

SHELLFISH FISHERIES

PPI2009-01	Stock assessment of Mair Bank pipis
SCA2009-06	Environment-recruit relationships for scallops
SCA2009-07	Scallop medium term research plan
SUR2009-01	Characterisation of kina fisheries

Project: Stock assessment of Mair Bank pipis

Project Code: PPI2009-01

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: None

Overall Objectives:

1. To carry out a stock assessment of pipis (*Paphies australis*) on Mair Bank Whangarei Harbour, including estimating absolute biomass and sustainable yields.

Specific Objectives:

1. To estimate the size structure and absolute biomass of pipis on Mair Bank during March – April 2010. The target coefficient of variation (c.v.) of the estimate of absolute recruited biomass is 20 %.
2. To complete the stock assessment and estimate yields for pipis on Mair Bank for the 2010/2011 fishing year.
3. To determine the growth rate of pipis on Mair Bank

Reporting Requirements:

Specific Objective 1, 2 and 3

1. To present the findings to a meeting to the Shellfish Fishery Assessment Working Group by 30 August 2010.
2. To submit to MFish a draft Fisheries Assessment Report as specified in Research Reporting Form 5 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 (form 13) 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

Ninety nine percent of the commercial pipi catch in New Zealand comes from Mair Bank (in Whangarei Harbour). Annual commercial landings from Mair Bank have averaged 182 tonnes since 1990-91.

The commercial fishery area is defined in regulation as that area within 1.5 nautical miles of the coastline from Home Point at the northern extent of the Whangarei Harbour entrance, to Mangawhai Heads, south of the harbour. The defined area includes Snake Bank within the harbour. Commercial access to the fishery was constrained by the moratorium on granting new fishing permits for non-QMS fisheries. No new entrants entered the fishery after 1992.

Mair Bank pipis (PPI 1A) were introduced into the Quota Management System from 1 October 2004 with a total allowable catch (TAC) of 250 t, comprised of a total allowable commercial catch (TACC) of 200 t, a customary allowance of 25 t, and a recreational allowance of 25 t.

Non-commercial fishers (recreational and customary) harvest pipi on Mair Bank and elsewhere in the harbour. The amateur daily bag limit is 150 pipi per person per day. Customary fishing permits are issued by iwi to allow Māori to take more than the amateur daily limit for customary purposes. There is no information available on the quantities of pipi harvested in the harbour by these fishers.

A biomass survey and yield estimate was undertaken in March – May 2005. Overall, the 2005 biomass estimate and simple yield estimates suggest that fishing at the level of the recent average landings were likely to be sustainable in the short term. Only two biomass estimates have been made for Mair Bank, and it is not known how biomass in the population varies over time. Periodic biomass surveys and yield estimates are required to monitor the fishery.

Objectives 1, 2 & 3

These objectives would undertake a biomass survey of Mair Bank pipis in March – May 2010 and make estimates of yield. Periodic biomass surveys and yield estimates are required to monitor the fishery. The last biomass survey and yield estimate was made in 2005. Little is known about the growth rate of pipis. Better estimates of growth will improve the precision of the yield estimates

Weighting of Objectives

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.33: 0.33: 0.33.

Project: Environment-recruit relationships for scallops

Project Code: SCA2009-06

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: None

Overall Objective:

1. To investigate how environmental variations influence scallop population dynamics

Specific Objectives:

1. To identify possible environmental factors influencing scallop biology through analysis of historical data to determine the extent to which scallop population dynamics is predictable.

Reporting Requirements:

3. To present the findings to a meeting to the Shellfish Fishery Assessment Working Group in Auckland by 30 August 2010.
4. To submit to MFish a draft Fisheries Assessment Report as specified in Research Reporting Form 5 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 (form 13) 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

Scallops are an important component of New Zealand's marine ecosystem, are widely distributed in a range of habitats around the coastline, and support valuable commercial, recreational, and customary fisheries. Growth, condition, mortality, and recruitment all vary in scallop populations for reasons that are poorly understood. In general, scallops grow rapidly, have high natural mortality, and exhibit highly variable recruitment. Such a life history results in large fluctuations in population abundance, often independent of fishing effort. Currently, we do not fully understand the processes that have resulted in these large fluctuations, but sea temperature and food supply undoubtedly play a role. Fundamental biological processes (reproduction, growth, mortality, and recruitment) are known to be strongly influenced by environmental conditions, and changes in these conditions can alter the population dynamics of marine species. This concept is termed oceanographic forcing. Previous exploratory investigations suggest that scallop recruitment in northeastern New Zealand appears to be strongly linked to El Niño-Southern Oscillation (ENSO) and sea temperature.

What is needed is a greater understanding of the relationship between environmental conditions and recruitment so that we adapt management to environmental fluctuations. This is especially relevant when considering the potential development of an integrated stock assessment model for scallops, suggested as a future research direction at the 21 July 2008 Shellfish Working Group meeting. An important component of such a model would be recruitment strength.

A variety of extensive spatial/temporal data relating to different life-history phases are already available. These include data on adult condition (meatweight data from fish processors), larval settlement success (spatfall data from enhancement programmes and research projects), growth (from tagging studies), and population abundance (fishery catch and effort data, and data from fishery-independent dredge and diver surveys). Using the time series of climate and oceanographic data available, these data provide the basis to assess the influence of the environment on scallop fisheries.

Objective 1

This objective will identify possible environmental factors influencing scallop biology. Appropriate historical data should be analysed in relation to environmental variables to determine the extent to which scallop population dynamics is predictable.

