Annual status report

Queensland Eel Fishery

January 2007

Queensland Government
Department of **Primary Industries and Fisheries**

PR07–2673

The Department of Primary Industries and Fisheries (DPI&F) seeks to maximise the economic potential of Queensland's primary industries on a sustainable basis.

Introduction

The Queensland Eel Fishery (QEF) targets the long fin eel, *Anguilla reinhardtii*, and the short fin eel, *Anguilla australis*, in rivers and freshwater impoundments. The QEF is unique in that the resource is harvested at two stages in the lifecycle — the adult stage (eels ›30 cm) and the glass/elver stage (eels ‹30 cm) for both species. Commercial adult eel trappers collect adult eels from impounded waters;[1] commercial juvenile eel (JE) fishers take glass eels and elvers from rivers and supply seed stock for grow-out in aquaculture systems.

The majority of Queensland's wild caught adult eel catch is exported live to Asia, principally Hong Kong and Taiwan, with a small percentage of adult eels being sold frozen to European markets.

This report covers the period January–December 2005.

Fishery profile 2005 — Adult eel fishery

Total harvest from all sectors: approximately 33 t

Commercial harvest 2005: approximately 32 t

Recreational harvest 2005: negligible — 6 individual freshwater eels retained (24 released)

Indigenous harvest 2000: negligible — 869 eels reported in the National Recreational and Indigenous Fishing Survey (NRIFS) as caught by Indigenous fishers in Queensland

Charter harvest 2005: none reported

Commercial Gross Value of Production (GVP): approximately $352 000

Number of licences: 37 as of October 2006

Commercial fishers accessing the fishery: 18 as of October 2006

Fishery season: January–December

Fishery profile 2005 — Juvenile eel fishery

Commercial harvest (weight): approximately 276 kg

Commercial harvest (number of individuals): approximately 1 673 750

Recreational harvest: nil

Indigenous harvest: nil

Charter harvest: nil

Commercial Gross Value of Production (GVP): not available as management arrangements prevent sale[2]

Number of licences: Twelve

Commercial fishers accessing the fishery: Five

Fishery season: January–December

[1] Impounded waters are defined in the *Fisheries (Freshwater) Management Plan 1999*.

[2] For the 2004/05 financial year, 42.7 t of adult eel were produced from aquaculture for a reported gross value of $569 000. The production originated from both the on-growing of juvenile eels and the on-growing of smaller adult eels.

Description of the fishery

Fishing methods

In Queensland, adult eels may only be taken commercially using baited eel traps or round traps which are usually set on the bottom of the impoundment. Eel traps consist of a single entry mesh funnel and a floated codend to hold the captured eels, which ensures that captured eels are not over-stressed and that air breathing non-target species can reach the water surface to breathe. Traps are generally baited with pilchards or mullet.

- The maximum size of an eel trap is 2.0 × 0.6 × 0.6 metres when set.
- The maximum size of a round trap is a diameter of 1 metre and a height of 0.6 metres.
- The frame of the trap must be made of a rigid material.
- A trap (other than its pocket) must have a mesh size of at least 25 mm, and any rigid mesh on the trap must be at least 22 mm in each of its dimensions.
- A float of at least 150 mm in each of its dimensions must be attached to each trap.
- The trap and trap float must be marked with authority number and full name of the authority holder.
- The tail of the codend must also be attached to a float or buoy of adequate size so that at least some of the codend floats at the surface so as to allow trapped animals access to surface air.

The juvenile component of the QEF targets juvenile eels using a variety of different gear types, including fyke nets, dip nets and flow traps. Juvenile traps must contain bycatch reduction devices to minimise impacts on non-target species. The maximum total amount of fishing gear allowed to be used under an authority is:

- One small mesh eel fyke net:
  - with a maximum of two wings (length ≤15 m)
  - fyke net must not exceed 4 m in height, width or diameter
  - the ends of the wings and the codend of the net must be marked with a reflective float bearing the holder's name and address
  - the net may be fixed by anchor or supported on stakes
  - a float must be attached to the codend to ensure that incidentally captured air-breathing animals can access air to breathe.
- Three small mesh dip nets
- Three flow traps with an effective bycatch excluder that have been approved by the chief executive prior to use.

Fishing area

The long fin eel is distributed along the east Queensland coastline and is found throughout eastern states of Australia. The abundance of long fin eel is greatest in Queensland and New South Wales. The short fin eel is at its northern distribution limit in southern Queensland. The species is more abundant in southern Australian states such as New South Wales, Victoria and South Australia.

Adult eel

The adult eel fishery allows fishing in all Queensland East Coast Drainage Division catchments with the exception of all coastal island catchments (Figure 1). Within this area, trapping of adult eels is only permitted in:

1. artificially created private impoundments in those catchments listed on an eel authority (for example, a farm dam)
2. an impoundment formed by a dam that is specifically listed on an eel authority (for example, a public owned impoundment such as Cressbrook Dam).

The majority of public impoundments are not open to commercial harvesting and as such the fishery comprises mainly private impoundments.

