



ANNUAL REVIEW OF **FRESHWATER** **FISHERIES** 2011/12



Photo: Dave Allen

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National Snapshot: Freshwater Fisheries 2011/12

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 for Primary Industries (MPI) has set out management objectives for freshwater fisheries managed under the Fisheries Act 1996 in the Draft National Plan for Freshwater Fisheries (the Plan). Performance measures¹ are used to monitor progress towards meeting the management objectives and to guide management activity. The following is a summary performance report for 2011/12.

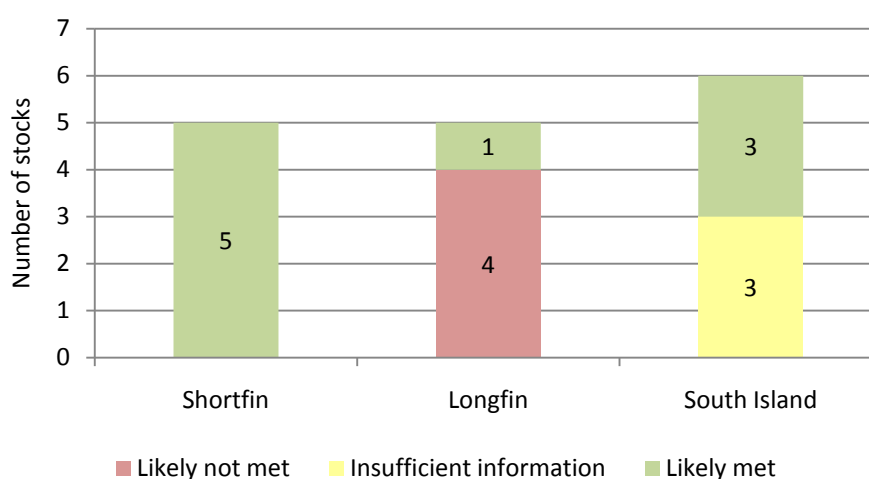
Health of Our Freshwater Fisheries

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 has not been 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. Figure 1 summarises the performance of eel stocks against the stock sustainability performance measures set out in the Plan.

Figure 1: Number of eel stocks meeting stock sustainability performance measures



The three freshwater eel species are managed in sixteen stocks across New Zealand. Sustainability performance measures for nine eel stocks are likely to be met (all five shortfin eel stocks, one out of five longfin eel stocks and three out of six South Island stocks). For the four North Island longfin eel stocks, sustainability performance measures are not likely to be met, although management action

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

(catch limit cuts) was taken in 2007 to address that. Updated fishery status indicators for these stocks are expected during 2013 and will show the effect of these management changes. For three South Island stocks there is insufficient information to assess them against performance measures, largely due to declining fishing effort following introduction into the Quota Management System (QMS) in 2000. More detailed information on the sustainability performance measures of eel stocks and other indicators of stock health are summarised in Appendix 2.

Measures to increase eel numbers have been put in place. These included the introduction of eels to the 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 commence as stocks' sustainability measures are reviewed.

Reported catch levels for other freshwater species (Group 2 - non-QMS) are relatively low, although these continue to be monitored.

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, interruption to fish passage, 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. Please refer to the Ministry for the Environment website for the latest information on freshwater quality across the country.

MPI is working to develop peer networks with other agencies responsible for management of activities that impact on the freshwater environment to share information about these impacts and improve their management. This includes work on the Fresh Start for Fresh Water Programme, participation in the Dairying and Clean Streams Accord/Sustainable Dairying: Water Accord and reforms to the Resource Management Act 1991. MPI, in cooperation with local authorities and other agencies, is also responsible for managing the risks related to 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 Māori benefits: fulfilment of customary Māori fishing authorisations
- recreational sector benefits: recreational participation rates
- commercial sector benefits: quota share value
- intrinsic benefits: stock health indicators (refer to previous section).

Customary Māori 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 fishing authorisations provide an indication of whether customary fishing needs are being met.

Some information is available from customary reporting for eel stocks in the South Island. Information for ANG13 (Lake Ellesmere) and ANG15 (Otago and Southland) suggests fulfilment for these stocks is stable or increasing. MPI is aware that Tangata Tiaki generally do not issue authorisations for eels within ANG14 (South Canterbury) to improve eel abundance. No reports have been submitted for ANG11 (Nelson & Marlborough). For ANG12 (North Canterbury) the information suggests there is a declining trend in fulfilment. For several of these stocks, Tangata Tiaki 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 collected during 2011/12 for the Waikato region suggests recreational interest in eels is relatively marginal in comparison to recreational interest in introduced species such as rudd, koi carp, goldfish and catfish.²

Commercial Sector Benefits

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. MPI understands that market demand for eels is a key driver of catch, and thus of commercial benefit.

Figure 2 summarises reported commercial catch of eels in recent years. Information from industry indicates that market conditions have been positive in recent years (increasing demand and price). During 2012, the eel fishery generated \$9.4 million in export revenue, as illustrated in Figure 3.

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.

² Hicks, B.J.; Allen, D.G.; Kilgour, J. T.; Watene-Rawiri, E.T.; Stichbury, G.A. and Walsh, C. (2013) "Fishing activity in the Waikato and Waipa Rivers" *Environmental Institute Report No. 7*. A report prepared for the Ministry for Primary Industries by the Environmental Research Institute, University of Waikato, Hamilton.

Figure 2: Reported commercial catch and Total Allowable Commercial Catch of freshwater eels (all stocks)

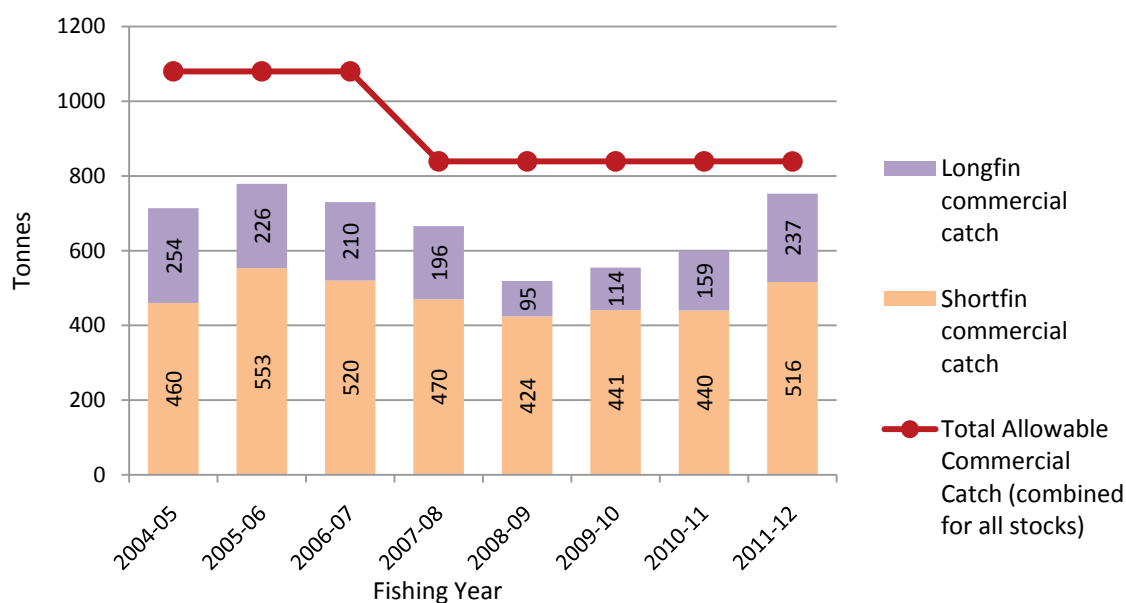
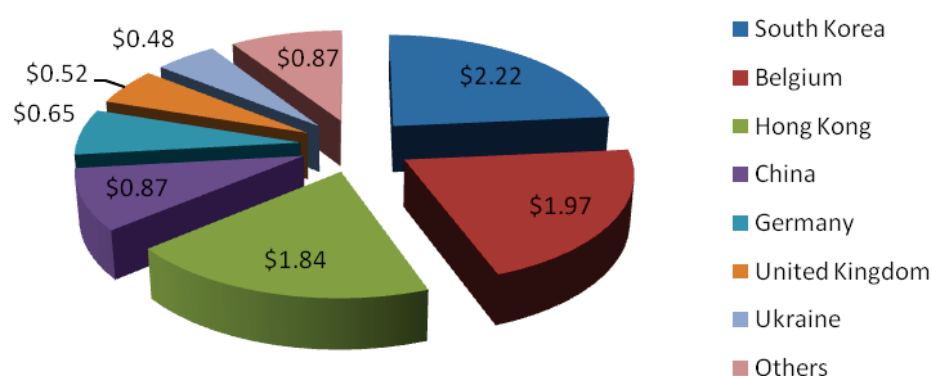


