

Non Commercial Fisheries

| Code | Title |
|-------------------|--|
| AKI2009/01 | Shellfish monitoring in the Auckland Fishery Management Area |
| BCO2009/01 | Relative abundance of blue cod between Otago Peninsula and the Catlins (BCO 3) |
| BCO2009/02 | Relative abundance of blue cod in the Foveaux Strait (BCO 5) |
| GLM2009/01 | Green-lipped mussels in GLM 9 |
| REC2009/03 | Survey of the Southland recreational blue cod fishery |
| REC2009/04 | Recreational fishing effort indices |

Project: Shellfish monitoring in the Auckland Fishery Management Area

Project Code: AKI2009/01

Start Date: 1 July 2009

Completion Date: 30 November 2010

Vessel Use: None

Overall Objectives:

1. To monitor shellfish populations on selected beaches in the Auckland Fisheries Management Area.

Specific Objectives:

1. To design/refine a monitoring programme for pipi and cockle shellfish populations on selected beaches in the Auckland Fishery Management Area to determine population trends to assist the Ministry in determining whether management intervention is required.
2. To undertake a survey of pipi and cockle populations on 12 selected locations within the Auckland Fishery Management Area in 2009/2010 in order to determine population trends to assist the Ministry in determining whether management intervention is required.

Reporting Requirements:

Research Reporting

Specific Objective 1

1. To submit to MFish, a Progress Report as specified in Research Reporting form 4 by 1 December 2009.
2. To present results to a meeting of the Shellfish Fishery Assessment Working Group by 1 November 2009.

Specific Objective 2

1. To submit to MFish a draft Final Research Report as specified in Research Reporting form 5 by 30 September 2010.
2. To present the findings of the draft Final Research Report, incorporating specific objectives 2 and 3 above, to a meeting to the Shellfish Fishery Assessment Working Group by 1 October 2010. Presentations to more than one meeting in Auckland may be required.

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 November 2010.

Rationale:

General

Intertidal shellfish resources are easily accessed and highly valued by the customary, recreational and environmental sectors. In Northland, Auckland and the Bay of Plenty, due to the high human population, these resources are extensively exploited and are often the subject of sustainability concerns.

The Auckland Fishery Management Area is home to approximately half of New Zealand's population. Fisheries Officers regularly report up to 400 people harvesting scallops from shallow water at Clarks Beach, Manukau Harbour and reports were received of up to 1500 people collecting cockles at Cockle Bay, Manukau City, on Auckland Anniversary day in 2008.

MFish has monitored population trends of intertidal shellfish since 1991/92. Since then, a variety of beaches/ locations have been monitored to identify trends at both the individual beach level but also across the fishery. Generally, beaches of concern are monitored each year with locations of less concern being monitored on a less frequent basis.

The main intertidal species of interest to customary and recreational fishers are pipi (*Paphies australis*) and cockle (*Austrovenus stutchburyi*). Tuatua (*Paphies subtriangulata*) are also of interest in some locations. Concerns have also been expressed about the state of intertidal scallop fishery (*Pecten novaezelandiae*) in some areas. A previous project has undertaken monitoring of cockle and pipi beds on 12 selected beaches throughout the greater Auckland area. This previous monitoring proved satisfactory for the longer term monitoring of cockle populations, but was less satisfactory for monitoring pipi because of the changing geomorphology of some sites and the lack of a consistent lower bound for surveying pipi (which also live in the subtidal). No significant Tuatua populations were found at any of the surveyed sites. The interest in the state of scallop beds is specific to a few locations where scallops appear intermittently in intertidal regions (e.g., Clarks Beach).

In 1998 MFish reduced the daily bag limit for cockles, pipi and tuatua from 150 to 50 per person per day and for green-lipped mussel from 50 to 25 for the Auckland Metropolitan Area (AMA). In 1999 this was extended to include the water surrounding the Coromandel Peninsula (Auckland Coromandel Area).

Despite these daily bag limit reductions, it is evident that such measures are inadequate to manage the harvest pressure at some locations. For example monitoring has shown the cockle population at Umupuia beach has declined from an estimated 90 million in 2000 to 12 million in 2006. This beach is subject to a 2 year temporary closure. There are currently seven local management initiatives established or proposed in the Auckland and Bay of Plenty areas.

