



Annual Review of Freshwater Fisheries

2010/11



New Zealand Government

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National Snapshot: Freshwater Fisheries 2010/11

The Government's long-term goal for fisheries is "New Zealanders maximising benefits from the use of fisheries within environmental limits". To support this goal, the Ministry has set out management objectives for freshwater fisheries managed under the Fisheries Act 1996 in the Draft National Fisheries Plan for Freshwater (the Plan).¹ Performance measures² are used to monitor progress towards meeting the management objectives and to guide management activity. The following is a summary performance report for 2010/11.

Health of Our Freshwater Fisheries

Healthy Freshwater Stocks

Fish stocks must be healthy if they are to support high-quality fisheries. New Zealand's fish stocks are considered healthy when their biomass (stock size) is at or above the level that would produce the maximum sustainable yield.

The main fishery covered by the Plan is the eel fishery. It is not feasible or cost-effective to estimate biomasses for all freshwater stocks, including eels, and the characteristics of freshwater stocks and environments provide some unique challenges. The best available information is therefore used to indicate stock health. Figures 1 and 2 summarise the performance of eel stocks against the stock sustainability performance measures set out in the Plan.

Figure 1. Percentage of eel stocks meeting stock sustainability performance measures

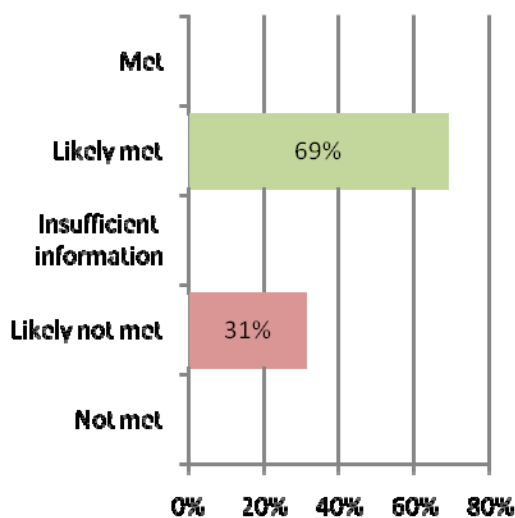
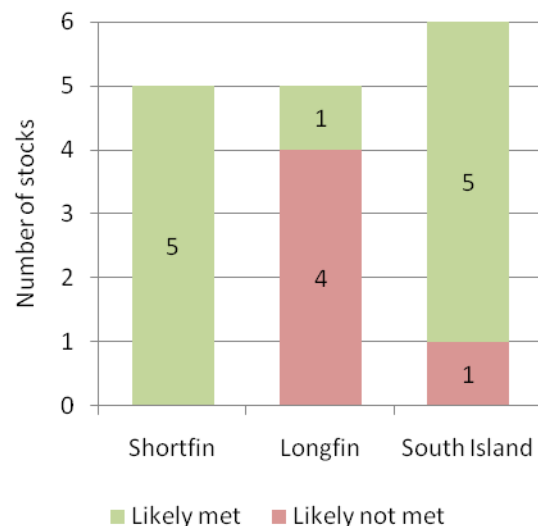


Figure 2. Number of eel stocks meeting stock sustainability performance measures



¹ The National Fisheries Plan for Freshwater relates only to species managed under the Fisheries Act 1996.

² Refer to Appendix 1 for a description of the performance measures used in this document.

The three freshwater eel species are managed in sixteen stocks across New Zealand. Sustainability performance measures for eleven eel stocks are likely to be met (all five shortfin eel stocks, one out of five longfin eel stocks and five out of six South Island stocks). For the remaining four longfin eel stocks and one South Island stock, sustainability performance measures are not likely to be met. More detailed information on the performance of eel stocks against sustainability performance measures and other indicators of stock health is summarised in Appendix 2.

Measures to increase eel numbers have been put in place. These included the introduction of eels to the Quota Management System (QMS) in the South Island (2000) and North Island (2004). Chatham Island stocks are also managed within the QMS (since 2003) but have had little reported catch to date. The setting of target reference levels and monitoring against those targets will also commence during 2011/12.

Reported catch levels for other freshwater species (Group 2 - non-QMS) are relatively low. However, given the vulnerable characteristics of some of these species, further consideration will be given during 2011/12 to specific monitoring needs for non-QMS freshwater stocks.

Healthy Freshwater Environments

A healthy aquatic environment provides the basis for healthy fisheries. Habitats important to freshwater fisheries can be negatively affected by a range of factors, including pollution, sedimentation, nutrient run-off, the modification of water flows, and the spread of unwanted aquatic life.

Local authorities undertake monitoring of some of these factors, particularly water quality, using a number of standardised measures. Measures include levels of nitrates, and the Trophic Level Index. Recent results, as shown in Figures 3 and 4³, show a small number of lakes are experiencing an improvement in water quality, while the majority are stable and some are declining. Nitrogen levels are highly variable with some rivers having over ten times the concentration of others.

Figure 3. Nitrogen concentrations in rivers by percentile group between 2002 and 2009 (Source: Statistics New Zealand)

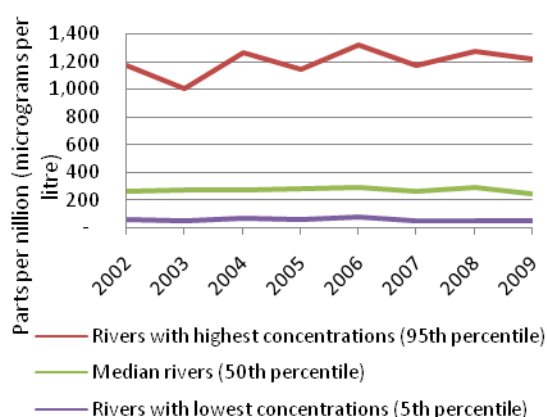
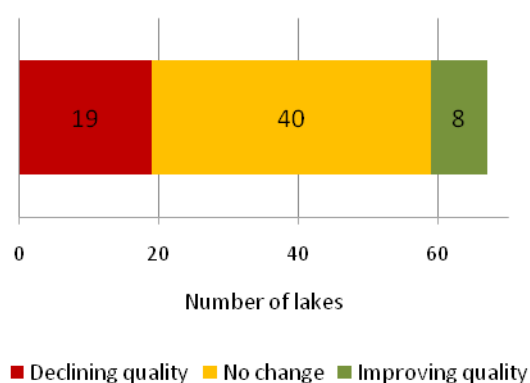


Figure 4. Trends in nutrient levels (Trophic Level Index) for monitored lakes and land cover, 2005-2009 (Source: Ministry for the Environment)



³ Data sourced from Ministry for the Environment, through Statistics New Zealand.

Information to identify and monitor habitats of particular significance for management of freshwater fisheries is not yet available. Work is being undertaken in 2011/12 to support identification of such habitats, with an emphasis on those habitats important to eels. The Ministry is also working to develop strong peer networks with other agencies responsible for management of activities that impact the freshwater environment, including the risks surrounding the spread of unwanted aquatic life.