Weighting of Objectives

Weightings indicate the relative importance of each of the objectives. As there is only one objective in this project it carries a weighting of 1.

Project: Scallop medium term research plan

Project Code: SCA2009-07

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: N/A

Overall Objective:

1. To prepare a medium term research plan (MTRP) that will identify the main research directions and needs for undertaking research on scallops over the next three to five years.

Specific Objectives:

1. To review the current knowledge of research and fisheries management of scallops.
2. To identify and prioritise the key areas where research is required to improve the stock assessment and management of scallops.

Note: The development of this report will be reviewed by the SFWG in March-April 2010 to allow all stakeholders the opportunity to have input into the MTRP.

Reporting Requirements:

Research Reporting

Objective1&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.
2. To present a draft outline of the report in 1 above to a meeting of the Shellfish Fisheries Assessment Working Group in March-April 2010.
3. To present the draft completed report in 1 above to a meeting of the Shellfish Fisheries Assessment Working Group in October-November 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 31 October 2010.

Rationale:

General

Scallops (*Pecten novaezelandiae*) support valuable commercial, recreational, and customary fisheries around New Zealand's coastline. Total commercial scallop landings in 2006–07 were over 1,900 t greenweight. Scallop research requirements are currently assessed within a medium-term research plan (MTRP) for shellfish fisheries. This contains a number of marine invertebrate stocks (mostly bivalves, but also crabs, echinoderms, and gastropods) that constitute a number of fisheries at various stages of development. Not included in the Shellfish MTRP are paua, scampi, and rock lobster which all have individual MTRPs. Most of the species in the Shellfish MTRP benefit from low exploitation levels compared with their allowed catch (TACC), and, therefore, there is no research deemed necessary until such a time as a fishery develops. Notable exceptions, however, are scallops and oysters, and, to a lesser extent, cockles, pipi, and mussels. Fisheries for these species are fully developed and, as with other fully developed fisheries, it is appropriate to separate out these bivalves from the current Shellfish MTRP and prepare more comprehensive MTRPs exclusively for these bivalve species.

In the current Shellfish MTRP, research requirements for scallop fisheries concentrate on a repetition of surveys to determine abundance in some fisheries. However, there are a number of aspects of scallop biology and ecology where research could improve stock assessment and management. Examples include the need for more information on growth, mortality, recruitment, and the effects of fishing on habitats and by-catch. The development of a MTRP for scallops will provide an opportunity to take a fresh look at what kind of research is needed for the sustainable management of the stocks. We need to review the current knowledge of research and fisheries management of scallops to identify the information that is not available for each stock. We can then prioritise which of this information is needed to make informed management decisions which provide for the utilisation of fisheries resources while ensuring sustainability.

The development of a Scallop MTRP plan could involve the inclusion of industry representatives and research providers who will be able to contribute to achieving the Specific Objectives of this project. The plan will be used to identify specific research projects for consideration during the Ministry of Fisheries annual research planning process over the next three to five years. It is likely that the MTRP would be reviewed after three years and updated accordingly.

Objective 1

This objective would review the historical sequence of research and management of scallops in New Zealand. This could also include reviewing research, stock assessment, and management of scallops overseas. These reviews would identify key areas where there are knowledge gaps that if filled could improve the stock assessment and fisheries management of scallops in New Zealand.

Objective 2

Based on the results of the review of existing knowledge from Objective 1, this objective would identify specific research requirements for scallops. A list of research priorities to meet research and management needs for scallops over the next five years would be produced.

Weighting of Objectives:

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.4, 0.6.

Project: Characterisation of kina fisheries

Project Code: SUR2009-01

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: None

Overall Objectives:

1. To characterise the kina fisheries in the major kina stocks.

Specific Objectives:

1. To characterise the major kina fisheries in New Zealand using available data.
2. To provide advice on suitable procedures to monitor the sustainable utilisation of kina fisheries.

Reporting Requirements:

Specific Objective 1 & 2

5. To present the findings to a meeting to the Shellfish Fishery Assessment Working Group by 30 August 2010.
6. To submit to MFish a draft Fisheries Assessment Report as specified in Research Reporting Form 5 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 (form 13) 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

Kina were introduced into the Quota Management System for the South Island in 2002 and the North Island in 2003. The total TACC for all kina stocks is 976 tonnes and the reported total 2005/06 landings were 826.5 tonnes. The fisheries within each kina stock appear to be at various levels development, with some stocks fully utilised. Kina are highly valued as a customary fishery. The extent of the customary harvest is not known.

There is little understanding of the status of various kina stocks. Fisheries plans are being developed for inshore fisheries, including kina. Additional information on the various kina fisheries would assist in the development of fish plans.

Objective 1

This objective would characterise the most important kina fisheries in New Zealand, this should specifically address at least stocks SUR1B, 4, 5 and 7A. The characterisation would include catch history, distribution of landing, methods, and catch and effort. The characterisation would include any available information from log books programmes undertaken by fishers. The characterisation would also include any available information on the distribution and extent of the customary fishery for kina.

Objective 2

Monitoring landings against the TACC for kina is the only monitoring tool presently applied to kina. There are no stocks assessments or any other form of monitoring to determine the status of various kina stocks. This Objective would provide advice on the most appropriate methods of monitoring the status of kina stocks for the purpose of sustainable management and utilisation.

Weighting of Objectives

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.85: 0.15.