Non-Commercial Fisheries

EEL2009-01	Survey of tuna in customary areas of ANG 14
EEL2009-04	Assessment of the eel population in Patea River catchment
KIN2009-01	Catch-at-age and CPUE of recreational charter catch of kingfish in KIN 1
TOH2009-01	Distribution and abundance of toheroa on Ninety Mile Beach

Project: Survey of tuna in customary areas of ANG 14

Project Code: EEL2009-01

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: None

Overall Objective:

1. To characterise the population structure of eels in selected areas of customary significance in ANG 14.

Specific Objectives:

1. To determine the distribution, species composition, size and age structure, and sex composition of eel populations in the areas of customary significance in ANG 14 to provide a reference point for any future monitoring of the population and management of the customary fishery.

Reporting Requirements

Research Reporting:

Objectives 1

1. To submit to 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 the report detailed in 1 above to meetings of the Eel Fishery Working Group in August/September 2010. Meeting locations to include Christchurch and/or Wellington.

Project Update Reports

No Project Update Reports are required for this project.

Work In Progress Reports

Monthly Work In Progress Reporting (Form 13) is required for this project in accordance with the document entitled "Conducting Research with the Ministry".

Data Reporting

To submit any data generated, collected or modified during the course of this project to the Research Data Manager, MFish by 30 November 2010.

Rationale:

General
Tuna (freshwater eels) are of significant value to customary fishers of Arowhenua and Waihao Runanga in the Quota Management Area 14 (ANG 14). In the past, tuna flourished in rivers, creeks, and waterways within close proximity to Arowhenua, Waihao and Punatarakao Pa. Today, there are fewer and smaller tuna in the waterways than in the past. The smaller eels tangata whenua are able to find are not of a good size to harvest.

The reduction in the size of tuna available within the Arowhenua and Waihao takiwā threatens the sustainability of the fishery for customary fishers. Establishing the present extent and well-being of mahinga kai species will provide a baseline for any future monitoring of the population and management of the customary fishery. Information on the species composition and size structure, and catch and effort data from the survey, will provide data for comparison with other eel population surveys. This will enable some assessment to be made of the status of the eel populations in the selected customary areas.

Objective 1
This Objective will determine the distribution, relative abundance, species composition, size and age structure and sex ratio of tuna in selected areas of customary importance in ANG 14. The by-catch of other species will also be determined. Comparisons will be made of the species and size composition of eels, and catch and effort, from the commercial fisheries sampling and other data sources.

ANG 14 includes several major rivers, lagoons and smaller rivers/creek that contain eel populations of significance to customary fishers, including:

Opihi Lagoon and tributaries
Orari River
Temuka River
Coopers Creek
Ohape River
Washdyke Lagoon inlet tributaries
Orakipaoa River
Waihao River
Hook River
Wainono Lagoon
Waimate Stream
Hakataramea River.

There will necessarily be limitations on the number of locations that will be sampled. The location of sampling sites will be determined in consultation with the nominated Tangata Tiaki/Kaitiaki.

Project: Assessment of the eel population in Patea River catchment

Project Code: EEL2009-04

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: None

Overall Objectives:

1. To characterise the population structure of the eel population in the Pātea River catchment.

Specific Objectives:

1. To determine the distribution, species composition, size and age structure, and sex of freshwater eels in the Patea River catchment to provide a reference point for any future monitoring of the eel population and management of the respective customary fishery.

2. Based on Objective 1 provide an assessment of eel population structure in relation to selected habitat types.

Note:
This project would require consultation and involvement of local iwi in undertaking the survey and communication of the results.

Reporting Requirements
Research Reporting:

Objectives 1 and 2

3. To submit to 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.

4. To present the report detailed in 1 above to meetings of the Eel Fishery Working Group in August/September 2010. Meeting locations to include Hamilton and/or Wellington.

Project Update Reports

No Project Update Reports are 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 November 2010.

Rationale:

General
Tuna are important local resource to the hapu of the Patea River catchment, including Rangitaawhi, Puu Korokoro, Tupito, and Ringi.