Benefits Realised from Freshwater Fisheries

Fisheries provide cultural, social, economic, environmental and intrinsic benefits to New Zealand. At this time there is no accepted way of estimating a single benefit measure for fish stocks, therefore benefits are monitored for each fishing sector using available datasets:

- customary Maori benefits: fulfilment of customary Maori fishing authorisations
- recreational sector benefits: recreational participation rates
- commercial sector benefits: quota share value
- intrinsic benefits: stock health indicators (refer previous section).

Customary Maori Benefits

Freshwater fish are an important traditional food source for many iwi, hapu and whānau, and tangata whenua have special relationships with taonga fish species and places of customary food gathering importance. Trends in fulfilment of customary Maori fishing authorisations provide an indication of whether customary fishing needs are being met.

A small amount of information is available from customary reporting for eel stocks in the South Island. Information for ANG13 (Lake Ellesmere), ANG15 (Otago and Southland) and ANG16 (West Coast) suggests fulfilment for these stocks is stable or increasing. The Ministry is aware that Tangata Kaitiaki do not issue authorisations for eels within ANG14 (South Canterbury) to improve eel abundance. No reports have been submitted for ANG11 (top of the South Island). In ANG12 (North Canterbury) the information suggests there is a declining trend in fulfilment. For several of these stocks, Tangata Kaitiaki report some concern about local depletion and the inability to fish according to tikanga.

There is not enough information available to inform trends for other eel stocks.

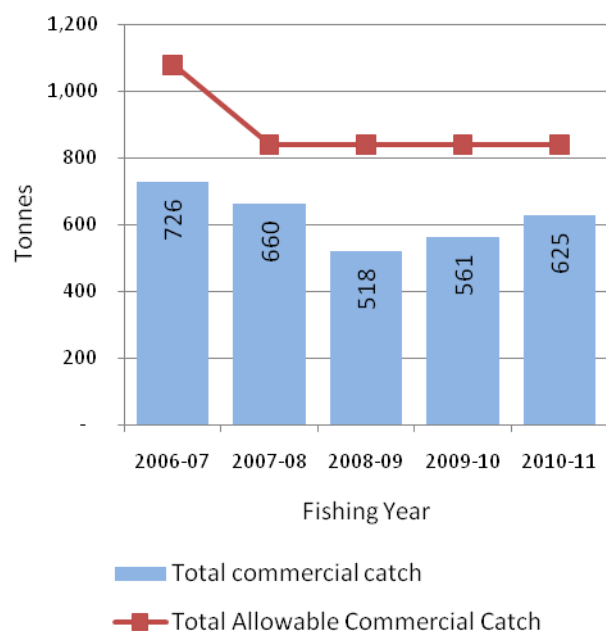
A key focus for the future is extending the customary reporting coverage and improving data quality. Discussions with iwi about stocks, where the data suggests fulfilment rates are declining, will inform decisions about whether and what management action is required.

Recreational Sector Benefits

No direct information on the benefits realised from amateur fishing of freshwater stocks or rates of participation is available at this time. Information will be collected during 2011/12 for the Waikato region (thought to be a key fishing area) which will provide direction on the benefits of obtaining further information on freshwater recreational fishing.

Commercial Sector Benefits

Figure 5. Reported commercial catch and Total Allowable Commercial Catch of freshwater eels (all stocks)



Eels are the main commercial freshwater species. The price paid for eel quota gives a market-based estimate of commercial benefit. However, there has been insufficient quota trading in recent years to determine a trend. The Ministry understands that market demand for eels is a key driver of catch, and thus of commercial benefit. Figure 5 summarises reported commercial catch of eels in recent years.

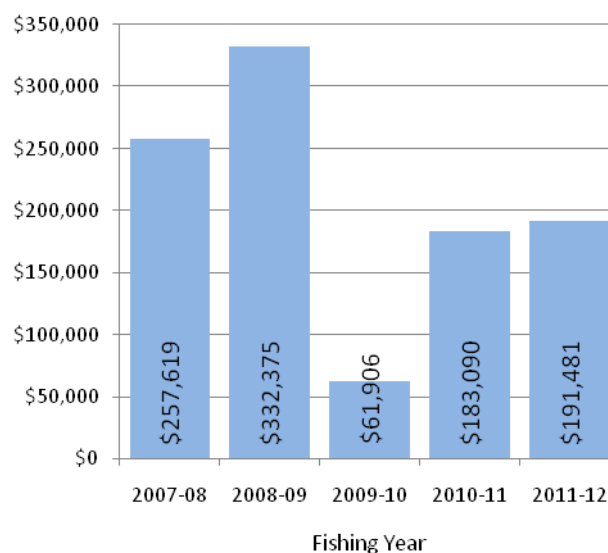
Key management focus areas to secure commercial benefits include reducing illegal fishing, removing regulations that unnecessarily constrain benefits, supporting industry value-added initiatives, and facilitating sustainable development of fisheries.

Management Costs

Total costs recovery levies for eel stocks from 2007/08 to 2011/12 are illustrated in Figure 6.

Over this period, total cost recovery levies have been variable. The variability in management costs relates largely to changing research costs from year to year. A focus for 2011/12 is to look for opportunities to improve the cost-effectiveness of stock monitoring strategies. This focus is part of a broader investigation into setting management targets and monitoring against those targets.

