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**Technical Memorandum
GBRMPA-TM-4**

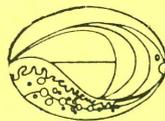


**Great Barrier Reef Marine Park Authority
Townsville, Queensland**

Technical Memorandum - GBRMPA-TM-4

**Amateur Fishing on the
Great Barrier Reef**

Wendy Craik



AUGUST, 1979

GREAT BARRIER REEF MARINE PARK AUTHORITY
TECHNICAL MEMORANDUM GBRMPA-TM-4
AMATEUR FISHING ON THE GREAT BARRIER REEF
WENDY CRAIK
SUMMARY

Analysis of catch records from deep sea amateur fishing clubs and charter boat operators using the Great Barrier Reef has confirmed frequently voiced comments on catches of demersal reef fishes. The results are preliminary and only apply to amateur fishing from charter boats, however the major findings showed that

- where reefs are a range of distances from shore, catches increase with increasing distance from port (e.g. Cairns, Innisfail);
- off Townsville, the same number of fish are being caught as 15 years ago, but the average fish size is smaller;
- off Innisfail, catches are smaller but the fish have got larger in the last five years;
- in the Capricorn-Bunker area, catches and average fish size have remained fairly steady over the last 20 years;
- many smaller fish are caught in the Capricorn-Bunker area but these figures change with latitude and by Cairns fewer but larger fish are caught;
- large red emperor and coral trout are caught less frequently;
- small boats catch more fish than larger boats.

Keywords: Great Barrier Reef Marine Park Authority, amateur fishing, demersal fish, Great Barrier Reef, catch and effort, charter boats.

Technical Memoranda are of a preliminary nature, representing the views of the author and do not necessarily represent the views of the Great Barrier Reef Marine Park Authority.

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1. Introduction

Although there is a large fishery for demersal reef fish on the Great Barrier Reef, and a percentage of the landings from the commercial fishery are documented by port of landing, there has been no attempt at analysis of catch and effort statistics to determine the state of the fishery. Although it is believed to be substantial, there has been no investigation of the amateur fishery whatsoever.

As fishing is probably the major activity on the Great Barrier Reef, the necessity of managing reef stocks so that it may continue to be a major reef activity is evident.

The Great Barrier Reef Marine Park Authority has been conducting a study of amateur fishing on the Great Barrier Reef to determine whether there have been any changes in catch over time, whether any particular reefs show particularly low catches and whether catches of certain species have changed. The study concentrated on demersal fishes such as coral trout, sweetlip, red emperor, spangled emperor etc., and was not concerned with pelagic species such as mackerel.

Records were collected from amateur fishing clubs and charter boat operators from Cairns to Maryborough who run fishing trips to the reef lasting from one to three days. These records made it possible, in most cases, to calculate catch per unit effort (number or weight of fish per person per day) and average fish size (kg per fish) for each trip. Both of these figures will provide an indication of the state of the fish population: if catch per unit effort and/or mean fish size show a steady decline the area may be progressing towards being overfished. The results should be interpreted as indicating relative differences in catch, rather than absolute values, since the nature of the records means there are many factors which have not been taken into account, e.g. hours spent fishing, changes in bait and gear, etc. In the accompanying figures, the range of values is indicated by

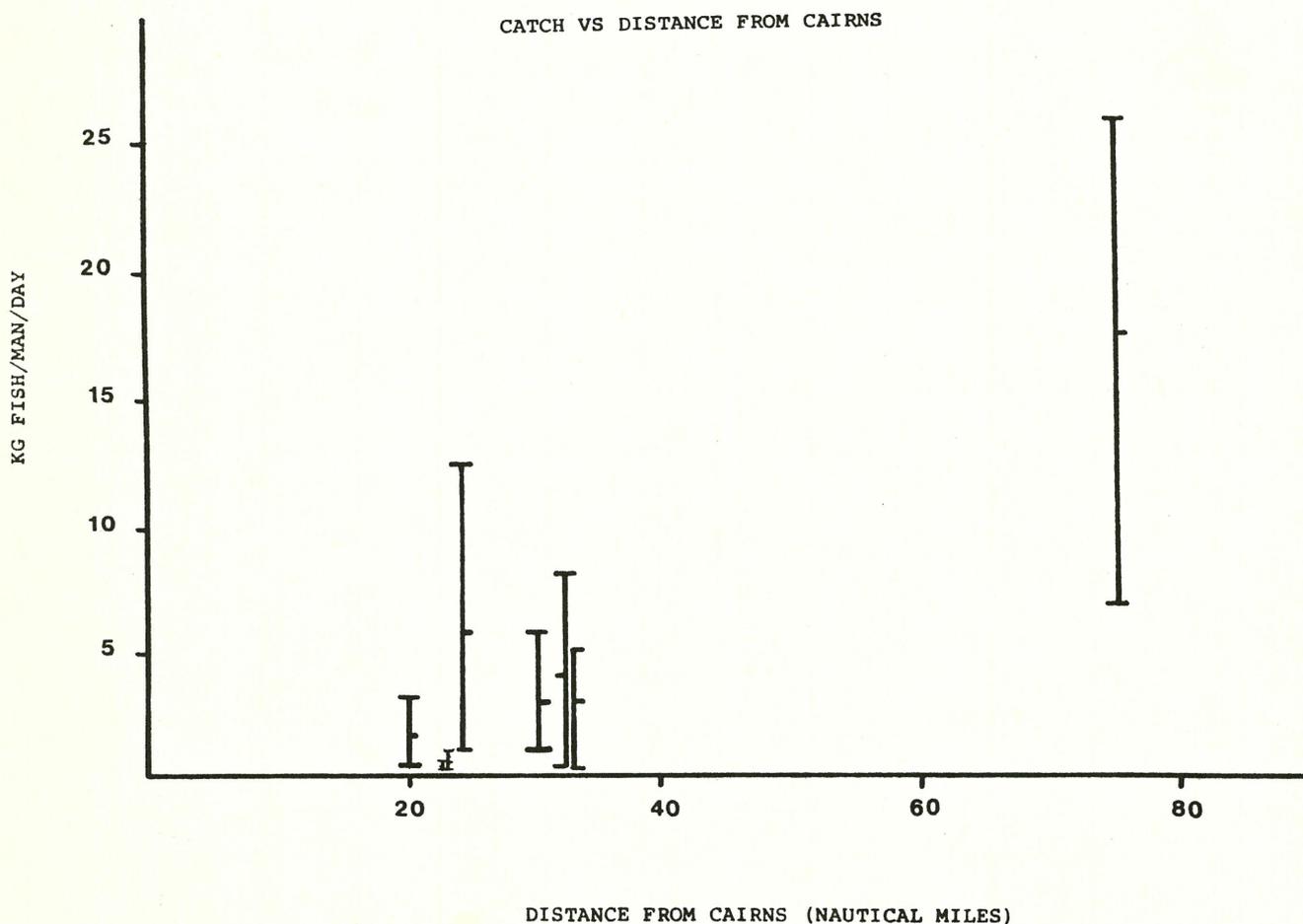
the vertical bar, with the horizontal bar giving the average value. In some cases the reliability of the average value is indicated by the solid bar around the average (two standard deviations).