MFish's has a legal obligation to ensure that the utilisation of intertidal shellfish resources is sustainable. In order to respond to these concerns, the Ministry requires shellfish population trend information. This information will also be essential for informing the fish plan advisory groups for the North-East and North-West Shellfish plans commencing in 2009.

Objective 1

This objective would design/refine a shellfish population monitoring programme to meet the objective of monitoring cockle and pipi shellfish population trends on selected beaches in the Auckland Fishery Management Area. This information would assist in determining whether management intervention is required, such as a beach closure to harvesting. Currently a decision rule exists whereby if cockle (>30mm) or pipi (>50mm) densities are 25 per square metre or less a beach is closed. The design of the monitoring programme would take into account the results of previous surveys so that population trends are comparable through time. The survey design would also include estimates of the statistical power of the surveys to detect significant changes in shellfish populations over time.

Other agencies have an interest and have been undertaking research on shellfish populations around the Auckland area. This Objective would review these various programmes and design the MFish monitoring programme so as to ensure that an integrated and cost effective approach is taken to monitoring shellfish populations in the region. The design of the survey will be reviewed by the Shellfish Fisheries Working Group.

A satisfactory design will be needed at this stage, as judged via oral presentation to the SFWG and written reporting, before objective 2 is commissioned.

Objective 2

The Objective would undertake a survey of cockle and pipi populations on 12 selected beaches, according to the monitoring programme design from Objective 1, in 2009/10. Six of these beaches have been identified: Little Waihi, Ohiwa Harbour, Okoromai, Te Haumi, Umupuia and Otumoetai. The remaining six beaches will be decided upon in March 2009 following consultation and all prospective tender applicants will be informed.

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: 0.8.

Project: Relative abundance of blue cod between Otago Peninsula and the Catlins (BCO3)

Project code: BCO2009/01

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: Subject to tender

Overall Objectives:

1. To estimate relative abundance, maturity state, sex ratio, and age structure of blue cod (*Parapercis colias*) around Otago Peninsula and the Catlins.

Specific objectives:

1. To undertake a potting survey between Otago Peninsula and the Catlins (BCO 3) to estimate relative abundance, size- and age-at-maturity, sex ratio and collect otoliths from pre-recruited and recruited blue cod.
2. To analyses biological samples collected from the potting survey.
3. To determine stock status of blue cod populations in this area, and compare to other survey areas.

Reporting Requirements:

Research Reporting

Objective 1-3

1. To submit to the Chief Scientist MFish a Progress report as specified in Research Reporting form 4 by 14 March 2010.
2. 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 November 2010.
3. To present the report in 2 above to meetings of the Southern Inshore Fishery Assessment Working Group in February 2011 in Wellington. Presentations to more than one meeting may be required.

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

The national diary surveys of marine recreational fishing found blue cod to be the second most frequently landed finfish species nationally, and the most frequently landed species in the South Island. Blue cod is an important species for Maori customary fishers, but the catch is unknown. Recreational take in BCO 3 was estimated at 175 and 245 t in 1994 and 1996. A similar amount (180 t) is landed annually by commercial fishers in BCO 3. The reef area in BCO 3 supporting blue cod is not extensive. Recreational catch rates are reported to be low.

In the 2000-01 Sustainability Round, the Ministry undertook to work with stakeholders in the area to monitor blue cod populations. A series of relative biomass estimates based of potting surveys was consequently initiated with a view to conducting surveys every three years (see Inshore Medium Term Research Plan). This project represents the first survey in this area.

This research is necessary because:

- blue cod support important commercial, recreational, and customary fisheries;
- current stock status of blue cod is unknown, no formal stock assessments are undertaken for this species;
- independent biomass surveys are considered to be a useful method for monitoring the stock status and a time series of these data have been developed;
- the project has been identified as integral to the blue cod component of the New Zealand Inshore Fisheries Medium Term Research Plan; and

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

Objective 1

Blue cod populations on important recreational fishing grounds in BCO 3 are currently monitored using relative biomass indices generated by cyclical potting surveys (every third year).

Under objective a potting survey will be undertaken between Otago Peninsula and the Catlins. The previous survey should be considered and any necessary improvements implemented. All physical environmental data thought to influence catchability of the pots should be collected at each sample site.