Figure 6. Total costs recovered for eel management



1. Introduction

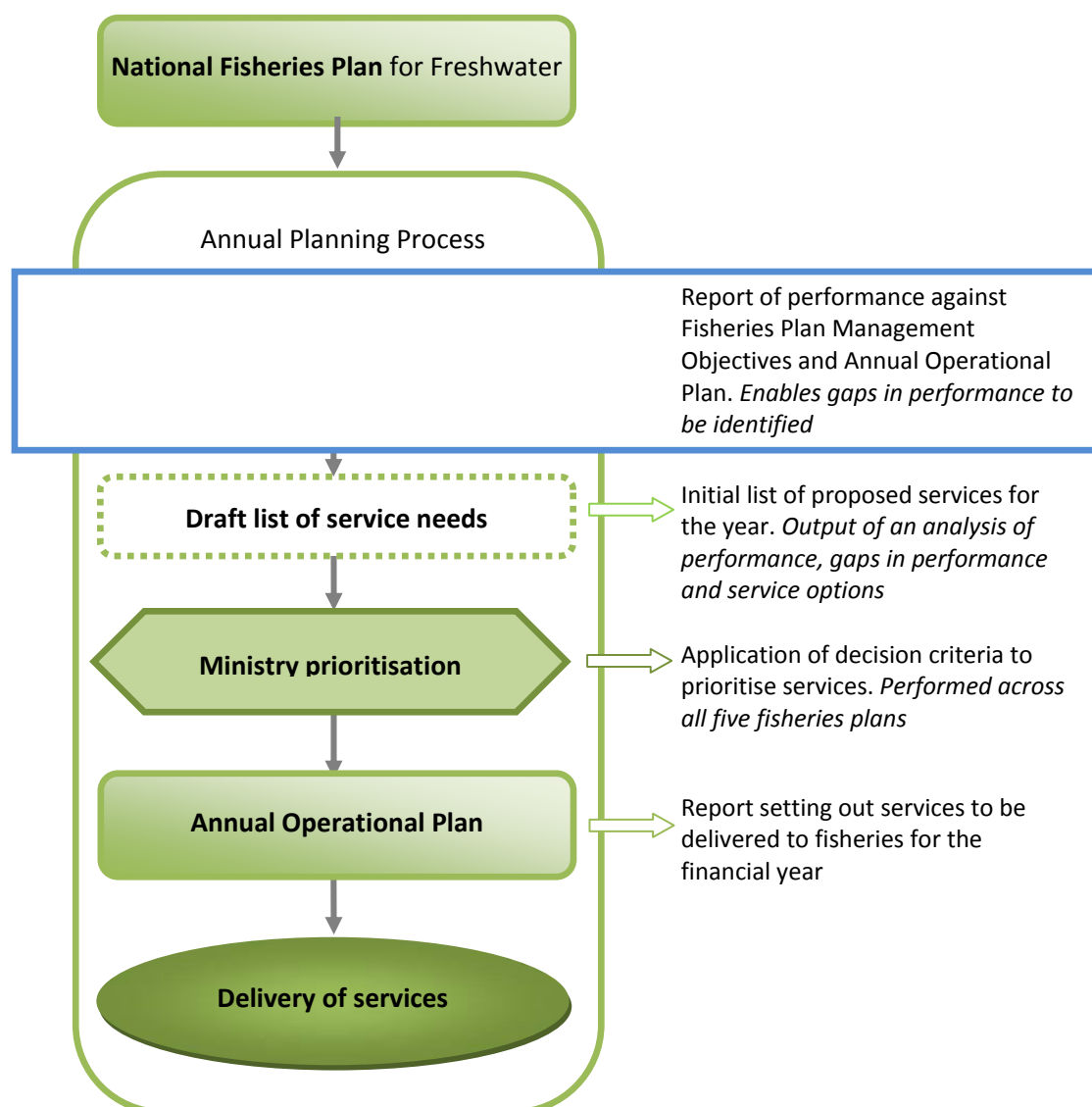
1.1 Purpose

This Annual Review Report presents information relating to fisheries managed under the National Fisheries Plan for Freshwater (the Plan) for the 2010/11 fishing year. The information is used to monitor performance against the management objectives set out in the Plan and to plan fisheries management activities in the next financial year. The information in this Annual Review Report will inform development of the 2012/13 Annual Operational Plan.

1.2 Context

The Plan provides the overarching framework for management of New Zealand's freshwater fisheries that are subject to the Fisheries Act 1996 and is implemented through an annual planning and service delivery cycle (Figure 7).

Figure 7. Annual Planning and Service Delivery Cycle



The Plan drives the annual cycle by establishing the management objectives for freshwater fisheries. The annual cycle begins with an Annual Review Report, which reports performance on:

1. the status of freshwater fisheries relative to the performance measures set out in the Plan (and any associated stock-specific performance measures); and
2. delivery of management actions and services specified in the previous year's Annual Operational Plan (*Note: this Annual Review Report only contains (1) above as the Annual Operational Plan for 2011/12, the first one under this planning model, is currently being implemented*).

Annual Review Report information is analysed and discussed with tangata whenua, industry and stakeholders to determine what, if any, management actions and services are required to address any gaps in performance indicated or to maintain or enhance performance in the fisheries. Potential management actions and services are captured in a draft Annual Operational Plan.

The demand for the Ministry's management services is frequently greater than what can be delivered. An internal prioritisation process across draft Annual Operational Plans from the five National Fisheries Plans (Deepwater, Highly Migratory, Inshore Finfish, Inshore Shellfish, and Freshwater) seeks to address competing interests. Discussions with tangata whenua, industry and other stakeholders also provide opportunities to identify where these groups can provide needed or desired services.

1.3 Structure

The Annual Review Report's assessment is set out in the following sections:

- Chapter 2: **Measuring Performance**
Describes the stock groups' performance objectives and measures established by the Plan.
- Chapter 3: **Assessment**
Reports on the assessment against the performance measures at the stock level. This section is organised by Fishery Management Areas.
- Chapter 4: **Performance of the Annual Operational Plan**
In future years, this section will examine delivery of specified management actions and services.
- Appendices: **Appendix 1 - Performance Measures**
Provides a detailed description of the methodology used to assess stocks against the performance measures.
- Appendix 2 - Eel catch distribution, CPUE indices and recruitment**
Provides more detailed information of the proxies used to assess the stock sustainability performance measure and indicators of the stocks' health.
-

2. Measuring Performance

2.1 Stock Groups

This Annual Review Report reports performance of each stock against the Performance Measures set out in the Plan.

The Plan groups stocks to facilitate multi-stock objective-setting and service delivery. Performance Measures are established at the group level. The stock groupings are as follows:

QMS stocks	Group 1
	Longfin eels ⁴ (North Island and Chatham Islands LFE17, 20, 21, 22, 23)
	Shortfin eels ⁵ (North Island and Chatham Islands SFE17, 20, 21, 22, 23)
	Freshwater eels ⁶ (South Island ANG11, 12, 13, 14, 15, 16)
Non-QMS stocks	Group 2
	All other freshwater fisheries resources subject to the Fisheries Act 1996.

2.2 Performance Measures

The Performance Measures (and associated Management Objectives) for each stock group are set out in the table below.

Group 1	
USE OBJECTIVES:	Secure social, economic and cultural benefits from each stock.
<ol style="list-style-type: none"> 1. Trends in: <ul style="list-style-type: none"> ○ fulfilment of customary fishing authorisations ○ amateur participation rates ○ real quota value ○ overall benefits, where these can be determined cost effectively, are stable or increasing. 2. Rolling 5-yr average Cost Recovery Levies (CRL)/Annual Catch Entitlement (ACE) value is not increasing. 	

⁴ LFE stocks include longfin eel *Anguilla diffebachii* only.

⁵ SFE stocks include shortfin eel, *Anguilla australis* and Australasian longfin eel *Anguilla reinhardtii*.

⁶ ANG stocks include longfin eel, *Anguilla diffebachii*, shortfin eel, *Anguilla australis*, and, where relevant Australasian longfin eel, *Anguilla reinhardtii*.

ENVIRONMENT OBJECTIVE (Stock Sustainability):	Maintain adequate spawning biomass to provide for high levels of recruitment. Protect, maintain and enhance eel habitats.
<ol style="list-style-type: none"> 1. Stock size (or agreed indicator) is at or above an established target reference level with at least a 50% probability. 2. Policy objectives for habitats of significance for the management of eel fisheries are met. 3. Relevant resource management policy and planning documents include objectives, policies, and rules that protect habitats of significance for the management of eel fisheries. 	

Group 2

USE OBJECTIVE:	Enable utilisation of each stock.
<ol style="list-style-type: none"> 1. Management costs are stable or decreasing 	
ENVIRONMENT OBJECTIVE (Stock Sustainability):	Ensure catch is at a level that is sustainable.
<ol style="list-style-type: none"> 2. Catch does not exceed or fluctuate beyond the Quota Management System Introduction Standard thresholds. 	

All Groups

ENVIRONMENT OBJECTIVE (Effects of Fishing):	Minimise adverse effects of fishing on the aquatic environment, including on biological diversity.
<ol style="list-style-type: none"> 1. Policy objectives for managing fishing effects on the aquatic environment are met. 	






The datasets and approaches used to assess each stock against the performance measures are described in Appendix 1.

