

**WESTERN TUNA AND BILLFISH FISHERY  
SIZE MONITORING PROGRAM 2004 - 05**

**PROJECT NO. R03/1406**

**FINAL REPORT**

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APPENDIX 1            Graphs of all WA data for 3 main species

## **Summary**

Scientifically robust size data from the West Coast longline fishery has been successfully collected for the three main species yellowfin tuna, bigeye tuna and broadbill swordfish. The size data are individual processed (gilled and gutted or trunked) weights supplemented by some length/processed weight pairs gathered from processing/packing factories at ports of unloading.

The individual weight data are accessed from processing company records and transferred to computerized data bases. These data bases are passed on to BRS and CSIRO as required. This has been completed. Individual length/processed weight pairs are forwarded to the agencies as a separate spreadsheet.

The number of records in the data base may be as many as 50 – 70% of the total landed number of fish of the three main species.

Data on by-catch species collected with the species catch data is stored in hard copy format for further use.

## **Introduction and Background**

The collection of size data from the WA longline fishery commenced in 2000 in Geraldton. The data collection systems in various formats have been continuous since then, even though formal contracts have not always been issued. This report covers the period 1<sup>st</sup> July 2004 to 30<sup>th</sup> June 2005.

Catch size data are essential for the assessment of fish stocks. Any stock assessment or stock analysis requires an accurate catch by size and therefore an age data base, over a long time series. Information on age structure is also necessary for following cohorts through the fishery and for creating indices of abundance by year classes. Length and/or individual weight data can be used to create a number at age matrix of landed fish.

The WA longline fishery is still in relative infancy and is already showing large fluctuations in catches. Scientifically robust size data from the early stages of fisheries can be extremely valuable to scientists. However as the fishery changes so should the data collection techniques and strategies. The fishery has suffered a severe downturn in late 2003 and since late 2004 only a few boats have been operating.

## **Objectives**

1. Continue the length and weight data collection system established at Geraldton in collaboration with the main processor. The CSIRO bigeye otolith collection program that was run in conjunction with the size monitoring program has now finished and size data collection must now be run independently.
2. Continue to investigate methods for identifying and accessing caches of individual size data available from the unloading port of Fremantle. This process began in 2002/3. Continue to explore and develop the possibilities of establishing a routine length/weight data gathering system there as and when landings dictate the necessity. Events of the last year suggest high variation in the fishing effort and landings.
3. Continue to gather the individual weight records identified at Albany as an indication of size structure in the southern areas of the fishery.
4. In collaboration with CSIRO and BRS, continue to develop and maintain (including data verification and back-up procedures) a data base of size and length/weight data collected by the monitoring program.
5. Opportunistically collect data on the size composition of secondary target and by-catch species.
6. Carry out general liaison with CSIRO, BRS, AFMA and industry and State bodies in matters to do with the field programs and the fishery as required.

## **Methods, Results and Discussion**

The physical length/weight sampling in Geraldton has continued since the program's 2000 inception. It was initially run in conjunction with the CSIRO bigeye otolith program but this funding has now ceased.

Following the downturn in the fishery during 2003 and several staff changes, the length/weight sampling program operated much more sporadically in 2003/04 and ceased in 2004/05. There have however been some changes to the data storage systems at the principal processing establishment at Geraldton and their historical records, where excellent size data exists, can now be accessed. These data (all individual weights) were gathered for limited periods in 2002/03 and all the 2003-04 data available have been accessed and added to the database that year.

Additional data sources had been identified and accessed in Fremantle, the main southern port of the fishery and some data collected from this area, until the end of 2004 have been included. Almost all fishing further south has ceased and no Albany data are included again this year.

The data collected for the 2004/05 financial year cover approximately 60% of the total landed weight of the catch in WA, represented as individual weight data. These data comprise approximately 30% of the total landed weight in Fremantle and perhaps as much as 90% from Geraldton and more northern ports. This is a wholly satisfactory result scientifically and is somewhat similar to the coverage in the east coast fishery.

The length/weight pairs data collections ceased this year and the database is reliant on landed individual weights only, the same as for the east coast data collection. Most processors have either closed down entirely or are running at a very low level with minimal staff only.

All the individual weight data from the electronic data sets and the hard copy collections, as well as the length/weight data pairs have been collated and transferred electronically to BRS as required. The data base contains approximately 5,700 records of the three main species. This is approximately 50% of last year which is consistent with the fishery downturn.

Histograms of the size data for the three main species bigeye tuna, broadbill swordfish and yellowfin tuna for the entire WA fishery for the year are attached as appendices.

## Benefits / Management Outcomes

Long term catch by size data-bases are important in most fisheries but particularly in fisheries involving relatively long-lived slow growing species. Catch size data are essential for the assessment of fish stocks and one of the principle inputs into any stock assessment/stock analysis is an accurate catch by size data base. A long term (and continuous) series of catch by year by size is required.

The incorporation of these data into any stock assessments and population analyses would be an indication of the benefit derived to the fishery over a long term. The more accurate any scientific analyses can be, the more confident fisheries managers can be in their management decisions. The early establishment of a suitable size data base in the WA longline fishery may prove to be extremely valuable to researchers in the future. If the fishery develops further it may be absolutely essential.

## Conclusions

The size monitoring program must be seen as part of a long term series of data collections and must change strategically as the fishery changes and develops or contracts. While there have been major changes recently and the program has undergone significant basic restructuring, a wholly pleasing scientific result has still been achieved this year. While not without some problems, good access to historical records of individual weights has been achieved and the data incorporated into the data base. The situation is now quite similar to the east coast size monitoring program albeit on a smaller scale.

While catches in the fishery are running down and may continue to run at a low level for some indefinite period, it may be prudent to continue to monitor the processor data collection where possible and add some length/weight pairs at opportunity. The situation should then be re-assessed when fishing improves but some size monitoring should be maintained in the interim. Discussions have taken place with AFMA management concerning problems with the program coverage in a much reduced fishery.

What needs to be assessed in the future is whether the numbers of length/weight pairs compared to weights is sufficient and representative. Clearly the number of individual weights is sufficient but expanding the length/weight collections to other areas (a costly proposition) could not be justified at the level the fishery is running at present. On the east coast the sheer numbers of individual weights compared with landings has driven the success of the program – now acknowledged internationally. I suspect similar judgments could be made on the west coast data collection if it continues at this level.