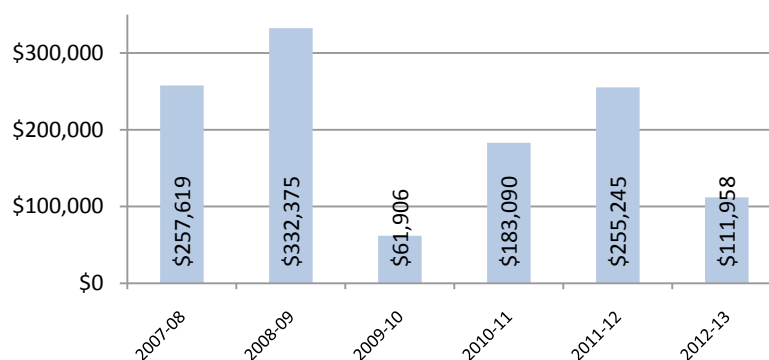
Figure 3: Value of 2012 eel exports by country, million NZ\$ FOB (Source: Seafood New Zealand)



Management Costs

Total costs recovery levies for eel stocks from 2007/08 to 2012/13 are illustrated in Figure 4. Over this period, total cost recovery levies have been variable due largely to changing research costs from year to year.

Figure 4: Total costs recovered from industry for eel management



1. Introduction

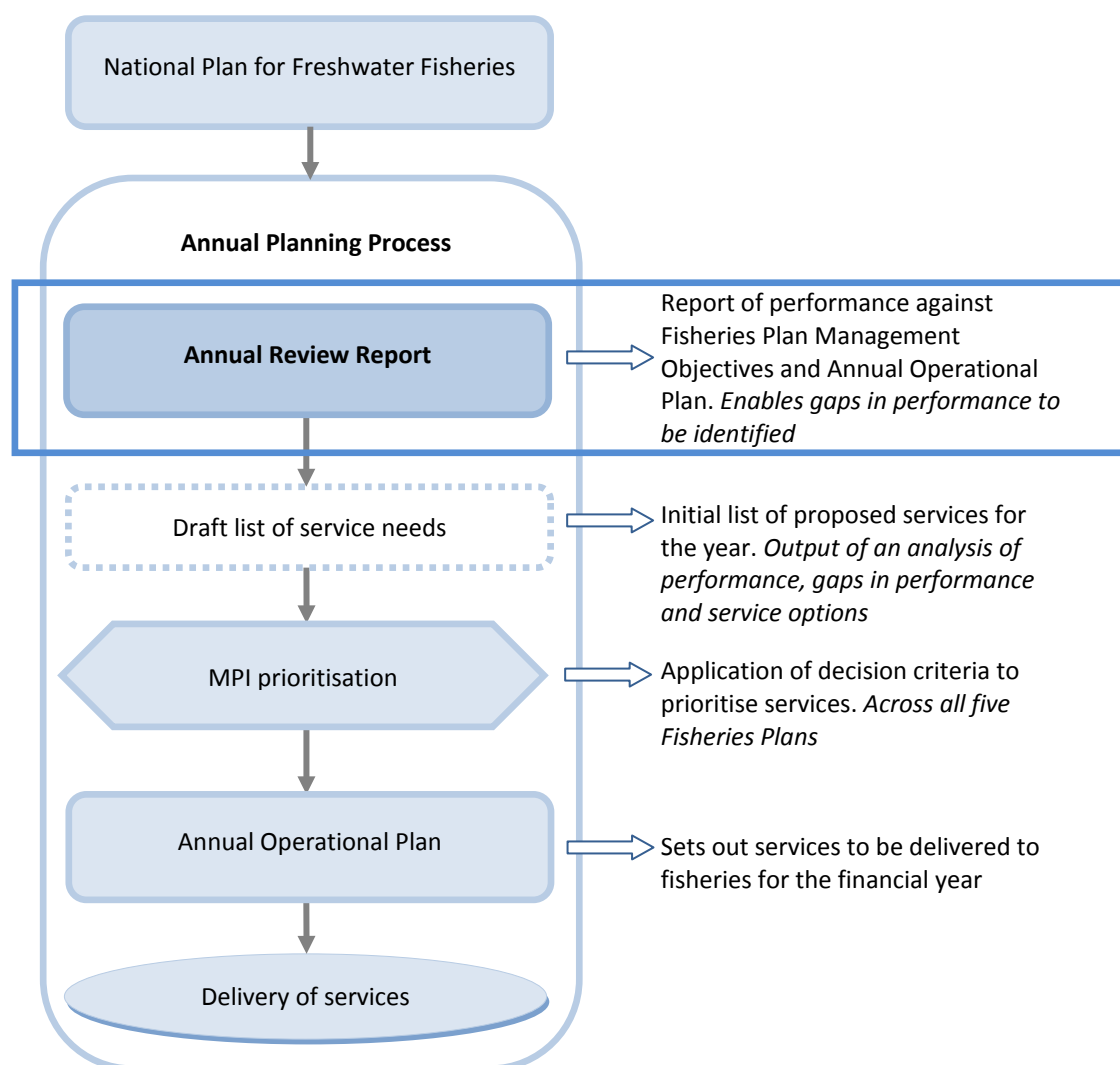
1.1 Purpose

This Annual Review Report presents information relating to fisheries managed under the Draft National Plan for Freshwater Fisheries (the Plan) for the 2011/12 fishing year. The information is used to monitor performance against the management objectives set out in the Plan and to plan fisheries management activities for the next financial year. The information in this Annual Review Report will inform development of the 2013/14 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 5).

Figure 5: 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 (this document), 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.

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

The demand for MPI's management services is frequently greater than what can be delivered. An internal prioritisation process across draft service lists 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:

Section 2: **Measuring Performance**

Describes the stock groups' performance objectives and measures established by the Plan.

Section 3: **Assessment**

Reports on the assessment against the performance measures at the stock level. This section is organised by Fishery Management Areas.

Section 4: **Performance of the Annual Operational Plan**

Examines 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 ³ (North Island and Chatham Islands LFE17, 20, 21, 22, 23)
	Shortfin eels ⁴ (North Island and Chatham Islands SFE17, 20, 21, 22, 23)
	Freshwater eels ⁵ (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 tables below.

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

³ LFE stocks include longfin eel *Anguilla dieffenbachii* only.

⁴ SFE stocks include shortfin eel *Anguilla australis* and Australasian longfin eel *Anguilla reinhardtii*.

⁵ ANG stocks include longfin eel *Anguilla dieffenbachii*, shortfin eel *Anguilla australis*, and, where relevant, Australasian longfin eel, *Anguilla reinhardtii*.

Group 1

USE OBJECTIVES:	Secure social, economic and cultural benefits from each stock.
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1. Trends in:
 - 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-year average Cost Recovery Levies (CRL)/Annual Catch Entitlement (ACE) value is not increasing.

ENVIRONMENT OBJECTIVE (Stock Sustainability):	Maintain adequate spawning biomass to provide for high levels of recruitment. Protect, maintain and enhance eel habitats.
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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.
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Management costs are stable or decreasing

ENVIRONMENT OBJECTIVE (Stock Sustainability):	Ensure catch is at a level that is sustainable.
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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.
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Policy objectives for managing fishing effects on the aquatic environment are met.

