.1	16.5	3.8	3.0	0.6		1,134
	Oct.-Dec.	68.1	22.0	6.3	3.0	0.6		2,748
	Jan.-Mar.	59.5	24.4	9.2	5.4	1.4	0.1	9,272
	Apr.-Jun.	69.2	22.0	5.2	2.5	1.1		2,364
1952/53	Jul.-Sep.	69.3	20.1	6.2	3.4	0.9	0.1	3,647
	Oct.-Dec.	70.6	19.2	5.9	3.2	0.9	0.2	2,552
	Jan.-Mar.	61.9	24.8	8.8	3.5	0.9	0.1	5,009
	Apr.-Jun.	69.2	20.4	7.5	2.3	0.6	*	2,782
1953/54	Jul.-Sep.	75.3	17.0	4.7	1.8	1.1	0.1	1,555
	Oct.-Dec.	62.0	23.2	9.0	4.2	1.6		1,519
	Jan.-Mar.	73.1	17.3	6.6	2.1	0.8	0.1	4,547
	Apr.-Jun.	74.9	17.1	5.3	1.8	0.8	0.1	4,517
1954/55	Jul.-Sep.	76.2	16.7	5.1	1.5	0.4	0.1	6,561
	Oct.-Dec.	69.7	21.4	5.9	2.2	0.7	0.1	2,497
	Jan.-Mar.	67.0	22.4	7.6	2.7	0.3	*	2,708
	Apr.-Jun.	71.6	18.4	7.9	1.5	0.5	0.1	1,879
1955/56	Jul.-Sep.	77.3	17.5	3.7	1.0	0.5		1,365
	Oct.-Dec.	71.9	20.3	5.2	1.6	0.8	0.2	1,358
	Jan.-Mar.	62.9	27.9	6.4	2.3	0.5	*	3,792
	Apr.-Jun.	69.0	24.3	4.8	1.3	0.5	0.1	3,087

cont.

Table 4: cont.

Year	Quarter	33-37	38-42	43-47	48-52	53-57	58-62	Total
1956/57	Jul.-Sep.	66.2	26.0	5.7	1.6	0.5	*	3,537
	Oct.-Dec.	55.9	29.9	10.6	2.7	0.9	.	1,552
	Jan.-Mar.	49.9	31.3	14.3	3.6	0.8	0.1	4,674
	Apr.-Jun.	53.2	29.9	13.1	2.9	0.8	0.1	3,633
1957/58	Jul.-Sep.	54.1	29.0	13.1	3.1	0.6	0.1	2,349
	Oct.-Dec.	55.0	23.5	13.8	6.0	1.5	0.2	2,084
	Jan.-Mar.	54.2	27.1	13.7	4.1	0.8	0.1	4,348
	Apr.-Jun.	63.5	25.4	8.5	2.0	0.6		2,225
1958/59	Jul.-Sep.	64.5	25.1	7.8	2.0	0.6		4,519
	Oct.-Dec.	54.6	27.0	12.7	4.3	1.2	0.2	2,813
	Jan.-Mar.	57.4	27.5	10.7	3.8	0.5	0.1	5,619
	Apr.-Jun.	57.3	28.2	10.4	3.5	0.5	0.1	1,837
1959/60	Jul.-Sep.	58.8	25.6	10.2	4.2	1.2	*	4,770
	Oct.-Dec.	67.8	20.8	7.5	3.0	0.9	*	3,914
	Jan.-Mar.	61.9	24.6	9.1	3.7	0.6	0.1	7,001
	Apr.-Jun.	68.4	22.2	7.0	2.2	0.2	*	3,891
1960/61	Jul.-Sep.	63.3	25.9	8.1	2.1	0.6	*	6,323
	Oct.-Dec.	62.4	25.1	8.6	3.2	0.6	0.1	4,341
	Jan.-Mar.	50.6	31.5	11.9	4.4	1.3	0.3	2,828
	Apr.-Jun.	41.8	38.1	14.8	4.2	1.1	*	2,237
1961/62	Jul.-Sep.	57.3	28.5	10.4	3.2	0.6	*	7,163
	Oct.-Dec.	65.7	20.6	9.6	2.8	1.1	0.2	4,347
	Jan.-Mar.	63.8	22.5	10.0	2.5	1.1	0.1	3,496
	Apr.-Jun.	56.1	29.5	10.3	3.3	0.7	0.1	1,772
1962/63	Jul.-Sep.	66.4	24.3	6.1	2.3	0.8	0.1	6,334
	Oct.-Dec.	61.7	25.6	8.5	2.8	1.3	0.1	6,021
	Jan.-Mar.	56.1	27.8	10.0	3.8	2.2	0.1	2,958
	Apr.-Jun.	48.9	34.8	10.5	4.3	1.4	0.1	2,651
1963/64	Jul.-Sep.	54.1	29.4	11.0	3.9	1.4	0.2	5,724
	Oct.-Dec.	57.4	24.4	10.8	5.6	1.7	0.1	2,653
	Jan.-Mar.	54.2	27.2	12.2	4.6	1.7	0.1	3,741
	Apr.-Jun.	64.5	24.5	8.0	2.6	0.4		1,148
1964/65	Jul.-Sep.	64.6	22.3	9.6	2.6	0.8	0.1	5,090
	Oct.-Dec.	70.4	17.1	7.6	3.7	1.1	0.1	4,877
	Jan.-Mar.	65.2	21.1	8.3	3.6	1.6	0.2	5,127
	Apr.-Jan.	72.1	19.1	5.1	2.4	1.2	0.1	3,379
1965/66	Jul.-Sep.	66.7	23.6	6.2	2.3	1.1	0.1	3,584
	Oct.-Dec.	63.2	25.4	6.1	3.8	1.4	0.1	3,271
	Jan.-Mar.	63.4	27.4	6.6	2.1	0.5		3,874
	Apr.-Jun.	52.7	31.7	9.6	3.9	1.7	0.4	2,607
1966/67	Jul.-Sep.	61.7	26.6	7.5	3.0	1.1	0.1	4,943
	Oct.-Dec.	70.4	20.4	5.6	2.4	1.1	0.1	4,033
	Jan.-Mar.	64.5	23.1	8.3	2.9	1.1	0.1	4,079
	Apr.-Jun.	61.0	25.8	8.7	2.8	1.4	0.3	2,049

TABLE 5: PERCENTAGES OF LEGAL-SIZED TIGER FLATHEAD AT ≥ 37 CM, SUMMARIZED FOR GROUPS OF YEARS FROM TABLES 1 AND 2

Period	Steam trawlers		Other boats	
	Range	Mean	Range	Mean
1945/46	48	48	44	44
1946/47-1948/49	65-68	66	51-59	56
1949/50-1954/55	41-45	42	27-43	34
1955/56-1966/67			32-44	39

TABLE 6: CATCHES OF TIGER FLATHEAD BY STEAM TRAWLERS (ST) AND OTHER BOATS (OB); AVERAGE NUMBERS OF BOATS AND VESSEL UNITS FISHING, AND MEAN CATCHES PER BOAT AND VESSEL UNIT, BY YEARS. VESSEL UNITS COUNTED AS 7 PER ST, 1 PER OB. BLANKS MEAN ZERO, * MEANS UNKNOWN

Year	Catch (1,000 lb)			Numbers of boats and units			Catch (1,000 lb) per boat or unit		
	ST	OB	Total	ST	OB	Units	ST	OB	Unit
1928	12,147		12,147	11.0		77	1,104		158
1934	5,759		5,759	14.0		98	411		59
1938/39	7,037	*	*	14.0	6	104	503	*	*
1939/40	5,765	*	*	10.0	10	80	576	*	*
1940/41	2,275	*	*	4.0	26	54	569	*	*
1941/42	869	*	*	3.0	49	70	290	*	*
1942/43	506	27	533	1.0	4	11	506	7	48
1943/44	506	704	1,210	1.0	10	17	506	70	71
1944/45	702	4,961	5,663	2.5	36	54	281	138	105
1945/46	1,229	3,988	5,217	4.5	57	88	273	70	59
1946/47	1,901	3,075	4,976	8.0	67	123	238	46	40
1947/48	1,946	1,892	3,838	12.0	75	159	162	25	24
1948/49	930	1,197	2,127	11.0	58	135	85	21	16
1949/50	885	1,462	2,347	11.5	52	132	77	28	18
1950/51	1,708	818	2,526	11.5	41	122	149	20	21
1951/52	1,833	1,108	2,941	10.0	39	116	183	28	25
1952/53	1,737	1,389	3,126	10.0	63	140	174	22	22
1953/54	1,434	987	2,421	10.0	86	163	143	11	15
1954/55	892	1,133	2,025	7.5	106	158	119	11	13
1955/56	463	1,043	1,506	4.0	105	133	116	10	11
1956/57	347	1,324	1,671	4.0	139	167	87	10	10
1957/58	168	1,006	1,174	4.0	146	174	42	7	7
1958/59	41	1,210	1,251	1.0	134	141	41	9	9
1959/60	*	*	1,254	0.5	130	134	*	*	9
1960/61	*	*	1,153	0.5	148	152	*	*	8
1961/62		1,863	1,863		158	158		12	12
1962/63		3,027	3,027		198	198		15	15
1963/64		2,324	2,324		192	192		12	12
1964/65		2,978	2,978		188	188		16	16
1965/66		2,366	2,366		145	145		16	16
1966/67		1,930	1,930		147	147		13	13
1975/76		1,788	1,788		*	*		*	*