2. Cairns Area

(Tongue, Norman, Saxon, Scott, Hastings, Miln, Flynn, Moore, Michaelmas and Ruby Reefs and Stag Patches.)

Only relatively recent information (1977-78) was available, but there is a striking relationship between the weight of the catch and the distance of the reef from Cairns so that while catches are relatively poor close to port, excellent catches can still be obtained at distant reefs (Figure 1).

Figure 1

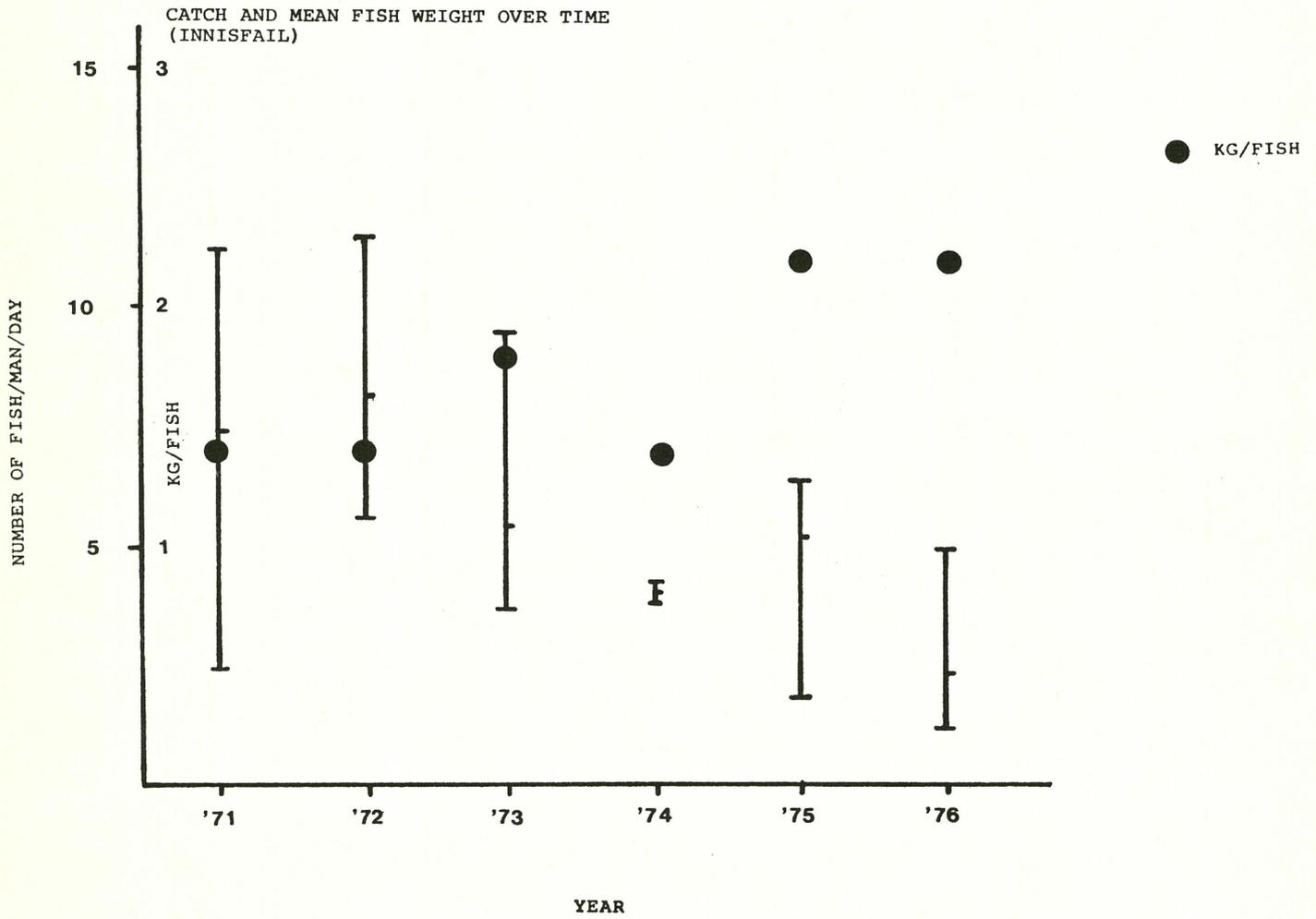


3. Innisfail Area

(Arthurs Patches, Feather, Howie, Gibson, Nathan, and Wardle Reefs, Noggin Passage).

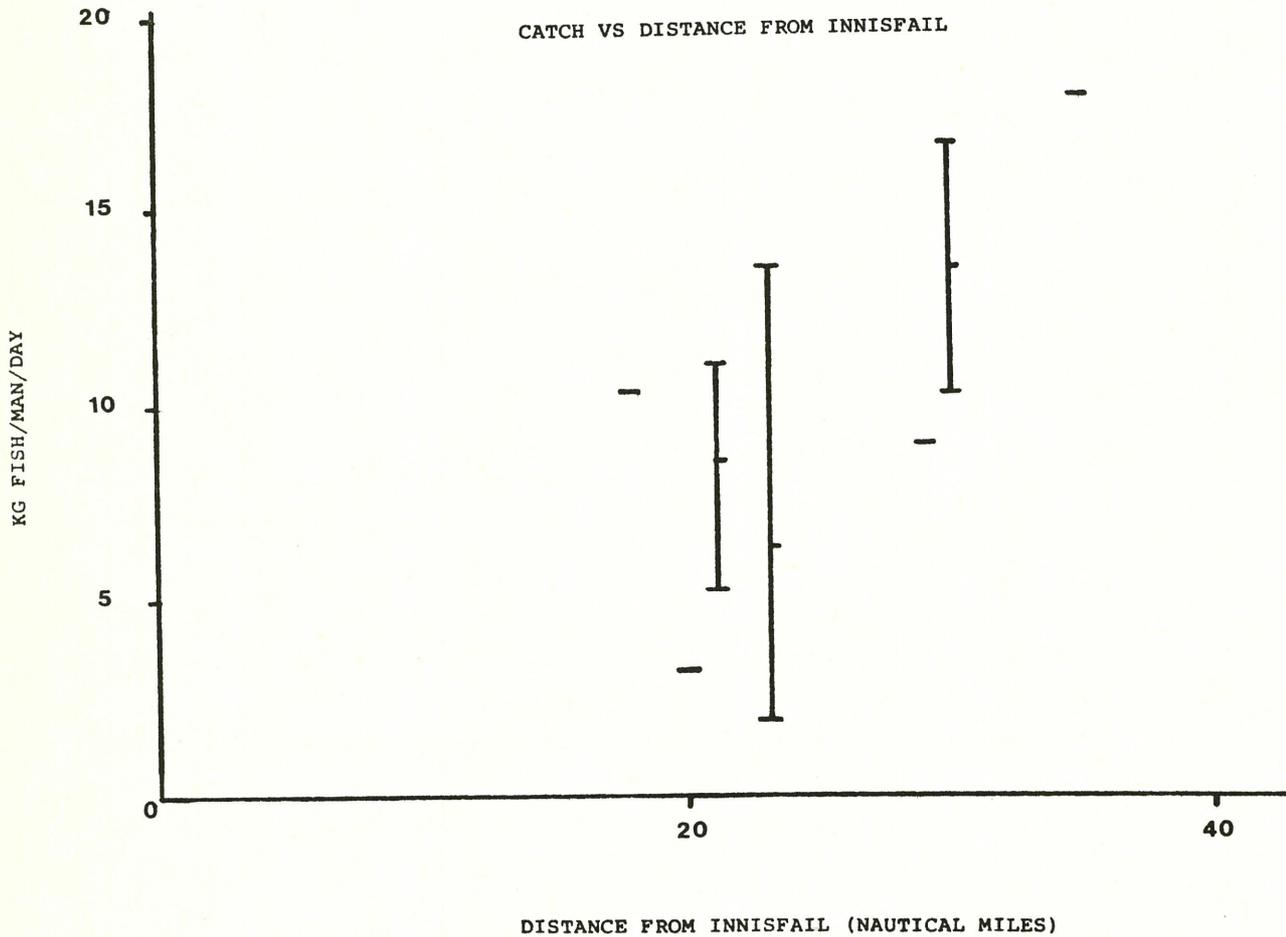
Records from 1971-1976 showed that catches have become smaller, but larger fish are being caught (Figure 2). This pattern was evident at many of the individual reefs.