3. Assessment against performance measures

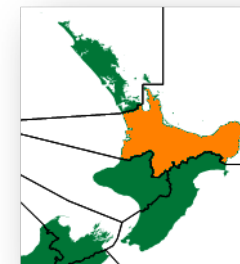
3.1 Group 1: Eel fisheries

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 stakeholders on priority areas for action. MPI 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 information <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)⁶



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	
LFE21	? Estimated quota value in 2006/07 was \$9,534 per tonne.	? 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 from 2007. Updated CPUE results due in September 2013.	? 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.
SFE21	? Estimated quota value in 2007/08 was \$46,624 and in 2010/11 \$15,206 per tonne.				✓ No target level set. However, CPUE series shows increase (estimates are only available to 2007). Overall information does not indicate an immediate sustainability concern. Updated CPUE results due in September 2013.			

⁶ 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 <i>performance measures</i>	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection	
LFE22	? Estimated quota value in 2006/07 was \$9,413 per tonne.	? 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 from 2007. Updated CPUE results due in September 2013.	? 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 MPI in the Wellington Regional 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.
SFE22	? Insufficient information to generate a trend. Average since October 2001 has been \$9,308 per tonne.				✓ No target level set. However, CPUE series shows increase (estimates are only available to 2007). Overall information does not indicate an immediate sustainability concern. Updated CPUE results due in September 2013.			

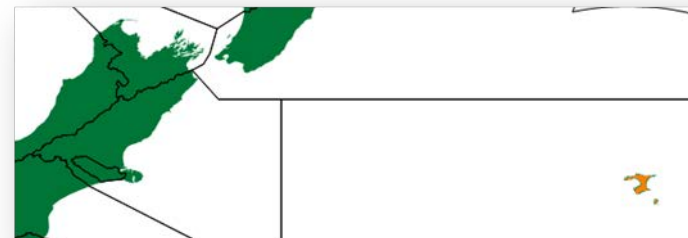
3.4 SOUTH-EAST & SOUTHLAND FISHERY MANAGEMENT AREAS (FMA3 & FMA5)



Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability performance measures	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection	
ANG12	? Insufficient information to generate a trend. Average since October 2001 has been \$12,222 per tonne.	? No amateur participation data for freshwater stocks.	☒ Decreasing trend between 2008 and 2012. 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 and unknown trend in CPUE. Insufficient information to date since introduction to the QMS to produce an updated CPUE series. Updated CPUE results due in 2015.	? Habitats of significance not yet determined. A number of areas closed to commercial fishing.	☑ Areas of significance to Ngāi 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.
ANG13	? Estimated quota value for 2008/09 was \$10,652 per tonne.		☑ Consistent reporting of authorisations and catch. Stable fulfilment of authorisations between 2006 and 2012 (average 73%). Inability to fish according to tikanga.		☑ No target level set. However, CPUE series shows increase in shortfin abundance since introduction to the QMS up to 2006, then abundance relatively stable until 2010. Updated CPUE results due in June 2013.			

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	
ANG14	<p>?</p> <p>Insufficient information to generate a trend. Average since October 2001 has been \$15,344 per tonne. Customary commercial ACE is generally not being fished or sold due to depletion concerns.</p>	<p>?</p> <p>No amateur participation data for freshwater stocks.</p>	<p>✗</p> <p>Tangata Tiaki do not generally issue authorisations for this stock due to local depletion concerns and inability to fish according to tikanga. 58% and 20% fulfilment in 2011 and 2012 respectively.</p>	<p>✓</p> <p>Not enough ACE value information available. However, declining trend in cost recovery levies.</p>	<p>?</p> <p>No target level set and unknown trend in CPUE. Insufficient information to date since introduction to the QMS to produce an updated CPUE series. Updated CPUE results due in 2015.</p>	<p>?</p> <p>Habitats of significance not yet determined. A number of areas closed to commercial fishing.</p>	<p>✓</p> <p>Areas of significance to Ngāi Tahu for eel fishing identified in Canterbury Coastal Plan.</p>	<p>✓</p> <p>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.</p>
ANG15	<p>?</p> <p>Estimated quota value for 2006/07 was \$9,000 per tonne.</p>		<p>✓</p> <p>100% of authorisations fulfilled in 2006, 2008, 2009 and 2011 but no authorisations issued in 2007, 2010 or 2012.</p>		<p>✓</p> <p>No target level set. However, CPUE series shows increasing or stable abundance trends for shortfin and longfin since introduction to the QMS up to 2010. Updated CPUE results due in 2015.</p>		<p>✓</p> <p>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.</p>	

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 <i>performance measures</i>	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection	
LFE17	? No information available.	? No amateur participation data for freshwater stocks.	? No reports - only recently operating under Customary Fishing 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 measures in place to address biosecurity risks.
SFE17					✓ No target level set. However, only nominal reported catch, 15 tonne TAC, 10 tonne TACC.			

3.6 CHALLENGER FISHERY MANAGEMENT AREA (FMA7)



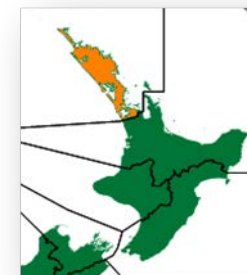
Stock	Trend in Real Quota Value	Trend in Amateur Participation	Trend in Customary Authorisation Fulfilment	Trend in CRL/ACE value	Stock sustainability performance measures	Habitats of significance for eel management		Policy objectives for effects of fishing on the environment
						Policy objectives	Resource management protection for eel habitats	
ANG11	? Insufficient information to generate a trend. Average since October 2001 has been \$21,758 per tonne.	? 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 and unknown trend in CPUE. Insufficient information to date since introduction to the QMS to produce an updated CPUE series. Updated CPUE results due in 2015.	? 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.
ANG16	? Insufficient information to generate a trend. Average since October 2001 has been \$12,711 per tonne.		✓ 100% of authorisations fulfilled in 2007 but no further reports.		✓ No target level set. However, CPUE series shows increasing abundance trends for shortfin and longfin since introduction to the QMS up to 2010. Updated CPUE results due in 2015.		✓ 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	
LFE23	? Estimated quota value for 2006/07 was \$8,552 per tonne.	? No amateur participation data for freshwater stocks.	? Less than 75% coverage of Customary Fishing 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 from 2007. Updated CPUE results due in September 2013.	? 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.
SFE23	? Estimated quota value for 2006/07 was \$10,269 per tonne.				✓ No target level set. However, CPUE series shows increase (estimates are only available to 2007). Overall information does not indicate an immediate sustainability concern. Updated CPUE results due in September 2013.			

3.8 AUCKLAND WEST FISHERY MANAGEMENT AREA (FMA9)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 for eel habitats	
LFE20	? 2006/07 estimated value was \$54,410, 2007/08 reported value was \$3,926, and \$9,474 for 2009/10 (all per tonne).	? No amateur participation data for freshwater stocks.	? Less than 75% coverage of Customary Fishing 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 from 2007. Updated CPUE results due in September 2013.	? Habitats of significance not yet determined.	✓ 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.
SFE20	? 2006/07 estimated value was \$34,617, 2007/08 reported value was \$5,012, and \$8,645 for 2009/10 (all per tonne).				✓ No target level set. However, CPUE series shows increase (estimates are only available to 2007). Overall information does not indicate an immediate sustainability concern. Updated CPUE results due in September 2013.			

⁷ 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 low. There is some emerging interest in the brown bullhead catfish fishery in the Waikato, caught in conjunction with koi carp. Goldfish is another introduced species for which there is emerging interest. The methods used in these fisheries 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 freshwater 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 other native and introduced 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 service strategies outlined in the Plan and are specified at a level that guides service delivery to individual MPI branches and, where relevant, external providers.

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 MPI 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 and Services

The Annual Operational Plan 2011/12 was an internal MPI pilot document and was not extensively discussed with tangata whenua, industry and other stakeholders. Progress with delivering management actions and services specified in the Annual Operational Plan 2011/12 is described below.