3. Assessment against performance measures

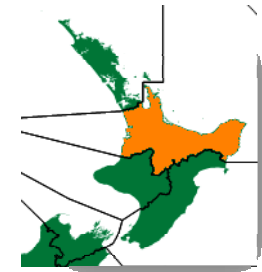
3.1 Group 1: Eel fisheries

The stock-level performance assessments are set out in the following tables for all Group 1 stocks (eel fisheries). Stocks are organised by Fishery Management Area to facilitate engagement with tangata whenua, industry and other stakeholders.

The assessments are brief summaries. A symbol has been used to indicate performance relative to the performance measure set in the Plan and, where useful, a brief description is provided. The key purpose of this section is to support discussion with tangata whenua, industry and other stakeholders on priority areas for action. The Ministry expects to improve the quality of performance measures and analyses over time.

Symbol	Description
	Performance measure met. <i>Information directly relevant to the performance measure is available and confirms the performance measure is met.</i>
	Likely performance measure met. <i>Information directly relevant to the performance measure is not available but other information indicates performance is consistent with the performance measure.</i>
	Insufficient data. <i>Available information is insufficient to make an assessment relative to the performance measure.</i>
	Unlikely performance measure met. <i>Information directly relevant to the performance measure is not available but other information indicates performance is not consistent with the performance measure.</i>
	Performance measure not met. <i>Information directly relevant to the performance measure is available and confirms the performance measure is not met.</i>

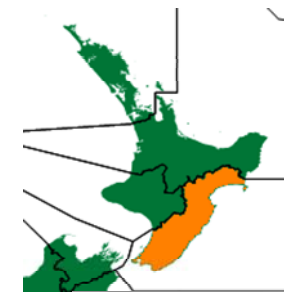
3.2 AUCKLAND EAST FISHERY MANAGEMENT AREA (FMA1)⁷



Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability <i>performance measures</i>	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection	
LFE 21	? Estimated quota value in 2006/07 approximately \$9,534	? No amateur participation data for freshwater stocks	? Less than 75% coverage of customary regulations. Some reporting has occurred but it is not species specific	✓ Not enough information on ACE value but declining trend in cost recovery levies	✗ No target level set. However, CPUE series shows decline (estimates are only available to 2007). Plan to increase eel numbers initiated in 2004 made up of a range of measures including introduction to QMS and significantly reduced catch limits.	? Habitats of significance not yet determined. A number of areas closed to commercial fishing.	✓ Lower Waikato wetlands identified as important eel habitat in Waikato Regional Policy Statement. Bay of Plenty Coastal Environment and Water and Land Plans provide specific reference to eels.	✓ Policy objectives for managing effects of fishing on the environment have not been determined. Fishing method impacts considered low. Regulated and voluntary measures in place to address biosecurity risks.
SFE 21	? Estimated quota value in 2007/08 was \$46,624 and in 2010/11 \$15,206	? No amateur participation data for freshwater stocks	? Less than 75% coverage of customary regulations. Some reporting has occurred but it is not species specific	✓ Not enough information on ACE value but declining trend in cost recovery levies	✓ No target level set. However, CPUE series shows increase (estimates are only available to 2007). Overall information does not indicate an immediate sustainability concern.			

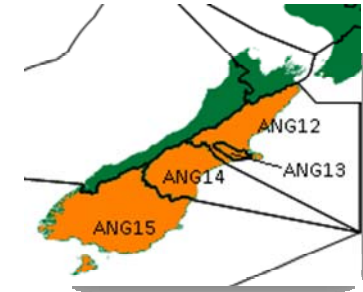
⁷ The boundaries of northern eel stocks align with multiple Fishery Management Areas, see FMA9 for SFE20 and LFE20.

3.3 CENTRAL EAST FISHERY MANAGEMENT AREA (FMA2)












Stock	Trend in Real Quota Value	Trend in Recreational Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability performance measures	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection	
LFE 22	? Estimated quota value in 2006/07 was \$ 9,413	? No amateur participation data for freshwater stocks	? Less than 75% coverage of customary regulations. Some reporting in 2010 but it is not species specific	✓ Not enough ACE value information available. However, declining trend in cost recovery levies.	✗ No target level set. However, CPUE series shows decline (estimates are only available to 2007). Plan to increase eel numbers initiated in 2004 made up of a range of measures including introduction to QMS and significantly reduced catch limits.	? Habitats of significance not yet determined. A number of areas closed to commercial fishing.	✓ Reference to eels in Hawke's Bay Regional Coastal Plan (in relation to estuaries). Specific mention of eels and the role of the Ministry in the Wellington [Region] Freshwater Plan.	✓ Policy objectives for managing effects of fishing on the environment have not been determined. Fishing method impacts considered low. Regulated and voluntary measures in place to address biosecurity risks.
SFE 22	? No information available	? No amateur participation data for freshwater stocks	? Less than 75% coverage of customary regulations. Some reporting in 2010 but it is not species specific	✓ Not enough ACE value information available. However, declining trend in cost recovery levies.	✓ No target level set. However, CPUE series shows increase (estimates are only available to 2007). Overall information does not indicate an immediate sustainability concern.			

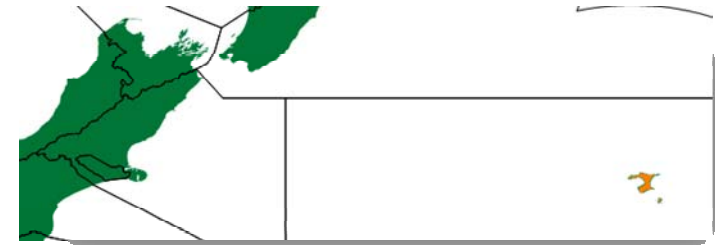
3.4 SOUTH-EAST & SOUTHLAND FISHERY MANAGEMENT AREAS (FMA3 & FMA5)



Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability <i>performance measures</i>	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection	
ANG 12	? No information available	? No amateur participation data for freshwater stocks	✗ No reporting in 2007 or 2011; decreasing trend between 2008 and 2010. Depletion concerns and inability to fish according to tikanga.	✓ Not enough ACE value information available. However, declining trend in cost recovery levies.	✗ No target level set. However, CPUE series shows decline (estimates are only available to 2006). Updated CPUE analysis is scheduled for delivery in 2011/12. Plan to increase eel numbers initiated in 2000 made up of a range of measures including introduction to QMS.	? Habitats of significance not yet determined. A number of areas closed to commercial fishing.	✓ Areas of significance to Ngai Tahu for eel fishing identified in Canterbury Coastal Plan.	✓ Policy objectives for managing effects of fishing on the environment have not been determined. Fishing method considered low. Regulated and voluntary measures in place to address biosecurity risks.
ANG 13	? Estimated quota value for 2008/09 was \$10,652	? No amateur participation data for freshwater stocks	✓ Consistent reporting of authorisations and catch. Fulfilment of authorisations is stable. Inability to fish according to tikanga.	✓ Not enough ACE value information available. However, declining trend in cost recovery levies.	✓ No target level set. However, CPUE series shows increase in shortfin (estimates only available to 2006). Updated CPUE analysis is scheduled for delivery in 2011/12. Overall information does not indicate an immediate sustainability concern.			