Figure 2



As in the Cairns area, bigger catches and larger fish are caught at reefs further away from shore (Figure 3).

Figure 3

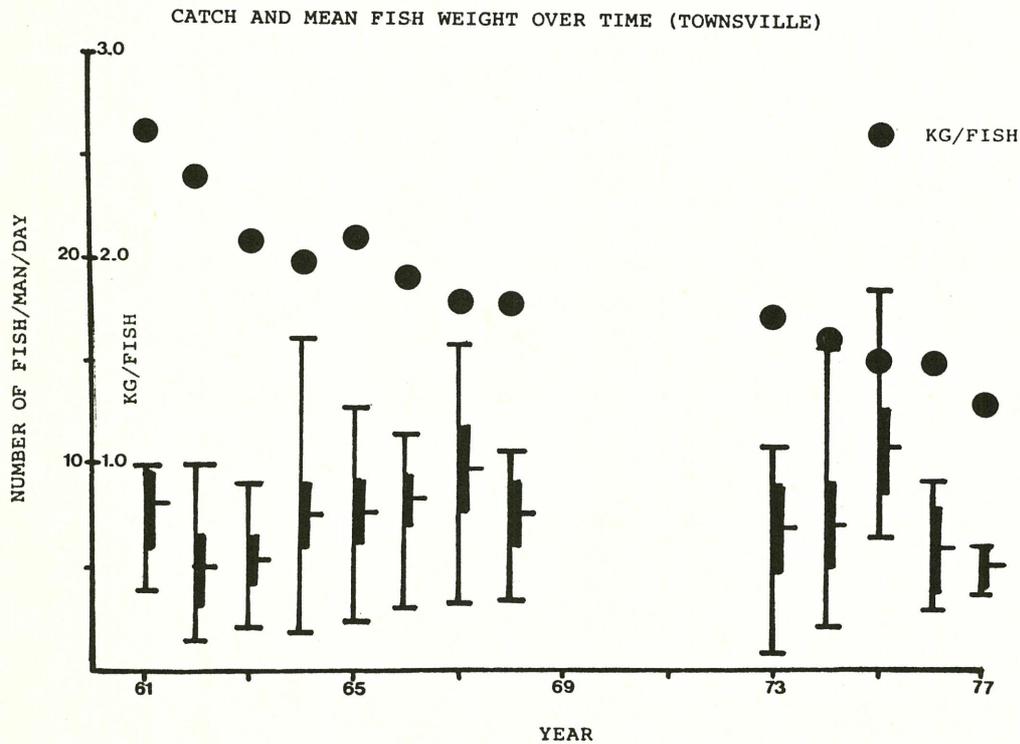


4. Townsville Area

(Loadstone, Watt, Keeper, Bramble, Rib, Lynch, Yankee, Broadhurst, Slashers, Kelso, Grubb, Hopkinsons, Halls, Centipede, Trunk and Davies Reefs).

Detailed records from 1961 to 1968 and from 1973 to 1978 were available and these showed that although fishermen are catching about the same number of fish as 15 years ago, the average fish size has been reduced by about 1 kg to about 1.5 kg in that time (Figure 4).

Figure 4



Generally there were similar findings at the individual reefs examined (for example, Broadhurst and Slashers Reefs). Most of the reefs for which records were available lie between 45 and 55 nautical miles from Townsville and it was difficult to find any relationship between catch and the distance of the reef from shore.

Looking at records of particular species caught at reefs off Townsville showed that coral trout catches increased in the early 1960's but have since declined somewhat. Sweetlip, which together with coral trout make up the majority of the catch, show variable catches, but there appears to be an overall increase in the last few years. Catches of red emperor, spangled emperor and cod have been consistently low over the last 15 years (Figures 5 and 6).