Action	Status	Comment and Next Steps
A1. Review biosecurity risks associated with freshwater fisheries and, if needed, develop/update processes, educational material or other management interventions	Business as usual	MPI Biosecurity developing communications material targeted at eel fishers.
A2. Develop “peer networks” with MAF Biosecurity, councils and Department of Conservation to facilitate information-sharing	Business as usual	Contact with other agencies was mainly on an ad hoc basis. Nonetheless, some relationships were established. MPI will continue to engage with other agencies in a more proactive fashion.
A3. Scan regulations for opportunities to reduce regulatory costs to the commercial sector	Complete	Carried out as part of standard Annual Operational Plan development. Redundant regulations were identified and proposals to revoke progressed (e.g. minimum ACE holding for South Island). No longer included as a separate action but assuming this will become business as usual.

Action	Status	Comment and Next Steps
A4. Undertake programmed research to contribute to investigations into the effectiveness of elver seeding	Ongoing/multi-year	Final results due to be presented during 2013.
A5. Increase proportion of New Zealand freshwater catchments covered by customary fishing regulations	Ongoing/ Business as usual	Waikato-Tainui (Waikato River Fisheries) Regulations 2011 came into force.
A6. Improve iwi and Tangata Tiaki/Kaitiaki understanding of use and importance of customary permit data and provide for easy reporting of data		Four Tiaki/Kaitiaki responsible for freshwater/inland rohe were appointed/trained.
A7. Undertake programmed research to gather information on fishing activity in the Waikato/Waipara rivers and their catchments	Completed	Part of Waikato-Tainui Settlement work, report published during 2013.
A8. Determine methodology for assessing status of longfin and shortfin eel stocks and establishing management targets	Deferred	Initial discussions on a possible Harvest Strategy for ANG13 started, and expected to be finalised, during 2013.
A9. Determine long-term stock monitoring strategies for longfin and shortfin eels		Following Parliamentary Commissioner for the Environment's report on longfin eels, independent expert review panel on scientific monitoring of eel stocks will be established during 2013 to confirm if current monitoring is robust and adequate.
A10. Develop an agreed definition of habitat of particular significance to fisheries management and identify priority habitats with respect to meeting eel fishery objectives	Cancelled	"Habitats of particular significance" relate to one of the environmental principles established by the Fisheries Act 1996. Decision-makers under the Act need to take into account the need to protect these habitats. A definition has been developed yet for eels, the application of this principle under the Act is less relevant than for marine fisheries. In this context, all freshwater habitats where eels could live are significant.
A11. Improve fisher awareness and understanding of fishing laws where current compliance levels are sub-optimal	Business as usual	More than 100 inspections/education contacts with eel fishers/licensed fish receivers completed, and 19 minor offences identified. MPI intends to produce material to clarify reporting requirements applicable to commercial fishers during 2013.
A12. Increase deterrent activities where emerging or systemic illegal activity (or opportunities for illegal activity) is identified		
A13. Review QMS Introduction Standard in respect to freshwater fisheries	Cancelled	Although the QMS Introduction Standard is probably not suitable to other native and introduced freshwater species, a review of its application to these species is not a priority. Sustainability and utilisation Issues with these species will be addressed on a case by case basis.

The 2012/13 Annual Operational Plan is currently being delivered. Below is a preliminary assessment of delivery of these management actions and services to date. A final assessment will be presented in the 2012/13 Annual Review Report.

Management Action			Status	Comment and Next Steps
	1.	Review minimum Annual Catch Entitlement (ACE) holding requirement for South Island eel stocks	Partially completed/Deferred	The Minister has decided to postpone a decision on this and to consider it in the context of any additional measures required in response to the Parliamentary Commissioner for the Environment's report on longfin eels.
	2.	Review Total Allowable Catch for Te Waihora/Lake Ellesmere (ANG13), subject to final outcome of fishery status indicators	Deferred	Discussions with Ngāi Tahu and industry held. Updated CPUE index due September 2013. Results up to 2010 supported a review.
	3.	Factors Required to Create Benign Habitats for Eels in a Modern New Zealand Context (industry-led)	Deferred	Industry/tangata whenua research initiatives to be focused on local areas (e.g. Ngāti Hine rohe) in the first instance.
	4.	Review of Total Allowable Catches for North Canterbury/Marlborough (ANG12) and South Canterbury/Waitaki (ANG14), subject to final outcome of fishery status indicators	Deferred	Insufficient information to inform a TAC review during 2013, yet ongoing concerns from customary fishers.
	5.	EEL2012/01: CPUE for North Island eel stocks	Partially completed	Final results expected to be presented in September 2013.
	6.	EEL2012/02: Monitoring/sampling size composition/grades of commercial eel catch	Ongoing/multi-year	Final results expected to be presented in April 2016.
	7.	EEL2012/03: Recruitment of eels	Ongoing/multi-year	Final results expected to be presented in 2015.
	8.	EEL2011/01: Eel population structure in tributaries of hydro reservoirs seeded with elvers	Partially completed	Final results expected to be presented in 2013.
	9.	Develop Harvest Strategies for eel fisheries including: <ul style="list-style-type: none"> - agreed methodology for assessing/monitoring eel stocks - setting management targets - developing a medium term research plan to support Harvest Strategies 	Ongoing/multi-year	Initial discussions on a possible Harvest Strategy for ANG13 started in 2013. Expected to be finalised during 2013. Following Parliamentary Commissioner for the Environment's report on longfin eels, independent expert review panel on scientific monitoring of eel stocks will be established during 2013 to confirm if current monitoring is robust and adequate. Following that review, Harvest Strategies for other stocks will continue to be developed.
	10.	Review North Island and Chatham Islands fyke net escape tube minimum diameter requirement	Partially completed	Minister has agreed to recommend an increase in the minimum diameter to 31mm. Scheduled to come into force on 1 October 2013.

Management Action		Status	Comment and Next Steps
	11. Clarify management objectives for non-QMS freshwater fisheries, including: <ul style="list-style-type: none"> - reviewing the application of the QMS Introduction Standard to endemic freshwater species; and - reviewing management rules for introduced/unwanted species 	Ongoing	Although the QMS Introduction Standard is probably not suitable to other native and introduced freshwater species, a review of its application to these species is not a priority. Sustainability and utilisation issues with these species will be addressed on a case by case basis. During 2013, this will involve clarifying management rules for introduced/unwanted species and, where necessary, reviewing them.
	12. Increase proportion of New Zealand's fisheries waters covered by customary fishing regulations	Ongoing/ Business as usual	No new freshwater/inland rohe under customary fishing regulations. 21 new Tiaki/Kaitiaki responsible for freshwater/inland rohe were appointed/trained. Most of these appointments were made in the Waikato-Tainui rohe.
	13. Improve iwi and Tangata Tiaki/Kaitiaki understanding of the importance and use of customary fishing authorisation data and provide for easy reporting		
	14. Improve fisher awareness and understanding of fishing laws where current compliance levels are sub-optimal	Business as usual	More than 80 inspections/education contacts with eel fishers/licensed fish receivers completed, and 11 minor offences identified so far. MPI intends to produce material to clarify reporting requirements applicable to commercial fishers during 2013.
	15. Increase deterrent activities where emerging or systemic illegal activities (or opportunities for illegal activity) are identified		
	16. Implement an agreed definition of habitats of particular significance for freshwater fisheries management by identifying such habitats.	Cancelled	"Habitats of particular significance" relate to one of the environmental principles of Fisheries Act 1996, under which decision-makers must provide for the protection of these habitats. A definition has been developed. Yet for eels, the application of this principle under the Act is less relevant than for marine fisheries as freshwater habitats in general are of significance.
	17. Develop "peer networks" in natural resource management agencies to share information where non-fishing activities may impact on the health of freshwater fisheries and to clarify/ confirm MPI's role vs. the role of other agencies in relation to freshwater fisheries.	Business as usual	MPI is working closely with the Department of Conservation on a number of fronts including the response to the Parliamentary Commissioner for the Environment's report on longfin eels and the freshwater threat classification review. Ongoing contact with local authorities and other agencies on an ad hoc basis.
	18. Maintain a watching brief of biosecurity risks and mitigation measures.	Business as usual	MPI Biosecurity developing communications material targeted at eel fishers, expected to be completed during 2013.

