

Alien Fishes Committee Report - December 2002

Compiled by Tarmo Raadik

State representatives for the sub-committee are listed below. The Sub-committee tends to meet once a year during the Annual Conference of the society, and the meeting is open for all to attend. For further details, ideas, questions or suggestions, please contact your state representative or anyone listed below.

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WA - .

Recent News

National - By Richard Tilzey, Tarmo Raadik, Alex McNee

- The **National Carp Task Force** has changed its name to the “National Carp and Pest Fish Task Force”, and altered its aims to include understanding, research and management of all invasive pest fish in the Murray-Darling Basin. (*Cyprinus* – Newsletter of the National Carp Task Force, No. 14, October 2002).

- **MDB Native Fish Strategy:** The draft native Fish Strategy for the Murray-Darling basin has been released for public comment. The strategy aims to rehabilitate fish communities back to 60% of estimated pre-European levels within the next 50 years. Two objectives of the strategy deal with alien species and involve control and management of these species, which also includes stocking. (Murray-Darling Basin Ministerial Council 2002).
- **MDBC Pest Species Project:** ...A report on risk assessment of the impacts of pest species in the Murray-Darling basin has been released (Clunie *et al.*2002) (see below in "Recent Publications").
- **AFFA Oriental Weatherloach Project:** A scoping study of the potential spread and impact of the Oriental weatherloach (*Misgurnus anguillicaudatus*) in the Murray-Darling Basin has been completed by the Arthur Rylah Institute for Environmental Research. The scoping study produced a resource document which contained existing data on the species within its natural range and in Australia, updated distribution data in Australia, and scoped potential management strategies for containment, reduction and eradication. A draft management strategy was also produced. Contact Wayne Koster (wayne.koster@nre.vic.gov.au) and see below (Recent Publications).
- **National Exotic Freshwater Species Inventory:** A desktop review of exotic freshwater fish species in Australia has been undertaken by the Bureau of Rural Science. The inventory identified 1181 exotic fish species that have been recorded as present in Australia over the past 40 years, and of these, 481 are on the current permitted import list. Contact Alex McNee for further details (alex.mcnee@brs.gov.au).
- **Feral Animal Control Program:** The NHT Feral Animal Control program has been extended for a further 12 months. Check the web site.
- **Fish Translocation and Stocking Workshop:** The World Wide Fund for Nature and Inland Rivers Network recently held a workshop in Canberra (September 2002) on "Managing Fish Translocation and Stocking in the Murray-Darling Basin". A report is being prepared with commissioned papers from the workshop and recommendations for the scope and content of Basin wide codes of practice and/or guidelines for the stocking and translocation of fish. Contact Marie Waschka (mwaschka@wwf.org.au).

Queensland - by Aimee Burton and Rachel Mackenzie

- **Noxious List Committee:** A Noxious List Committee was formed in February 2002 with the aim of reviewing current species declared as noxious and to update and amend the list. Species considered to be a high threat to Queensland waterways will be recommended for addition to the noxious fish list in the Fisheries Regulation 1995 early 2003. The public will have an opportunity to comment on the proposed additions.
- **Screening Success:** A Regional Management Plan for the Boondoomba and Burnett Catchment was developed in 2001. Screens are now being installed by Tarong energy to prevent the spread of Tilapia from the dam into the Barkers Creek catchment (Bjelke-Petersen Dam). This represents a real step forward for the regional planning process and supports the notion that pest fish are not just a fisheries problem. It is excellent that a large corporation, such as Tarong energy, is willing to take its community and environmental obligations seriously. Progress is also being with the Barron-Mitchell

Management Plan in taking action to prevent the potential spread of tilapia from Tinaroo Falls Dam into the Mitchell Catchment and Gulf of Carpentaria waterways. The management plan, developed by QDPI in consultation with the community and SunWater (the owner of Tinaroo dam) recommends the installation of screens. These screens will cost \$1.2 million initially and \$20 000 per annum, which makes obtaining funding difficult.