Figure 5

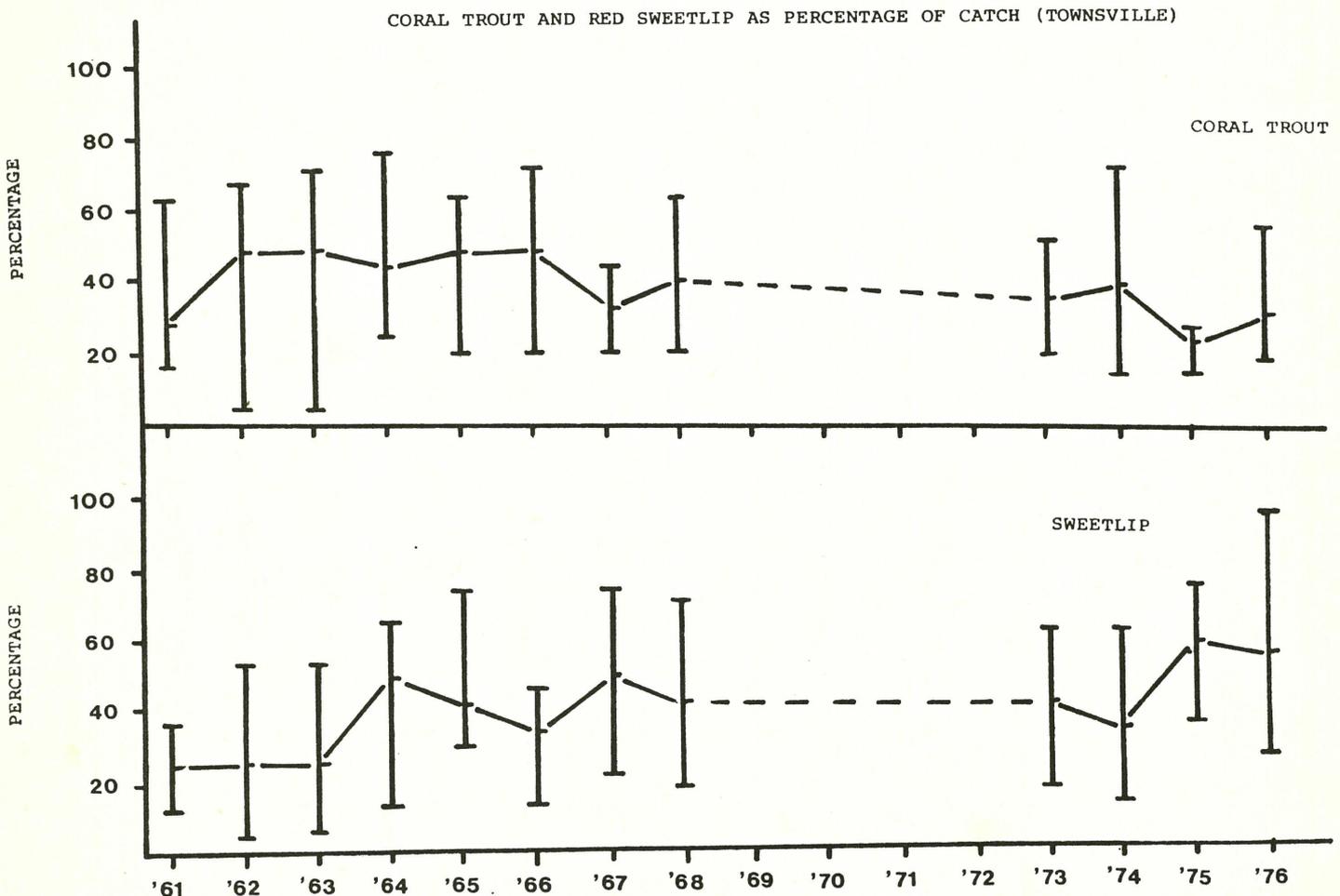
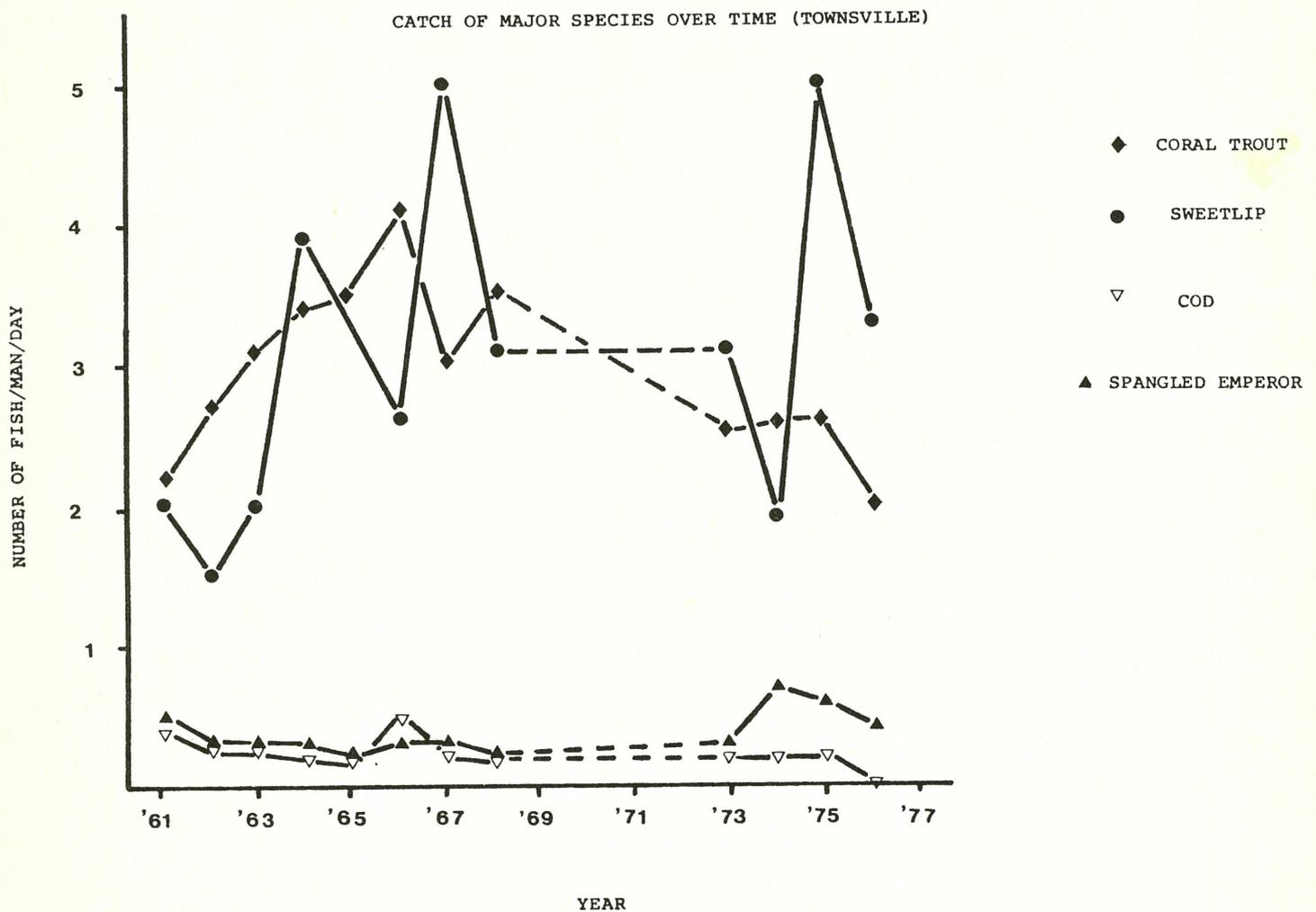


Figure 6



5. Mackay Area

(Chinaman, Scottish, Southampton, Coles, Creel, Bolton, Warlen, Stevens and Square Reefs among others).

Members of the Mackay deep sea fishing clubs fish from either a large cruiser or from small dories operating from the cruiser. Records from 1976 to 1979 were available. Comparing the catches from the small boats with the large boat, it is strikingly evident that the dories are much more successful in catching many more fish than the large boat (Figure 7). However although the men in dories catch

more fish, they catch fish of about the same size (Figure 7) and the main species of fish (coral trout and sweetlip) are caught by each group in similar proportions (Figure 8).