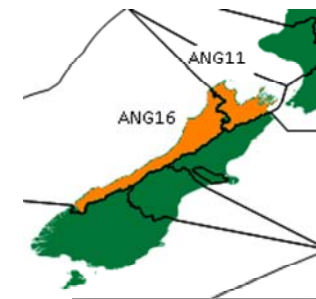
Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability <i>performance measures</i>	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection	
ANG 14	? No information available. Customary commercial ACE is not being fished or sold due to depletion concerns.	? No amateur participation data for freshwater stocks	 Tangata Kaitiaki do not issue authorisations for this stock due to local depletion concerns and inability to fish according to tikanga.	 Not enough ACE value information available. However, declining trend in cost recovery levies.	 No target level set. However, CPUE series fluctuates (estimates incomplete and only available to 2006). Updated CPUE analysis is scheduled for delivery in 2011/12. Overall information does not indicate an immediate sustainability concern.	? Habitats of significance not yet determined. A number of areas closed to commercial fishing.	 Areas of significance to Ngai Tahu for eel fishing identified in Canterbury Coastal Plan.	 Policy objectives for managing effects of fishing on the environment have not been determined. Fishing method impacts considered low. Regulated and voluntary measures in place to address biosecurity risks.
ANG 15	? Estimated quota value for 2006/07 was \$9,000	? No amateur participation data for freshwater stocks	 100% of authorisations fulfilled in 2008 and 2009 but no authorisations or catch reported for 2007 or 2010.	 Not enough ACE value information available. However, declining trend in cost recovery levies.	 No target level set. However, CPUE series shows a decline followed by an increase (estimates incomplete and only available to 2006). Updated CPUE analysis is scheduled for delivery in 2011/12. Overall information does not indicate an immediate sustainability concern.		 Eels directly referred to in policy 8.5.1 of the Otago Regional Water Plan. References to eels made in the Southland Regional Water Plan.	

3.5 CHATHAM ISLANDS FISHERY MANAGEMENT AREA (FMA4)



Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock Sustainability performance measures	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection	
LFE 17	? No information available	? No amateur participation data for freshwater stocks	? No reports - only recently operating under Customary Regulations	✓ Not enough ACE value information available. However, declining trend in cost recovery levies.	✓ No target level set. However, only nominal reported catch, 3 tonne TAC, 1 tonne TACC.	? Habitats of significance not yet determined.	✓ Eels referenced in resource management plan and specific references made to managing habitats of native fauna.	✓ Policy objectives for managing effects of fishing on the environment have not been determined. Only nominal reported catch and fishing method impacts considered low. Regulated and voluntary measures in place to address biosecurity risks.
SFE 17	? No information available	? No amateur participation data for freshwater stocks	? No reports - only recently operating under Customary Regulations	✓ Not enough ACE value information available. However, declining trend in cost recovery levies.	✓ No target level set. However, only nominal reported catch, 15 tonne TAC, 10 tonne TACC.			

3.6 CHALLENGER FISHERY MANAGEMENT AREA (FMA7)



Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability performance measures	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection for eel habitats	
ANG 11	? No information available	? No amateur participation data for freshwater stocks	✗ No reports but >75% coverage of Customary Regulations. Stock depletion concerns, inability to fish according to tikanga.	✓ Not enough ACE value information available. However, declining trend in cost recovery levies.	✓ No target level set. However, CPUE series shows increase (estimates incomplete and only available to 2006). Updated CPUE analysis is scheduled for delivery in 2011/12. Overall information does not indicate an immediate sustainability concern.	? Habitats of significance not yet determined. A number of areas closed to commercial fishing.	✓ Nelson resource management plan includes policies to reflect eel management plans in water management decisions.	✓ Policy objectives for managing effects of fishing on the environment have not been determined. Fishing method impacts considered low. Regulated and voluntary measures in place to address biosecurity risks.
ANG 16	? No information available	? No amateur participation data for freshwater stocks	✓ 100% of authorisations fulfilled in 2007 but no further reports	✓ Not enough ACE value information available. However, declining trend in cost recovery levies.	✓ No target level set. However, CPUE series shows increase (estimates only available to 2006). Updated CPUE analysis is scheduled for delivery in 2011/12. Overall information does not indicate an immediate sustainability concern.		✓ Habitats of significance to eels identified in West Coast South Island Land and Water Regional Plan.	

3.7 CENTRAL FISHERY MANAGEMENT AREA WEST (FMA8)



Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability performance measures	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection for eel habitats	
LFE 23	? Estimated quota value/ton for 2006/07 was \$8,552	? No amateur participation data for freshwater stocks	? Less than 75% coverage of customary regulations – no reporting	☑ Not enough ACE value information available. However, declining trend in cost recovery levies.	☒ No target level set. However, CPUE series shows decline (estimates are only available to 2007). Plan to increase eel numbers initiated in 2004 made up of a range of measures including introduction to QMS and significantly reduced catch limits.	? Habitats of significance not yet determined. A number of areas closed to commercial fishing.	☑ Taranaki Regional Freshwater Plan identifies schemes for monitoring eel passage through dams. Horizons Regional Council includes reference to eels while describing lakes and rivers in the region. Level of protection being provided in practice is unclear.	☑ Policy objectives for managing effects of fishing on the environment have not been determined. Fishing method impacts considered low. Regulated and voluntary measures in place to address biosecurity risks.
SFE 23	? Estimated quota value/ton for 2006/07 was \$10,269	? No amateur participation data for freshwater stocks	? Less than 75% coverage of customary regulations – no reporting	☑ Not enough ACE value information available. However, declining trend in cost recovery levies.	☑ No target level set. However, CPUE series shows increase (estimates are only available to 2007). Overall information does not indicate an immediate sustainability concern.			



3.8 AUCKLAND WEST FISHERY MANAGEMENT AREA (FMA9)⁸

Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability performance measures	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection for eel habitats	
LFE 20	? 2006/07 estimated value was \$54,410, 2007/08 reported value was \$3,926, and \$9,474 for 2009/10	? No amateur participation data for freshwater stocks	? Less than 75% coverage of customary regulations – no reporting	☑ Not enough ACE value information available. However, declining trend in cost recovery levies.	☒ No target level set. However, CPUE series shows decline (estimates are only available to 2007). Plan to increase eel numbers initiated in 2004 made up of a range of measures including introduction to QMS and significantly reduced catch limits.	? Habitats of significance not yet determined. A number of areas closed to commercial fishing.	☑ Northland Regional Council identifies eels as a species affected by dams. Level of protection being provided in practice is unclear	☑ Policy objectives for managing effects of fishing on the environment have not been determined. Fishing method impacts considered low. Regulated and voluntary measures in place to address biosecurity risks.
SFE 20	? 2006/07 estimated value was \$34,617, 2007/08 reported value was \$5,012, and \$8,645 for 2009/10	? No amateur participation data for freshwater stocks	? Less than 75% coverage of customary regulations – no reporting	☑ Not enough ACE value information available. However, declining trend in cost recovery levies.	☑ No target level set. However, CPUE series shows increase (estimates are only available to 2007). Overall information does not indicate an immediate sustainability concern.			