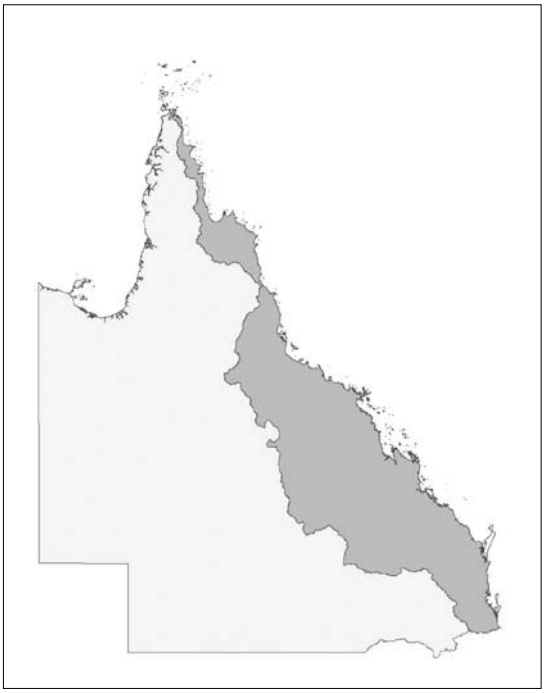

Figure 1: Area open to adult eel trapping.[3]

Juvenile eel

The juvenile eel fishery allows fishing in river basins associated with 21 rivers along the East Coast of Queensland, which represent less than 10% of Queensland river systems: Albert, Barron, Brisbane, Burdekin, Burnett, Burrum, Caboolture, Coomera, Currumbin, Fitzroy, Johnstone, Kolan, Logan, Maroochy, Mary, Mooloolah, Mulgrave, Nerang, Noosa, Pine and Tully rivers (Figure 2). Within these basins, juveniles may only be collected at, or downstream of, the most downstream dam or weir[4] and up to 200 m either side of the mouth of the approved rivers. Collecting is also allowed in tributaries that enter the approved rivers downstream of the most downstream dam or weir for a distance of 1 km upstream of the confluence.

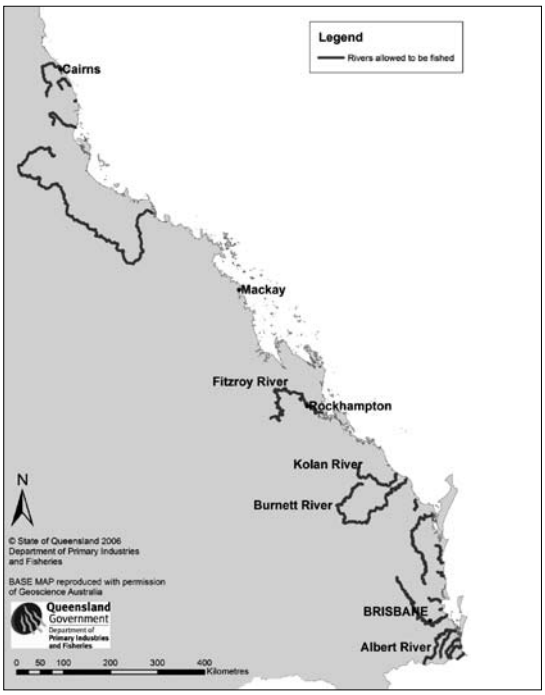

Figure 2: Map of permitted juvenile eel fishing rivers.

[3] Within this area, trapping is only allowed in artificially created impoundments in those catchments listed on an eel Authority, for which a trapper has gained access from the landholder or water-controlling agency.

[4] A tidal barrage is not considered a weir for the purpose of these conditions.

Main management methods used

The Department of Primary Industries and Fisheries (DPI&F) manages the QEF in accordance with ecologically sustainable development principles. The fishery management methods differ between the adult and juvenile components of the QEF.

The adult wild caught eel component of the fishery is managed under the *Fisheries (Freshwater) Management Plan 1999*, which is subordinate legislation to the Queensland *Fisheries Act 1994*. Fishing activity in this component of the fishery is also controlled by the *Fisheries Regulations 1995*.

The collection and grow-out of juvenile eels is currently controlled through conditions stipulated on Culture Stock Collection Permits and Aquaculture Licences under the *Fisheries Act 1994* and the *Policy for Management Arrangements for the Commercial Harvesting and use of Juvenile Eels*.[5]

A range of input and output controls are in place to manage the harvesting of eels including:

- a minimum size limit (30 cm) for commercial adult eel collectors and recreational fishers
- a recreational in-possession limit for freshwater eels (combined limit of 10 for all species)
- restrictions on which waters are open to collection activities
- a limit on the number of authorities issued to access the fishery
  - the adult eel fishery has 39 authorised fishers and is closed to new applicants
  - the juvenile eel fishery is restricted to 12 authorities
- restrictions on the type and design of apparatus and number of each gear type that can be used (Figure 3)
- restrictions on the use of juvenile eels (may be sold to authorised aquaculture facilities within Australia only).