Figure 7

CATCH AND MEAN FISH WEIGHT OVER TIME (MACKAY)

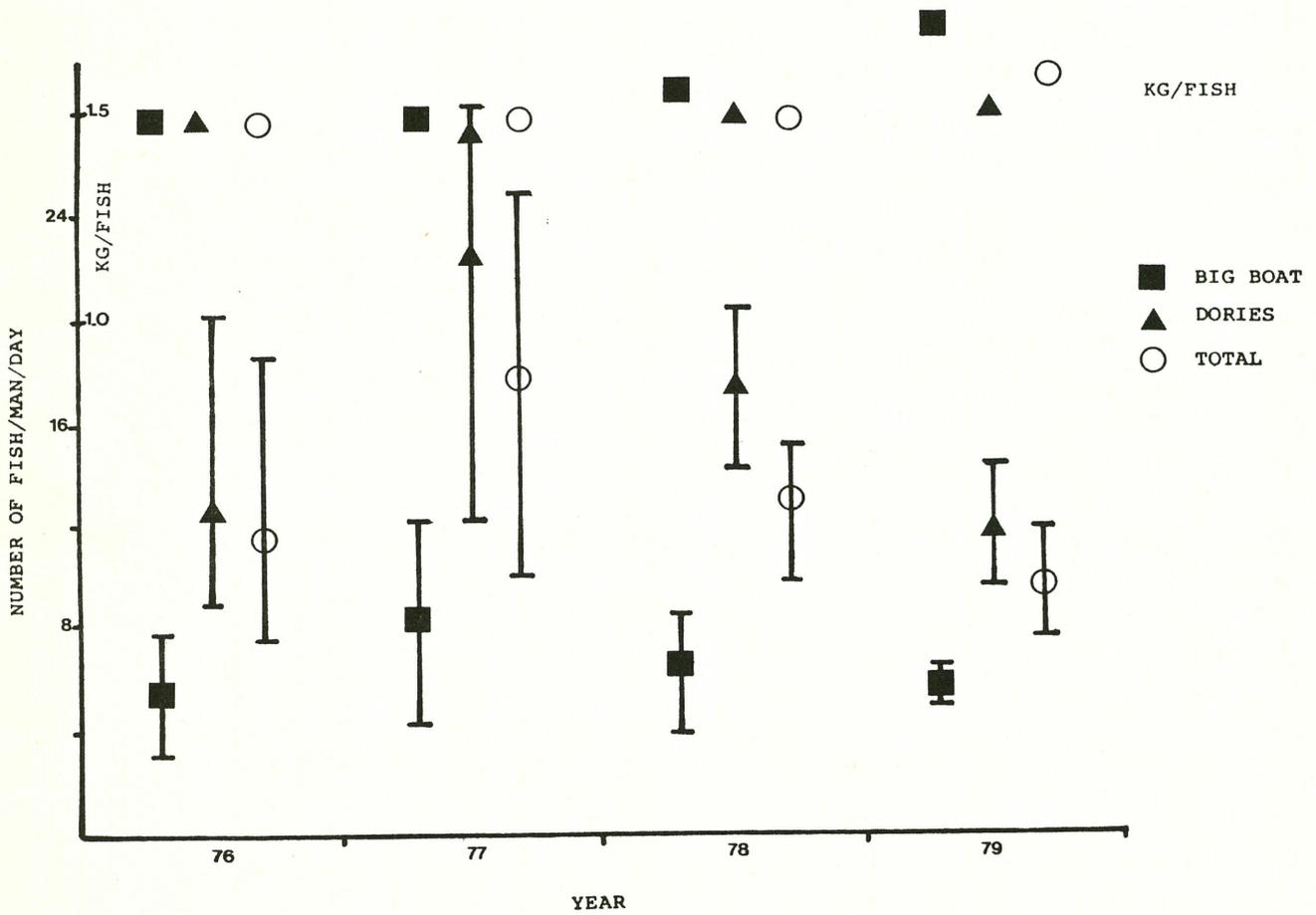
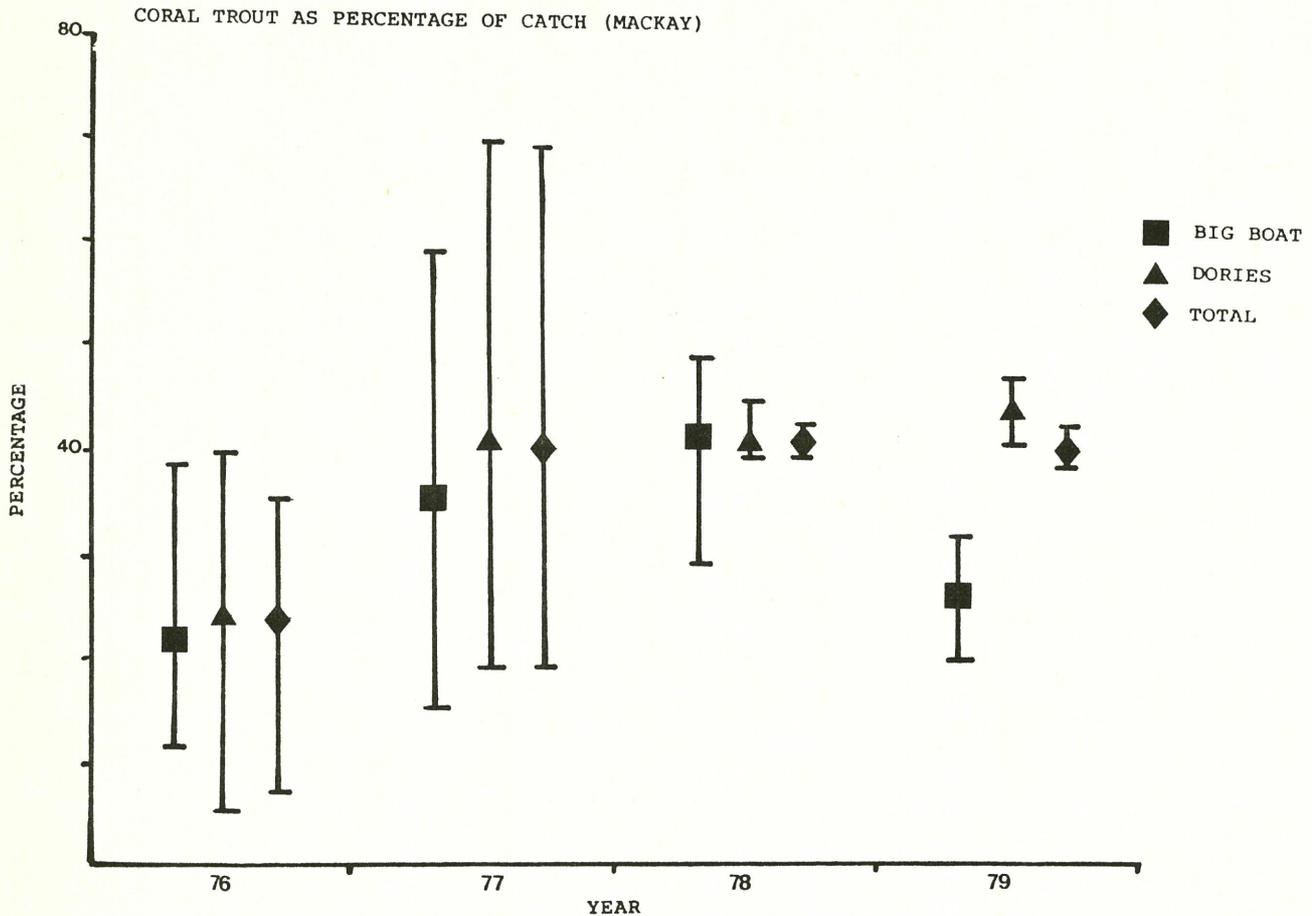