- **“Aquatic Invaders” educational module:** “Aquatic Invaders” is an education module aimed at Upper Primary – Lower Secondary school students. It was designed to help students understand the impact of exotic pest fish infestations in natural waterways. It is hoped the module will educate young Queenslanders about the dangers of introducing non-native fish to our waterways and prevent the spread of existing pest fish and the introduction of new pest species. The Department of Primary Industries released this education module in October 2001.
- **Pest Fish Reporting Kit:** A draft “Pest Fish Reporting Kit” has been distributed to regional fisheries staff. The trial period will be for six months, after which it will be modified if needed. The kit was developed so people receiving reports of pest fish infestations are able to obtain the necessary information, which will then be entered into the “PestInfo” database. A brochure will also be developed in the near future for distribution to the public so they know the correct procedure for reporting pest fish.
- **Imported Tilapia and Climbing Perch fillets being sold in Queensland:** There has been an increase in reports from fisheries inspectors of the sale of frozen imported Tilapia and Climbing Perch fillets in Queensland. This is of particular concern as under current legislation, possession of these species dead or alive is an offence. There is concern in Queensland that if these fish are marketed as a food item, the public will not be concerned of the establishment of these species in the wild, and may even translocate them into other waterways to increase their range. This would also cause problems for identifying if fish were imported or caught in the wild.
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- **Noxious Fish Species:** The noxious fish list underwent a taxonomic review earlier this year and the changes should be incorporated into the legislation in the near future. The reviewed list is set out below. Additionally, the list is being moved from the *Management Plan (Freshwater) 1999* into the *Fisheries Regulation 1995* so the fish will be considered noxious regardless of whether they are in fresh or tidal waters.

Common name	Scientific name(s)
Bluegill	<i>Lepomis</i> spp. (Centrarchidae)
Chinese Weather fish (Weather loach)	<i>Misgurnus anguillicaudatus</i> (Cobitididae/Cobitidae)

Electric Eel	<i>Electrophorus electricus</i> (Electrophoridae)
Carp	<i>Cyprinus carpio</i> (Cyprinidae)
Climbing Perch	<i>Anabas testudineus</i> (Anabantidae)
Grass Carp	<i>Ctenopharyngodon idella</i> (Cyprinidae)
Largemouth Bass	<i>Micropterus salmoides</i> (Centrarchidae)
Gambusia or Mosquitofish	<i>Gambusia</i> spp. (Poeciliidae)
Nile Perch (live)	<i>Lates niloticus</i> (Centropomidae)
Parasitic or Pencil Catfishes, Candiru	Family Trichomycteridae
Pike Cichlids	<i>Crenicichla</i> spp. (Cichlidae)
Piranhas, Pacus	Family Serrasalminidae: Myleinae and Serrasalminae (of Gery 1977) or Family Characidae: Serrasalminae (of Nelson 1994) – all species (includes <i>Taddyella</i> , <i>Serrasalmus</i> , <i>Catoprion</i> , <i>Pygopristis</i> , <i>Pristobrycon</i> , <i>Pygocentrus</i> , <i>Colossoma</i> , <i>Piaractus</i> , <i>Mylossoma</i>), <i>Utiaritichthys</i> , <i>Acnodon</i> and <i>Mylesinus</i>). except <i>Metynnis</i> spp. and <i>Myleus rubripinnis</i>
Snakeheads	<i>Channa</i> spp. (Channidae)
Tiger	<i>Pseudoplatystoma fasciatum</i> (Pimelodidae)

Catfish	
Tigerfishes (African)	<i>Hydrocynus</i> spp. (subfamily Hydrocyninae or Alestinae)
Tigerfishes (South American), Trahiras	<i>Erythrinus</i> , <i>Hoplerythrinus</i> and <i>Hoplias</i> spp. (Erythrinidae)
Tilapia	<i>Tilapia</i> , <i>Oreochromis</i> and <i>Sarotherodon</i> spp. (Cichlidae)
Walking Catfish, Airbreathing Catfish	Family Clariidae