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 produced by FishServe 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

MPI 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 MPI in relation to customary fishing authorisations issued under the Fisheries (Kaimoana Customary Fishing) Regulations 1998 and 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 each 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 assessment section. The period 2006 to 2012 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 produced by FishServe 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 2006-11 and 2007-12. The percentage change between the 2006-11 and 2007-12 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 2009-10 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 Annual Review Report. 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. Please refer to Appendix 2 for more information.

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.

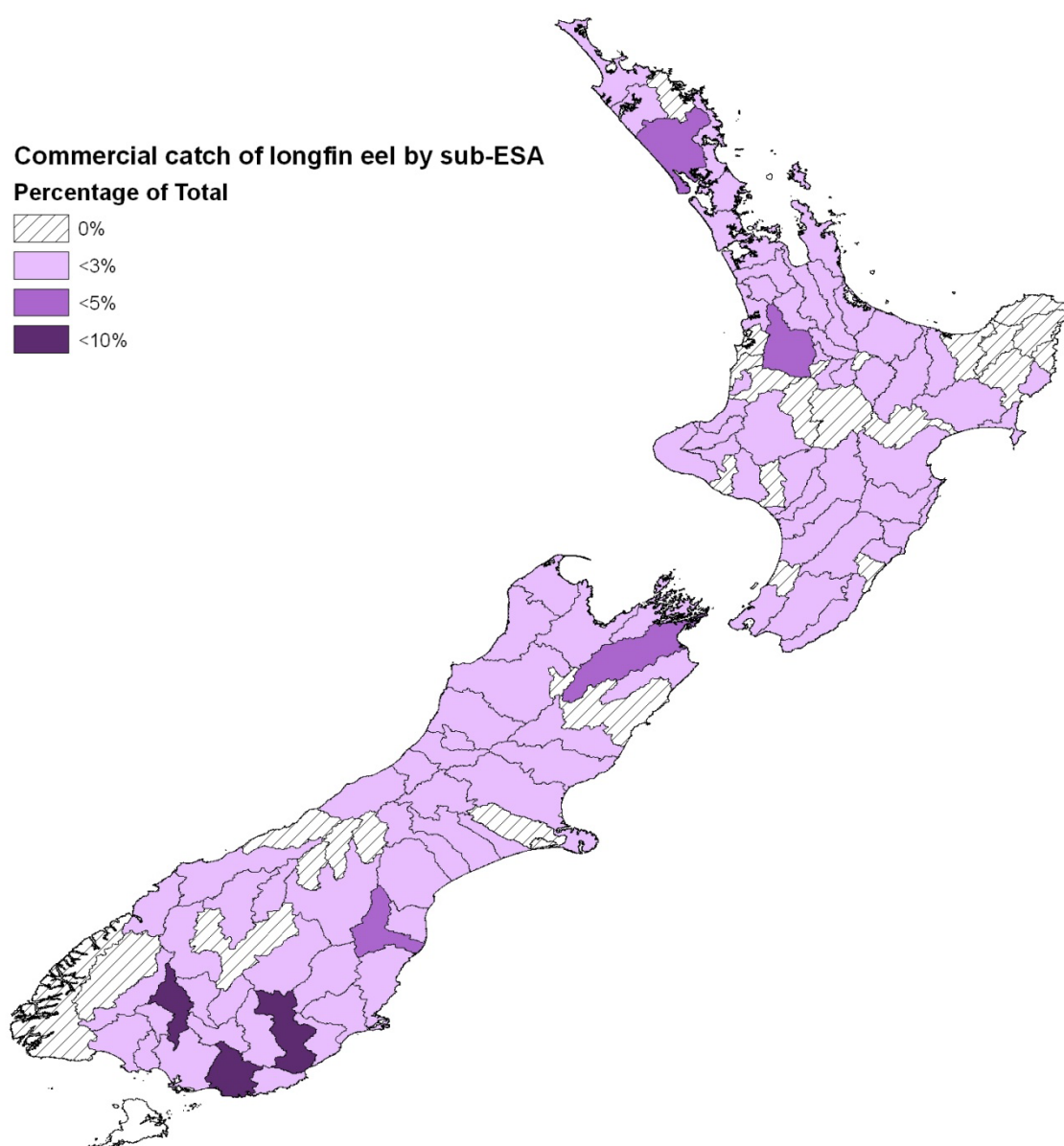
POLICY OBJECTIVES FOR MANAGING FISHING EFFECTS ON THE AQUATIC ENVIRONMENT ARE MET

No formal policy objectives have been determined. While information about the effects of fishing in 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.

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

A summary of catch distribution for the period 2010/11-2011/12 is presented in Figures A1 and A2.⁸ There has been nominal reported catch in the Chatham Islands over this time period.

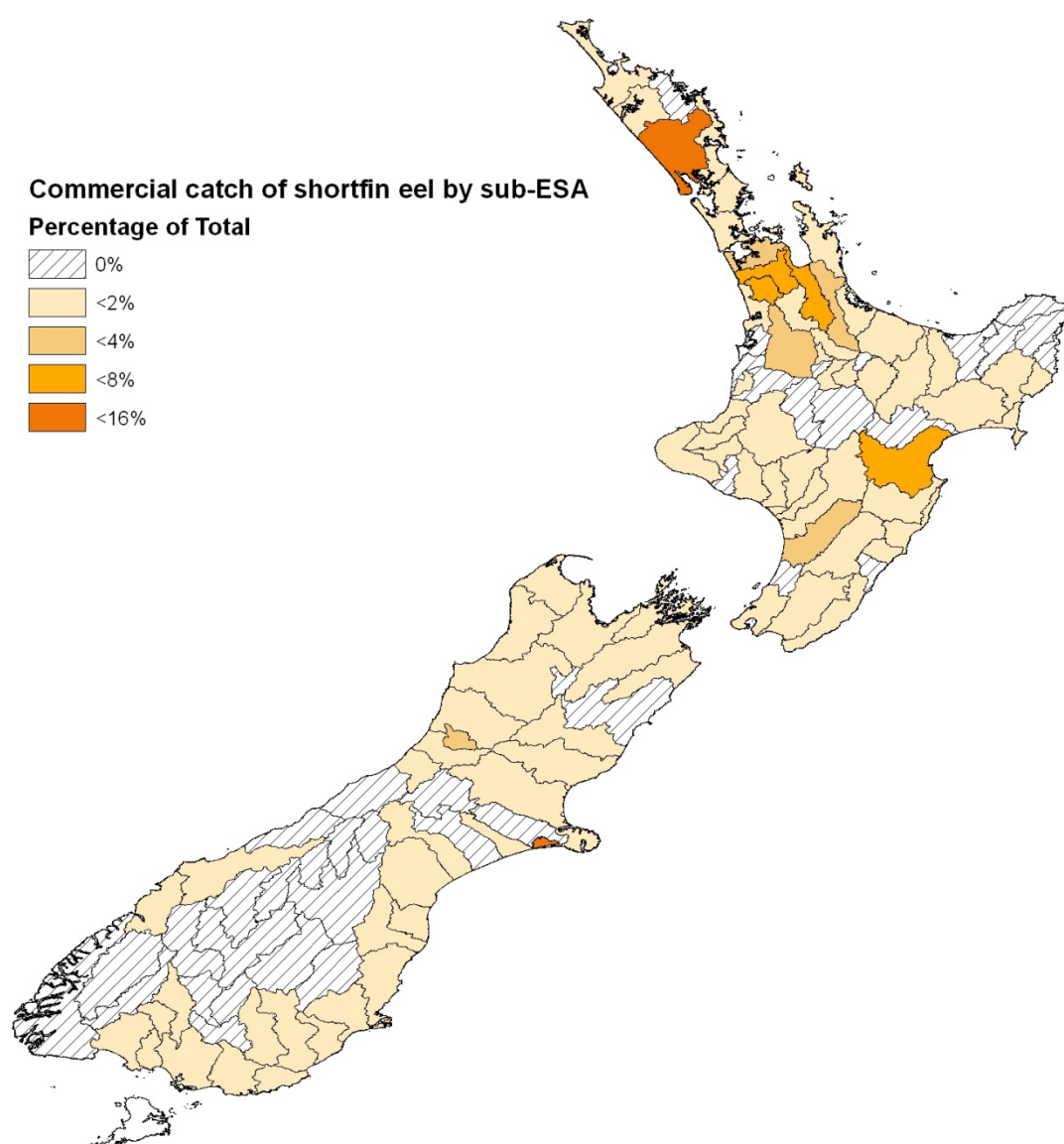
Figure A1 - Longfin eel catch distribution by sub-ESA 2010/11-2011/12



This map is intended to be used as a guide only, in conjunction with other data sources and methods, and should be used only for the purpose for which it was developed. Although the information on this map has been prepared with care and in good faith, no guarantee is given that the information is complete, accurate or up-to-date. Importantly, this map does not show catch distribution within each sub-ESA. Please refer to page 33 for a map of area closures under the Fisheries Act 1996 and protected areas managed by the Department of Conservation, where commercial eel fishing is generally prohibited.