Figure 8



The clubs recognise that dory fishermen are more successful and their point scoring system and allowable fishing times reflect this.

6. Capricorn-Bunker and Lady Elliott Island Area

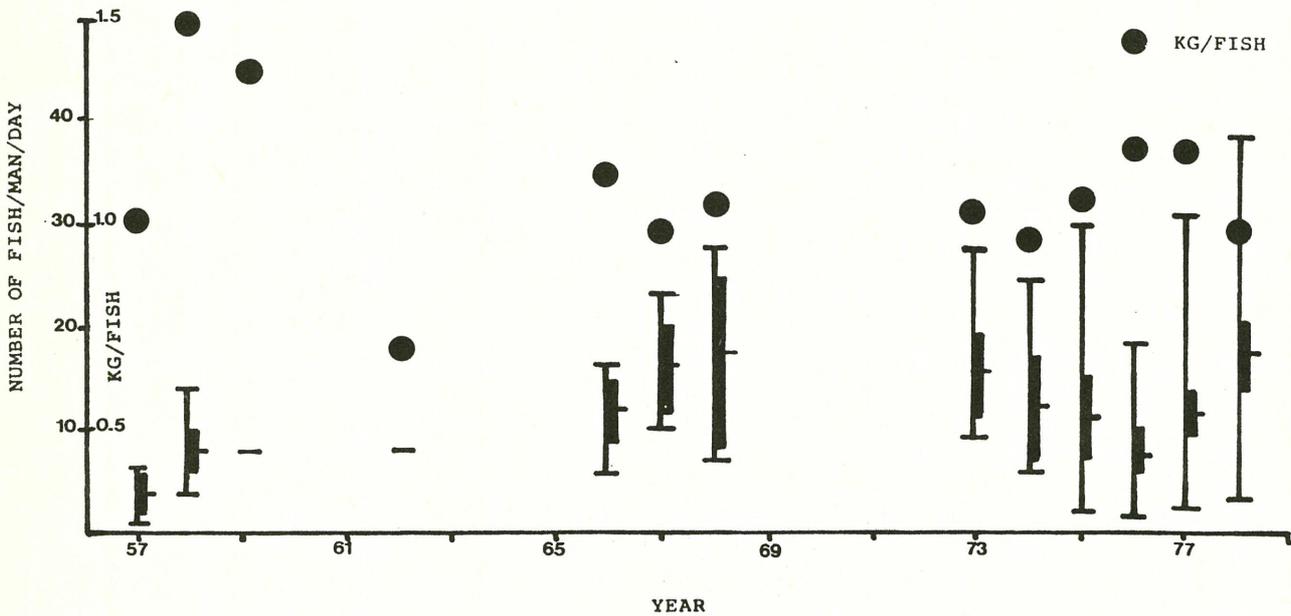
(Lady Elliot, Lady Musgrave and One Tree Reefs, Douglas Shoals, Llewellyn, Fairfax, Fitzroy, Broomfield, Wreck, Lamont, Wilson, Erskine and Masthead Reefs, Cabbage Patch, Wistari, North West, Boulton, Hoskyn, Tryon and New Reefs, Guthrie and Haberfield Shoals and Johnson Patches).

Records from 1957 to 1978 were available from a number of clubs, and although this area is probably one of the most heavily fished on the Great Barrier Reef, the records for all reefs combined showed that there has been no decrease in the last 20 years in catches or in the average fish size; there is some suggestion of an increase in catches in the late 1950's which has subsequently levelled off (Figure 9).

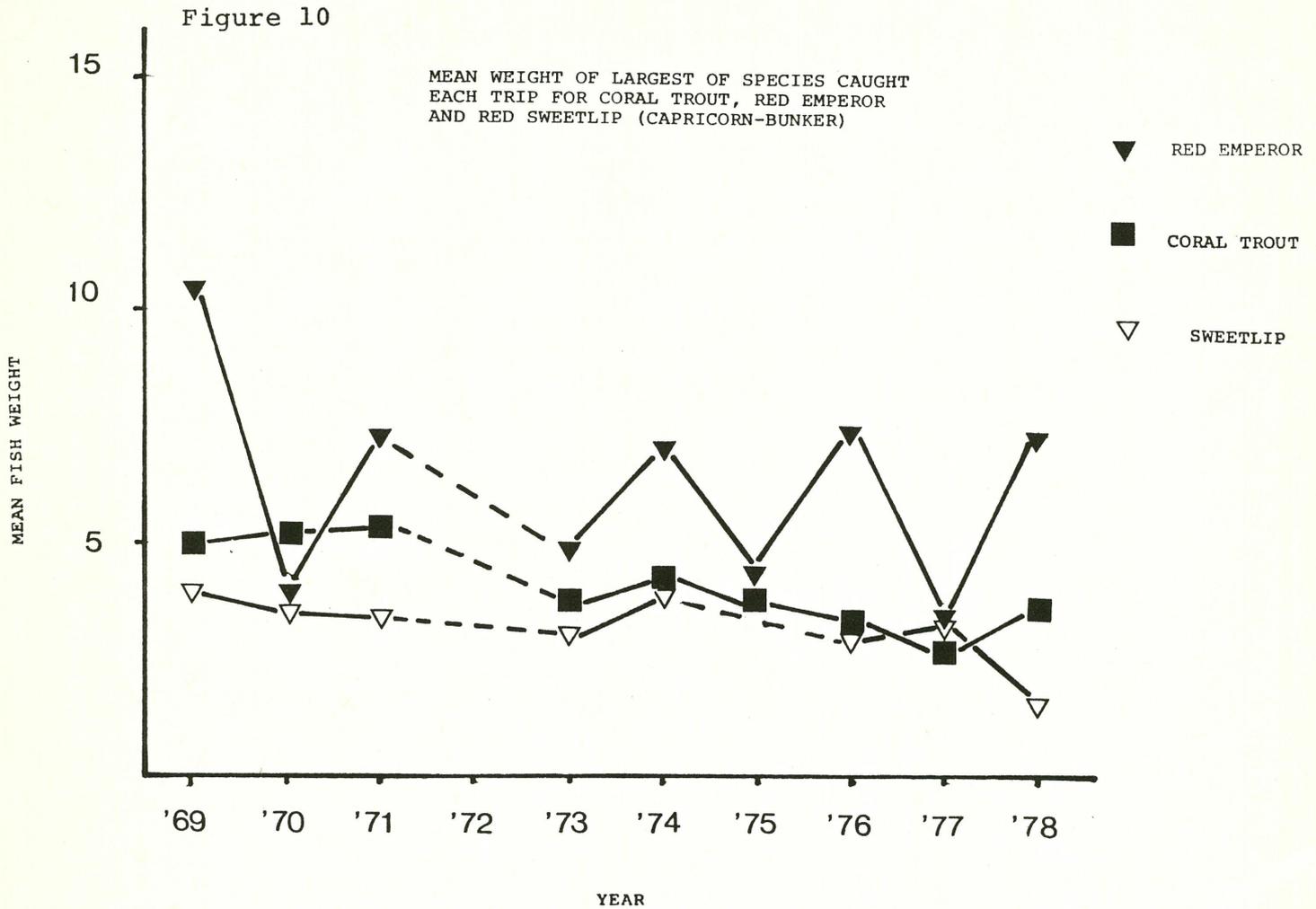
This was also true of catch records for individual reefs for which we have records (Lady Elliot, Lady Musgrave).