TABLE 7: SUMMARY OF MEASUREMENTS OF MORWONG FROM SAMPLES TAKEN EACH YEAR BY STEAM TRAWLERS. NUMBERS IN HEADINGS ARE CM

Year	Total all sizes	Total ≥ 33	%	% of Total ≥ 33		
				≥ 33	33-37	38-42
1947/48	13,041	4,795	36.8	89.4	10.4	0.2
1948/49	12,887	3,992	31.0	90.0	9.9	0.1
1949/50	7,624	2,159	28.3	91.7	8.2	0.1
1950/51	9,008	3,047	33.8	83.2	16.2	0.6
1951/52	8,350	2,484	29.8	84.4	15.1	0.5
1952/53	9,798	3,002	30.6	81.6	17.9	0.5
1953/54	7,817	2,791	35.7	79.9	19.2	0.9
1954/55	11,595	4,297	37.1	79.8	18.7	1.5
1955/56	9,296	3,359	36.1	79.2	19.6	1.2
1956/57	6,754	2,169	32.1	82.6	17.0	0.4
1957/58	4,793	1,956	40.8	80.5	18.8	0.7
Total	100,963					

TABLE 8: SUMMARY OF MEASUREMENTS OF MORWONG FROM SAMPLES TAKEN EACH YEAR BY OTHER BOATS. NUMBERS IN HEADINGS ARE CM

Year	Total all sizes	Total ≥ 33	%	% of Total ≥ 33		
				≥ 33	33-37	38-42
1947/48	2,960	1,210	40.9	89.3	10.7	
1948/49	4,789	2,055	42.9	91.1	8.3	0.6
1949/50	5,008	1,725	34.4	89.3	10.6	0.1
1950/51	4,109	1,215	29.6	86.7	12.9	0.4
1951/52	2,440	875	35.9	85.9	13.6	0.5
1952/53	3,736	1,058	28.3	91.1	8.6	0.3
1953/54	1,897	780	41.1	84.2	15.3	0.5
1954/55	4,303	1,664	38.7	86.9	12.8	0.3
1955/56	9,606	3,301	34.4	89.2	10.6	0.2
1956/57	6,653	2,162	32.5	86.9	12.7	0.4
1957/58	5,718	2,010	35.2	85.8	13.8	0.4
1958/59	7,637	2,786	36.5	84.5	15.2	0.3
1959/60	8,738	3,338	38.2	86.0	13.5	0.5
1960/61	10,389	4,367	42.0	84.3	15.2	0.5
1961/62	11,440	5,159	45.1	82.5	16.4	1.1
1962/63	16,971	7,100	41.8	85.3	14.2	0.5
1963/64	22,288	8,614	38.6	84.7	14.8	0.5
1964/65	22,609	8,272	36.6	87.0	12.4	0.6
1965/66	14,215	5,820	40.9	85.9	13.4	0.7
1966/67	18,959	6,947	36.6	87.7	11.7	0.6
Total	184,465					

TABLE 9: CATCHES OF MORWONG BY STEAM TRAWLERS (ST) AND OTHER BOATS (OB), AVERAGE NUMBERS OF BOATS AND VESSEL UNITS FISHING, AND MEAN CATCHES PER BOAT AND VESSEL UNIT, BY YEARS. VESSEL UNITS COUNTED AS 33 PER ST, 1 PER OB. BLANKS MEAN ZERO, * MEANS UNKNOWN

Year	Catch (1,000 lb)			Numbers of boats and units			Catch (1,000 lb) per boat or unit		
	ST	OB	Total	ST	OB	Units	ST	OB	Unit
1942/43	20		20	1.0	4	37	20		< 1
1943/44	2	14	16	1.0	10	43	2	1	< 1
1944/45	267	262	529	2.5	36	118	107	7	4
1945/46	1,602	360	1,962	4.5	57	206	356	6	10
1946/47	3,452	486	3,938	8.0	67	331	432	7	12
1947/48	3,556	437	3,993	12.0	75	471	296	6	8
1948/49	2,559	489	3,048	11.0	58	421	233	8	7
1949/50	2,041	462	2,503	11.5	52	432	177	9	6
1950/51	1,805	353	2,158	11.5	41	420	157	9	5
1951/52	2,053	225	2,278	10.0	39	369	205	6	6
1952/53	2,570	538	3,108	10.0	63	393	257	9	8
1953/54	2,043	586	2,629	10.0	86	416	204	7	6
1954/55	1,885	807	2,692	7.5	106	354	251	8	8
1955/56	1,484	808	2,292	4.0	105	237	371	8	10
1956/57	1,355	1,993	3,348	4.0	139	271	339	14	14
1957/58	949	1,594	2,543	4.0	146	278	237	11	9
1958/59	164	1,811	1,975	1.0	134	167	164	14	12
1959/60	*	*	1,787	0.5	130	146	*	*	12
1960/61	*	*	1,433	0.5	148	164	*	*	9
1961/62		1,995	1,995		158	158		13	13
1962/63		3,860	3,860		198	198		19	19
1963/64		3,084	3,084		192	192		16	16
1964/65		2,099	2,099		188	188		11	11
1965/66		1,861	1,861		145	145		13	13
1966/67		2,360	2,360		147	147		16	16
1975/76		3,247	3,247		*	*		*	*

TABLE 10: SUMMARY OF MEASUREMENTS OF REDFISH FROM SAMPLES TAKEN EACH YEAR BY STEAM TRAWLERS. NUMBERS IN HEADINGS ARE CM

Year	Total	Total	%	% of Total ≥ 24		
	all sizes	≥ 24	≥ 24	24-28	29-33	34-38
1947/48	13,235	8,758	66.2	88.1	11.6	0.3
1948/49	39,119	14,723	37.6	96.8	3.2	< 0.1
1949/50	41,171	12,507	30.4	96.3	3.7	< 0.1
1950/51	16,250	7,074	43.5	92.4	7.5	0.1
1951/52	10,354	5,959	57.6	88.0	11.9	0.1
1952/53	7,494	3,147	42.0	93.0	7.0	< 0.1
1953/54	10,506	5,624	53.5	91.7	8.0	0.3
1954/55	9,521	5,978	62.8	88.6	11.3	0.1
1955/56	5,101	3,285	64.4	90.9	9.0	0.1
1956/57	2,663	1,701	63.9	94.3	5.7	
1957/58	2,647	1,615	61.0	90.9	9.0	0.1
1958/59	2,090	1,270	60.8	92.7	7.2	0.1
Total	160,151					

TABLE 11: SUMMARY OF MEASUREMENTS OF REDFISH FROM SAMPLES TAKEN EACH YEAR BY OTHER BOATS. NUMBERS IN HEADINGS ARE CM

Year	Total	Total	%	% of Total ≥ 24		
	all sizes	≥ 24	≥ 24	24-28	29-33	34-38
1948/49	2,949	505	17.1	98.3	1.7	
1949/50	3,163	923	29.2	98.7	1.3	
1950/51	6,291	1,175	18.7	99.6	0.4	
1951/52	1,527	478	31.3	99.4	0.6	
1952/53	3,547	1,181	33.3	98.6	1.4	< 0.1
1953/54	1,784	573	32.1	97.4	2.6	
1954/55	894	365	40.8	96.7	3.3	
1955/56	2,070	1,032	49.9	93.3	6.7	
1956/57	2,947	1,230	41.7	98.0	2.0	
1957/58	3,348	1,345	40.2	97.6	2.4	
1958/59	2,902	1,448	49.9	92.4	7.3	0.3
1959/60	3,855	2,002	51.9	88.6	11.4	< 0.1
1960/61	2,040	1,287	63.1	88.3	11.7	
1961/62	2,833	1,707	60.2	89.5	10.3	0.2
1962/63	2,241	1,515	67.6	90.7	9.2	0.1
1963/64	2,023	1,313	64.9	91.7	8.3	
1964/65	3,223	2,053	63.7	93.2	6.6	0.2
1965/66	1,770	1,248	70.5	80.8	18.6	0.6
1966/67	4,382	2,731	62.3	88.6	11.2	0.2
Total	53,789					

TABLE 12: CATCHES OF REDFISH BY STEAM TRAWLERS (ST) AND OTHER BOATS (OB), AVERAGE NUMBERS OF BOATS AND VESSEL UNITS FISHING, AND MEAN CATCHES PER BOAT AND VESSEL UNIT, BY YEARS. VESSEL UNITS COUNTED AS 82 PER ST, 1 PER OB. BLANKS MEAN ZERO, * MEANS UNKNOWN

Year	Catch (1,000 lb)			Numbers of boats and units			Catch (1,000 lb) per boat or unit		
	ST	OB	Total	ST	OB	Units	ST	OB	Unit
1942/43	133		133	1.0	4	86	133		1
1943/44	54		54	1.0	10	92	54		1
1944/45	83	24	107	2.5	36	241	33	1	< 1
1945/46	752	53	805	4.5	57	426	167	1	2
1946/47	1,847	134	1,981	8.0	67	723	231	2	3
1947/48	3,251	240	3,491	12.0	75	1,059	271	3	3
1948/49	4,977	481	5,458	11.0	58	960	452	8	6
1949/50	4,557	331	4,888	11.5	52	995	396	6	5
1950/51	2,105	686	2,791	11.5	41	984	183	17	3
1951/52	826	92	918	10.0	39	859	83	2	1
1952/53	1,086	452	1,538	10.0	63	883	107	7	2
1953/54	1,587	120	1,707	10.0	86	906	159	1	2
1954/55	925	79	1,004	7.5	106	721	123	1	1
1955/56	421	69	490	4.0	105	433	105	1	1
1956/57	304	129	433	4.0	139	467	76	1	1
1957/58	336	165	501	4.0	146	474	84	1	1
1958/59	181	117	298	1.0	134	216	181	1	1
1959/60	*	*	172	0.5	130	171	*	*	1
1960/61	*	*	86	0.5	148	189	*	*	< 1
1961/62		92	92		158	158		1	1
1962/63		243	243		198	198		1	1
1963/64		192	192		192	192		1	1
1964/65		210	210		188	188		1	1
1965/66		157	157		145	145		1	1
1966/67		207	207		147	147		1	1
1975/76		2,042	2,042		*	*		*	*