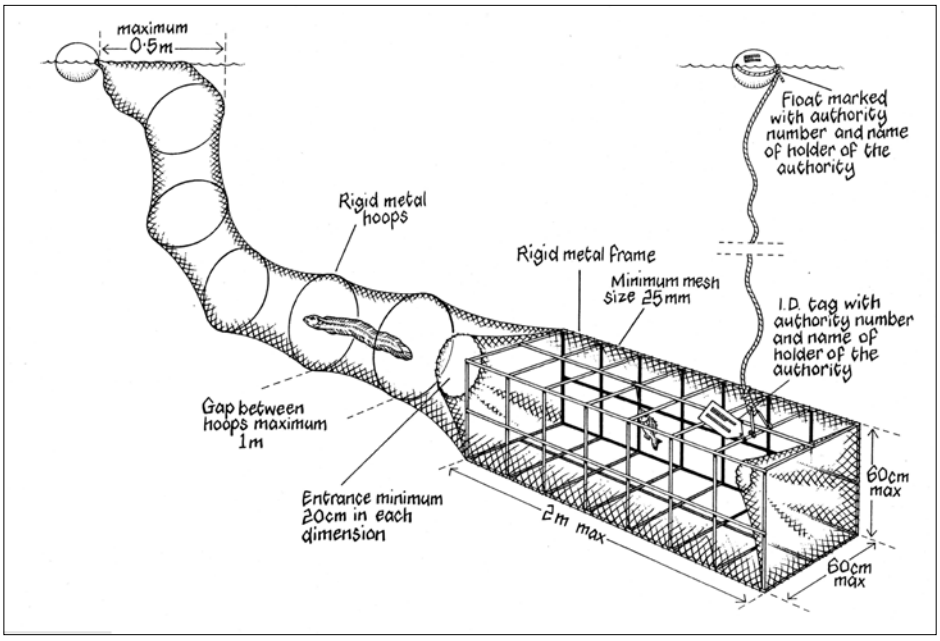

Figure 3: Eel trap used by adult eel trappers.

[5] Available online at: www.dpi.qld.gov.au/fishweb

Approximate allocation between sectors

The Queensland eel fishery is predominately a commercial fishery. The Recreational harvest of eel recorded in the 2005 Annual Status Report (7766) was sourced from the 2001 NRIFS and was indicative of recreational catch of all species of eels including saltwater congers.[6] More accurate and freshwater specific figures from the 2005 Recreational Fishing Information System (RFISH) diary survey indicate 6 individual eels were retained and 24 released. Previous Indigenous[7] surveys recorded negligible levels of adult eel harvest.

Fishery accreditation under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The Queensland eel fishery was granted a five-year exemption from export requirements of Part 13A of the Australian Government EPBC Act on 6 November 2004. The exemption acknowledges that the fishery is being managed in an ecologically sustainable manner and allows the export of eel harvested from Queensland waters. The exemption expires 22 September 2009.

Catch statistics

Commercial — Adult eel

Commercial catch data are maintained by DPI&F in the Commercial Fisheries Information System (CFISH) via compulsory monthly catch returns in the fishery logbooks.

In 2005, annual reported catch of adult eel declined from approximately 44 t in 2004 to 31 t (Figure 4).

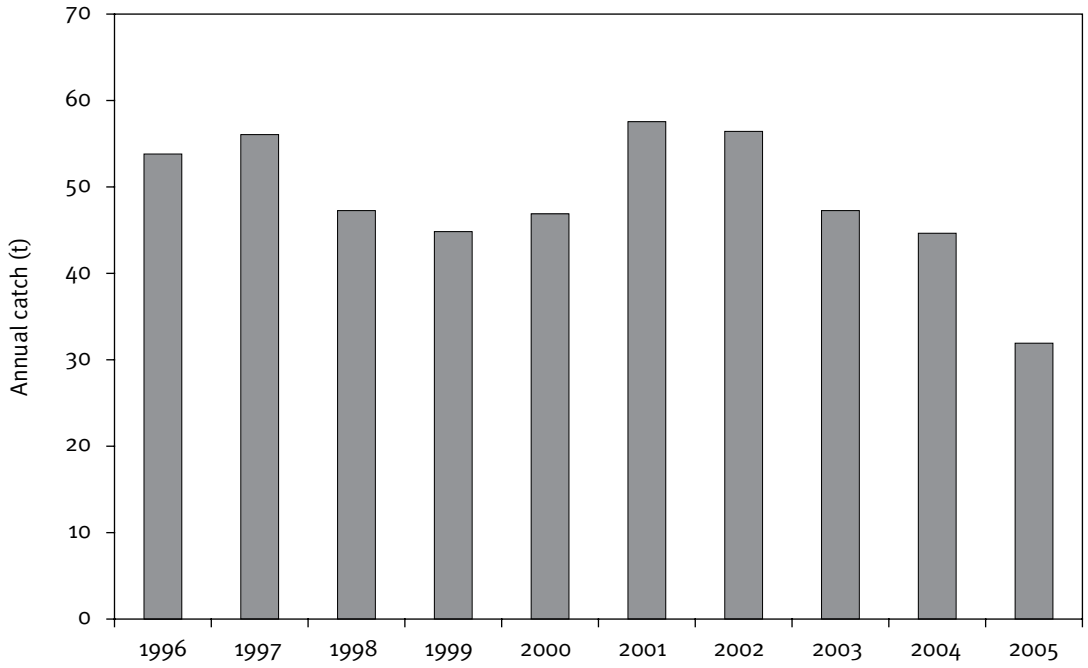

Figure 4: Queensland adult eel reported annual catch 1996–2005 (Source: DPI&F CFISH database. Data correct as at 18.1.2007).