Figure 9

CATCH AND MEAN FISH WEIGHT OVER TIME (CAPRICORN-BUNKER)



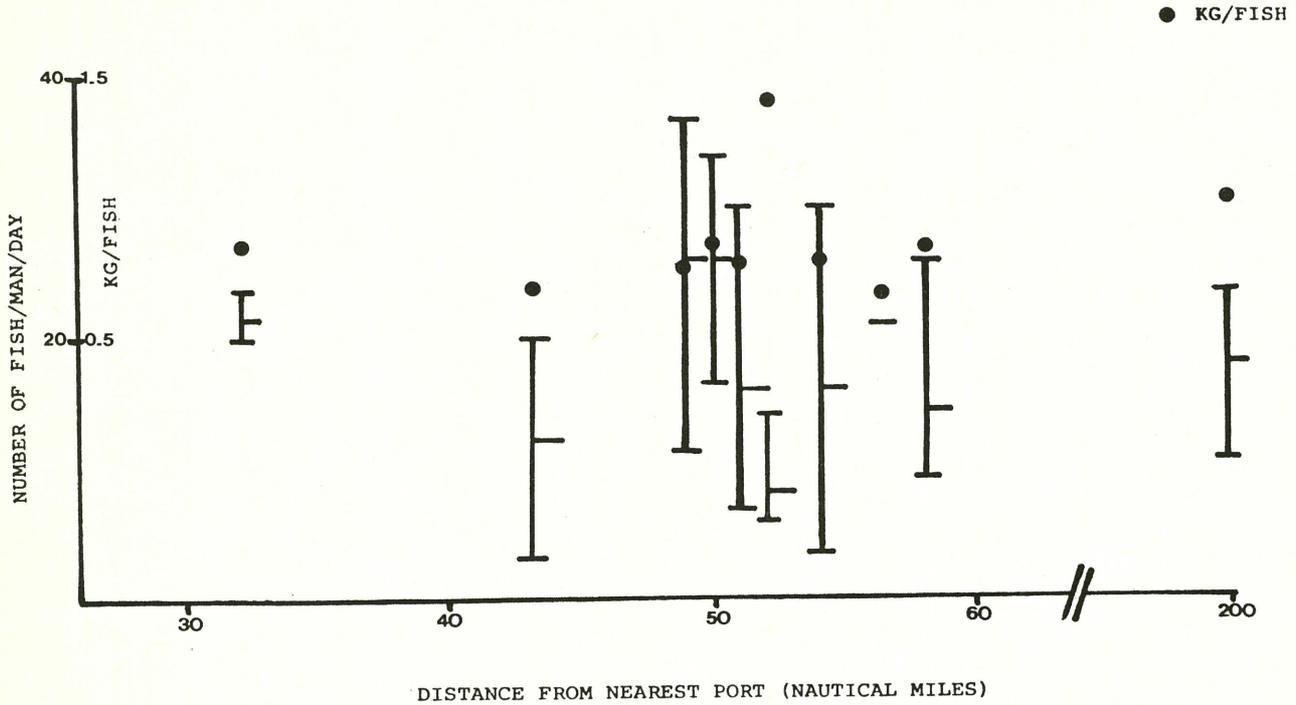
Looking at the percentage of fish over 4 kg and more recently 2.5 kg, supported the contention that average fish size has not changed greatly. However, although the average fish size may not have changed greatly there is some evidence that large coral trout, sweetlip and red emperor are caught less frequently, although catches of red emperor, in particular, fluctuate considerably (Figure 10).



Reefs in the Capricorn-Bunker area are accessible from a number of ports; and are not located a wide range of distances from the coast. These facts probably account for the lack of a clear relationship between catch and distance from the nearest port (Figure 11). Comparing reef fishing with fishing from the edge of the Continental Shelf (where, although the catch is different, it could be regarded as a comparatively unfished area) shows that the catch and average fish size do not differ greatly, although catches from the edge of the Continental Shelf do show greater fluctuations.

