

Project: Catch-at-age and catch composition of jack mackerel fisheries in JMA 1

Project Code: JMA2009/01

Start Date: 01 August 2009

Completion Date: 30 August 2012

Vessel Use: None

Overall Objectives:

1. To determine the seasonality and species composition of the commercial catches of *Trachurus declivis*, *T. murphyi*, and *T. novaezelandiae* in JMA 1.

Specific Objectives:

1. To characterise the fishery in order to inform the sampling design development.
2. To collect representative samples from fish processing sheds to determine the age, length, seasonality, and species composition of the commercial catches of *T. declivis*, *T. murphyi*, and *T. novaezelandiae* in JMA 1 in the 2009/2010 and 2010/2011. The target coefficient of variation (CV) for the catch-at-age will be 30% (mean weighted CV across all age classes).
3. To explore the times series of catch sampling data for the three jack mackerel species. Determine any significant changes in the species composition of commercial catches and any indications of change in stock status in JMA 1.

Note:

The successful tenderer will be expected to liaise with the fishing industry to ensure the successful outcome of this project.

This is a continuation of the monitoring programme of jack mackerels (JMA2001/01, JMA2004/01 and JMA2006/01). As fisheries managers have determined that this research is required on an ongoing basis in the medium-term, this project has been framed as a multi-year monitoring programme.

The sampling design will be reviewed by the Inshore Working Group prior to the sampling commencing using the criteria set out in the “Guidelines to the design, implementation and reporting of catch sampling programmes”. This contains details of what is expected in relation to designing and implementing a catch sampling programme and reporting the subsequent results back to a working group.

Reporting Requirements:

Research Reporting

Objective 1-3

1. To present the proposed sampling design for specific objective 1 to the Northern Inshore working Group in September 2009.
2. To submit to the Chief Scientist MFish a Progress report as specified in Research Reporting form 4 by 1 September 2010.
3. To present the report in 2 above to meetings of the Northern Inshore Fishery Assessment Working Group in October 2010 in Auckland.
4. To submit to the Chief Scientist MFish a Final Research Report as specified in Research Reporting form 5 or a draft Fishery Assessment Report as specified in Research Reporting form 7 by 30 February 2012.
5. To present the report in 4 above to meetings of the Northern Inshore Fishery Assessment Working Group in March 2012 in Auckland.

Project Update Reports

No Project Update Reporting is required for this project.

Work In Progress Reports

Monthly Work In Progress Reporting is required for this project in accordance with the Conducting Research with the Ministry document.

Data Reporting

To submit any data generated, collected or modified during the course of this project to the Research Data Manager, MFish by 30 July 2012.

Rationale:

General

The jack mackerel fisheries catch three species, the two New Zealand species, *Trachurus declivis* and *T. novaezelandiae*, and the more recently arrived *T. murphyi*. *T. murphyi* spread into New Zealand waters in the early 1980s and is now the dominant species of jack mackerel in some areas.

Jack mackerels were introduced to the QMS as a species assemblage of the three species *T. declivis* (JMD), *T. novaezelandiae* (JMN) and *T. murphyi* (JMM) under a single species code, JMA. Accordingly it is not possible to determine the quantity of each species caught annually from commercial catch landings data.

The three species of jack mackerel support substantial but variable commercial trawl and purse seine fisheries, with landings from 1999/00 to 2006/07 ranging between 21,000 t and 39,000 t. Of 2006/2007 landings JMA 3 accounted for 1857 t, JMA 7

for 32,039 t and JMA 1 for 5,293 t. JMA 1 is the major recreational fishery for jack mackerels with around 100 t being taken annually.

The size of the jack mackerel resource in JMA 1 is unknown. For JMA 1 it is not known whether catches at the level of the current TACC (10,000 t) or recent catch levels are sustainable in the long-term. In recent years catches have not been constrained by TACCs.

Increased availability of jack mackerels since the 1980s caused by the invading *T. murphyi* resulted in increased quotas in JMA 1 under the proviso that they be accounted for by increased catches of *T. murphyi* only. Industry agreed to these limits and voluntarily introduced monitoring programmes to provide the information necessary for them to be met. However, this information pertains to the two New Zealand species (*T. declivis* and *T. novaezelandiae*) combined and *T. murphyi* i.e. the two New Zealand species are not separated.

A stock assessment and subsequent determination of the status of the stock in relation to the maximum sustainable yield is proposed for the native species. Steps to allow stock assessment of *T. murphyi* in future are underway, and data on seasonality and species composition of the Jack mackerel catch will be important for this.

A review of previous species composition monitoring for JMA by the Inshore Fisheries Stock Assessment Working Group strongly supports the continuation of this programme.

This research is necessary because:

- Jack mackerel catches although variable are substantial in some years and knowing the total catch of each species accurately is basic information required for management
- the stock status of the jack mackerel species is poorly known
- this research will provide the species proportions in the catch not otherwise available, this research is an essential building block for future stock assessment, and this research is fundamental to the management of this multi-species assemblage
- the project has been identified as integral to the jack mackerels Medium Term Research Plan.

Within this context, this research project is considered a high priority.

Objectives 1& 2

Results of the characterisation will be used to determine spatio-temporal sampling effort and which fisheries need to be sampled in order to obtain representative samples. The characterisation will also provide valuable input for the fisheries plan that is presently being developed.

Because the three species of jack mackerel are not individually distinguished in catch records, there is a need to continue to determine the species composition of Jack mackerel landings to monitor the species catch limits. Such information is also

essential to derive catch histories and abundance indices before stock assessments can be attempted.

In JMA 1 over 90 % of the catch is taken by purse seiners that land into Tauranga and Nelson. The current fish shed sampling program provides reliable species composition information.

Therefore, to improve the species composition information from JMA 3 and JMA 7, observer coverage within the target fishery has been focussed on both the winter and summer fisheries with coverage levels improved in both. The 2007/08 observer year coverage is currently on target. The catch sampling program on-board the large factory vessels will continue with the observer sampling regime.

This project continues the time series of species composition data for Jack mackerels. Tenderers should consider the results from JMA2001/01 and JMA 2004/01 while fine-tuning a sampling regime for the 2006/07 and 2007/08 fishing years.

The market has a large influence of the size range, species and quantum of Jack mackerels targeted in any year. Commercial fishers frequently select the size of fish caught to meet market demands; the sampling regime will need to consider this.

Without a summary of these market variables, interpretations of catch data are difficult. The tenderer should consult with various industry stakeholders to determine factors that may have affected the volumes and sizes of Jack mackerel taken during the 2006/07 fishing year. This analysis should document relevant market variables for the JMA 1, JMA 3 and JMA 7 fisheries in the 2006/07 and 2007/08 fishing years to continue the time series begun in project JMA2004/01.

Variables need to be quantitative, indicative of changes through time and simple to collect.

Weighting of Objectives:

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.2, 0.7. and 0.1