[6] Henry, GW, and Lyle, JM 2003, *The National Recreational and Indigenous Fishing Survey*, Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, ACT, Australia.
[7] *Ibidem*.

From 2001 — when there was the highest reported annual catch of adult eels — to 2005, the annual reported catch has declined along with the number of days fished (Figure 5). Limits were placed on entering the fishery in 1999 and since then the number of active operators has steadily declined, which has led to a reduction in effort in the fishery.

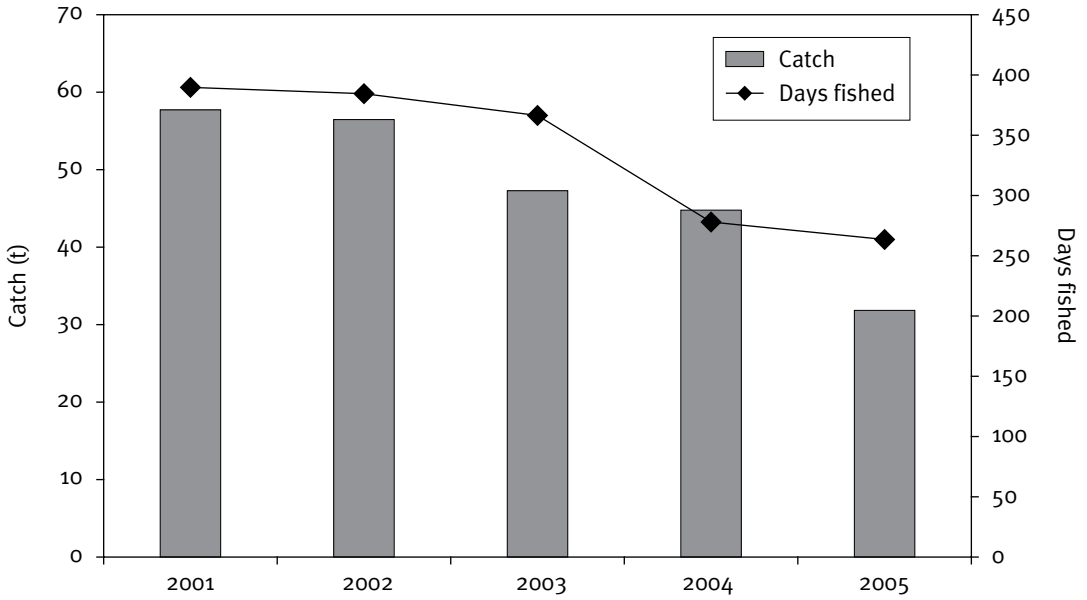

Figure 5: Queensland adult eel reported annual catch and days fished 2001–05 (Source: DPI&F CFISH database Data correct as at 18.1.2007).

Because there are concerns with previous reporting of the number of trap checks in the adult eel collection component of the fishery, this measure of historical effort is not considered reliable. In November 2006, a new logbook was implemented in the fishery. The logbook was designed to provide greater confidence in reporting of effort.

Recreational — adult eel

The RFISH 2005 diary survey indicates that approximately 6 individual freshwater eels were retained and 24 released; therefore, negligible levels of freshwater eels are retained by the recreational sector. These data are substantially less than those estimated in the 2001 NRIFS (7766 ± 2728). The NRIFS estimated recreational catch of eel is an estimate of all eel species harvested in Queensland, including *Conger* spp. (saltwater) in addition to the *Anguilla* species targeted by the commercial fishery.

Indigenous — adult eel

Indigenous community fishing activity was analysed for Queensland as part of the NRIFS[8] conducted in 2000. In Queensland, 869 eels were reported as being taken by Indigenous fishers. These eels would have included other marine and estuarine species (e.g. *Conger* spp.) in addition to the *Anguilla* species targeted by the commercial fishery.

[8] Henry, GW, and Lyle, JM 2003, *The National Recreational and Indigenous Fishing Survey*, Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, ACT, Australia.

Commercial — juvenile eel

Commercial catch data are maintained by DPI&F in CFISH, which records compulsory monthly catch returns in fishery logbooks.

Annual reported catch of juvenile eel increased from approximately 145 kg in 2004 to approximately 276 kg in 2005 (Table 1, Figure 6). The catch of juvenile eels has fluctuated greatly since 1996, with total reported annual catches between 0.9 and 276 kg (see Figure 6).