TABLE A: MARKET MEASUREMENTS OF TIGER FLATHEAD CAUGHT BY STEAM
TRAWLERS (ST) AND OTHER BOATS (OB), 1945/46 TO 1954/55

1945/46

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21	1							
22	1	4						
23	4	10	1	2				
24	8	36	2	6		1		1
25	13	50	2	10		6		
26	21	59	11	36		11		1
27	29	75	8	57	1	37	1	5
28	26	207	16	80		77	5	7
29	72	413	41	136	1	127	5	35
30	109	676	64	245	4	183	6	32
31	158	1,020	91	386	11	298	15	50
32	242	1,253	114	730	25	433	17	76
33	273	1,387	154	860	52	623	10	86
34	285	1,280	158	923	70	726	19	116
35	280	1,242	158	874	71	766	21	137
36	236	998	159	880	96	734	33	161
37	203	851	162	768	78	685	26	158
38	205	672	126	662	54	650	26	208
39	167	513	116	484	50	578	18	151
40	142	428	115	450	42	506	15	161
41	122	308	78	355	15	405	23	143
42	113	227	92	261	9	350	13	98
43	81	189	55	199	4	269	8	107
44	63	152	61	144	7	222	8	89
45	56	131	40	134		204	7	54
46	51	103	31	72	3	159	1	53
47	34	77	28	93	3	154	5	35
48	23	53	19	58	3	134	6	41
49	29	59	17	37	6	112	3	22
50	22	46	11	42	7	80		16
51	17	37	2	32	7	71	3	6
52	11	32	5	17	8	43	2	6
53	10	25	2	19	8	41	2	6
54	5	20	3	11	3	29		6
55	4	11	2	7	3	8	2	2
56	6	4	2	3		4		3
57	2	5	2			5		1
58		2	2	4		2		1
59	1	1	1			2		
60			1	1		3		
61				1				
62								
63								
64								
Total	3,125	12,656	1,952	9,079	641	8,738	300	2,074

1946/47

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21								
22		2		2				
23		3		7				
24	1	16	1	11		7		1
25	4	21		40	2	21	1	8
26	6	27	8	78	3	63	5	17
27	18	50	20	72	6	109	5	38
28	30	92	21	86	16	108	9	60
29	48	190	62	94	31	129	18	65
30	59	299	77	172	51	121	28	88
31	91	487	143	218	92	169	43	105
32	162	634	221	369	174	212	56	94
33	223	840	301	463	291	323	67	78
34	295	820	336	501	374	358	91	99
35	297	805	421	553	441	422	106	109
36	299	742	388	554	477	426	100	126
37	322	696	462	465	464	373	120	151
38	310	568	432	488	465	338	107	107
39	320	444	413	436	505	302	137	114
40	245	349	363	382	415	252	106	125
41	265	291	307	350	431	212	122	102
42	230	205	296	289	309	171	119	82
43	199	155	216	265	228	124	129	92
44	160	123	182	270	180	94	126	72
45	114	76	179	220	165	87	132	57
46	103	77	153	159	146	51	130	45
47	88	67	136	133	133	60	125	54
48	57	58	117	110	114	55	123	27
49	59	38	111	113	94	40	101	32
50	44	40	98	91	96	27	94	25
51	37	32	63	70	78	13	69	22
52	20	29	54	55	52	31	57	18
53	33	31	52	52	40	21	71	22
54	19	22	41	41	30	13	60	19
55	17	12	31	37	21	12	51	12
56	10	5	30	19	18	3	55	6
57	7	9	21	18	7	6	31	8
58	2	3	11	9	2	1	40	7
59	3	2	4	7	2	2	19	1
60	1		5	3	3		13	3
61			1	1	1		12	1
62							5	
63							1	
64							1	
Total	4,198	8,360	5,778	7,303	5,957	4,756	2,685	2,092

1947/48

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21				1				
22		1		1		1		
23		2				2	1	2
24	1	25		3	1	9	1	6
25	8	79	1	27		17	3	12
26	21	169	8	106	4	51		22
27	44	226	26	246	5	160	7	43
28	48	230	73	337	42	390	15	88
29	62	230	75	314	38	630	46	218
30	82	297	85	309	58	679	71	397
31	164	433	79	275	56	517	92	437
32	167	462	73	353	116	478	93	372
33	203	454	76	385	192	495	50	247
34	228	490	91	357	327	497	38	189
35	349	504	128	357	446	484	40	165
36	350	552	129	322	547	519	59	182
37	367	548	153	333	583	528	68	160
38	348	495	153	334	607	459	76	167
39	370	443	136	301	591	529	53	161
40	333	374	128	285	594	459	67	162
41	297	308	136	275	518	469	66	187
42	227	217	91	207	482	433	55	183
43	187	185	94	191	398	373	41	191
44	122	114	87	156	331	318	55	120
45	90	103	85	92	265	267	28	117
46	61	66	70	109	221	210	29	91
47	58	56	72	78	193	155	25	71
48	54	47	45	67	162	134	19	44
49	26	42	51	45	152	109	16	48
50	26	36	53	52	120	71	9	40
51	17	39	44	29	88	74	4	29
52	13	24	49	36	55	44	7	24
53	11	21	44	39	51	37	6	15
54	10	12	37	30	32	30	1	13
55	9	13	32	13	14	39	6	12
56	3	14	21	21	12	16	3	4
57	4	5	18	10	5	14	2	1
58	2	4	25	9	2	10		4
59			6	4	1	2	2	2
60		1	4	4	4	2	1	
61		3	3			1	1	
62			3					
63				2				
64								
Total	4,362	7,324	2,484	6,115	7,313	9,712	1,156	4,226

1948/49

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21								
22		1	1				1	
23		4	4	5	1	1	1	1
24	1	11	7	12	1	3		
25	2	15	18	24	4	24		1
26	5	22	26	44	25	36	3	5
27	2	23	51	81	77	109	8	35
28	13	70	69	145	140	173	26	120
29	30	148	104	159	136	186	47	328
30	39	241	151	195	136	216	67	473
31	62	296	207	258	138	251	70	506
32	51	290	262	303	162	276	56	436
33	42	197	256	292	153	264	58	350
34	33	144	187	276	152	293	62	274
35	32	141	192	265	156	244	62	271
36	30	134	136	190	175	243	72	274
37	34	132	119	186	205	246	77	286
38	39	118	111	149	236	232	63	262
39	48	148	92	134	193	205	61	212
40	38	120	86	134	209	210	48	185
41	39	91	76	128	187	184	46	186
42	30	105	70	110	214	180	57	225
43	28	63	72	139	167	166	60	202
44	24	52	70	153	171	198	60	186
45	14	51	64	133	119	165	59	176
46	11	32	49	101	110	141	41	151
47	12	18	44	88	98	84	42	108
48	6	19	46	62	76	62	48	97
49	8	20	45	54	62	53	32	55
50	3	7	37	42	48	44	21	45
51	6	17	31	34	39	40	20	33
52	1	5	20	33	24	28	17	19
53		8	19	24	20	12	14	16
54	2	5	34	22	15	13	16	11
55		2	16	21	4	8	12	5
56		2	19	9	6	1	4	6
57		2	10	16	3	4	2	2
58		1	7	3	4			2
59			6	1	1	2	1	1
60			4	1	1			
61				2				
62			1					
63								
64								
Total	685	2,755	2,819	4,028	3,668	4,597	1,334	5,545

1949/50

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20							1	
21			1				1	
22				2		2	2	
23			3	8		3	1	
24	2	8	3	18	4	5	9	
25	5	16	21	44	16	10	13	8
26	7	51	75	108	34	31	29	16
27	12	88	148	164	62	113	60	60
28	36	255	231	217	113	268	109	114
29	68	570	279	312	156	471	154	170
30	90	802	395	465	174	516	209	253
31	86	919	486	591	206	694	257	313
32	65	854	462	564	265	830	282	328
33	49	625	456	475	280	873	270	326
34	45	533	442	406	242	757	312	325
35	32	355	330	313	235	561	270	259
36	36	315	236	245	173	399	184	218
37	25	326	175	192	143	300	137	148
38	28	255	185	153	149	250	94	99
39	18	236	177	145	136	196	58	59
40	19	199	151	143	118	192	54	46
41	11	171	116	119	106	174	42	34
42	21	151	90	98	106	171	36	35
43	23	128	63	83	95	149	35	26
44	14	127	64	89	88	161	23	24
45	12	132	65	70	75	158	19	23
46	20	113	73	87	77	147	18	21
47	16	98	70	84	65	156	24	19
48	17	99	64	63	65	122	21	20
49	6	57	47	56	43	93	13	6
50	6	57	47	30	39	74	15	3
51	7	39	31	33	30	57	10	3
52		38	21	29	17	29	6	3
53	2	29	20	16	6	21	10	1
54	1	17	17	14	13	10	3	1
55	1	16	15	11	8	8	2	3
56		8	10	16	3	4	4	1
57	1	6	7	3	2	2		
58		2	4	3	1	3		
59		3		1		1		
60		2						
61		4						
62								
63								
64								
Total	781	7,704	5,080	5,470	3,345	8,011	2,787	2,965

1950/51

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21						1		
22					1		1	
23					1	2	4	2
24	2	1	11	2	7	1		
25	6	7	23	27	23	11	10	5
26	28	23	94	89	71	83	28	33
27	107	57	229	156	175	181	49	57
28	229	124	433	243	298	332	75	145
29	299	178	582	234	452	391	138	353
30	391	266	742	228	477	472	180	624
31	440	306	845	229	553	582	171	807
32	410	538	729	191	580	509	146	653
33	411	279	627	153	502	513	90	567
34	378	258	563	142	499	579	88	568
35	394	247	473	126	418	505	68	544
36	262	202	338	110	344	388	45	420
37	254	194	312	79	257	328	36	340
38	219	158	258	77	253	278	45	235
39	146	82	205	47	223	249	31	173
40	124	44	174	34	194	162	48	141
41	82	41	116	37	188	129	29	92
42	64	27	103	34	123	90	22	48
43	52	23	68	18	96	77	11	48
44	37	26	65	24	95	64	9	35
45	41	22	64	17	91	65	5	38
46	28	11	46	22	91	81	7	27
47	22	19	30	16	85	61	1	29
48	29	9	35	20	94	78	3	21
49	16	16	30	21	72	72	3	24
50	21	13	24	17	61	51	2	29
51	21	8	37	15	48	40	1	20
52	9	12	29	8	38	32		21
53	12	4	24	14	25	24		8
54	11	3	18	9	22	18		3
55	4	4	17	2	7	12		6
56	2	1	9	5	3	5		4
57	2	1	5	7	5	8		
58	1	1	3	4	1	1		1
59	2		3			1		
60	1			2	1	1		
61			1					1
62			3					1
63								
64								
Total	4,557	3,205	7,369	2,459	6,474	6,477	1,346	6,126