Biological samples should be collected to allow determination of the size and age composition of the blue cod populations and other important biological characteristics such as sex ratio and age/size at maturity. While ensuring that sufficient biological samples are available, care should be taken to minimize the impact of the sampling on population density.

Objective 2

Biological samples should be analysed to describe the size, age, and sex composition of blue cod in the region. The spatial distribution of samples should be considered when producing raised estimates of population quantities, e.g. size and age structure.

Objective 3

While a formal stock assessment (based on a stock assessment model) is not proposed for blue cod at this time, there are multiple sources of information that can be used to provide information on stock status and the sustainability of current removals.

Under this objective, four primary tasks are envisaged:

- calculation of a standardised abundance index from the potting survey;
- estimation of total mortality (Z) from catch composition data;
- estimation of spawning biomass per recruit reference points; and
- compare these estimates to those obtained from other blue cod potting surveys.

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:

- 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; and
- discussion of the consistency of spatial signals should be included e.g. are the estimates of Z stable between this area and other surveyed areas.

Finally, the length, age, maturity and mortality data should then be used to determine estimates of spawner biomass per recruit that can be used to develop MSY-related proxies that will provide a basis for determining likely stock status based on the estimates of Z from the catch curve analysis.

Weighting of Objectives:

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.5, 0.25 and 0.25.

Project: Relative abundance of blue cod in the Foveaux Strait (BCO 5)

Project code: BCO2009/02

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: Subject to tender

Overall Objectives:

1. To estimate relative abundance, maturity state, sex ratio, and age structure of blue cod (*Parapercis colias*) in the Foveaux Strait.

Specific objectives:

1. To undertake a potting survey in the Foveaux Strait to estimate relative abundance, size- and age-at-maturity, sex ratio and collect otoliths from pre-recruited and recruited blue cod.
2. To analyses biological samples collected from the potting survey.
3. To determine stock status of blue cod populations in this area.
4. Undertake a Dropped Underwater Video (DUV) survey concurrently with potting survey to provide comparative estimates for validating the DUV data.

Note: The sampling design will be reviewed by the Inshore Working Group prior to the sampling commencing.

Reporting Requirements:

Research Reporting

Objective 1-4

1. To submit to the Chief Scientist MFish a Progress report as specified in Research Reporting form 4 by 14 March 2010.
2. 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 November 2010.
3. To present the report in 2 above to meetings of the Northern Inshore Fishery Assessment Working Group in February 2011 in Wellington. Presentations to more than one meeting may be required.

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

The national diary surveys of marine recreational fishing found blue cod to be the second most frequently landed finfish species nationally, and the most frequently landed species in the South Island. Blue cod is an important species for Maori customary fishers, but the catch is unknown. Recreational take in BCO 5 was estimated at 130-230 t in 1994 and 1996 in the surveys and 165-296 in the 1999/2000 survey. The commercial sector landed 1,386t in 2006/07.

In the 2000-01 Sustainability Round, the Ministry undertook to work with stakeholders in the area to monitor blue cod populations. A series of relative biomass estimates based of potting surveys was consequently initiated with a view to conducting surveys every four years (see Inshore Medium Term Research Plan). This area has not been surveyed previously.

This research is necessary because:

- blue cod support important commercial, recreational, and customary fisheries;
- current stock status of blue cod is unknown, no formal stock assessments are undertaken for this species;
- independent biomass surveys are considered to be a useful method for monitoring the stock status and a time series of these data have been developed;
- the project has been identified as integral to the blue cod component of the New Zealand Inshore Fisheries Medium Term Research Plan; and

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

Objective 1

Blue cod populations on important recreational fishing grounds in BCO 3 are currently monitored using relative biomass indices generated by cyclical potting surveys (every third year).

Under objective a potting survey will be undertaken between Oamaru and Shag Point. The previous survey should be considered and any necessary improvements implemented. All physical environmental data thought to influence catchability of the pots should be collected at each sample site.

Biological samples should be collected to allow determination of the size and age composition of the blue cod populations and other important biological characteristics such as sex ratio and age/size at maturity. While ensuring that sufficient biological samples are available, care should be taken to minimize the impact of the sampling on population density.