Table 1: Fishery details for the commercial harvest of juvenile eel 1996–2005 (Source: DPI&F CFISH database. Data correct as at 18.1.2007).

Year	Days	Catch (numbers)	Catch (kg)
1996	10	6965	0.9
1997	201	1 030 628	133.18
1998	214	521 622	81.78
1999	145	211 731	32.13
2000	59	95 776	16.64
2001	22	60 980	8.71
2002	9	252 980	38.78
2003	174	829 920	206.94
2004	182	679 255	145.36
2005	300	1 673 752	275.65

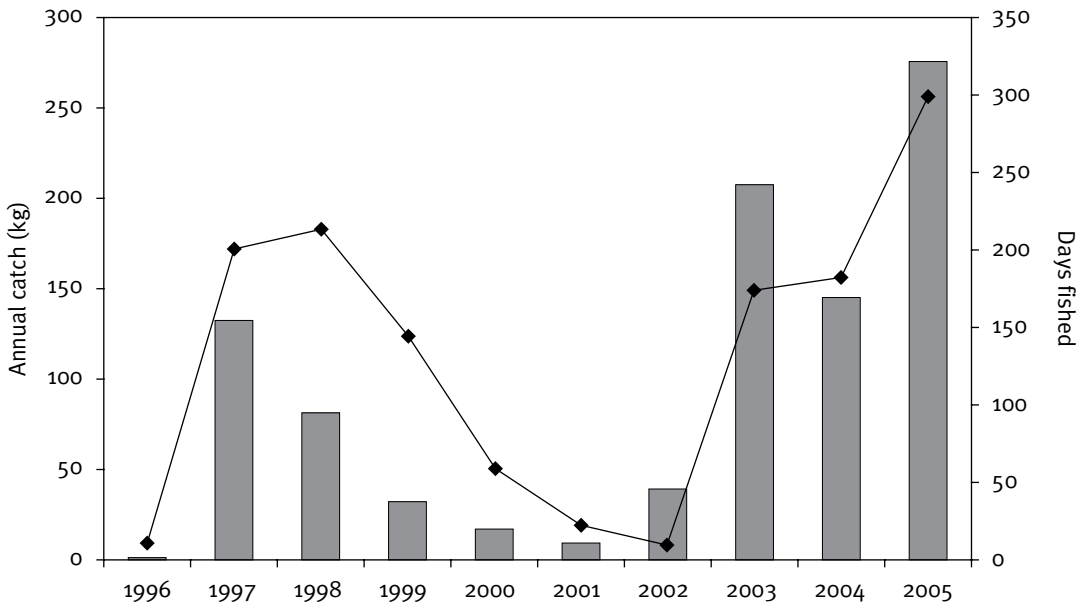

Figure 6: Total reported commercial catch (kg) and effort (days fished) in the Juvenile Eel Fishery 1996–2005 (Source: DPI&F CFISH database. Data correct as at 18.1.2007).

Fluctuations in annual catches of juvenile eels are expected due to the temporal nature of the fishery. Seasonal, weather and tidal cycles impose natural restrictions and significant variation in both catch and fishing effort.

The number of approval holders remained at 12 operators—of these, five were active in the 2005 fishing season. The effort expended in the fishery has increased from 2002–05, which may be due to several factors including: the market opening up to interstate sale, the demand from aquaculture farms for on-growing, and market demand from Asia, where most of the produce is exported live.

Spatial issues/trends

The collection of juvenile eels is concentrated at specific river locations that favour collection (such as waterway barriers). Juvenile eels were harvested from the Albert, Burnett, Kolan and Fitzroy rivers in 2005 (Figure 7).

Socio-economic characteristics and trends

The vast majority of eels, including wild-caught adult eels and juvenile eels grown on farms to export size, are exported live to Asia, with prices from $10/kg to 12/kg. Prices have remained stable in recent years.

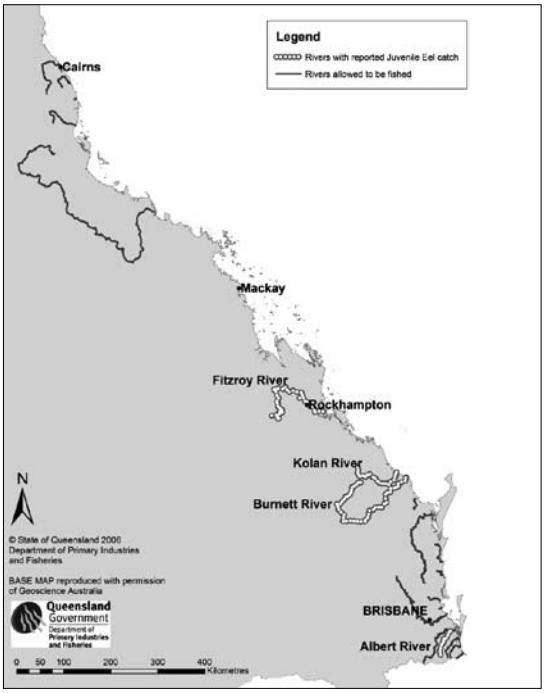

Figure 7: Rivers with reported juvenile eel harvest in 2005

Fishery performance

The adult eel fishery operates within impounded waters, which minimises the potential impact of the fishery on natural waterways. Eighteen licence holders fished in the 2005 season, which is a result of the limits that were placed on entry into the fishery in 1999. Since 1999, the number of active operators has declined, which has resulted in reduced effort and subsequently reduced annual catch.