⁸ Modified from Beentjes, 2013.

Figure A2 - Shortfin eel catch distribution by sub-ESA 2010/11-2011/12



This map is intended to be used as a guide only, in conjunction with other data sources and methods, and should be used only for the purpose for which it was developed. Although the information on this map has been prepared with care and in good faith, no guarantee is given that the information is complete, accurate or up-to-date. Importantly, this map does not show catch distribution within each sub-ESA. Please refer to page 33 for a map of area closures under the Fisheries Act 1996 and protected areas managed by the Department of Conservation, where commercial eel fishing is generally prohibited.

CPUE analyses grouped by QMA are presented in Figures A3 - A16.⁹

FISHERY MANAGEMENT AREA 1

Figure A3 - LFE21 CPUE indices

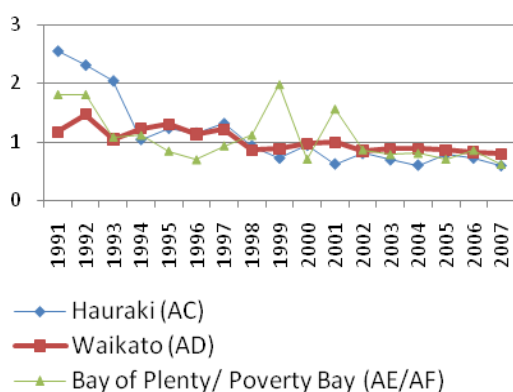
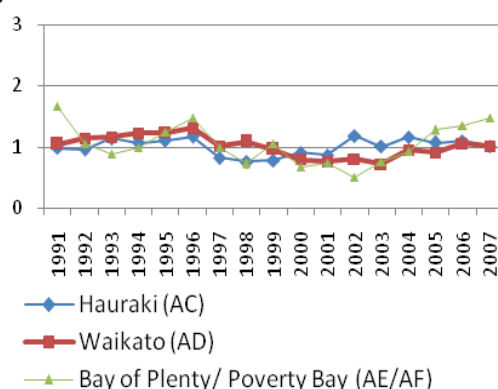


Figure A4 - SFE21 CPUE indices



FISHERY MANAGEMENT AREA 2

Figure A5 - LFE22 CPUE indices

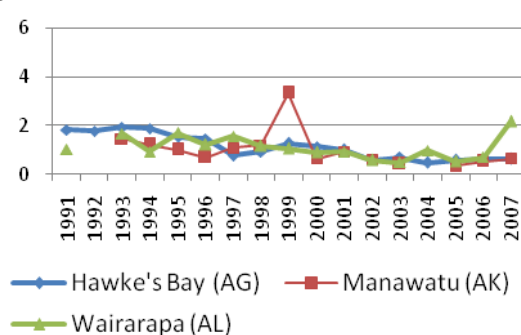
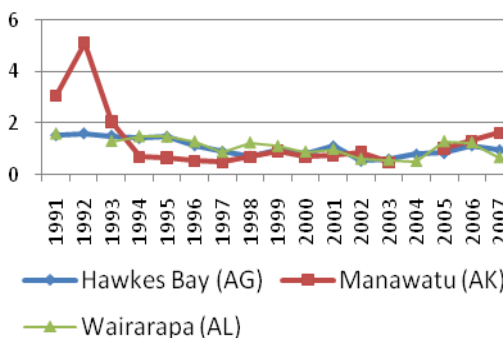


Figure A6 - SFE22 CPUE indices



FISHERY MANAGEMENT AREAS 3 & 5

Figure A7 - ANG13 CPUE index

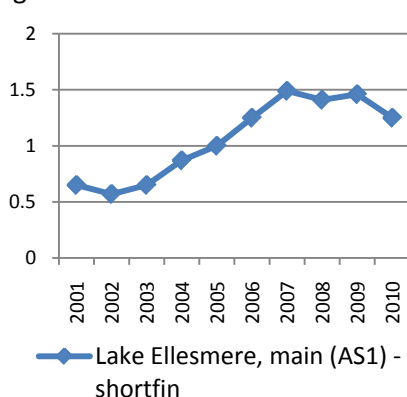
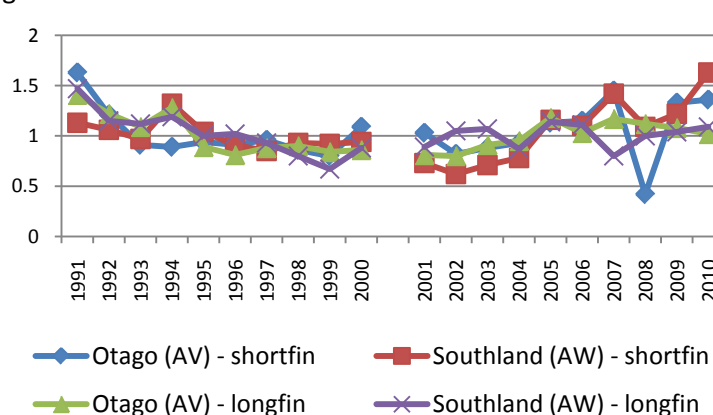


Figure A8 - ANG15 CPUE indices

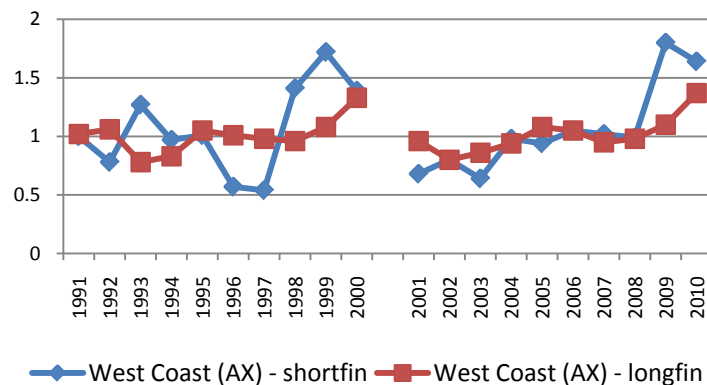


There was insufficient information to generate CPUE indices for the period after introduction to the QMS for ANG12 (North Canterbury) and ANG14 (South Canterbury).

⁹ Beentjes & Dunn, 2010, (in prep).

FISHERY MANAGEMENT AREA 7

Figure A9 - ANG16 CPUE indices



There was insufficient information to generate a CPUE index for the period after introduction to the QMS for ANG11.