Objective 2

Biological samples should be analysed to describe the size, age, and sex composition of blue cod in the region. The spatial distribution of samples should be considered when producing raised estimates of population quantities, e.g. size and age structure.

Objective 3

While a formal stock assessment (based on a stock assessment model) is not proposed for blue cod at this time, there are multiple sources of information that can be used to provide information on stock status and the sustainability of current removals.

Under this objective, three primary tasks are envisaged:

- calculation of a standardised abundance index from the potting survey;
- estimation of total mortality (Z) from catch composition data; and
- estimation of spawning biomass per recruit reference points.

A standardised relative abundance index will be calculated for the potting survey. To the extent that other factors influence catchability of potting activities, historical data should be included and those estimates revised as appropriate.

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:

- 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; and

- discussion of the consistency of signals over time and space should be included e.g. is the progression of cohorts apparent and are estimates of Z stable between years.

Finally, the length, age, maturity and mortality data should then be used to determine estimates of spawner biomass per recruit that can be used to develop MSY-related proxies that will provide a basis for determining likely stock status based on the estimates of Z from the catch curve analysis.

Objective 4

Under this objective the research provider will undertake simultaneous DUV surveys in the potting locations and compare the relative abundance estimates between the two techniques. These data will then be used to assess the feasibility of using DUV to develop relative abundance estimates and compare the costs and pros and cons of each method.

Weighting of Objectives:

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.5, 0.25 and 0.25.

Project: Green-lipped mussels in GLM 9

Project Code: GLM2009/01

Start Date: 1 October 2009

Completion Date: 30 September 2010

Vessel Use: Subject to tender

Overall Objective:

1. To determine the best method(s) for investigating population connectivity of the green-lipped mussel resource and associated algal species at Ninety Mile Beach and adjacent coastal areas (GLM 9).

Specific Objective:

1. Undertake a desk-top study to identify, review and evaluate various scientific methods (eg. acoustic mapping, aerial photography, 2-dimensional hydrodynamic modeling, elemental fingerprinting, side-scan sonar swath mapping) that could be used to determine the extent of and relationship between populations of green-lipped mussel at Ninety Mile Beach and adjacent coastal areas.
2. Identify potential knowledge gaps in the green-lipped mussel fishery in GLM9 and evaluate future research directions to best aid management objectives.

Reporting Requirements:

Research Reporting

Objectives 1 & 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 the report in 1 above to a meeting of the Shellfish Fishery 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:

The green-lipped mussel (GLM) resource is managed under the quota management system. In contrast with other green-lipped mussel stocks, specific management arrangements were applied to the GLM 9 stock (North Cape to Tirua Point, south of Kawhia). This is because much of the commercial catch at Ninety Mile Beach is directed at the harvest of the spat life stage rather than the adult. The spat washes ashore attached to macro-algae and other material during storm events. Adult green-lipped mussels are taken by non-commercial interests from the Ninety Mile Beach area, as well as other parts of the stock.

To effectively manage the resource, knowledge of the location of adult populations, associated macro-algae and the connectivity of these inter-related species is vital. This would assist in ensuring that any future decisions for sustainable utilization of green-lipped mussel better take into account the biological and physical characteristics of resources that contribute to the fishery. This knowledge would also aid in ensuring that harvesting activities and adverse impacts do not compromise the values associated with the fishery.

There have been several studies on New Zealand green-lipped mussel assessing the genetic characteristics, mussel settlement and algal/mussel spat associations. Mussels have a larval phase of approximately three to five weeks meaning that larvae could come from adult populations ranging over a large area. However recent studies overseas have shown that marine larval dispersal may be more localized than traditionally inferred. The authors of locally focused papers and research providers have indicated that further work needs to be conducted to fully understand the population dynamics of the green-lipped mussel resource at Ninety Mile Beach.

Methods for investigating population connectivity have been developed for mussel populations overseas and for species such as kina and paua larvae in New Zealand. Acoustic mapping and side-scan sonar are two methods that have been used to identify benthic habitats across a broad spatial scale and could be used at Ninety Mile Beach. Similarly, hydrodynamic features of the area could be studied through 2-dimensional modeling or fieldwork. Population connectivity can be further investigated through the use of novel tagging and elemental fingerprinting techniques that can determine the source of the spatfall. Elemental fingerprinting has been demonstrated to be effective in tracking the source of settled mussels in an overseas coastal environment.