Traditionally, māori harvested tuna according to the maramataka (lunar cycle), with particular focus on the tuna heke (seasonal tuna migration), when large numbers of well conditioned tuna would provide bountiful harvests.

Hapu consider that the customary eel take in the Pātea River catchment has fallen markedly over time and anecdotal evidence attributes this to a decline in the longfinned eel population. The decline began in the early 1900's when large longfinned eels, so treasured by tangata whenua, became the subject of a nation-wide "pest" eradication program. Commercial fishing and construction of migration barriers, notably of Pātea Dam, led to an accelerated rate of decline. Major habitat loss no doubt also contributed to the fall in the population. Large podocarps once stood along the Patea River but these trees have largely disappeared, removed for their timber and then for agriculture. Much of the stream and river margins are now barren with only a few remaining pockets of forest remaining along the waterways. Associated with the loss of riparian cover and change in land-use came water quality issues, increased water temperature and loss of in-stream woody cover for large eels.

The rapid decline in abundance and distribution of tuna over the past century disconnects tangata whenua from the traditional practice of fishing for tuna. Traditional principals governing sustainable harvest require far greater abundance than what currently exists in the Pātea River catchment. This project aims to determine the present status of the eel population of the Pātea River.

Objectives 1 & 2
These objectives will determine the current distribution, species composition, age structure and sex composition of freshwater eels in the Pātea River catchment. The size and age composition of juvenile eels (i.e., < 300 mm) will be determined to provide evidence of recruitment, and also be an index of future recruitment into the "adult" fishery (i.e., tuna of sufficient size for harvest for customary purposes). Sampling will include areas of different habitat with a view to providing some assessment of the status of the eel population in relation to habitat type and quality.

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, 0.1.

Project: Catch-at-age and CPUE of recreational charter catch of kingfish in KIN 1

Project Code: KIN2009-01

Start Date: 01 September 2009

Completion Date: 30 July 2012

Vessel Use: None

Overall Objectives:

1. To monitor the status of kingfish (*Seriola lalandii*) stocks in KIN 1.

Specific Objectives:

1. To characterise the fisheries in order to inform the sampling design development and to investigate the use of Charter Boat CPUE as a monitoring tool for KIN 1.

2. To conduct representative sampling to determine the length, sex, and age composition of the recreational charter boat landings of kingfish in KIN 1 for the 2009/10 and 2010/11 fishing years to monitor the KIN 1 stock. The target coefficient of variation (CV) for the catch-at-age will be 30% (mean weighted CV across all age classes).

Note:

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
Kingfish is highly regarded by recreational fishers in New Zealand for its sporting attributes and large size. Kingfish are most often caught by recreational fishers from private boats and from charter boats, but are also a prized catch for spearfishers and shore based game fishers. Kingfish are recognized internationally as a sport fish, and kingfish caught in New Zealand waters hold 20 of the 22 International Gamefish Association World Records.

Recreational fishers have voiced concerns over a perceived marked decline in the size of kingfish available to them in recent years. Many clubs, competitions and charter boats have implemented a voluntary one kingfish per person per day limit in response. A number of gamefish clubs have also adopted a minimum size limit of 100 cm for kingfish.

Recreational harvest estimates by fish stock have been obtained from national telephone diary surveys undertaken in 1996 and 2000, with a follow up survey in 2001. Regional telephone diary surveys were undertaken in 1991–92 in the South Region, 1992–93 in the Central Region and in 1993–94 in the North Region.

This research is necessary because:

- kingfish support important commercial, recreational, and customary fisheries
- CPUE and catch-at-age for the recreational fisheries will be important monitoring tools and inputs for any future stock assessment.
- the project has been identified as integral to the kingfish Medium Term Research Plan.

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

Objective 1
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.

This objective includes investigating the use of charter boat catch and effort data to develop a CPUE based index of abundance for kingfish in KIN1.

Note: Recreational catch monitoring by charter boats may become compulsory in the near future. This may influence the design strategy for this project.

Objective 2
While a formal stock assessment (based on a stock assessment model) is not proposed for kingfish at this time, age compostion of the catch has been shown by previous studies to provide information on stock status and the sustainability of current removals. It is, however, critical that accurate information on the size (and age) composition of released fish is collected.