FISHERY MANAGEMENT AREA 8

Figure A10 - LFE 23 CPUE indices

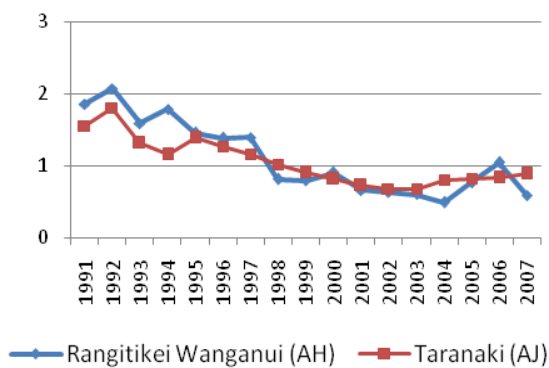
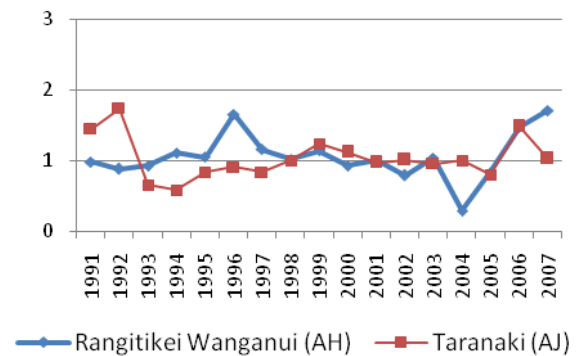


Figure A11 - SFE 23 CPUE indices



FISHERY MANAGEMENT AREA 9

Figure A12 - LFE 20 CPUE indices

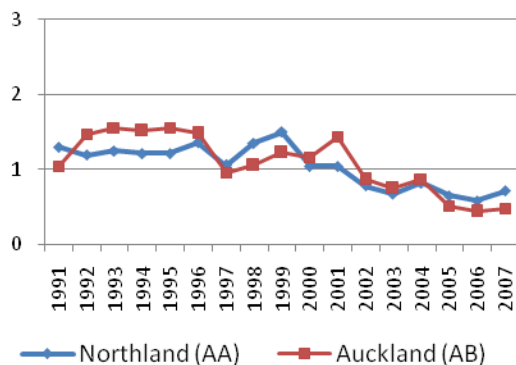


Figure A13 - SFE 20 CPUE indices

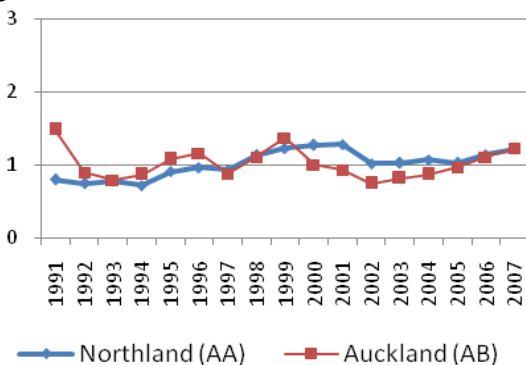
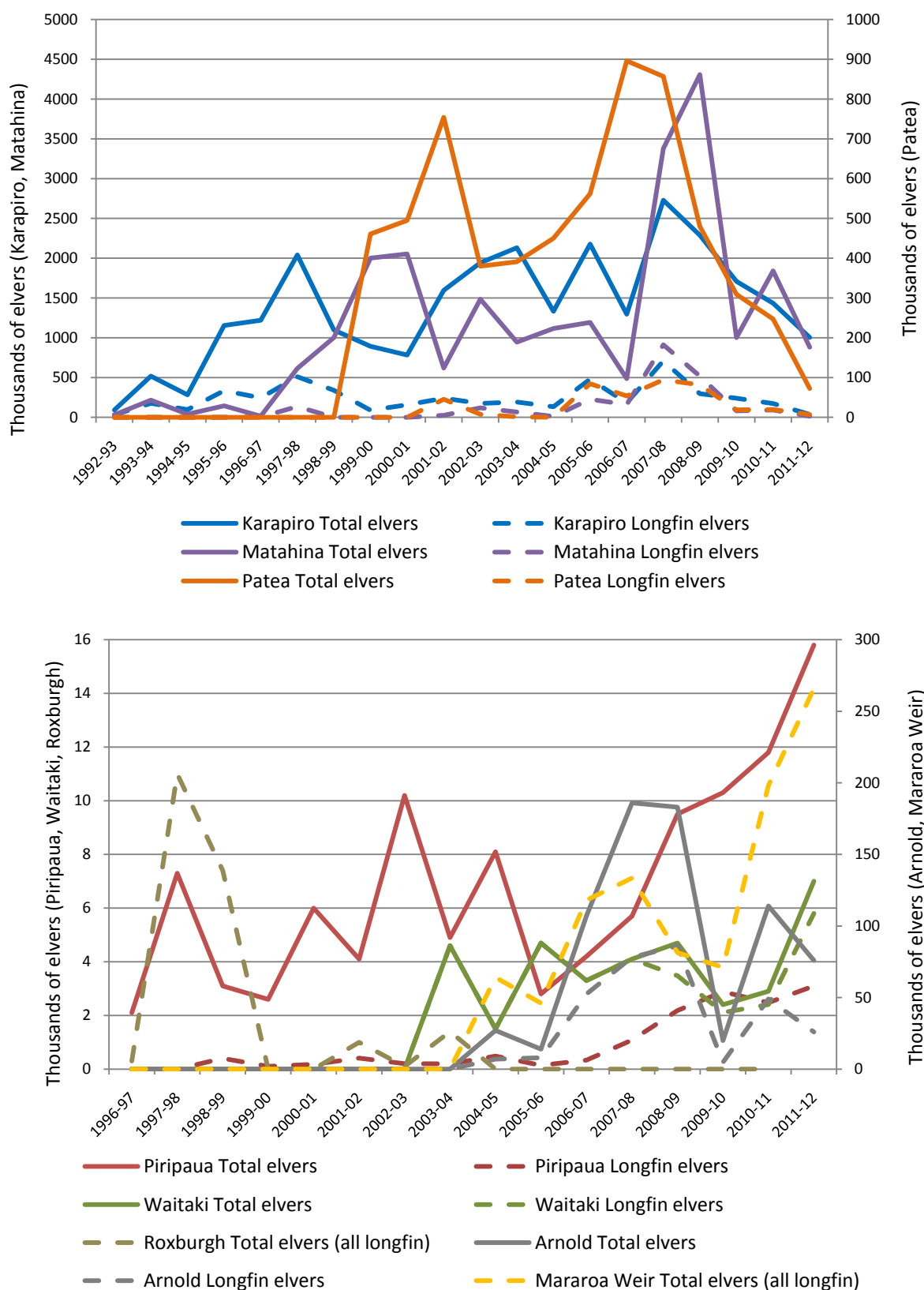