⁸ The boundaries of northern eel stocks align with multiple Fishery Management Areas, see FMA1 for SFE21 and LFE21.

3.9 Group 2: Non-QMS Stocks

Reported catch levels and management costs for non-QMS freshwater stocks are very low. There is some emerging interest in the brown bullhead catfish fishery in the Waikato, caught in conjunction with koi carp (species of unwanted aquatic life managed outside the Plan). The methods used in this fishery differ from the eel fishery and may therefore require specific consideration. Given the small and isolated populations of native non-QMS stocks, a range of monitoring methods may be appropriate for this group.

The Plan established as management measures for non-QMS stocks:

- the trend in management costs, and
- catch reported in relation to the QMS Introduction Standard thresholds.

No management costs are reported as cost recovery levies for non-QMS species. Although there has been some reported catch of catfish, goldfish and koi carp, among other freshwater species, the catch levels are far from the QMS Introduction Standard thresholds. It has been noted that the QMS Introduction Standard may not be well suited to freshwater species. During 2011/12, the Ministry will review the application of the QMS Introduction Standard to freshwater species.

4. Performance of the Annual Operational Plan

The second purpose of the Annual Review Report is to examine delivery of the management actions and services against those specified in the Annual Operational Plan from the previous year.

The Annual Operational Plan sets out the stock, fishery and cross-fishery Management Actions and Services to be provided in each financial year. The services specified in the Annual Operational Plan are consistent with the high-level service strategies outlined in the Plan and are specified at a level that guides service delivery to individual business groups.

The Annual Operational Plan also describes the 'maintenance' and 'core' Management Services to be undertaken for each stock or fishery. Completion of the management actions contributes to achievement of the management objectives, outcomes, and goals described in the Plan. Management Services describe the business group services (compliance, research, regulatory, etc) required to deliver the specified management actions.

The Annual Review Report evaluates the progress that has been made over the year on the management actions and services. It also identifies any stock needs, which will be subsequently addressed in the following year's Annual Operational Plan.

4.1 Delivery of Specified Management Actions

As this is the first year of operation, there is no Annual Operational Plan for the previous year to report against. The 2011/12 Annual Operational Plan is currently being delivered.

4.2 Delivery of Specified Management Services

As this is the first year of operation, there is no Annual Operational Plan for the previous year to report against. The 2011/12 Annual Operational Plan is currently being delivered.

Appendix 1 – Performance Measures

Use Performance Measures

TRENDS IN REAL QUOTA VALUE ARE STABLE OR INCREASING:

The data used was taken from the *Quota Monitoring Reports* for the last month of each of the last five fishing years. Where quota value data was not available, estimated values were calculated from Annual Catch Entitlement (ACE) values. The data were adjusted for inflation using the *Gross National Expenditure Deflator* (GNED).

The trend in real quota value was obtained by analysing the gradient of a trend-line (LINEST) fitted to the data. The percentage change variable comes from converting the trend-line gradient value to a percentage of the baseline quota value (i.e. the 2006-07 fishing year).

Where real quota value was determined to have decreased by more than 5%, the performance measure was deemed as not met.

TRENDS IN AMATEUR PARTICIPATION:

The Ministry does not currently hold data on recreational participation in freshwater fisheries.

TRENDS IN FULFILMENT OF CUSTOMARY FISHING AUTHORISATIONS ARE STABLE OR INCREASING:

Information is submitted quarterly to the Ministry in relation to customary fishing authorisations issued under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 or the Fisheries (South Island Customary Fishing) Regulations 1999.

Regulation 27A of the Fisheries (Amateur Fishing) Regulations 1986 also provides for the authorisation to take fisheries resources for hui or tangi but does not require reporting of the amounts authorised or taken and was not used in this assessment.

The data was used to assess the percentage of what was authorised and what was actually taken under the authorisation. This information was totalled for each year and presented as a total percentage of taken and reported catch as a proportion of the total authorised. A trend-line was fitted to provide an indication of the amount of change in the percentage of fulfilment. A minimum of three years of data was used. Where fulfilment of customary permits was determined to have decreased by more than 5%, the performance measure was deemed as not met. Where additional information was available that might explain a trend, or lack of, this was included in the comments section. The period of 2006-2011 was used.

ROLLING 5 YEAR AVERAGE COST RECOVERY LEVY/ANNUAL CATCH ENTITLEMENT VALUE IS NOT INCREASING:

ACE prices (\$/tonne, year-to-date) came from the *Quota Monitoring Reports* for the last month of each fishing year. Where ACE prices were unavailable, estimates of the ACE value were derived from

quota values, where those values were known. The data was adjusted for inflation using the *Gross National Expenditure Deflator (GNED)*.

The average cost recovery levy/tonne (total levy/TACC) divided by the ACE value was calculated for both of the 5 year periods 2005-10 and 2006-11. The percentage change between the 2005-10 and 2006-11 ratios was calculated. Where the ratio had increased by more than 5% the performance measure was deemed as not met.

MANAGEMENT COSTS ARE STABLE OR DECREASING:

Analysis of this performance measure was only applied to non-QMS stocks and was assessed by analysing the costs of any research that was carried out on these stocks in the last 5 year period. There was no relevant research identified for freshwater stocks within this period.

Environment Performance Measures

STOCK SIZE (OR AGREED INDICATOR) IS AT OR ABOVE AN ESTABLISHED TARGET REFERENCE LEVEL WITH AT LEAST A 50% PROBABILITY:

Each eel species comprises a single biological stock but adult eels undergo limited movement within a catchment until their seaward spawning migration. The unique characteristics of eels and the changing environments where they are found support an alternative to the maximum sustainable yield approach. The current approach is largely guided by standardised catch-per-unit-effort (CPUE) analyses, which have been conducted for the commercial longfin and shortfin fisheries from 1990-91 to 2006-07 for all North Island Eel Statistical Areas (ESAs) and to 2005-06 for all South Island ESAs. As management targets have not yet been set, these CPUE series are the primary piece of information used to assess stock status in this ARR. Consideration has also been given to the length of time initiatives to increase eel numbers have been in place. In future years, monitoring approaches specific to a target are anticipated.

The CPUE analyses are based at the ESA scale. Each North Island eel stock covers several ESAs. South Island eel stocks include both longfin and shortfin eels and also cover several ESAs. Catch levels vary between ESAs and between species.

POLICY OBJECTIVES FOR HABITATS OF SIGNIFICANCE FOR THE MANAGEMENT OF EEL FISHERIES ARE MET:

Habitats of particular significance for the management of eel fisheries have not been determined. There are a number of areas closed to fishing that likely contribute to eel management objectives.

RELEVANT RESOURCE MANAGEMENT POLICY AND PLANNING DOCUMENTS INCLUDE OBJECTIVES, POLICIES AND RULES THAT PROTECT HABITATS OF SIGNIFICANCE FOR THE MANAGEMENT OF EEL FISHERIES:

Habitats of particular significance for the management of eel fisheries have not been determined. An assessment of all twelve regional councils' relevant documents was undertaken to note the inclusion of objectives, policies and rules that protect eel habitat.