The nature and extent of green-lipped mussel and macro-algal populations at Ninety Mile Beach can be mapped using aerial photography, acoustic mapping or side scan sonar. A study by Morrison et al. 2008, found that the acoustic mapping tool 'QTC Impact' can reliably discriminate sub-tidal mussel beds on rocky reefs from other habitats, making it feasible to proceed with large-scale mapping. QTC Impact is a benthic-habitat mapping tool which, in combination with ground-truthing approaches,

will allow high-quality benthic habitat information to be collected over large spatial scales.

The hydrodynamic processes in the area are important as they determine the distribution and transport of the spat and the connectivity of the populations and inter-related species. A 2-dimensional hydrodynamic model was recently used to predict current flow off an area of coast north of Gisborne and was related to larval dispersal from within a marine reserve. This type of assessment could be replicated at Ninety Mile Beach and used to predict current flow and larval dispersal.

A review of the literature on the New Zealand green-lipped mussel may provide additional methodology that may be suitable in assessing the population connectivity of the resource at Ninety Mile Beach. Knowledge of the resource can also be gained by talking to local people such as industry and customary representatives.

Objective 1

This objective would review the literature on green-lipped mussel and evaluate scientific methodologies that could be used to determine the population connectivity of the green-lipped mussel resource, macro-algal populations and spat fall at Ninety Mile Beach. The research provider should discuss the relative strengths and weaknesses of different methodologies and whether the use of each method (either singularly or in combination), will significantly advance our knowledge of the population connectivity of the mussel resource at Ninety Mile Beach.

Objective 2

This objective would identify potential knowledge gaps in the green-lipped mussel fishery of GLM9 and evaluate the contribution future studies could make to fisheries managers and stakeholders in the development and review of fisheries management initiatives.

Weighting of Objectives:

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

Project: Survey of the Southland recreational blue cod fishery

Project Code: REC2009/03

Start Date: 1 October 2009

Completion date: 30 June 2011

Vessel Use: None

Overall Objectives:

1. To characterise the recreational fishery for blue cod in Southland.

Specific Objectives:

1. To undertake a survey of recreational fishers at selected boat ramps in Southland to determine areas fished, species caught and catch rates.
2. To carry out a survey of charter boat operators from Southland to determine areas fished, species caught and catch rates.

Note:

This is a multi-year project to allow for a full year of sampling and subsequent analysis. If it is realistic to bring forward the final reporting dates such a variation would be viewed favourably in tender documents. Research providers should make themselves aware of the final research report for SAP2006/01 which characterises the Fiordland area recreational fisheries. This project is not intended to duplicate that work.

Reporting Requirements:

Research Reporting

Objectives 1 and 2

1. To submit to the Chief Scientist MFish a Research Progress Report as specified in Research Reporting form 4 by 31 August 2010.
2. To submit to the Chief Scientist MFish a draft Fishery Assessment Report as specified in Research Reporting form 7 by 31 January 2011.
3. To present the report in 2 above to the Recreational Fisheries Working Group and the Southern Inshore Fisheries Management Group in February-March 2011. Presentations to more than one meeting may be required.
4. To submit to the Chief Scientist MFish a revised Fishery Assessment Report as specified in Research Reporting form 7 by 30 April 2011.

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 May 2011.

Rationale:

General

The national telephone diary surveys of marine recreational fishing found that blue cod is the most frequently landed species on the lower South Island and supports a valuable recreational fishery. The blue cod fishery (BCO5) is the most important commercial inshore finfish fishery in Southland. The BCO5 Quota Management Area (QMA) begins at Slope Point (Catlins), includes Foveaux Strait, Stewart Island and stretches up and past Fiordland to Awarua Point (West Coast). However, the significant majority of blue cod fishing is thought to occur in Statistical Areas 025 and 030, being Foveaux Strait and northern Stewart Island and the south coast.

