

# **WESTERN TUNA AND BILLFISH FISHERY SIZE MONITORING PROGRAM FOR 1999-2000**

**PROJECT NO. R99/1542**

**FINAL REPORT  
2002**

## **INTRODUCTION AND BACKGROUND**

Although the program was initiated in the 1999-2000 financial year, actual fact finding trips to Western Australia did not take place until mid 2000. Following suggestions from the Western Tuna MAC regarding prospective data sources and the possibilities of combining parts of the program with the CSIRO bigeye tuna ageing program, actual work commenced in October 2000 in Geraldton.

As a result of this delayed start, there was no formal size monitoring program for 2000-01 under an AFMA research contract. Rather the 1999-2000 money was run over to 2000-01 and Project No. R99/1542 continued until a new contract was initiated and eventually signed in April 2002 under the titles for 2001-2 & 2002-3 combined (R01/1295). Effectively though, size monitoring in some form has been continuous since late in 2000 and from some archived sources since mid 1999.

Following Ansett's demise and the consequent travel difficulties to and within W.A. the program initiated in late 2000 was allowed to run - quite successfully until further appraisal earlier this year 2002 (see Progress Report Nov 2000 and Sept 2001). This report therefore really covers work up to the end of 2001.

## **AIMS**

The original aims of the program were:

1. to assess individual size data collections available in processor records and develop methods of accessing and incorporating them if these records were suitable for scientific use,
2. explore the possibilities of establishing routine length/weight collection at various unloading ports, and
3. develop and maintain suitable data bases for storage of the size data collected.

The hands-on length/weight sampling program was initiated in Geraldton in October of 2000 and is continuous. It has operated in tandem with the CSIRO Marine Research Division's bigeye tuna otolith ageing program. This program requires the collection of otoliths (ear bones) from bigeye tunas throughout the size range, for direct ageing studies. This program, run in conjunction with the collection of length/weight data can result in some cost benefits for both studies.

Whilst this program was running at Geraldton, investigations continued into what data sources were available, useful and accessible in processor records in Fremantle and Albany.

During the first year or so of the program, the decision was made to assess the results of the Geraldton sampling operation before increasing the scope. Co-operation from the principal operator in Geraldton was excellent and if success was not possible there then a complete rethink of the program structure may be needed.

## **RESULTS**

Size sampling programs like this one are very long term and the data sets themselves can really only be assessed over longer periods. However assessments can be made as to the likelihood of the systems being successful. In the W.A. case at the end of the first assessment period – remembering that the program is ongoing - some quite good results have been achieved.

The collection of length/weight pairs from the three main species of all the fish going through the principal processor in Geraldton continues. These data are collected and incorporated into appropriate computer data bases in a timely and cost effective manner. This is a wholly satisfactory result for the northern areas of the fishery.

Individual weight data from processor records in Albany (southern most part of the fishery) has been accessed and incorporated into the data base. These data commenced in mid 1999 and are continuous – but are weight data only. Other sources of individual weight data for Fremantle - the middle area of the fishery - were identified and will be utilised in 2001-02.

The Albany data comprises 7,513 records from mid 1999–end 2001 for the main species caught in the south - bigeye tuna and broadbill swordfish. The Geraldton data set comprises 5,595 length/weight pairs from the time of commencement in October 2000 to the end of 2001. These data are from the three main species, yellowfin and bigeye tunas and broadbill swordfish. Additionally 355 bigeye otoliths were collected for the CSIRO direct ageing program.

All data collected have been entered into appropriate data bases and forwarded to BRS.

For interest, histograms of size data for the main species and areas are attached, as well as histograms for the combined W.A. fishery. These are collated from the Albany and Geraldton operations - Albany from mid 1999 to the end of 2001 (individual weight only records) and Geraldton from October 2000 to the end of December 2001 (length and weight records).

## **CONCLUSIONS**

While the program is an ongoing one and several changes have already been instituted in subsequent operations, the results in the first period were quite pleasing. The overall aim of the program is to supply a scientifically acceptable size breakdown (hence age breakdown) of the three main species targeted by the longline fishery - yellowfin tuna, bigeye tuna and broadbill swordfish. This has been satisfied quite successfully. Tuna longline fisheries are notoriously difficult to monitor for size because of their geographical range and small landings to a large number of shore establishments. However, by concentrating on a few of the major shore processors/packers, a satisfactory outcome has been achieved and more importantly a sound base for future collections or expansion has been established.

The real benefits from this type of data collection will become apparent over several years when the size data is incorporated into stock assessment and population analyses. More fine scale analyses e.g. size composition by month, following cohorts through the fishery, recruitment patterns etc. can be carried out by the appropriate agencies at that time.

The individual size data, length and or weight data either collected or identified will be sufficient to satisfy the main aims of the program. What needs to be assessed in the future is whether the numbers of lengths compared to weights is sufficient and representative for the fishery. Perhaps there is a need in the future to expand the length/weight pair collection to other ports, a much costlier proposition. Independent assessment of the data needs by BRS/CSIRO scientists will be the next requirement.

A similar program operating up and down the east coast of Australia has been extremely successful using extensive collections of individual weight data supplemented by smaller collections of length/weight data. The sheer numbers of individual weight records available there, has driven the success of the program. Similar assessments can now be carried out in W.A. to determine future strategies.