1951/52

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21	1			1				
22	4		1	4	1		1	
23	11	1	1	10	1	1	1	1
24	54	5	4	32	1	10	1	
25	123	26	19	98	11	21	4	8
26	250	59	106	224	21	74	6	18
27	355	101	218	330	59	233	21	47
28	457	197	337	390	119	556	94	89
29	628	216	464	435	249	726	212	185
30	975	389	617	479	378	1,093	328	321
31	1,173	429	726	573	571	1,206	465	375
32	1,067	364	714	578	673	1,385	533	406
33	916	267	732	481	748	1,300	569	412
34	859	215	780	455	708	1,258	618	404
35	578	169	652	377	735	1,077	498	302
36	497	131	562	299	754	1,053	489	267
37	357	81	402	260	655	825	453	251
38	293	63	329	193	585	682	378	149
39	223	49	332	139	523	546	283	125
40	190	33	258	111	427	436	223	110
41	131	23	221	91	356	325	196	69
42	107	19	171	70	317	271	175	68
43	83	10	114	54	233	227	129	43
44	59	14	112	46	201	176	140	24
45	34	7	74	28	182	164	91	27
46	28	7	68	20	138	139	72	16
47	19	5	63	26	116	151	59	12
48	31	6	37	16	124	133	37	15
49	16	5	55	26	150	110	48	16
50	18	12	40	12	145	116	41	6
51	22	7	48	14	113	77	37	14
52	17	4	34	15	72	67	37	8
53	15		34	6	53	60	21	9
54	18	4	23	3	27	34	27	8
55	16	3	17	2	26	16	17	4
56	7		15	3	9	9	6	5
57	1		3	1	5	10	7	
58	1				2	6	2	
59	1		5		2	5		
60					2			
61								
62								
63								
64								
Total	9,635	2,921	8,388	5,902	9,492	14,577	6,321	3,814

1952/53

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21								
22								
23								
24				2				
25	2	5	2	2		1	1	
26	7	10	2	7	1	3	7	1
27	28	22	18	22	4	16	17	2
28	121	99	39	84	7	84	32	30
29	292	244	96	204	28	162	50	112
30	583	494	206	417	54	354	107	276
31	921	764	486	569	133	683	125	573
32	1,034	790	603	615	241	725	177	603
33	1,123	721	698	520	308	777	219	550
34	1,165	676	767	488	354	745	220	501
35	884	462	687	369	355	648	222	370
36	704	385	611	250	384	540	210	271
37	587	282	591	175	343	390	197	232
38	520	258	429	173	371	355	153	160
39	363	186	326	105	332	303	164	145
40	260	129	254	98	304	250	155	94
41	173	92	190	66	239	185	106	87
42	126	68	164	48	216	147	74	82
43	97	66	116	47	189	121	72	66
44	98	57	108	33	130	95	66	45
45	70	43	81	42	131	107	53	44
46	76	32	58	16	109	60	59	27
47	56	29	43	14	108	59	48	25
48	30	30	28	19	79	51	21	15
49	39	33	26	22	71	33	24	16
50	33	24	27	14	68	35	20	10
51	36	19	31	15	67	37	11	18
52	22	16	25	11	72	22	13	6
53	27	9	24	9	52	17	20	3
54	24	4	29	5	24	10	16	4
55	18	12	17	6	29	7	7	6
56	19	7	16	2	19	7	21	3
57	8	1	10		10	2	5	1
58	6	5	7	2	3	2		1
59	1	1	2	3	2	3		
60	3		2		1			
61	1		1			1		
62								
63								
64								
Total	9,557	6,075	6,820	4,474	4,838	7,037	2,692	4,379

1953/54

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21								
22								
23								
24					1			
25					1			
26	2				1	1	1	4
27	6		7		3	5	2	9
28	32	10	21	6	9	23	4	16
29	95	44	48	37	32	128	14	70
30	261	163	176	119	87	423	74	282
31	356	381	356	217	191	880	193	650
32	406	518	375	279	269	1,155	302	888
33	374	398	386	268	313	1,042	421	1,000
34	416	287	401	233	348	852	477	863
35	304	189	320	183	288	633	380	649
36	283	170	249	140	266	435	311	523
37	212	128	200	119	256	360	218	347
38	175	98	178	103	228	222	179	251
39	148	58	120	76	221	192	134	176
40	84	44	128	65	201	161	145	153
41	70	38	103	56	145	129	117	111
42	51	26	83	50	142	84	105	83
43	47	24	69	31	141	89	90	64
44	48	18	56	38	102	80	76	60
45	36	13	53	22	106	44	62	60
46	26	11	30	26	72	38	64	27
47	24	7	30	20	62	50	49	27
48	16	6	15	15	58	33	42	24
49	13	5	18	24	64	18	46	18
50	10	5	15	9	35	17	39	16
51	12	6	13	8	41	16	24	8
52	5	6	4	8	46	13	25	16
53	8	6	10	10	26	15	17	9
54	8	6	6	7	21	9	23	9
55	7	2	8	3	15	5	14	8
56	6	1	1	3	12	4	12	8
57	3	2	3	2	3	2	6	
58	2	1	2		4		3	2
59	1				1	2	2	3
60					1	2	1	2
61								
62								
63								
64								
Total	3,547	2,671	3,484	2,177	3,812	7,162	3,672	6,436

1954/55

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
20								
21								
22								
23								
24		1						
25		1		1		1		1
26		4		1	1		1	1
27	1	9			1	4		1
28	10	33	7	11	3	25	1	18
29	18	102	19	47	14	51	8	68
30	66	373	63	118	30	125	19	150
31	139	845	110	236	50	277	46	219
32	239	1,393	210	432	91	460	67	314
33	308	1,404	227	472	97	468	69	366
34	355	1,329	275	479	115	464	72	369
35	303	1,027	222	356	97	368	76	252
36	234	716	207	239	89	283	76	193
37	196	523	176	194	79	232	82	166
38	154	336	129	186	70	190	70	94
39	126	272	111	115	48	139	51	79
40	100	199	90	97	47	126	41	81
41	70	169	58	78	38	77	35	50
42	65	123	43	58	27	74	24	41
43	56	119	56	43	23	51	15	47
44	35	81	33	29	28	63	17	33
45	40	57	38	25	24	45	13	31
46	36	53	31	32	26	22	15	20
47	39	24	29	20	20	24	7	18
48	31	31	29	9	14	11	2	14
49	27	20	20	13	16	20	7	5
50	25	20	17	14	8	15	4	5
51	11	16	18	12	9	16	3	2
52	12	13	11	7	3	10	3	2
53	6	7	9	5	6	5	4	1
54	13	7	8	7	2		1	3
55	8	4	5	2	2	3		1
56	5	3	2	3	3	1	2	3
57	4	3	1		2		2	2
58	2	3	2					
59	1	1		1		1		1
60	1	1		1	1			
61								
62								
63								
64								
Total	2,736	9,322	2,256	3,343	1,084	3,651	833	2,651

TABLE B: MARKET MEASUREMENTS OF TIGER FLATHEAD CAUGHT BY BOATS
OTHER THAN STEAM TRAWLERS, 1955/56 TO 1966/67

cm	1955/56				1956/57			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
20								
21								
22								
23								
24								
25					1			
26					1	2	3	
27		4		1	7	2	2	
28	4	8	5	3	4	12	11	
29	20	18	21	36	68	16	40	23
30	60	95	98	133	150	56	115	74
31	132	136	238	280	309	89	224	176
32	238	226	384	387	461	146	366	352
33	273	247	504	432	463	160	404	381
34	285	259	586	502	505	156	479	422
35	209	177	495	478	518	190	496	390
36	156	165	434	395	504	193	470	391
37	132	128	365	323	352	169	482	350
38	94	99	306	247	259	149	401	329
39	68	65	262	201	224	92	303	236
40	40	50	202	132	176	82	280	184
41	22	37	157	77	151	91	231	168
42	15	25	131	93	109	50	251	170
43	17	27	82	57	74	57	213	149
44	10	10	57	29	41	42	184	118
45	11	8	42	27	34	31	126	93
46	7	11	30	18	24	18	73	73
47	5	15	30	16	27	17	71	42
48	6	7	25	9	15	17	53	28
49	3	6	19	8	12	8	48	29
50	5	4	18	7	13	4	30	25
51		1	14	10	8	6	21	16
52		3	12	8	8	6	15	5
53	3	1	7	7	6	4	14	14
54	2	2	1	3	7	5	12	10
55	1	1	3	2	1	2	4	4
56		6	5	3	3	1	5	1
57	1	1	3	1	2	2	4	1
58			1	1			1	2
59		3		1			1	2
60					1		1	
61			1				1	
62								
63								
64								
Total	1,819	1,845	4,538	3,927	4,538	1,875	5,435	4,258