POLICY OBJECTIVES FOR MANAGING FISHING EFFECTS ON THE AQUATIC ENVIRONMENT ARE MET:

No formal policy objectives have been determined. While information about the effects of fishing in the freshwater is limited, the nature of fishing gear used suggests effects are minimal. Fishing has been identified as a contributing activity to the spread of unwanted aquatic life in the freshwater environment and ad-hoc initiatives have been undertaken to address potential risks.

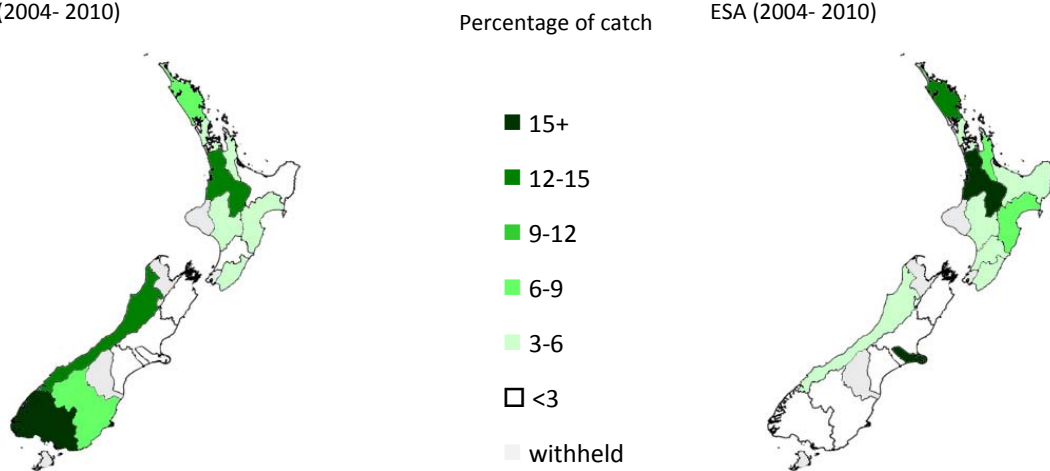
More detailed guidelines on the methodology used to assess these performance measures are available from the Ministry on request.

Appendix 2 – Eel catch distribution, catch per unit of effort indices and recruitment

A summary of distribution of catch, based on Eel Catch Effort Returns between 1 October 2004 and 30 September 2010 is presented in Figures A1 and A2. Eel Statistical Areas (ESAs) have been combined in some areas where data would otherwise be withheld. There has been nominal reported catch in the Chatham Islands over this time period.

Figure A1 - Longfin eel catch distribution by ESA (2004- 2010)

Figure A2 - Shortfin eel catch distribution by ESA (2004- 2010)

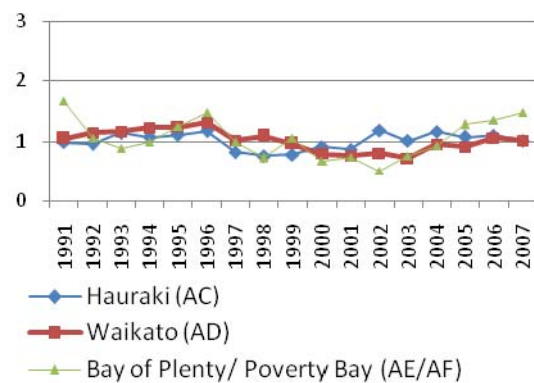
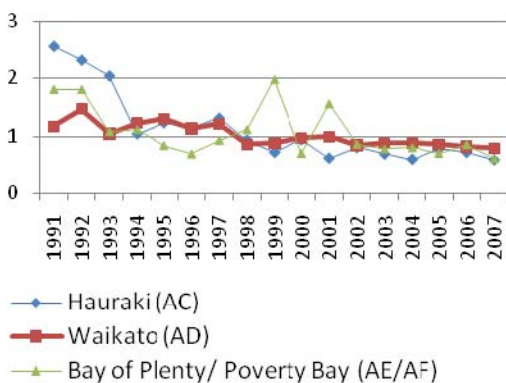


CPUE analyses grouped at a stock level are presented in Figures A3 - A16.

FISHERY MANAGEMENT AREA 1

Figure A3 - LFE21 CPUE indices

Figure A4 - SFE21 CPUE indices



FISHERY MANAGEMENT AREA 2

Figure A5 - LFE22 CPUE indices

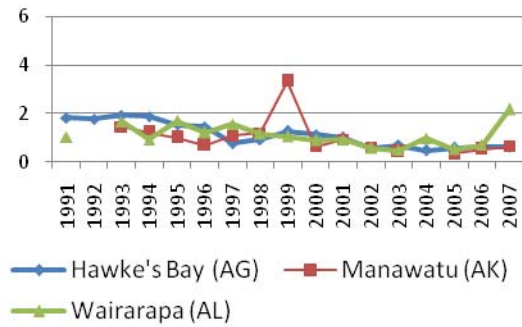
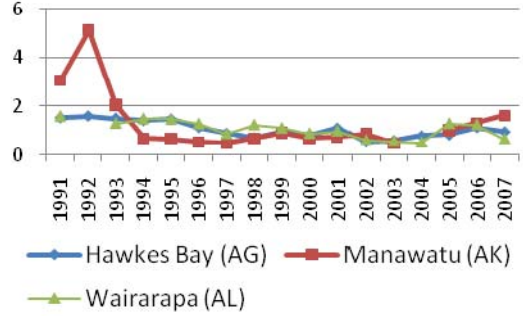


Figure A6 - SFE22 CPUE indices



FISHERY MANAGEMENT AREA 3

Figure A7 - ANG12 CPUE indices

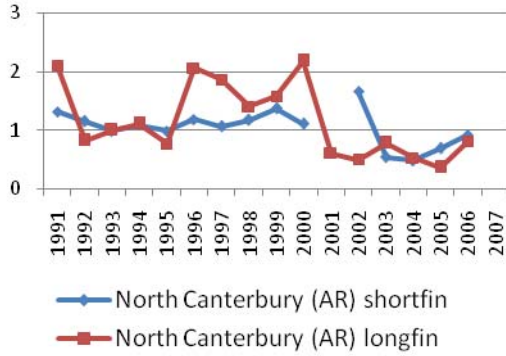


Figure A8 - ANG13 CPUE indices

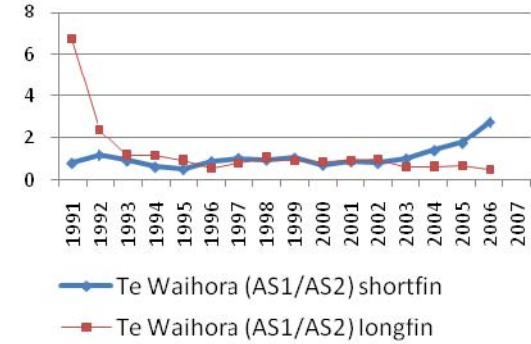


Figure A9 - ANG14 CPUE indices

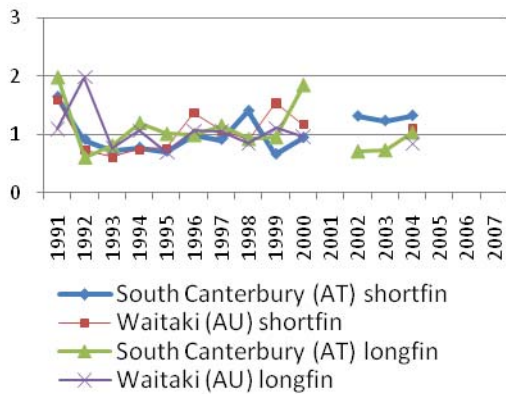
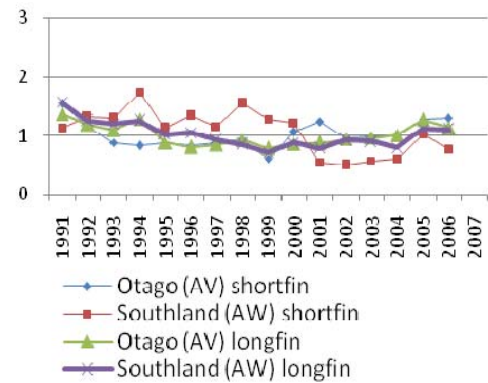


