Data issues pertaining to the Torres Strait rock lobster fishery – discussions with AFMA.

*Robert Campbell*

CSIRO Oceans and Atmosphere Flagship

July 2016

**Introduction**

In compiling and analysing the data pertaining to the Torres Strait rock lobster fishery for the past few assessments, a number of issues related to aspects of the data have been identified, mainly associated with the TIB docket-book data (Campbell 2015). In order to discuss and clarify where possible these issues a meeting was organised with the AFMA data and licensing sections in Canberra. The meeting was held on 19 April 2016 and was attended by John Garvey (data management section) and Narelle Williams (licensing section), Dean Pease (Executive officer for TSRL) and myself. This report provides a summary of the issues discussed and some conclusions.

**Docket-book data**

A copy of the DB01 docket-book is shown in Appendix A. The docket-book records the transaction date, the name of the seller together with details of the catch (in weight) and the price obtained. Additional information is also provided regarding the vessel, the number of crew, the number of days fished and the fishing methods used. This information therefore provides a measure of both the catch and effort for a given seller (or fisher) during a fishing trip and hence can be used to gain a measure of the catch rate (weight of lobsters caught per day fished) during that trip.

However, there are a number of issues with the docket-book system which create problems with using this data for estimating the total catch and effort in the TIB fishery. These issues include:

1. The requirement that completion of the docket-book is only voluntary,
2. The fact that catches recorded in the docket-book can also be reported elsewhere, including the TVH logbook,
3. The fact that processors can also record catches in the docket-book, essentially creating duplicates.

**Specific Data Issues**

*Decline in Docket-Book Records*

The number of catch records and the associated estimate of the total catch of rock lobsters in the TIB sector each year is shown in Table 1. The number of records has decreased significantly since 2012. This is due to the fact that a significant portion (estimated to be around 43%) of the TIB sector catch in 2013 was attributed to aggregate annual catch records sent to the AFMA office on Thursday Island to account for catches received by processors but not recorded in the docket-books sent to the AFMA data section. A similar situation also occurred in 2014 when again aggregate catch records (representing 50% of the total catch for the TIB sector this year) were added to the TIB database to account for lobsters received by processors but not recorded in the docket-book.

Table 1. The number of catch records and the associated estimate of the total catch of rock lobsters in the TIB sector by year.



John Garvey indicated that the main AFMA database containing the data for the TIB sector of the TSRL fishery currently only contained the docket-book data returned to the AFMA data section in Canberra. He had been unaware of any additional aggregate catch data being supplied by the processors directly to the AFMA office on Thursday Island and as a consequence this information was currently not held within AFMA’s database for the fishery. A further consequence was that this additional catch had not been taken into consideration when estimating the GVP for the fishery. This would have resulted in the GVP values estimated in recent years being incorrect.

Since the meeting additional data has been supplied by the processor and this data has been passed onto John Garvey. This data is aggregated by financial year for 2013/14 and 2014/15 but has been supplied on a monthly basis since July 2015. While these aggregate data allow compilation of annual catch statistics for the TIB sector, unfortunately there is no effort or related location data associated with the catch data which means that this data cannot be used for CPUE analyses and calculation of annual abundance indices. As these catches represent a significant portion of the total annul catch this presents an ongoing problem.

*Docket-book data fields*

Given the duplication of catch information from both the TVH sector and processors which occurs in the docket-book data, in the past several filters have been applied to this data to remove possible duplicates. The meeting spent some time discussing the filters being applied by the CSIRO project team to ensure that they were consistent with those being used by AFMA. In particular, some time was spent gaining a mutual understanding on how some of the data fields in the Docket-Book data provided to CSIRO should be interpreted as there is no existing explanatory notes for these fields. Particularly, several fields can be used to help identify non-TIB or duplicate catch records. For example:

1. Seller-Name: It was acknowledged that these names are often misspelt or that nicknames are sometimes used. The meeting noted that the TIB-Workshop held in November 2015 had spent considerable time attempting to ‘clean’ these names with the result that the number of unique names in the database had been considerably reduced.
2. Seller-Type. This field is to be used to indicate whether the seller is a TIB or TVH fisher or a processor. It can be used to remove TVH and duplicate processor to processor data from the TIB data. However, a high proportion of the entries in this field are Unknown. John Garvey explained that the data field was set up around 2006 with the assistance of Annabel Jones. It was based on linking the seller-name on the Docket-Book to the seller-type (TIB, TVH, Processor) in a look-up table. However, the list of names and seller-types has not been kept up to date, and together with the fact that the seller-names are often misspelt or a nick-name is used, the Seller-Type most often remains unknown. This reduces the utility of this data field to identify the seller-type.
3. Related-Log. This field is used to indicate whether the catch has been recorded elsewhere, and if so records the type of logbook used. There is a correlation with Seller-Type above, as many TVH sellers indicate that the catch has been recorded in the TRL04 logbook while sellers identified as processors have indicated that the catch has been recorded in the TDB01 docket-book. In this instances the catches can be separated from the TIB catch data. Where this field is null it can be interpreted that the catch data has not been recorded elsewhere and as such is TIB data. However, there are a range of other entries in this field (e.g. HC01, HC02, NSS BESI, etc) associated with an Unknown Seller-Type for which the character of the data remains uncertain.
4. Client-Name. This is the name of the processor or person to whom the catch is sold.

Given the better understanding of these fields it is hoped that the combination of the Seller-Type, the Related-Log together with the vessel symbol (with the symbol for most TVH vessels starting with an ‘F’) will enable a better means of identifying and removing non-TIB and duplicate records from the Docket-Book data.

*Multiple TIB Record-Numbers for same vessel, seller, day.*

The structure of the docket-book data indicates that there should be a unique Record-No for each vessel, date and seller-name. However, investigation of the data indicates that there are often multiple Record-Nos associated for a given vessel, date and seller-name. The reason for these multiple records remained unknown. Some examples where all of the TIB data records associated with a single vessel and a single date are shown in Table 2. There are multiple

Table 2. An example of the TIB data showing all records associated with a single vessel and a single date. For each seller there are multiple Record-Nos and for each Record-No there are multiple catch record, several for the same method, process-type and grade.



records for three sellers and a number of questions arise. For example, why there are multiple catch records pertaining to the same process-type and grade of lobsters for a single Record-No? Why are there multiple Record-Nos for the same seller for the same vessel-date? Finally, why are the days-fished different for several of the Record-Nos for the same seller?

The original completed paper docket-book sheets for the Record-Nos shown in Table 2 were examined by the meeting. Whilst it was difficult to reach a definitive conclusion, the meeting was of the opinion that the dates associated with these docket-book forms were most likely not correct. This was based on the observation that the style of writing across all the sheets examined was also identical which indicated that the same person had completed all forms using the same pen on the same day. If this is the case then there does not appear to be any mechanism for correcting these historical data.

The meeting also noted that there was missing Docket-Book pages associated with the original sheets examined associated with the series of Record-Nos listed in Table 2. This would seem to indicate that perhaps not all Docket-Book sheets are returned to AFMA. How large this problem may have been in the past (and may continue to be) and what catches may be associated with these missing sheets (and which are not being captured in the data held by AFMA) also remains unknown.

*F-Vessels listing catches in both the Logbook and Docket-book*

In recent years a number of F-vessels (i.e. those vessels having a registration symbol beginning with F) have had catches recorded in both the TVH-logbook and the TIB-docket-book. It is assumed that F-vessels relate to vessels operating in the TVH sector and so catches for such vessels found in the TIB docket-book have been assumed to be duplicates of those recorded in the logbook. However, upon closer inspection the date/catch listed in the docket-book relate to dates for which there was no corresponding catch recorded in the TVH logbook. So one wonders whether these are additional TVH catches recorded in the docket-book but not in the logbook. Note, however, for some vessels there are sometimes catches for a given date recorded in both books (adding to the mystery).

A listing of the logbook and docket-book data for the eight vessels which had joint log entries in 2013 was prepared and sent to Dean Pease who has since followed this issue up with one of the operators. This operator stated that the docket-book catches related to lobsters that were a mortality in the cage and then tailed and sold to a processor on Thursday Island, while live lobsters was sold direct to a processor in Cairns and therefore no docket-book was filled out. The figures were quite high because the operator reported that his first cages had poor water circulation but since 2013 the cages have been modified resulting in reduced mortality. Dean was to follow up with some of the other operators. However, if the reasoning is similar for these other operators then the catches recorded in the docket-book for these TVH vessels need to be added to the related catches recorded in the logbook.