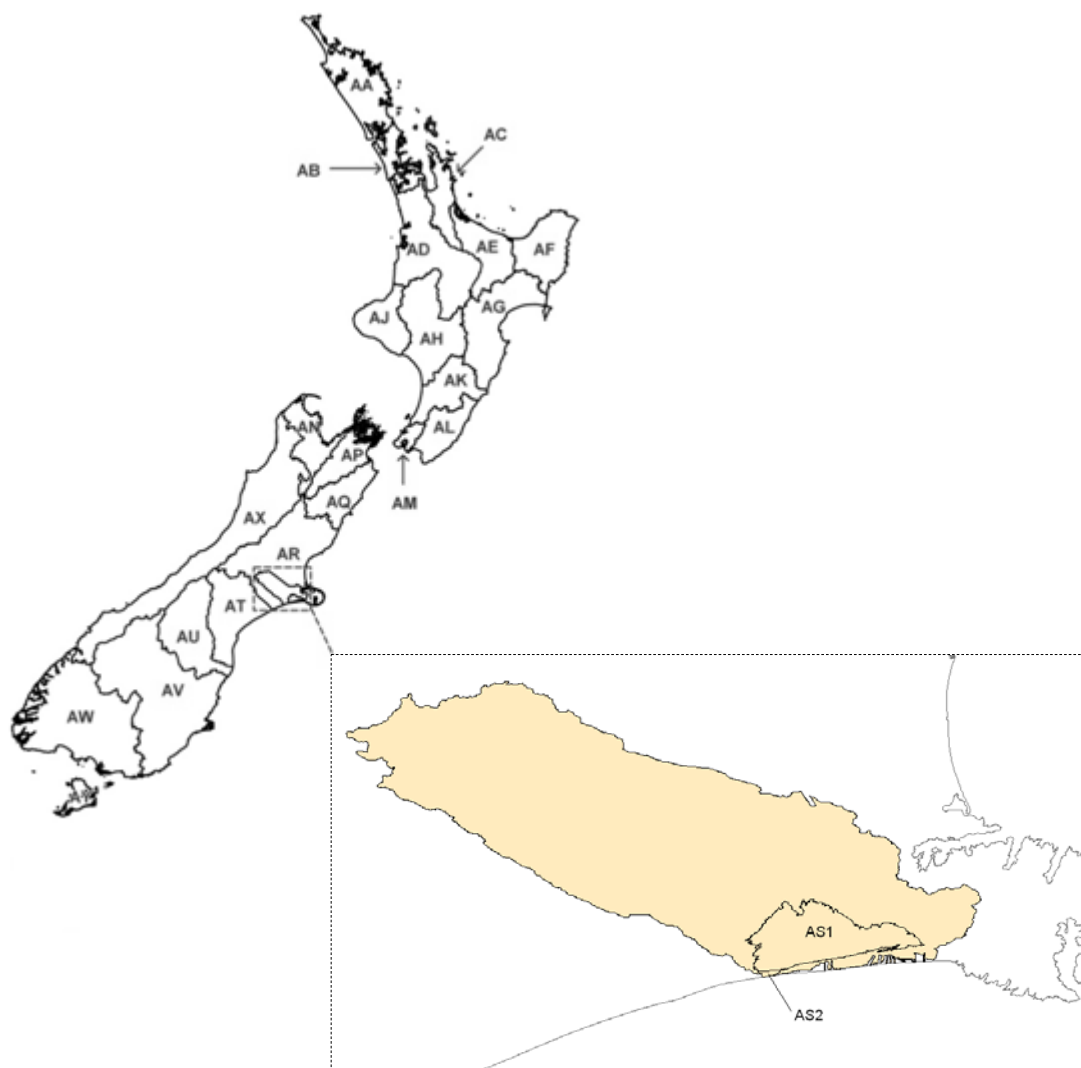
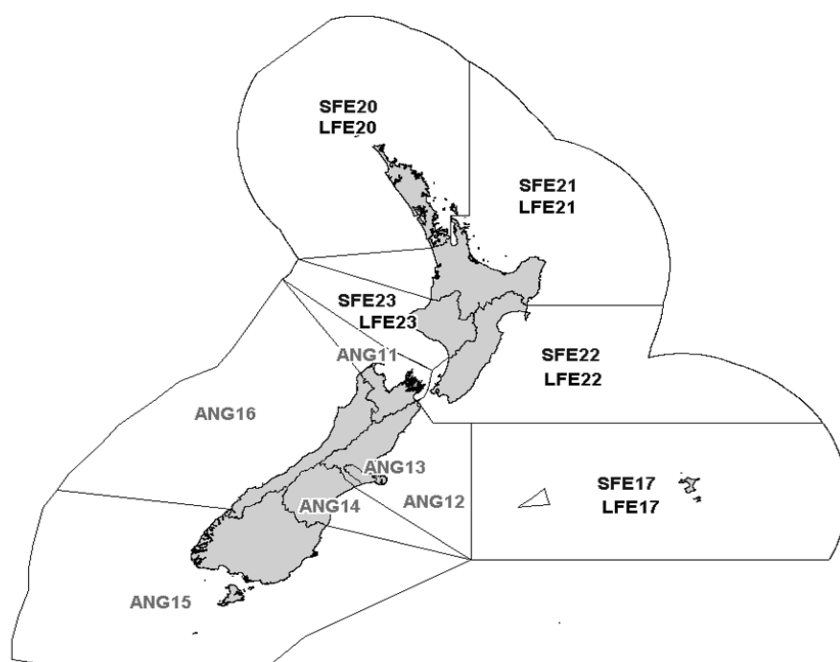
Figure A14 illustrates the time series of elver recruitment recorded at the monitoring sites around the country.¹⁰

Figure A14 - Number of elvers recorded at monitoring sites (Modified from Boubee et al 2012)



¹⁰ Modified from Martin et al. (in prep.).

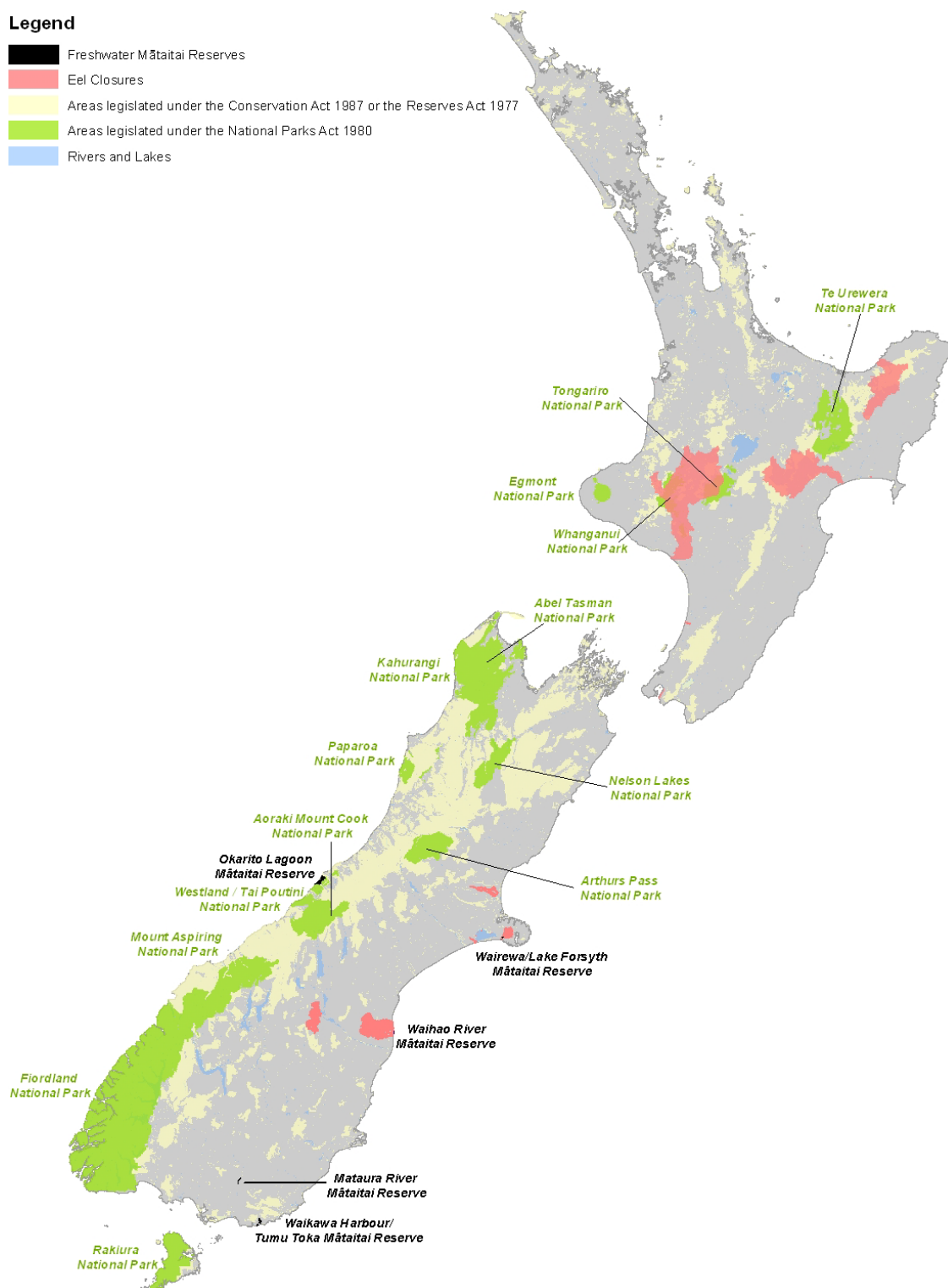
Freshwater Eel Quota Management Areas and Statistical Areas



Freshwater Eel Closures and Protected Areas

Legend

- Freshwater Mātaitai Reserves
- Eel Closures
- Areas legislated under the Conservation Act 1987 or the Reserves Act 1977
- Areas legislated under the National Parks Act 1980
- Rivers and Lakes



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