

Hoki and Middle Depth Fisheries

Code

SBW2009-02

Title

Biomass estimation of southern blue whiting using acoustic surveys

Project: Biomass estimation of southern blue whiting using acoustic surveys

Project Code: SBW2009/02

Start Date: 1 July 2009

Completion Date: 30 September 2010

Vessel Use: Subject to tender, winter 2009

Overall Objectives:

1. To estimate the biomass of southern blue whiting (*Micromesistius australis*) using acoustic surveys.

Specific Objectives:

1. To estimate pre-recruit and spawning biomass at Campbell Island during September 2009, using an acoustic survey, with a target coefficient of variation (c.v.) of the estimate of 30 %.
2. To refine estimates of acoustic target strength from *in situ* measurements.

Reporting Requirements:

Research Reporting

Objective 1

1. To submit to MFish a Voyage Programme as specified in Research Reporting form 2 one month before the beginning of the survey.
2. To submit to MFish a Voyage Report as specified in Research Reporting form 3 one month after the completion of the survey.
3. To present the results to the Middle depths Fishery Assessment Working Group as required by 31 March 2010.
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 September 2010.

Objective 2

1. 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 September 2010.

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 September 2010.

Rationale:

General

This fishery was developed in the early 1970's by the Soviet fleet. Landings have fluctuated considerably, peaking at 75,000 t in the 1991/92 fishing year, when almost 60,000 t was taken from the Bounty Platform stock. From 1992/93 to 1995/96 an annual catch limit of 32 000 t applied, but this was increased for the 1996/97 fishing year to 58 000 t, as the stock assessment indicated higher yields were available. Southern blue whiting was introduced into the QMS in 1999 with separate TACs for each of the four main stocks in SBW6. The TACC for the Campbell Island stock is currently 25 000 t.

There is uncertainty over the estimates of current stock size for all four stocks. This is due to imprecision in the acoustic data and to uncertainty over recent and future recruitment. The fishery is strongly recruitment driven and is currently dependent on less than 5 year classes, compared with up to 15 year classes in the past.

A time series of acoustic surveys was started in 1993. The acoustic surveys have been used to measure relative abundance of adult SBW and also to predict pre-recruit numbers in each stock. As the fish recruit at 2 and 3 years to the fishery, surveys are required every 2 years to keep the assessment up to date. The movement of fish during the survey period has required the development of an adaptive survey design to increase efficiency; alternative survey designs result in different biases in the estimate of biomass. The last acoustic survey of the Campbell Island stock was completed in September 2006.

Objectives 1 and 2

In September 2009 the Campbell Island stock will again be surveyed. The time series of acoustic surveys are providing fishery independent monitoring of both the recruited part of the population as well as predicting the strength of year classes about to enter the fishery. Further *in situ* data on target strength will be collected during the survey. Refining the estimates of target strength will allow the absolute abundance of separate age classes to be determined. The catalogue of target strength signatures and target identification information and results should be updated as part of Objective 2.

Weighting of Objectives:

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.9 and 0.1