cm	1957/58				1958/59			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
20								
21								
22								
23								
24								
25			1					
26			1				1	
27			1		1	1	3	1
28		5	7		3	2	10	4
29	21	38	28	11	25	16	26	13
30	57	130	130	57	143	78	155	43
31	148	224	274	178	430	189	357	136
32	240	295	470	312	700	328	627	214
33	297	279	480	302	706	348	739	236
34	289	272	550	305	684	346	764	251
35	239	238	505	318	602	318	644	215
36	242	183	438	262	514	275	566	197
37	203	175	386	225	410	248	512	153
38	186	130	312	180	358	211	442	137
39	179	109	305	111	296	176	355	120
40	128	79	239	107	207	149	302	108
41	100	93	176	94	153	140	256	76
42	88	78	146	74	120	85	190	77
43	94	62	153	58	102	92	149	58
44	80	66	132	46	78	91	137	40
45	58	59	116	32	73	54	124	43
46	45	58	111	31	47	65	104	29
47	31	43	82	22	50	55	85	21
48	22	42	60	13	24	30	75	17
49	20	30	50	8	25	33	50	20
50	12	23	31	9	21	25	42	17
51	13	16	15	9	8	18	29	7
52	7	14	21	5	14	16	18	4
53	6	12	12	5	13	8	14	4
54	3	8	11	5	9	10	4	2
55	3	7	4	3	5	8	5	3
56	2	2	5	1		5	5	
57		1	5			2	3	
58	1	4	2			2	3	
59		1				3	1	
60	1		1					2
61								
62							1	
63								
64								
Total	2,815	2,776	5,260	2,783	5,821	3,427	6,798	2,248

cm	1959/60				1960/61			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
20								
21								
22								
23								
24								
25		1						
26		2	1		1			
27		5	2	1				1
28		26	6	1	2	4	1	
29	28	60	24	9	9	6	1	1
30	180	160	111	43	73	25	16	8
31	465	360	400	220	270	110	58	36
32	704	633	878	510	703	369	184	122
33	717	782	1,102	662	818	565	258	147
34	684	658	1,128	628	905	687	336	196
35	513	534	871	572	817	539	287	175
36	499	382	708	434	794	510	307	206
37	390	298	526	363	666	408	243	210
38	346	223	466	296	538	327	246	219
39	290	181	376	183	377	286	224	174
40	231	159	331	150	294	207	180	170
41	188	142	294	116	240	149	136	153
42	166	110	254	119	190	122	104	136
43	159	92	191	90	181	103	100	120
44	120	52	160	59	123	89	90	63
45	90	40	110	59	77	76	70	61
46	69	66	92	35	69	61	41	49
47	50	42	84	29	60	45	35	39
48	53	35	69	25	33	37	35	28
49	51	22	75	22	34	26	29	23
50	27	23	46	14	30	22	27	17
51	35	21	40	19	19	31	18	13
52	32	17	28	7	18	22	17	13
53	26	11	16	4	16	11	16	9
54	11	7	15	2	14	10	3	6
55	10	7	7	1	4	3	9	5
56	8	7	4		1	1	5	3
57	4	1	4		3	1	4	1
58	1	2	1		2	2	5	1
59			2	2			3	
60						1		
61			1					
62								
63								
64								
Total	6,147	5,161	8,423	4,675	7,381	4,855	3,088	2,405

cm	1961/62				1962/63			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
20								
21								
22								
23								
24								
25								
26								
27		1						
28	1	1	1	1	2			1
29	11	9	11	1	17	4	3	6
30	38	54	60	16	75	48	20	59
31	171	198	165	72	246	202	95	113
32	610	526	435	123	660	493	239	181
33	866	636	518	185	875	692	289	233
34	1,041	679	480	212	1,054	801	370	286
35	872	624	414	194	875	814	319	287
36	759	538	437	205	789	752	351	244
37	567	377	382	197	617	654	332	247
38	496	257	277	163	485	470	232	239
39	455	193	181	129	450	407	194	215
40	420	167	116	88	278	283	166	191
41	380	142	110	82	194	210	134	149
42	287	138	104	61	133	171	97	127
43	237	131	99	59	113	159	78	89
44	161	103	91	46	104	106	64	63
45	148	78	77	21	76	86	66	50
46	114	53	39	28	38	93	46	51
47	83	50	43	28	54	66	42	26
48	74	36	26	18	37	47	32	37
49	49	29	19	17	34	43	30	25
50	48	27	18	7	30	36	19	23
51	42	18	14	10	27	30	12	15
52	18	13	9	7	16	12	18	13
53	14	17	10	4	15	18	29	9
54	15	14	11	4	15	28	8	9
55	7	8	6	3	10	11	11	11
56	3	5	8		5	12	12	3
57	5	4	4	2	6	12	5	6
58	1	8	2	1	3	1	1	1
59	1		1			5	1	1
60		1		1	1	2		
61		1						
62								
63								1
64								
Total	7,994	5,136	4,168	1,985	7,334	6,768	3,315	3,011

cm	1963/64				1964/65			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
20								
21								
22								
23								
24								
25								
26		2						
27		2						
28	2	4		3				1
29	7	22	17	12	10	4	3	1
30	58	57	68	59	61	36	12	22
31	197	152	183	142	237	181	115	126
32	473	309	374	257	697	685	521	540
33	672	325	430	197	872	983	737	570
34	791	369	426	173	896	984	895	557
35	641	341	475	113	631	658	709	489
36	508	267	383	136	508	478	587	466
37	482	220	315	122	379	332	416	353
38	431	150	272	99	338	231	308	249
39	367	151	228	57	279	195	230	161
40	349	129	181	46	220	154	203	106
41	297	109	175	41	151	148	178	65
42	241	109	163	38	145	108	161	64
43	180	78	122	30	146	90	123	48
44	147	72	109	26	105	78	96	41
45	132	60	91	13	116	85	83	34
46	93	30	76	13	77	53	62	30
47	80	46	59	10	45	64	61	21
48	54	48	45	8	31	39	46	24
49	61	24	42	6	37	46	34	15
50	43	39	38	5	29	39	40	23
51	37	16	26	5	15	23	36	9
52	27	21	19	6	19	34	29	10
53	20	14	23	2	18	23	25	18
54	28	9	16	2	12	10	29	6
55	16	8	15		6	8	15	9
56	9	7	4		5	7	11	3
57	5	8	4		3	4	4	4
58	11		2		4		5	1
59	1	2	1		1	1	3	2
60		1	1		1	1	1	
61					1	1		
62	1							1
63								
64								
Total	6,461	3,201	4,383	1,621	6,095	5,783	5,778	4,069

cm	1965/66				1966/67			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
20								
21								
22								
23								
24								
25								
26								
27								
28			1	2	3		1	2
29	5	6	11	6	20	11	13	5
30	17	35	42	45	111	114	47	14
31	103	148	168	126	351	375	211	108
32	375	470	410	222	750	876	507	197
33	574	513	533	271	791	917	650	263
34	533	493	563	250	702	737	679	252
35	451	380	550	282	577	531	601	288
36	418	356	428	284	489	373	398	234
37	415	325	381	286	492	279	302	213
38	281	290	308	214	378	216	272	173
39	234	226	262	190	266	193	193	131
40	154	155	228	178	242	164	188	101
41	91	84	158	125	243	142	156	66
42	86	77	105	119	186	108	133	58
43	54	40	70	71	114	73	102	54
44	59	37	72	56	92	54	93	47
45	43	49	48	51	64	45	60	25
46	42	37	41	34	49	24	44	26
47	24	35	24	40	54	28	40	25
48	26	24	21	33	30	33	31	17
49	15	33	22	23	43	12	22	14
50	18	26	18	21	24	30	19	8
51	12	22	13	13	32	10	20	12
52	11	20	8	11	17	14	27	6
53	12	12	12	17	12	14	15	6
54	7	18	2	8	14	15	11	7
55	6	4	3	8	13	6	9	8
56	10	8	1	3	9	5	4	3
57	4	3	3	9	7	6	6	5
58	2	3		5	2	2	2	2
59	1	1		2	1	1		3
60						1		1
61								
62				1			2	1
63	1			1				
64				1				
Total	4,084	3,930	4,506	3,008	6,178	5,409	4,858	2,375

TABLE C: MARKET MEASUREMENTS OF MORWONG CAUGHT BY STEAM TRAWL-
ERS (ST) AND OTHER BOATS (OB), 1947/48 TO 1957/58

1947/48								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18								
19					3		1	4
20					10		2	8
21	1	3	1		19	3	10	43
22	9	9	10	4	14	1	19	40
23	18	9	42	24	30	1	11	38
24	28	15	76	20	124	3	50	41
25	15	6	74	8	173	5	132	74
26	24	13	81	16	256	11	169	84
27	53	8	114	17	257	4	177	86
28	87	18	211	43	373	10	208	73
29	151	31	257	61	459	4	243	77
30	164	38	301	93	547	8	301	90
31	219	42	325	103	620	7	356	121
32	260	52	313	154	529	3	319	124
33	264	67	307	144	467	8	307	127
34	238	61	214	113	379	11	245	84
35	180	43	190	101	314	5	171	59
36	107	42	158	81	231	4	137	35
37	81	34	71	28	146	2	79	32
38	48	16	47	22	90	7	52	18
39	22	7	32	18	60	2	33	8
40	11	6	10	7	33	1	23	2
41	6	6	4	2	13	1	5	
42	1	2	3	3	4		1	1
43	1		3		2		1	
44	1		1					
45			1					
46								
47			1					
48								
Total	1,989	528	2,847	1,062	5,153	101	3,052	1,269

1948/49

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18								
19			3					
20	1	5	20	2	1			
21	13	25	91	5	3		1	1
22	30	42	192	8	20		13	3
23	22	32	202	19	65		31	7
24	31	24	170	21	120		78	14
25	47	48	202	14	153		139	26
26	89	82	225	22	182		124	39
27	95	94	277	43	273		177	44
28	124	78	253	72	402		236	70
29	143	85	244	87	451		247	77
30	176	159	261	186	463		239	124
31	209	191	312	203	520		249	147
32	190	228	298	273	558		230	134
33	222	184	253	294	399		191	142
34	206	200	221	210	363		151	105
35	157	132	189	163	262		116	65
36	103	85	130	107	186		79	42
37	93	59	80	64	130		60	20
38	50	32	52	45	74		26	13
39	22	16	22	21	35		16	2
40	11	7	8	14	32		11	1
41	5	5	6	5	11		2	3
42	3	1	2	2	4		3	3
43				2	2			1
44					3			3
45				1	1			2
46				1				
47								
48				2				1
Total	2,042	1,814	3,713	1,886	4,713		2,419	1,089