New South Wales - By Anthony Moore, Tom Rayner, Tarmo Raadik

- **New Exotic Fish Found in Sydney:** A population of the speckled mosquitofish, Caudo, or one-spot livebearer (*Phalloceros caudimaculatus*), a live-bearing South American Poeciliid, was recently discovered (2002) in a lake at a golf course in North Sydney. The fish was found during survey work at a re-introduction site for green and gold bell frogs. This is the first record of this alien species in eastern Australia, though it is established in ponds and drains near Perth.
- **Banded Grunter:** Stuart Rowland, NSW Fisheries, has published a paper with details on the first record of banded grunter (*Amniataba percooides*) from NSW (see “Recent Publications” below).
- **Spread of Oriental Weatherloach:** Recent survey work on mountain galaxias (*Galaxias olidus*) in NSW discovered Oriental weatherloach (*Misgurnus anguillicaudatus*) at a new location in the Murrumbidgee River system, extending its known range further westward. Weatherloach were collected from Mountain Creek, below a causeway on Sawyers Gully Road during September 2002. Contact Tarmo Raadik.
- Weatherloach were reported from the Wingecarribee River in the Hawkesbury River system in the 1980’s and an eradication attempt was organised. Recent sampling in Mittagong Creek at Bowral (a tributary of the Wingecarribee River) during September 2002 discovered a healthy weatherloach population. Contact Tarmo Raadik.
- Additional Oriental weatherloach records for NSW are contained in the report by Koster *et al.* (2002) (see below in “Recent Publications”).

- **Coastal Galaxiid in the Murrumbidgee River system:** The broadfinned or climbing galaxias (*Galaxias brevipinnis*), a coastal species found in south-eastern Australia, was reported in 1990 to have colonised waterways in the upper Murray River system of Victoria and NSW, via inter-basin transfer of water through the Snowy Mountain Hydro-electric Scheme SMS. Water is also transferred via this scheme from the coastal Snowy River system to the Murrumbidgee River system. During March 2002 broadfinned galaxias were recorded from Morris Creek for the first time, a tributary of Blowering Reservoir and part of the SMS scheme. It is unclear whether this species was able to colonise via inter-basin transfer of water, or by “bait-bucket” release of unwanted fish. Contact Tarmo Raadik.

New Zealand - By Richard Allibone

- **Range extensions of exotic fish:** Following on from the discovery of new populations of the introduced fish species (tench, rudd, redfin perch, goldfish, koi carp, *Gambusia affinis*) in the Nelson region of the South Island. In response to these new liberations the Department of Conservation carried out a nationwide survey of selected waters in the summer of 2001/02 to assess the range expansion of coarse angling species (in particular). This resulted in the discovery of a number of previously unreported populations of coarse fish particularly around population centres such as Christchurch and Auckland. The spread of these species is thought to be via deliberate illegal releases for recreational fishing purposes. Amongst the populations discovered were some unusual carps that may be either hybrids between goldfish and koi carp or possibly a new variety of carp in New Zealand. These fish are currently being investigated with genetic and morphological studies carried about by NIWA (Peter Smith and Bob McDowall) for the Department of Conservation. Follow up survey will continue this summer in high risk areas of the South Island. Contact Belinda Studholme bstudholme@doc.govt.nz or Richard Allibone: rallibone@doc.govt.nz.
- **Gambusia eradication trial:** An experimental use rotenone permit was granted to the Department of Conservation for use in the Nelson region to carry out eradication of *Gambusia* populations. However, these operations have been on going as more populations have been found, with all but one in ponds where eradication have been possible. One stream population is of concern and eradication has yet to be attempted. Brian Finlayson from the Californian Department of Fish and Game is to visit the country in the summer of 2002/03 to assist with the design of a poisoning program to eliminate this stream population. The Department of Conservation is in the process of getting rotenone registered as piscicide in New Zealand so it can be used more generally outside the experimental use area of Nelson. Contact chadderton@doc.govt.nz or ngrainger@doc.govt.nz.
- **Red-finned perch:** Gerry Closs and Ruth Goldsmith continue to investigate the impacts of red-finned perch (*Perca fluviatilis*) on aquatic communities with Ruth’s research investigating the response of the native bullies once perch are removed from ponds. gerry.closs@stonebow.otago.ac.nz. In the Auckland region perch have been illegally released into Lake Ototoa. The lake is a prime rainbow trout fishery and has a

one of the best populations of dwarf inanga, a threatened native fish. Fish and Game Waikato/Auckland have surveyed the lake in winter and the initial indications are that the rainbow trout condition has dropped dramatically, but the impact on dwarf inanga is not yet known. Gut samples from perch caught so far indicates they are preying exclusively on freshwater crayfish. Contact Richard Allibone (rallibone@doc.govt.nz).