The recreational fishery primarily catches blue cod using hand lines or rods. Previous surveys of the recreational harvest suggest that the catch blue cod in BCO5 is in the order of 150 to 300 t. The commercial fishery in 2006/07 landed 1,382 t of blue cod from a 1,500 t TACC. While the estimated recreational harvest for blue cod is not significant compared to the commercial landings, there is some anecdotal evidence that recreational fishing for blue cod is increasing. It is evident from surveys of blue cod in BCO 3 and BCO 7, and recreational surveys of blue cod fishing, that blue cod can be subject to localised serial depletion, with subsequent impacts on catch rates for recreational fishers. This research will provide a characterisation of the present state of the blue cod recreational fishery in Southland, and provide information on catch rates that could be compared with any future surveys to monitor trends in the BCO 5 recreational fishery.

This research is necessary because:

- Blue cod are an important recreational fishery in Southland;
- Our knowledge of this fishery is minimal;
- Blue cod are prone to localised depletion;
- A reference point is required against which to monitor future trends; and

- The characterisation is an important input to regional fisheries management.

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

Objectives 1 & 2

This research will characterise the recreational fishery in Southland with an emphasis on the blue cod fishery. The characterisation needs to include species caught, areas fished and catch rates during the period 1 October 2009 to 30 September 2010. The survey should focus on boat ramps used by recreational fishers that provide trailer boat access to the fishery. The characterisation would also include a survey of charter boat operators to determine species caught, areas fished and catch rates.

There are a limited number of recreational fishing boat access points in Southland. The area of the survey should encompass:

- Primary recreational ramps which are Bluff, Riverton, Colac Bay;
- Secondary recreational ramps which are Garden Bay and Stewart Island (long weekends/holidays);
- Charter boat vessels from Bluff, Riverton, Stewart Island;
- Fishers who leave Stewart Island via the two main departure points - the ferry and airline terminals;
- Operators who charter hunting parties to and from Stewart Island; and
- Analysis of recreational take that is included in commercial fishers Catch Effort and Landing Returns.

Scale will be an important consideration in the design of this work, and collection and collation at the finest resolution practicable is sought.

Weightings

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 0.5 and 0.5.

Project: Recreational fishing effort indices

Project Code: REC2009/04

Start Date: 1 October 2009

Completion Date: 30 September 2012

Vessel Use: None

Overall Objectives:

1. To monitor changes in recreational fishing effort in FMAs1, 8 and 9.

Specific Objectives:

1. To derive regional indices of recreational fishing in FMA1, FMA8 and FMA9 using web camera data collected from boat ramps for the 2009/10, 2010/11 and 2011/12 fishing years.

Note:

This is a multi-year project to allow three full years of sampling.

Reporting Requirements:

Research Reporting

Objective 1

1. To submit to the Chief Scientist MFish a Research Progress Report as specified in Research Reporting form 4 by 31 October 2010.
2. To submit to the Chief Scientist MFish a Research Progress Report as specified in Research Reporting form 4 by 31 October 2011.
3. To submit to the Chief Scientist MFish a draft Fishery Research Report as specified in Research Reporting form 5 by 31 October 2012.

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 2012.

Rationale:

General

Information on recreational catch and effort is important for management of marine recreational fisheries. There is currently little information on the variability of recreational fishing effort through time, which hampers our ability to reconcile the disparate information that is available from these fisheries. Web cameras provide a cost effective means of monitoring recreational fishing effort, 24 hours a day, 365 days a year.

Objective 1

Camera systems have been established overlooking six ramps in QMA 1 and three in QMA 8. Data from three QMA 1 and two QMA 8 cameras are currently being used to generate indices of recreational fishing effort in these areas (REC2007/02 – Indices of recreational fishing). These indices are based on the interpretation of images selected annually from 60 days randomly pre-selected according to a random stratified design (derived from an associated programme, REC2005/06 – Monitoring recreational fishing effort and catches in QMA 1).

It is likely that an aerial over-flight survey of the QMA 1 fishery will be conducted during the period proposed here, and regional QMA 1 web camera indices will provide a means of interpolating between the next survey and those conducted in the Hauraki Gulf in 2003–04 and in QMA 1 in 2004–05.

The purpose of this programme is to support the continuing maintenance of all nine web cameras, to store all images collected by these systems on a secure server, and to extend the time series on fishing effort out until the end of the 2012 fishing year. Although data are currently used from five cameras only, the remaining four cameras should also be maintained to ensure continuity in case problems are experienced with neighbouring camera systems.

Weightings

Weightings indicate the relative importance of each of the objectives. The weightings for the objectives in this project are (in order): 1.0.