1949/50								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18								
19								
20	1				20	3	16	6
21					30	3	32	14
22	5	7		1	19	5	19	22
23	9	8	7	7	37	4	24	10
24	17	15	11	9	78	20	52	32
25	27	27	18	11	115	29	109	33
26	31	44	37	46	168	48	161	60
27	40	57	51	55	373	88	249	71
28	48	93	50	93	328	109	227	126
29	50	116	61	105	354	88	225	109
30	59	200	74	158	437	89	290	137
31	61	175	81	172	411	79	251	141
32	55	190	94	185	370	64	183	119
33	53	150	92	122	319	74	157	112
34	35	142	98	135	262	56	119	100
35	27	95	74	72	206	43	84	80
36	24	73	49	55	139	31	62	59
37	9	48	44	36	89	20	38	38
38	2	22	22	24	56	9	17	31
39	2	11	13	12	19	8	12	11
40	1	8	5	5	5	7	8	11
41		1	6	4	6	2		7
42		1	2	2		2	1	4
43		1			1			
44					1			
45								
46								
47						1		
48								
Total	556	1,484	889	1,309	3,843	882	2,336	1,333

1950/51								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18					1	1		
19						2		
20	1	4	5	1	13	3		
21	7	68	36	12	17	6	6	
22	14	110	108	25	43	7	8	2
23	13	106	221	45	138	18	24	6
24	8	63	187	83	207	23	42	12
25	11	65	123	75	215	30	62	12
26	24	93	104	54	193	19	68	20
27	33	99	104	73	220	22	61	13
28	34	156	148	84	260	23	106	18
29	57	183	141	118	374	35	121	28
30	41	161	158	123	434	32	133	28
31	42	169	151	151	491	42	143	40
32	31	148	136	105	511	34	132	44
33	46	133	112	79	412	24	113	52
34	42	122	148	88	409	25	107	49
35	25	117	107	51	315	15	67	39
36	10	82	70	28	237	6	51	44
37	4	58	55	27	175	5	29	9
38	5	38	31	18	132	2	25	8
39	3	26	25	12	93	3	12	3
40		16	8	15	73	4	11	2
41		4	9	2	41	1	1	
42		2	4	1	17		2	
43		3	1		10			1
44			1		5			1
45					4			
46								
47								
48								
Total	451	2,026	2,193	1,270	5,040	382	1,324	431

1951/52

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16							1	
17							1	
18	1						1	
19							1	
20	10		3				3	
21	39		25		7		5	1
22	85	2	65		21	1	18	13
23	100	7	103	9	52	3	40	8
24	68	22	178	30	103	9	76	24
25	56	37	175	31	130	24	169	52
26	59	34	188	36	156	35	202	54
27	36	37	178	38	187	40	216	65
28	43	45	184	45	208	57	205	49
29	34	45	150	49	199	34	205	46
30	42	52	169	38	213	50	198	56
31	51	64	174	31	218	45	179	42
32	49	56	181	35	239	55	167	59
33	44	49	151	38	192	36	171	73
34	45	59	185	21	164	33	147	60
35	35	43	117	28	142	33	121	60
36	28	27	89	23	99	21	108	63
37	14	31	75	9	87	14	82	31
38	9	12	52	12	61	11	43	25
39	6	6	22	5	38	5	19	11
40	4	1	20	3	36	6	14	8
41	2	3	7	1	16	2	10	3
42	1	2	4	1	8		3	2
43		1	1	1	8	1	1	
44				1	2			
45							1	
46								
47								
48								
Total	861	635	2,496	485	2,586	515	2,407	805

1952/53

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	St	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18								
19								
20		2						
21	7	8	2		1			
22	23	33	9		5		6	
23	34	40	46	10	38	2	4	
24	63	47	84	22	91	7	29	3
25	91	85	166	35	170	25	54	11
26	95	97	229	40	253	22	110	22
27	116	144	234	43	307	43	160	50
28	111	140	313	58	310	52	204	85
29	101	170	287	83	302	49	217	88
30	111	152	270	93	284	47	231	126
31	87	160	279	93	270	52	219	83
32	102	162	251	90	231	29	189	75
33	84	121	224	80	226	28	178	63
34	82	108	205	66	188	25	140	73
35	61	65	168	43	148	18	108	52
36	46	49	116	31	110	17	89	38
37	39	28	87	18	94	12	57	29
38	27	11	65	7	75	6	39	18
39	18	7	47	4	55	6	24	9
40	13	3	33	3	37	1	22	4
41	9	2	16	2	20	2	15	1
42	2	1	8		10	1	2	3
43		1			6		2	
44			2		3			
45		1			1			
46					1			
47								
48		1						
Total	1,322	1,638	3,141	821	3,236	444	2,099	833

1953/54								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18								
19								
20							1	
21	1	1					5	2
22	4	3	2	1	3		8	4
23	5	1	10	6	8		15	6
24	6	9	5	8	12		28	8
25	17	9	17	10	27		41	6
26	38	22	44	16	50		65	12
27	67	36	86	36	109		144	14
28	82	50	109	61	163		254	32
29	134	54	129	63	252		341	35
30	149	75	151	96	265		426	49
31	164	73	140	87	255		377	43
32	127	59	125	84	239		326	46
33	112	69	114	95	173		229	40
34	107	59	84	74	156		176	39
35	100	37	78	59	113		138	30
36	69	22	64	39	114		118	27
37	50	16	55	42	84		96	9
38	30	25	38	20	85		52	6
39	21	13	27	12	54		33	7
40	14	8	23	12	41		31	5
41	4	2	11		30		9	3
42	1	1	3	3	23		5	2
43	1	1		3	10		1	
44	2				6		2	
45	1				3			
46								
47								
48								
Total	1,306	645	1,315	827	2,275		2,921	425

1954/55

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18								
19								
20						1		
21	2	4		2	2	5	2	4
22	13	14	4	6	8	6	17	5
23	18	9	13	17	56	9	75	30
24	23	21	21	34	125	17	171	56
25	26	24	46	13	150	18	255	118
26	31	25	58	25	165	14	264	105
27	74	36	78	23	222	14	195	73
28	94	58	103	45	293	18	175	83
29	149	71	133	84	444	23	261	80
30	176	90	139	114	476	49	378	191
31	174	94	136	132	454	71	476	231
32	166	82	103	124	374	54	480	217
33	144	74	76	106	327	59	408	220
34	121	50	81	90	317	47	328	146
35	96	59	82	62	233	35	270	136
36	77	40	58	44	217	20	197	108
37	41	25	39	28	166	14	153	83
38	79	18	28	9	125	11	103	45
39	31	17	25	6	88	5	61	42
40	22	14	6	2	65	3	38	22
41	19	8	9	2	37		16	4
42	10	2	5		29		7	3
43	3	3	2		23		7	2
44					12		3	
45	2				5		2	
46	1				1		1	
47					1			
48								
Total	1,592	838	1,245	968	4,415	493	4,343	2,004

1955/56								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18								
19								
20	2	7			1			
21	5	16		3	10		2	5
22	10	48		12	12		4	16
23	43	75	8	41	46	4	17	56
24	69	91	21	78	91	18	59	123
25	119	202	29	138	148	31	91	190
26	197	243	55	187	188	41	170	258
27	188	223	59	197	248	52	205	234
28	122	161	64	226	312	62	195	254
29	108	139	70	169	270	56	205	210
30	143	217	85	220	375	70	237	239
31	159	272	93	256	344	51	241	206
32	174	337	91	340	310	29	242	197
33	157	320	104	322	278	39	218	225
34	158	252	94	301	214	35	171	161
35	165	166	55	202	154	30	136	160
36	131	124	49	146	137	28	103	128
37	118	86	33	105	112	12	73	102
38	82	59	22	49	105	4	54	61
39	59	21	16	29	64	8	25	29
40	42	15	15	13	49	6	18	25
41	7	5	6	9	38	1	13	7
42	13	5	3	1	24	1	4	2
43	3	1	3		17	2	1	1
44	1	1	1		11	2		
45	1				2			
46								
47								
48								
Total	2,276	3,086	976	3,044	3,560	582	2,484	2,894

1956/57								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18	1							
19	1							
20								
21		3		1	1		1	
22	3	29	1	4	5	2		1
23	10	67	12	37	19	13	1	1
24	18	104	41	49	53	16	22	13
25	35	181	41	68	96	33	63	22
26	44	253	54	116	131	42	122	63
27	61	321	79	128	173	65	209	82
28	64	318	83	142	237	49	307	73
29	53	286	87	114	275	64	272	84
30	94	308	113	159	294	50	329	82
31	59	268	86	137	220	29	209	67
32	65	319	89	130	166	25	186	73
33	71	263	64	129	157	19	186	84
34	77	248	49	130	100	26	168	72
35	69	221	63	106	85	12	159	76
36	72	149	45	95	77	3	142	40
37	50	109	24	65	50	5	84	28
38	50	67	25	37	31	1	54	15
39	30	43	12	24	23	1	31	13
40	17	23	15	16	10	1	22	4
41	5	9	5	6	6		14	4
42	5	6	7	3	5		2	1
43	2	2		3			1	1
44	1	1			2			
45							1	
46	1	1						
47								
48								
Total	958	3,599	995	1,699	2,216	456	2,585	899