The juvenile eel fishery operates at a very small scale, with five active operators in the 2005 season. In 2005, the number of days fished—along with the total reported catch—increased from 2004, which may be a result of weather, tidal and market cycles. Catch in the juvenile eel fishery generally fluctuates due to the temporal nature of the fishery.

Anecdotal evidence suggests that bycatch in both the adult and juvenile eel fishery is low. The gear used in the adult eel fishery is highly selective and observed bycatch in the juvenile eel fishery has been mostly limited to abundant and common species of glassfish. A species of conservation interest (SOCI) logbook was implemented in both the juvenile and adult eel fisheries in 2006.

In 2006, an ecological risk assessment (ERA) was undertaken for the fishery, and subsequently a performance measurement system (PMS) developed to ensure the fishery continues to be managed in an ecologically sustainable manner. The outcomes of the ERA and PMS will be included in the 2007 annual status report.

Progress in implementing the Department of the Environment and Heritage (DEH) recommendations

Recommendation	Progress
DPI&F to inform DEH of any intended amendments to the management arrangements that may affect sustainability of the target species or negatively impact on bycatch, protected species or the ecosystem.	*Ongoing* Adult: • 'Authority to Take' was transitioned to a Commercial Harvest Fishery Licence which provides perpetuity to holders. • Adult eel logbook has been finalised and was implemented in November 2006. Fishers are also required to report interactions with SOCI. Juvenile: • Culture stock collection permits for JE have been transitioned to a Commercial Harvest Fishery Licence which provides perpetuity to holders. • Implementation of the Juvenile Eel Policy (see Changes to management in the reporting year). • JE logbook has been finalised and was implemented in November 2006. The JE fishers are also required to report interactions with SOCI.
By the end of 2006, DPI&F to revise fishery specific objectives for the adult and juvenile eel fisheries to ensure that they specifically recognise the need to manage impacts on bycatch, protected species and the ecosystem. DPI&F also to develop performance indicators and performance measures for target, bycatch, protected species and impacts on the ecosystem.	*In progress* The Queensland eel fishery performance measurement system (PMS) will be finalised in early 2007 and will be applied to the fishery post-submission to DEH.
DPI&F to monitor the status of the adult and juvenile fisheries in relation to the performance measures once developed. Within three months of becoming aware of a performance measure not being met, DPI&F to finalise a clear timetable for the implementation of appropriate management responses.	*Ongoing* PMS will be assessed annually once developed.
DPI&F to conduct a risk assessment of compliance and enforcement activities in the adult and juvenile eel fisheries. Outcomes of the risk assessment will be used to develop a compliance and enforcement strategy for the fisheries, including a timetable for the implementation of key components of the strategy.	*In progress* Queensland Boating and Fishing Patrol (QBFP) are co-ordinating compliance risk assessments and strategy development across all Queensland fisheries. The Queensland eel fishery is scheduled for completion by mid-2007.
From 2005, DPI&F to report publicly on the status of the fishery on an annual basis, including explicit reporting against each performance measure once developed.	*Ongoing* This annual status report is the second to be completed for the Queensland eel fishery.
DPI&F to undertake fishery independent monitoring of representative impounded rivers to be identified on annually to enable trends in adult eel abundance indicative of any declining recruitment.	*Ongoing* Fishery independent monitoring continues annually through the Long Term Monitoring Program (LTMP). Analysis of trends in adult eel abundance from 1999–2006 will be included in the 2007 Annual Status Report.

Recommendation	Progress
DPI&F to develop and implement sustainability indices for eel stocks within three years to ensure some assessment of the proportion of adult eels that can be sustainably harvested is conducted annually. The annual assessment of the adult eel resource will incorporate assessment of the impacts of environmental variability, where possible.	*Ongoing* The DPI&F and the Fisheries Research and Development Corporation (FRDC) project 1998/128 *Biological data and model development for management of longfinned eel fisheries* showed that fishery independent CPUE data obtained from LTMP surveys was suitable to use as an index of abundance of adult eels and sustainability indicator. LTMP surveys are conducted annually.
In the event that the current genetic study on Long Fin Eels reveals that eel stocks harvested in the fishery are not panmictic, DPI&F will investigate alternative management arrangements with a view to implementing management measures that ensure that catchment fidelity is adequately taken into account. A program for the collection of fishery dependent and independent data to inform management will also be investigated.	*Ongoing* Postgraduate research is underway at Southern Cross University in NSW in genetic population structure of long fin eels.
DPI&F to conduct a cost-benefit analysis on methods to facilitate juvenile eel recruitment upstream past waterway barriers. If an appropriate mechanism is identified, DPI&F to implement the mechanism and/or encourage relevant authorities to put in place measures to facilitate ongoing juvenile eel recruitment past waterway barriers.	*Not started*
Within three years, DPI&F to undertake a risk analysis of the bycatch species, including protected species, taken in the fishery to identify those species vulnerable to fishing. Management measures to mitigate threats to any species found to be at high risk from fishing operations should be developed and implemented in a timely manner.	*In progress* An ERA of the Queensland eel fishery was undertaken in September 2006. The ERA will be submitted to DEH in early 2007.
DPI&F to implement the Species of Conservation Interest logbook in the adult and juvenile eel fisheries within 12 months to enable ongoing recording and monitoring of protected species interactions.	*In progress* A SOCI logbook for both the Adult and Juvenile components of the Queensland eel fishery was implemented in November 2006 (see Changes to management in the reporting year).