Age structure provides a tool with which exploitation rate can be measured, allowing for both temporal and spatial comparisons. Monitoring age structure also provides a means to better evaluate the response of a population to changes in regulations. Some outputs from this objective will include:

- Estimation of the age structure of the population/s
- Estimates of total fishing mortality that incorporate uncertainty in key parameters (e.g. age at full recruitment and other selectivity issues) and the different properties of regression and Chapman-Robson estimators.
- Proxies for Fmsy based on spawner biomass per recruit analyses (e.g. $F_{40\%SBR}$.)

Weighting of Objectives:
Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.3, 0.7.

Project title: Distribution and abundance of toheroa on Ninety Mile Beach

Project code: TOH2009-01

Start date: 1 September 2009

Completion Date: 30 December 2010

Vessel use: None

Overall Objectives:

1. To determine the distribution of toheroa (*Paphies ventricosum*) beds, and the abundance and size structure of toheroa on Ninety Mile Beach.

Specific Objectives:

1. To review the survey design for estimating the abundance of toheroa on Ninety Mile Beach.

2. To estimate the size structure and absolute abundance of toheroa on Ninety Mile Beach, during February – May 2010. The target c.v. for the estimate of absolute abundance of legal sized toheroa (≥100 mm shell length) is 20%.

3. To describe changes in the size structure and absolute abundance of toheroa on Ninety Mile Beach by comparing the results from this work with those from previous surveys.

Note: The Ministry of Fisheries recognises the importance of the toheroa resource to customary fishers. The successful tenderer will consult with and involve tangata whenua in the conduct of this research project.

Reporting Requirements:

<u>Specific Objective 1</u>

1. To submit to MFish, a Progress Report as specified in Research Reporting form 4 detailing the methods proposed in specific objective 1 by 1 December 2009.

2. To present the results of reporting requirement 1 to a meeting of the Shellfish Fishery Assessment Working Group in the week of the 14th to 18th of December 2009.

Specific Objectives 2 & 3

1. To present the findings of the draft Fisheries Assessment Report, incorporating specific objectives 1, 2 and 3 above, to a meeting to the Shellfish Fishery Assessment Working Group by 30 November 2010. Presentations to more than one meeting in Auckland may be required.

2. To submit to MFish a draft Fisheries Assessment Report as specified in Research Reporting Form 5 by 30 December 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 December 2010.

Rationale:

General

Toheroa represent an important Maori customary fishery and have historically also supported commercial and recreational fisheries of importance in Northland. Annual surveys of Muriwai, Dargaville and areas of Ninety Mile Beach were used to estimate the availability of toheroa during the 1960s. By 1967 the estimated stocks of toheroa on Northland beaches had become so low that the annual season for picking was closed to the public. Results from these surveys also showed that recruitment was highly variable and that the populations suffered large scale natural mortalities of both adults and juveniles. In 1993 surveys conducted in the north found only one animal of legal size.

Ongoing time series of abundance of toheroa are required on all major toheroa beaches, Ninety Mile Beach, Dargaville Beach, Murawai Beach (North Island), and Oreti Beach and Bluecliffs Beach (Southland).

Objectives 1, 2 & 3

A survey conducted on Ninety Mile Beach in May 2006 (TOH2005-01) showed that the overall population size of toheroa was 8.88 million (c.v. 31.0%), but only one individual over 74 mm was encountered. Problems were encountered with the survey stratification, making comparison with past surveys problematic. Objective 1 would review the survey design used in the last survey and make any necessary survey improvements to avoid the problems with the 2006 survey. The survey design would require a satisfactory review by the Shellfish Fisheries Working Group before the survey is undertaken. This new

survey would provide an updated assessment of the distribution and abundance of toheroa on Ninety Mile Beach.

Determining the population size structure may provide an indication of the health of the toheroa population and help determine if the 2000 recruitment pulse has translated into high adult toheroa abundance. Spatial and size information will assist kaitiaki in managing the resource available for customary harvest.

Weighting of Objectives

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.15: 0.7: 0.15.