1957/58								
cm.	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
15								
16								
17								
18								
19								
20								
21	3	1	2			1		3
22	1	7	3	1	3		1	3
23	6	17	2	1	10	14	4	4
24	20	23	13	14	14	10	15	7
25	38	50	11	19	18	29	43	18
26	67	116	24	21	24	28	44	19
27	82	205	35	52	51	52	58	30
28	109	223	52	108	81	109	86	55
29	111	211	66	137	157	152	139	110
30	91	229	65	194	182	171	181	132
31	61	166	47	163	177	126	189	127
32	57	177	54	146	157	105	183	122
33	55	147	47	150	144	77	145	109
34	67	117	38	131	136	69	121	84
35	65	93	29	111	117	71	109	98
36	53	73	31	85	89	47	95	70
37	36	52	29	53	88	37	80	50
38	21	37	14	45	65	22	56	27
39	10	22	11	22	48	7	32	19
40	6	11	6	13	25	8	23	9
41	6	7	2	8	13	2	9	6
42	1	4	1	3	12	3	8	2
43	1	3		1	3		4	1
44		1			2	1		1
45				1	2			
46	1							
47								
48								
Total	968	1,992	582	1,479	1,618	1,141	1,625	1,106

TABLE D: MARKET MEASUREMENTS OF MORWONG CAUGHT BY BOATS
OTHER THAN STEAM TRAWLERS, 1958/59 TO 1966/67

cm	1958/59				1959/60			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
15								
16								
17								
18								
19								
20	3	1		1		2	6	1
21	13	4	1		5	19	9	5
22	24	14	2	9	21	27	27	15
23	34	21	11	12	31	46	51	29
24	42	55	13	30	56	66	64	44
25	68	52	36	77	79	81	80	78
26	108	57	42	87	107	92	93	84
27	169	66	46	103	144	104	103	72
28	182	100	79	156	192	143	113	87
29	215	126	98	170	178	138	161	100
30	366	137	121	252	296	179	196	126
31	331	125	147	239	294	209	233	145
32	270	141	132	263	348	229	210	182
33	218	106	136	254	256	213	218	178
34	183	92	111	192	222	164	165	151
35	122	74	76	149	167	140	109	136
36	106	58	85	133	142	104	80	134
37	58	42	55	103	77	65	62	87
38	39	24	43	66	59	44	34	62
39	29	18	32	48	40	32	17	30
40	16	17	14	15	22	18	12	19
41	15	7	4	15	11	13	9	13
42	3	3	6	9	4	1	3	7
43	1	2	1	3	8	1	2	2
44	1		1	1		1		3
45								1
46								
47								
48								
Total	2,616	1,342	1,292	2,387	2,759	2,131	2,057	1,791

cm	1960/61				1961/62			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
15								
16								
17								
18								
19								
20	3	1						
21	6	5	1	3	4	1		
22	48	9	4	17	19	3	6	4
23	84	43	7	38	69	9	17	4
24	127	81	10	65	158	22	32	12
25	151	95	19	105	201	51	59	30
26	187	119	30	130	262	70	125	62
27	267	178	35	132	288	94	182	113
28	264	202	40	158	280	103	169	153
29	235	205	40	188	274	98	158	185
30	308	261	56	278	406	125	176	199
31	294	284	64	226	394	196	198	193
32	304	304	62	249	414	188	253	222
33	285	303	116	227	389	181	236	211
34	282	310	87	230	402	205	222	264
35	257	238	76	194	346	161	182	204
36	182	219	78	154	243	125	193	177
37	119	143	53	127	162	103	117	132
38	72	102	34	86	102	81	100	93
39	38	67	9	47	55	38	47	75
40	23	51	12	39	40	26	25	42
41	13	13	8	20	20	15	19	26
42	10	10	3	8	8	10	9	14
43		5	3	3	4	9	8	17
44	1	1		4	4	1	3	7
45		2		1	1		1	3
46	1			1	1			
47								
48								
Total	3,561	3,251	847	2,730	4,546	1,915	2,537	2,442

cm	1962/63				1963/64			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
15						2		
16						2		
17						3		
18						3	1	
19						3	1	
20			1			8		1
21	5	4	4		2	8	5	1
22	17	13	12	7	6	47	24	10
23	40	35	13	17	39	73	49	20
24	47	62	29	62	86	151	77	75
25	80	79	43	73	188	240	114	110
26	179	143	56	97	272	416	158	172
27	305	250	104	168	273	419	183	294
28	398	419	176	263	303	504	340	448
29	494	553	230	381	416	575	395	501
30	512	571	309	399	468	652	498	581
31	410	548	267	368	456	645	569	555
32	424	551	294	359	447	610	574	601
33	422	532	287	371	374	551	642	548
34	419	473	293	283	331	459	548	427
35	343	463	229	239	323	369	436	350
36	251	354	185	178	218	307	320	252
37	195	271	130	140	146	285	212	200
38	129	147	92	84	98	188	122	110
39	70	92	43	40	73	117	81	71
40	44	67	27	36	52	67	50	43
41	24	35	12	15	35	53	20	25
42	10	18	8	10	13	35	7	16
43	4	8	5	4	5	5	4	8
44	2	2	2	3	4	7	3	
45	1	1	1		2			2
46		3	3		1			1
47								
48								
Total	4,825	5,694	2,855	3,597	4,631	6,802	5,433	5,422

cm	1964/65				1965/66			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
15								
16								
17								
18								
19								
20			2					
21		1	1					
22	5	12	1		9	9		
23	20	17	7	4	14	25	4	6
24	77	83	15	9	38	41	16	17
25	173	161	29	28	57	70	27	35
26	303	302	107	94	111	88	48	68
27	451	508	163	223	215	159	72	104
28	562	654	265	339	333	248	120	149
29	631	772	374	515	459	369	176	279
30	609	832	476	553	529	387	261	365
31	630	803	477	628	553	409	310	510
32	531	752	526	612	461	450	305	489
33	512	711	469	499	427	391	293	459
34	397	587	399	326	293	317	267	369
35	342	515	282	285	205	237	233	290
36	303	438	195	216	181	150	181	193
37	197	271	125	131	134	123	143	113
38	123	170	74	67	90	67	111	91
39	78	115	42	57	46	37	64	35
40	32	75	22	22	35	23	50	23
41	20	35	7	24	15	12	19	18
42	26	20	8	8	6	16	16	7
43	8	8	1	9	4	10	2	6
44	4	8	1	3	4	4	4	1
45	1	2				4		
46	2							
47						1		
48								
Total	6,037	7,852	4,068	4,652	4,219	3,647	2,722	3,627

1966/67				
cm	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
15				
16				
17				
18				
19				
20				
21	3	8	1	
22	18	36	7	
23	47	94	34	2
24	69	127	63	7
25	90	175	94	28
26	224	246	85	47
27	429	383	134	75
28	502	543	188	110
29	591	614	296	165
30	731	709	425	216
31	797	643	446	245
32	763	717	532	253
33	660	644	453	245
34	510	507	329	218
35	373	367	247	171
36	247	262	181	123
37	160	181	120	96
38	103	119	72	64
39	54	67	47	31
40	28	49	36	30
41	23	23	16	15
42	8	11	10	8
43	5	9	3	3
44	2	4	2	2
45		4	1	1
46				2
47			1	
48				
Total	6,437	6,542	3,823	2,157

TABLE E: MARKET MEASUREMENTS OF REDFISH CAUGHT BY STEAM TRAWLERS (ST) AND OTHER BOATS (OB), 1947/48 TO 1958/59

1947/48								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12							1	
13								
14								
15								
16							3	
17	6		1				10	
18	10			1			24	1
19	19	4	10	1	2		73	1
20	76	7	81	14	8		178	6
21	159	32	185	42	61		313	27
22	310	57	382	31	199		506	34
23	449	60	492	17	275		644	55
24	566	43	446	5	345		660	42
25	520	21	354	2	388		658	24
26	418	18	247	1	359		597	12
27	263	3	186	1	306		544	13
28	161	2	117		228		355	1
29	55	2	57		130		227	2
30	23		45		110		115	
31	7		26		73		49	
32	2		11		40		13	
33	1		3		27		4	
34			1		15		1	
35					3		1	
36					1			
37								
Total	3,045	249	2,644	115	2,570		4,976	218

1948/49								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14							4	
15							5	
16	1	1	1				14	
17	3		4	1	1		40	2
18	29	6	24	16	14		127	2
19	139	24	164	70	44		487	7
20	513	42	732	225	144		960	18
21	1,457	53	1,834	583	404		1,869	42
22	2,588	60	2,515	694	598		2,106	42
23	3,195	65	2,161	466	567		1,652	25
24	2,895	50	1,627	205	439		1,242	7
25	1,948	40	974	81	280		739	3
26	1,114	32	508	27	179		484	1
27	554	30	227	8	105		355	
28	253	11	79	1	49		202	1
29	143	6	34		31		78	
30	43	1	10		19		38	
31	23	2	2		7		19	
32	3				3		6	
33	3				1		6	
34								
35							1	
36								
37								
Total	14,904	423	10,896	2,377	2,885		10,434	149

1949/50

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14			1		1			
15		1	5				2	
16	7	2	10		6		26	1
17	35	3	62	3	12		38	5
18	71	6	159	3	32		118	16
19	183	13	569	33	79	1	274	12
20	518	37	1,588	122	257	3	734	28
21	1,353	61	3,200	384	632	15	1,524	62
22	2,314	70	4,035	527	780	28	2,016	114
23	2,482	64	3,163	454	656	33	1,722	139
24	1,936	35	2,042	255	491	33	1,277	143
25	1,142	25	850	102	253	11	889	96
26	569	16	331	44	135	4	594	52
27	380	9	131	21	87	1	376	39
28	212	3	54	10	65		232	12
29	109	1	17	3	45		114	6
30	40		2		21		41	1
31	18		1		8		16	1
32	5		1		6		2	
33	2				6		4	
34	1						2	
35								
36								
37								
Total	11,377	346	16,221	1,961	3,572	129	10,001	727