Figure A10 - ANG15 CPUE indices



FISHERY MANAGEMENT AREA 7

Figure A11 - ANG11 CPUE indices

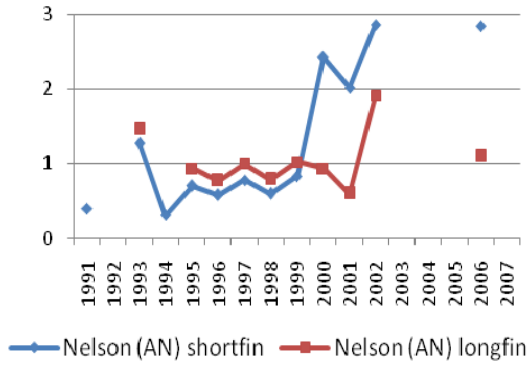
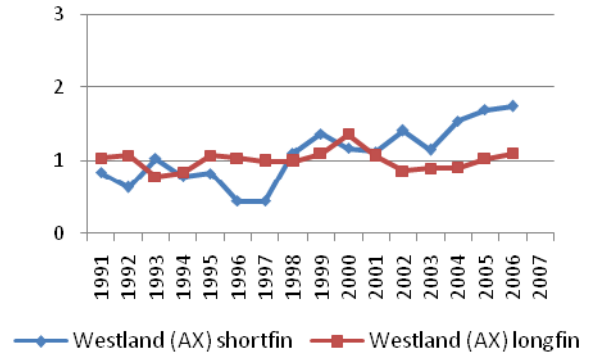


Figure A12- ANG16 CPUE indices



FISHERY MANAGEMENT AREA 8

Figure A13 - LFE 23 CPUE indices

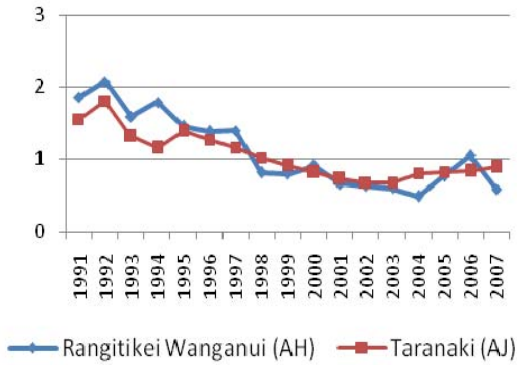
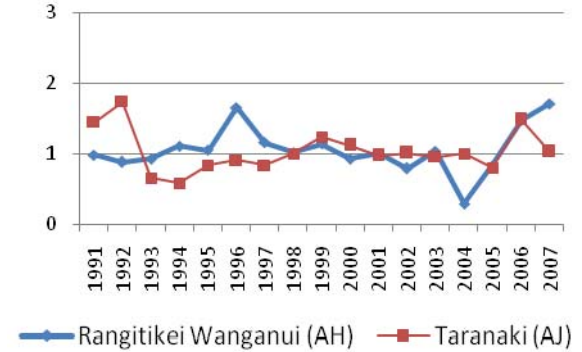


Figure A14 - SFE 23 CPUE indices



FISHERY MANAGEMENT AREA 9

Figure A15 - LFE 20 CPUE indices

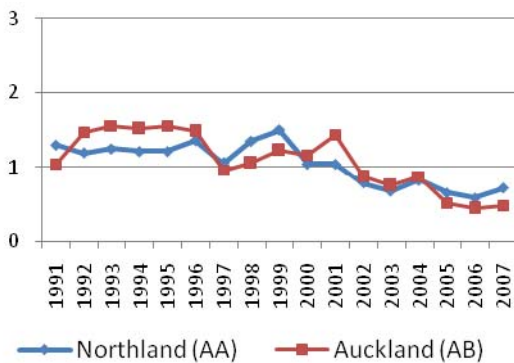
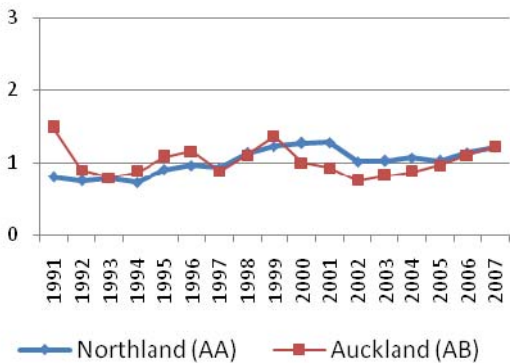


Figure A16 - SFE 20 CPUE indices



Figures A17 and A18 illustrate the time series of recruitment indicators recorded at the main monitoring sites, Karapiro Dam and Matahina Dam.

Figure A17 - Number of elvers recorded at Karapiro Dam

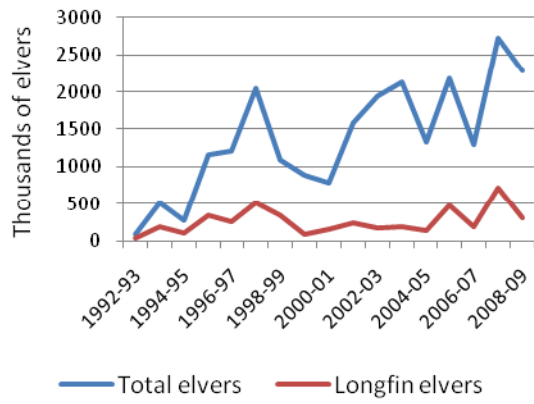
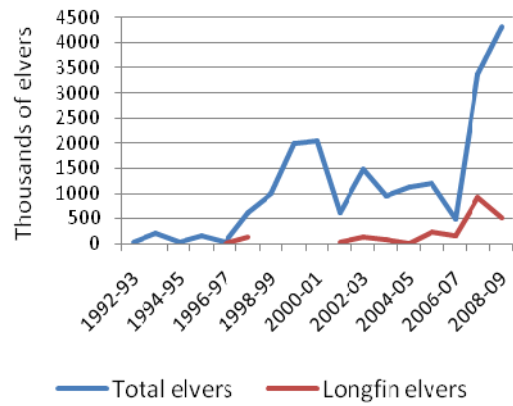


Figure A18 - Number of elvers recorded at Matahina Dam



Freshwater Eel Quota Management Areas and Statistical Areas