Management performance

DPI&F held a workshop in early September of 2006 to develop performance measures for the Queensland eel fishery. The PMS is to be finalised by early 2007 and will be applied to the fishery after submission to DEH and reported on annually.

Resource concerns

There is some concern about the effect of waterway barriers on eel migration. Juvenile eels are unable to negotiate the fish passage devices currently in operation. As part of DPI&F's management of this issue, a cost-benefit analysis of the possible solutions to this issue will be undertaken.

Ecosystem

Non-retained species/bycatch

There are no by-product species taken in the Queensland eel fishery as eels are the only freshwater fish permitted to be taken for trade or commerce. The selectiveness of adult eel traps minimises the likelihood of interactions with non-target species. Restrictions on the apparatus permitted for juvenile collection and the locations where they can be harvested reduce the potential impact on bycatch. Previous research found, over a three-year period, that bycatch consisted of 40 species, including 5 crustacean and 35 fish species in the Albert River.[9] In general, the majority of bycatch in terms of quantity and diversity comprised small abundant and common species, such as glassfish (*Ambassis* spp.). These data along with anecdotal evidence from fishers indicate that the juvenile eel fishery has a low level of bycatch.

Interactions with protected species

New logbooks to facilitate reporting of any interactions with protected species have been developed and finalised for both adult and juvenile eel fishers and were implemented in late 2006.

Fishery impacts on the ecosystem

The impact of the eel fishery on the ecosystem is considered to be low. The apparatus used is considered to have only a minimal impact on the physical environment and non-target species. Restrictions on the number of traps and the locations in which they can be used are implemented to minimise potential impacts. The use of apparatus designs sensitive to the environment and non-target species is encouraged. The trapping of adult eels occurs mainly in artificially created environments (e.g. farm dams) and therefore the adult eel fishery has negligible impact on the ecosystems of natural waterways.

Other ecosystem impacts

Weirs, sluices, locks or dams have been built on many rivers to optimise water levels for navigation, generating power or agricultural land use.[10] These man-made barriers may affect migration of fish to a variable degree, from short delays to complete obstruction depending on the dimensions and characteristics of the barriers, the hydrology of the river and species-specific features, such as swimming capacities and timing of migration.[11] In Queensland, barriers to eel passage upstream—such as dams, weirs and barrages—have the potential to reduce recruitment into upstream freshwater environments where female eels develop and grow.

[9] Gooley, GJ and Ingram, BA 2002, 'Assessment of Eastern Australian Glass Eel Stocks and Associated Eel Aquaculture,' Final Report FRDC Project No 97/312 (and No. 99/220).

[10] Winter, HV and Van Densen, WLT 2001, 'Assessing the opportunities for upstream migration of non-salmonid fishes in the weir-regulated River Vecht' *Fisheries Management and Ecology*, vol. 8, pp. 513 – 532.

[11] Northcote, TG 1998, 'Migratory behaviour of fish and its significance to movement through riverine fish passage facilities' In: M.Jungwirth, S.Schmutz & S.Weiss (eds) *Fish Migration and Fish Bypasses*, Oxford: Fishing News Books, Blackwell Science Publications, pp. 3 – 18.

Research and monitoring

Recent research and implications

No recent research has been undertaken in the Queensland Eel Fishery since DPI&F/FRDC project 1998/128 completed in 2004.

Monitoring programs and results

Long Term Monitoring Program

The freshwater LTMP objective is to monitor population changes of key recreational and commercial species as well as changes in species diversity, water quality and habitat conditions in freshwater river systems.

Figure 8 maps the river systems that are surveyed. River systems were chosen for a variety of reasons:

- they are subject to considerable recreational angling pressure
- they support commercial fisheries in adjacent coastal/estuarine areas
- they are likely to experience changes in the near future (e.g. fishway installation)
- they have a history of monitoring established sites.