Northern Territory - By Robbie Henderson

- **Gambusia in the NT – update:** A population of gambusia (*Gambusia holbrooki*) was discovered at in Ilparpa Swamp at Alice Springs during May 2000 (see Alien Zone (I)). Subsequently the swamp was dried by pumping and evaporation and the gambusia eliminated by January 2001. Additional populations of gambusia were discovered in five ponds in two residential properties and a church. The ichthyocide rotenone was used to eliminate fish from two ponds, and the other three were pumped dry to destroy fish. Contact Robie Henderson (robbie.henderson@nt.gov.au).

South Australia - By Michael Hammer and Ben Smith

- **Protection for introduced predators(!??):** New legislation has been passed to upgrade the status of brown and rainbow trout from 'exotic' to 'valuable introduced species' under the *Fisheries Act 1982*. This decision affords trout even further protection than most native species in South Australia, and is seen to send a poor message as promoting the translocation of exotic species into our waterways.
- **Strathalbyn exotic fish out:** Late last year around 280 school children ventured to the banks of the Angas River, a tributary to Lake Alexandrina south east of Adelaide to help do their bit to save regionally endangered native fish species. An 'education and exotic fish-out' day organised by the Strathalbyn Natural Resource Centre and Native Fish Australia (SA) helped to educate the children regarding the impacts of exotic fish and other threats to native species. A large tench and carp were captured with the children also having hands on experience with catching native gudgeons (*Hypseleotris* spp. and *Philypnodon* sp.) and numerous macroinvertebrates.
- **Exotic fishes data sheet:** A four page colour data sheet, as part of the Watercourse Rehabilitation Manual and a series of three sheets dealing with freshwater fishes of the Mount Lofty Ranges, SA. Hammer and Butler (2001) Data Sheet: Freshwater Fishes of the Mount Lofty Ranges: Exotic fish. Upper River Torrens Landcare Group, Mt Pleasant. For copies contact: www.torrenslandcare.4DW.com, (08) 8585682407.
- **South east South Australia – a refuge:** A recent extensive survey of freshwater habitats of SE SA covering some 182 sites revealed that exotic species are in low numbers; an encouraging sign for a range of threatened species encountered such as Yarra and variegated pygmy perch and dwarf galaxias. Only 32 sites (17% total or 23% of sites with fish) had exotic species, with large areas of the Upper and Lower South East, Drain L and Robe Lakes exotic free. Plague minnow and redfin were the most commonly recorded exotics, with tench and goldfish fairly restricted in range and abundance. In addition the Murray Darling carp gudgeon (*Hypseleotris* sp.) believed

translocated, was wide spread (18 sites), and there was also numerous reports of large native species in the region introduced outside their natural range. The research forms part of a joint project between NFA-SA, National Parks and Wildlife SA, SE Water Conservation and Drainage Board and the Natural Heritage Trust through the Wetlands Waterlink project. Contact michael.hammer@adelaide.edu.au.

- **Carp research:** During the 2001-2002 spring/summer/autumn periods, carp in the lower Murray River (downstream of Lock 1 at Blanchetown) were found to spawn over at least 7 months, from mid-October to early May. This is the longest spawning period ever recorded for carp in Australia. Sustained low flow conditions and warm calm weather during most of the period is likely to have promoted the long duration of spawning and strong survival of larvae. With similar weather conditions predicted for this year (2002-2003 periods), another strong year-class of carp may well result. This is especially likely since some carp in Lake Alexandrina began spawning in September. This is the earliest start date ever recorded for carp spawning in Australia. For more info contact ben.smith@adelaide.edu.au

Tasmania

- **Gambusia in Tasmania:** In July 2001 gambusia (*Gambusia holbrooki*) were discovered in the Tamar River. Gambusia were originally reported from a farm dam in the area in 1993 and were thought to have been eradicated after the Inland Fisheries Service poisoned the dam. It appears that some fish may have escaped and have invaded marshland fringing the Tamar River. Currently the Inland Fisheries Service is undertaking surveys to establish distribution, numbers and preferred habitat, with decisions regarding control options to follow. (From "On the Rise", Newsletter of the Inland Fisheries Service – see below in "Recent Publications".)