Figure 11

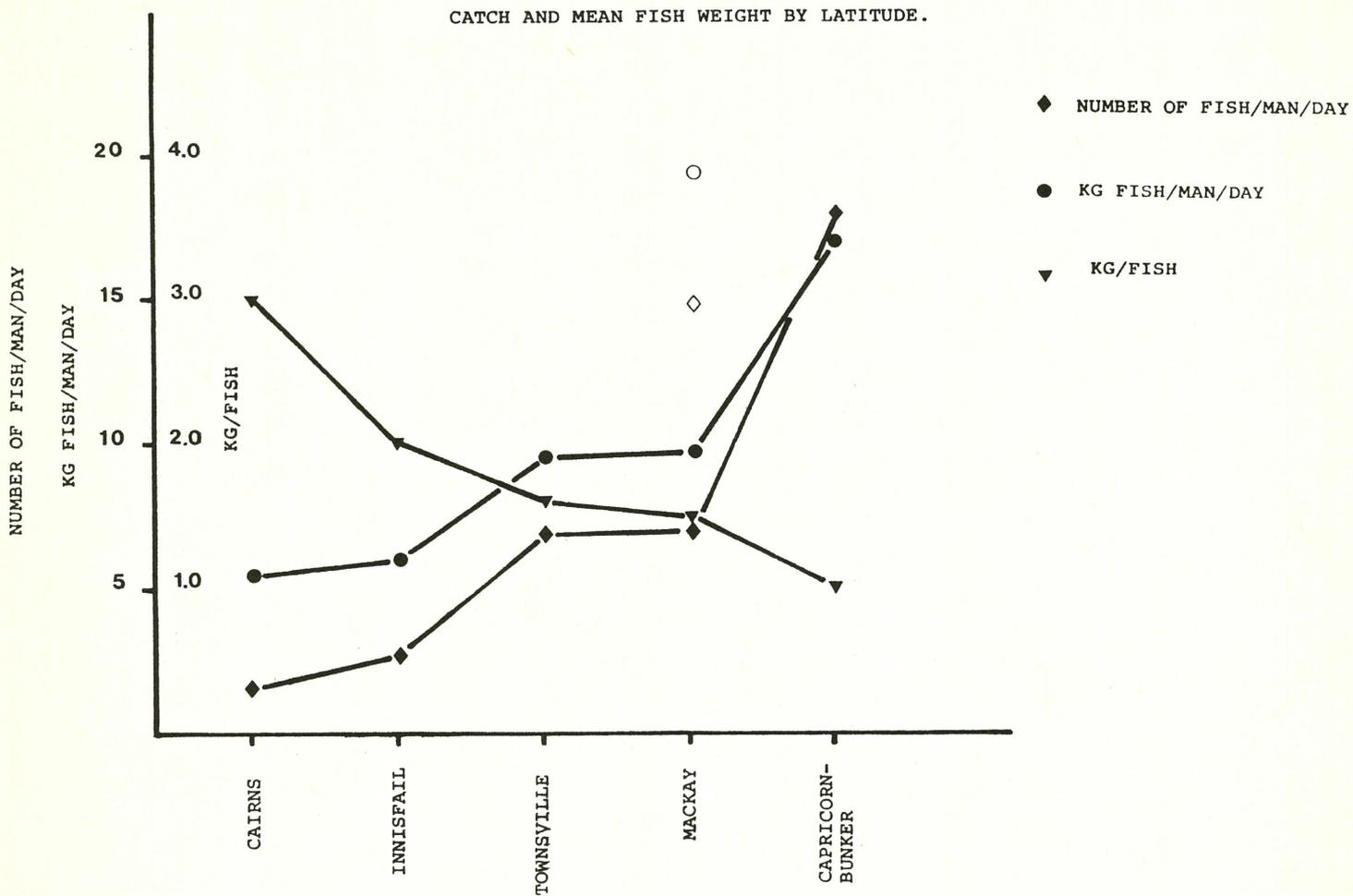
CATCH AND MEAN FISH WEIGHT vs DISTANCE FROM NEAREST PORT (CAPRICORN-BUNKER AND CONTINENTAL SHELF)



7. Changes in Catch with Latitude

Taking the average catch in numbers and weight and the average fish weight for each of the areas above for the most recent year we have records, shows that north to south from off Cairns to the Capricorn-Bunker area the catch changes from fewer (about 6) large (about 3 kg) fish to more (about 17) smaller (about 1 kg) fish (Figure 12). Whether this is a result of differences in the composition of the catch, species differences or other natural phenomena or whether it is the result of fishing is at this stage unknown.

Figure 12



The solid data points for Mackay are those from cruiser fishermen, while the empty points represent total values (based on catches of both cruiser and dory fishermen). Although the value for fish catch in numbers fits in with the general trend, the value for fish catch in weight is slightly higher than the value obtained for the Capricorn-Bunker area. This may be the result of the reefs from Mackay being further offshore than the reefs in the Capricorn-Bunker area; records from Cairns and Innisfail showed that catches further offshore are greater than inshore.

8. Discussion

Although most of the catch records are collected with a view to awarding annual prizes within each club rather than investigating the state of the fishery, the analysis of these records provided a surprising degree of confirmation of frequently voiced opinions on Reef fishing, e.g. catches at nearshore reefs are poor compared with offshore catches, fish are getting smaller, catches have declined from previous high catches in some areas, and large coral trout, red emperor are caught less frequently than in earlier years, etc. Unfortunately there was insufficient information to permit documentation of changes in catch composition of all areas. The only areas for which we have a time series of records of catch composition are for reefs off Townsville and Mackay, and although off Townsville there is some suggestion of a decline in the percentage of coral trout and an increase in the percentage of sweetlip in the catch, these are not so great as to suggest a major change in the catch as yet.

Although we have good records for individual reefs in some areas, e.g. off Townsville and the Capricorn-Bunker area, at this stage it is probably premature to conclude too much from individual reef records. However, in most cases, the results are similar to those for the combined reefs in each area. Future records should enable us to provide a more detailed analysis for individual reefs.

With the co-operation of the various clubs and the Queensland Amateur Fishing Council, the Authority is planning to continue to collect amateur deep sea fishing records chiefly through a record sheet, which serves both the clubs' record keeping purposes and assists the Authority in gathering information.

Additionally, the Authority is planning to start conducting surveys at boat launching ramps to determine whether catches from fishermen using small boats show a similar pattern to those from larger charter boats.

With continued collection of information on amateur fishing, the Authority hopes to obtain a more complete picture of Great Barrier Reef fishing.

9. Acknowledgements

The Great Barrier Reef Marine Park Authority would like to acknowledge the assistance of the following associations, clubs and individuals in this project.

Cairns and District Amateur Fishing Clubs Association;
Innisfail and District Amateur Fishing Clubs Association;
Townsville and District Amateur Fishing Clubs Association;
Mackay Deep Sea Fishing Clubs Association;
Ross Island Angling Club;
Barrier Reef Amateur Angling Club;
Townsville Amateur Angling Club;
Apex Amateur Deep Sea Angling Club;
Diggers Deep Sea Fishing Club;
Q.A.L. Deep Sea Fishing Club;
Sea Witches Deep Sea Fishing Club;
Sandy Cape Deep Sea Fishing Club;
Isis Deep Sea Fishing Club;
Maryborough Blue Water Club;
Ambassador Deep Sea Fishing Club;
Mackay Deep Sea Fishing Club;
Val West; Snow Baker; Ted Reilly; Nev Ridley; Jim Maconachie;
Les Gardner; Greg Plath; Lance Palmer; Mrs Nola Smith;
Sid Jensen; Kevin Plath; Al Mattsson; Mrs Gloria Chapman;
Bram Nicholson; Roy Human; Ron McNeilly; Gavin Peterson;
Allen Limpus.

APPENDIX I
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Queensland Amateur Fishing Council

Queensland Commercial Fishermens Organisation

Fish Workshop Attendees

Queensland Fisheries Service

Queensland National Parks & Wildlife Service

APPENDIX II

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Great Barrier Reef, amateur fishing, demersal fish' catch and effort, charter boats.

7. Descriptors

8. Classification Codes