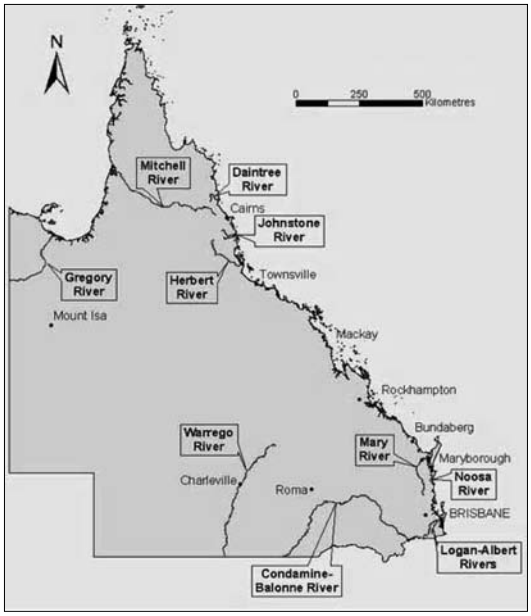

Figure 8: Map of river systems monitored in the Freshwater LTMP.

Sites are monitored by boat-mounted electrofishers. Six 50 m shots are randomly chosen within each site and electrofished for five minutes. Voltage and fain are adjusted to stun fish without damaging them. Stunned fished are netted from the water and placed in an aerated tank. All species caught during the survey are counted. Important recreational, commercial and noxious species (excluding *Gambusia)* have their length recorded. Scales from key target species, including Barramundi and Australian Bass, are removed for future ageing analysis. Fish are released alive back into the water.

Habitat information is also collected at the site including details of water quality, human disturbance to the site, amount of bank vegetation and area of habitats suitable for fish.

Table 2: LTMP catch data for longfin eel 2000–04.

River	Average catch (number of fish per 30 min. 'on time' electrofishing)				
	2000	2001	2002	2003	2004
Logan-Albert	2.63	2.84	1.52	1.01	2.84
Noosa	1.40	1.35	1.55	1.00	1.99
Mary	3.00	4.66	3.53	2.53	2.75
Herbert	8.86	6.96	5.46	2.87	13.46
Johnstone	4.44	3.52	6.01	3.51	6.31
Daintree	13.29	10.71	8.76	2.88	10.12

Table 2 reports LTMP longfin eel catch for surveys undertaken over 2000–04. A joint DPI&F and FRDC report[12] undertakes an analysis of the LTMP data. The report found that fishery independent CPUE data obtained from the LTMP are suitable for evaluating trends in eel stocks in rivers and can be used to generate an index of abundance for legal sized (adult) longfin eel stocks.

Collaborative research

No recent collaborative research has been undertaken since the completion of the DPI&F and FRDC project *Biological data and model development for management of longfinned eel fisheries* in 2005 (reported on in the 2005 Annual Status Report). The project results supported DPI&F's assertion that the management arrangements in place for the Queensland eel fishery are conservative and the best option for ensuring the sustainability of the resource.

Fishery management

Compliance report

Compliance and enforcement in the Queensland Eel Fishery is the responsibility of DPI&F and QBFP.

During 2005, a commercial eel fisher was breached and subsequently, in 2006, was prosecuted successfully for contravening a condition of an authority (unmarked traps); and failing to produce an authority. In addition, 15 unlawful eel traps were seized during the period.

A compliance risk assessment will be completed for this fishery in early 2007 in order to determine compliance priorities and allow the most effective use of QBFP resources.

Changes to management arrangements in the reporting year

Adult Eel Fishery

'Authority to Take' was transitioned to a 'Commercial Harvest Fishery Licence', which provides perpetuity to holders. The 'E' fishery symbol remains the only harvest fishery symbol that is non-transferable.

Juvenile Eel Fishery

Culture stock collection permits for the JE fishery have been transitioned to a Commercial Harvest Fishery Licence which provides perpetuity to holders.

The *Policy for Management Arrangements for the Commercial Harvesting and use of Juvenile Eels*[13] was introduced in February 2006. The policy details management arrangements for the harvest and use of juvenile eels in Queensland and was developed in consultation with industry. The intent of the policy is to ensure that the juvenile eel fishery and the products harvested from it are managed consistently with the principles of ecologically sustainable development, as set out in the *Fisheries Act 1994*.

[12] Hoyle, SD, Hutchison, MJ, Sellin, MJ, Peel, D, Mayer, D and Sumpton, WD 2005, *Biological data and model development for management of longfinned eels*, Fisheries Research and Development Corporation (Australia) and the Department of Primary Industries & Fisheries, Brisbane, Australia.

[13] Available online at: www.dpi.qld.gov.au/fishweb

Changes include:

- Removal of quota system — the fishery is now managed primarily via input controls.
- Limited entry to the fishery — 12 harvest fishery symbols will be issued.
- Restrictions on fishing methods — gear must be set appropriately, ensuring that no more than 50% of the width of a waterway is ever exposed to fishing gear at any one time.
- Approvals to collect JE are no longer restricted to holders of an approval to undertake aquaculture.
- JE authorities are renewable and transferable.

Complementary management

Formal discussions with New South Wales and Victorian fisheries agencies regarding complementary management have not yet occurred. However, officers from different jurisdictions regularly participate in informal contact.

Information compiled by

Fiona Hill

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Image

Long fin eel — *Anguilla reinhardtii*