*Additional data relating to the TSRL.*

John Garvey informed the meeting that several historical data sets are available for the fishery and are stored in the AFMA data warehouse of which CSIRO has a copy. A subsequent query of the CSIRO database indicates data in the following database tables are available:



These data sets relate to:

1. Murray-Island data. This is basically the TIB data for operations from Murray Island as this island is not covered in the TDB01 Docket-Book data. The above table indicates data for 2004 and 2005. However, subsequent to the April meeting AFMA has updated this data and there is now data covering the years 2003 to 2010. It is believed that there is no further data as the freezer on Murray Island closed in 2010.
2. Freezer data: This is historical TIB data going back to 1996 which precedes the coverage of the TDB01 Docket-book data presently used and which begins in 2004. This data was compiled by Selina Stoute and she will be contacted to provide more details on the exact nature of this data and where the data was sourced from.
3. Operation\_TSF and Catch\_TSF data. These database table hold TDB01 Docket-book catch and effort data with 99% of the data in the CSIRO database covering the three years 2004-2006. It is likely that this data is a duplicate copy of the Docket-Book data covering these years but this remains to be checked.
4. JCU data: This is another data set of data (presently not in the CSIRO database) which was compiled by Gavin Begg. It is believed to be a compilation of historical TIB data from the 1990s.

AFMA is in the process of updating all these data sets and when completed a copy of the updated database tables will be included in the data routinely sent to CSIRO. From the descriptions of the individual data provided above sets it is clear that there exists additional TIB data that precedes that presently used in the TIB data summaries provided to TSRL RAG (which starts in 2004). The data from Murray Island (covering the years 2003-2010) is also believed to be additional data which is presently not included in the TIB data. Whether there is additional data in the other data sets described above (3&4) remains to be seen.

**Proposal to introduce a Fish Receiver System**

Subsequent to the Canberra meeting, I received an email from Dean Pease (25-May) stating that AFMA is proposing to develop a fish receiver system (sometimes called a catch-disposal-record (CDR) system) for Torres Strait fisheries and that AFMA were seeking advice from a number of research members across the different Torres Strait consultative forums on the key principles/features a Torres Strait fish receiver system should include for data collection purposes. It was also stated that once AFMA had developed a draft proposal they were planning to meet with research members again to discuss in more detail the specific design of the system. Comments provided to Dean on 1 June was as follows:

First, if one is introducing CDRs in relation to a shift to quota management then there is a need for the CDR coverage to be comprehensive, i.e. cover all the landed catch. If this is not achieved then one is left trying to estimate what the total catch is and this undermines the management and data collection system. This can be a major challenge when there are many landing sites to be covered (e.g. across the many islands of the Torres Strait). Also, if there are a number of handlers before the catch is received by the final processor then this could raise a problem of keeping check of catches as they pass through the system (i.e. one needs to make sure there is not double counting).

Second, the information recorded on the CDR data sheets should collect, at a minimum, the following information:

Date

Name of Seller

Name of Boat or Boat Symbol

Unloading Port

Start-Date-of-Trip

End-Date-of Trip

Fishing Method

Species Name

Catch in numbers

Catch in weight

Process type

Weight Recording Method (i.e. estimated or weighed)

Name of Buyer / Processor

Third, the CDR records need to be able to be linked back to the relevant logbook and docket-book data pertaining to these catches – this is so that the relevant effort data can be matched to the catches (location, days/hours fished etc). It also provides a check on the logbook coverage (and also vice versa). Such a linkage can be done in various ways – recording a unique trip ID or vessel-name/dates, etc on both the CDRs and logbooks.

**References**

Campbell, R.A., 2015. *Use of TIB Logbook Data to construct an Annual Abundance Index for Torres Strait Rock Lobster – 2015 Update*. Information paper presented to the 14th meeting of the Torres Strait Rock Lobster Resource Assessment Group, held 25-26 August 2015, Thursday Island.

Appendix A. The Buyers and Processors Docket Book (TDB01) used in the TIB sector of the Torres Strait rock lobster fishery.