1950/51

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14				1				1
15	4		1	1			2	2
16	5	1	3	3	2		19	7
17	17	13	8	14	5		46	12
18	81	32	16	49	16		122	36
19	198	45	61	94	54		211	77
20	386	95	171	363	53		355	90
21	790	217	595	1,048	84		391	100
22	1,126	261	1,099	1,251	94		379	144
23	1,218	172	1,096	802	83		385	185
24	1,072	77	981	359	62		451	220
25	717	21	511	99	55		446	151
26	346	10	228	37	18		436	85
27	239	2	120	41	6		384	44
28	115	4	74	1	4		275	19
29	54		46		1		185	3
30	13	1	22				99	1
31	8		14				51	
32	1		5				24	
33			1				6	
34	1		1				1	
35							1	
36								
37								
Total	6,391	951	5,053	4,163	537		4,269	1,177

1951/52								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12			1					
13			1					
14	2							
15	2		1		2			
16	4				2		3	
17	36		6	10	11		19	3
18	90		8	20	40		76	4
19	109		25	38	81	3	141	22
20	168		55	80	109	14	279	66
21	242	2	80	82	136	23	314	115
22	212	4	220	101	158	21	384	135
23	219		453	153	155	18	551	135
24	170	2	588	127	123	21	658	118
25	122		489	68	71	9	668	52
26	117		258	24	46	6	583	28
27	104		135	5	39	3	518	7
28	78		66	1	20		394	4
29	41		50		10	1	241	
30	23		29		10		130	
31	10		18		10		67	
32	1		6		4		37	2
33			4		6		11	
34			4					
35								
36								
37								
Total	1,750	8	2,497	709	1,033	119	5,074	691

1952/53

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14								
15								
16								
17	6		1					
18	17	3	10	14		1	6	
19	56	9	51	28	3		71	2
20	126	63	143	107	10	5	254	7
21	172	176	279	271	18	8	496	25
22	246	286	359	463	20	5	610	55
23	298	287	439	496	25	5	631	50
24	277	214	391	398	25	2	540	34
25	203	103	224	173	19	2	324	32
26	106	31	84	79	13		228	15
27	87	31	42	20	8	1	150	10
28	54	7	16	7	14	2	120	3
29	21	3	6	1	2		80	2
30	15	2		2	6	1	48	2
31	6	2			7		17	1
32	3				2		4	1
33	1				1		2	
34							1	
35								1
36								
37								
Total	1,694	1,217	2,045	2,059	173	32	3,582	239

1953/54

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14								
15								
16								
17	1							
18	14		2	1				
19	70	5	11	17			4	
20	253	33	58	64	2	4	71	9
21	578	47	176	174	5	19	223	38
22	830	87	284	236	15	38	479	65
23	849	78	336	207	24	40	597	49
24	738	60	387	152	27	28	651	38
25	540	14	341	91	20	19	511	25
26	280	7	202	46	14	6	431	23
27	118	2	158	24	11	1	320	3
28	68	2	79	8	6	2	253	7
29	24		36	3	6	1	138	4
30	9		28	1	3		83	3
31	9		10	1	2		49	2
32			15		3		20	
33			8				6	
34			8				5	
35			3				1	
36			3					
37								
Total	4,381	335	2,145	1,025	138	158	3,842	266

1954/55

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14								
15								
16								
17							1	
18	4		2	1	3			3
19	22		1	3	4		10	2
20	85	1	24	16	8		56	28
21	302	2	115	56	34		142	45
22	513	5	267	85	100		277	70
23	664	14	349	123	131		429	75
24	716	10	325	102	148		573	54
25	463	7	302	54	107		468	40
26	316	6	191	28	81		434	8
27	200	6	112	24	78		330	5
28	97		67	7	48		238	2
29	73	1	38	1	37		166	4
30	27		12		26		105	
31	22		3		20		56	4
32	6		4		16		36	2
33	6				10		12	
34	1				6		1	
35					1			
36								
37								
Total	3,517	52	1,812	500	858		3,334	342

1955/56								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14								
15								
16							1	
17							3	
18	2						2	1
19	10	5	1	5		4	7	10
20	60	30	13	14	1	34	47	44
21	195	73	64	27	7	67	66	61
22	302	103	150	63	24	70	137	111
23	338	102	195	49	22	49	169	116
24	332	108	227	54	12	54	239	112
25	254	76	193	45	5	33	263	82
26	177	53	187	26	9	32	324	82
27	121	42	124	14	2	13	230	56
28	62	26	73	8	4	12	147	35
29	27	6	48	8	4	8	100	13
30	9	1	16	3	3	3	26	12
31	5	1	16	1			19	7
32	1		3		2		5	5
33	6		1		1		4	1
34							2	
35							2	
36								
37								
Total	1,901	626	1,311	317	96	379	1,793	748

1956/57

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14								
15								
16								
17					1	1		
18		1			3	2		1
19	1	6	1		18	12	1	11
20	17	53	3		27	18	23	66
21	51	143	6	3	32	29	56	215
22	119	200	9	5	14	19	151	378
23	161	180	24	10	20	11	224	353
24	159	145	36	12	6	6	268	361
25	145	100	35	9	2	4	253	235
26	112	44	23	7	2	2	221	145
27	78	16	7	6		1	115	75
28	44	9	10	1			88	28
29	19	2	2	1			43	16
30	9						17	4
31	2						3	1
32							2	
33								
34								
35								
36								
37								
Total	917	899	156	54	125	105	1,465	1,889

1957/58								
cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Apr. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14								
15								
16								
17								
18							2	
19	3	4	4	1			10	2
20	6	24	36	21		12	16	62
21	12	63	108	117		39	58	182
22	39	108	170	194		80	136	394
23	49	95	167	166		68	216	371
24	52	88	151	119		29	261	298
25	69	55	88	67		14	222	223
26	50	36	76	38		5	188	182
27	17	9	44	23		3	132	79
28	14	6	30	4		1	74	34
29	12	2	23	4			46	15
30	9	2	5	2			24	5
31	3	1	3				10	
32	2		2				4	1
33	3							
34			1					
35								
36								
37								
Total	340	493	908	756		251	1,399	1,848

1958/59

cm	Jul. - Sep.		Oct. - Dec.		Jan. - Mar.		Mar. - Jun.	
	ST	OB	ST	OB	ST	OB	ST	OB
12								
13								
14								
15								
16								
17								
18		1		1		2		
19		13		4		11		1
20	7	55		20		20		3
21	77	112		52		27		25
22	280	294		129		21		89
23	455	282	1	133		16		143
24	426	188	5	104		18		172
25	324	118	5	56		8		148
26	213	69	4	42		12		122
27	126	35	2	32		8		79
28	70	25	2	30		13		59
29	55	11		16		4		23
30	22	7		5		8		9
31	9	3		3		3		7
32	5			3		3		
33	1					1		
34	1					4		
35								
36								
37								
Total	2,071	1,213	19	630		179		880

TABLE F: MARKET MEASUREMENTS OF REDFISH CAUGHT BY BOATS
OTHER THAN STEAM TRAWLERS, 1959/60 TO 1966/67

cm	1959/60				1960/61			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
12								
13								
14								
15								
16								
17								
18								
19	4			4				
20	53	2	2	23		3		2
21	276	11	6	43	12	13	2	24
22	558	44	18	72	51	118	15	97
23	544	62	20	111	88	173	17	138
24	411	41	16	144	74	134	17	137
25	275	26	16	127	63	90	5	124
26	200	9	9	114	48	38	4	109
27	108	4	5	101	66	17	5	95
28	77	2	6	82	39	4		67
29	55		3	54	26	3	1	61
30	22			36	9	1		27
31	8		1	12	4	1		12
32	12		1	11				5
33	5			8				1
34	1							
35								
36								
37								
Total	2,609	201	103	942	480	595	66	899

cm	1961/62				1962/63			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
12								
13								
14								
15								
16								
17					3			
18					3			
19	10				5			
20	44	7		3	17			
21	77	39	3	24	52	4		28
22	212	106	20	69	81	48		97
23	240	128	27	117	93	84		211
24	245	77	49	144	90	118		237
25	160	31	49	152	66	94		203
26	99	23	46	125	55	55		146
27	81	14	15	79	52	23		137
28	62	12	9	56	30	12		57
29	35	10	8	27	15	4		52
30	23	6		29	5	4		34
31	4	3		10	3			13
32	1	5		7				7
33	1			6				2
34		1		2				1
35								
36								
37				1				
Total	1,294	462	226	851	570	446		1,225

cm	1963/64				1964/65			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
12								
13								
14								
15								
16								
17	5	2						
18	12	2						
19	38	12		2	5	1	5	1
20	35	10	2	7	5	4	16	10
21	40	19	8	30	65	26	30	39
22	33	60	26	78	158	112	53	81
23	49	93	31	116	237	163	54	105
24	36	107	62	149	252	155	51	156
25	40	84	45	124	177	96	60	140
26	41	87	25	118	111	89	43	129
27	18	47	17	86	90	56	41	112
28	27	29	6	56	42	27	24	63
29	10	7	1	39	13	23	18	20
30	6	4	1	15	4	7	11	11
31	2	2		13	2	1	6	5
32	3	2		1	1	2	6	1
33	1	1		1			3	
34							2	
35							2	
36								
37							1	
Total	396	568	224	835	1,162	762	426	873

cm	1965/66				1966/67			
	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.	Jul.- Sep.	Oct.- Dec.	Jan.- Mar.	Apr.- Jun.
12								
13								
14								
15								
16								
17								
18							1	
19	1			2			2	2
20	3	3		4	1		15	18
21	16	39		34	1	18	107	111
22	39	79		103	6	82	185	299
23	39	53		107	6	128	175	496
24	38	60		131	17	93	154	536
25	32	56		109	5	50	129	416
26	39	66		136	20	44	110	291
27	25	57		102	12	44	78	185
28	12	59		86	7	34	59	136
29	8	48		49	1	23	40	69
30	5	25		32	1	11	42	45
31	4	25		11	1	5	16	23
32	2	7		3		3	4	11
33	4	7		2		2	2	5
34		5					2	1
35	1	2				1		
36								
37							1	
Total	268	591		911	78	538	1,122	2,644