Victoria - By Ivor Stuart and Tarmo Raadik

- **AFFA Carp project update:** The "Point Source Management of Carp" project which began in 1999 at the Arthur Rylah Institute is now complete. The final project report details the results of more than 70 separate field trips to the Murray River at Barmah to investigate aspects of the ecology of carp and to test new on-ground control techniques. The project included a major radio-tracking component of adult and sub-adult carp, assessment of recruitment during a major flood and trialing the efficiency of new screens and traps. Several generic carp control measures were developed and continue to be tested at other sites in the Murray-Darling Basin and coastal Victoria. Copies of the report will be distributed to a range of river management agencies around Christmas this year. Contact Ivor Stuart for more information (ivor.stuart@nre.vic.gov.au).
- **Carp in the Glenelg River:** In addition to the work at Barmah a detailed carp management plan was developed for the Glenelg River in western Victoria. Carp were first found in Rocklands Reservoir, on the Glenelg River, in February 2001 and have since expanded their range upstream. The management plan calls for a strategic approach to invasive species management using both national and community based

resources. Contact Ivor Stuart for more information (ivor.stuart@nre.vic.gov.au). (see “Recent Publications” below).

- **Spread of Oriental Weatherloach:** Oriental weatherloach have continued to expand their range in Victoria since they were first discovered in the early 1980’s. Additional records are contained in the report by Koster *et al.* (2002) (see below in “Recent Publications”).

Western Australia - By David Morgan and Tarmo Raadik

- **Another aquarium fish established in WA:** The green-swordtail (*Xiphophorus helleri*), a live-bearing Poeciliid from central and South America, has recently been found established in the Irwin River. (see Morgan and Gill 2001, below in “Recent Publications”).
- **Redclaw in the wild in WA:** Redclaw (*Cherax quadricarinatus*), a freshwater crayfish native to the NT and QLD, has been discovered in Lake Kununurra in WA during 2001. Redclaw had previously been allowed into the state for aquaculture purposes in the Ord River region. Preliminary DNA testing has revealed that the Lake Kununurra redclaw are genetically different from the Ord River aquaculture redclaw, and therefore the source of introduction is currently unknown.
- **Redfin perch:** a paper entitled “Distribution, biology and likely impacts of the introduced redfin perch (*Perca fluviatilis*) in Western Australia” and by David Morgan, Simon Hambleton, Howard Gill and Stephen Beatty (Murdoch University) has recently been accepted by *Marine and Freshwater Research*. The paper highlights the success of this species within the south-west of the State and identifies traits such as environmental tolerance, young age/small size at maturity, fast growth rates, predatory nature and lack of competitors and predators as the major factors in the success of this species. The level of predation on the highly endemic native teleosts (80% endemic) and decapods (100%) was shown to be high with the virtual elimination of the native fish from a dam that has recently been colonised by redfin perch. The likely impacts on the marron fishery are also discussed.
- **Translocation of eastern Australian fishes into WA:** a discussion paper will soon be released by Department of Fisheries WA on the translocation of Murray cod, golden perch and Australian bass into WA for the purposes of aquaculture and enhancement of recreational fishing opportunities. These species are listed as *Class 2* by Department of Fisheries WA which states that currently they are not to be imported into WA without the written approval or authority of the Executive Director of the Department of Fisheries WA.
- **Exotic species research:**– Mark Maddern, David Morgan and Howard Gill are embarking on an impact assessment of tilapia (*Oreochromis mossambicus*), swordtails (*Xiphophorus helleri*) and one-spot livebearers (*Phalloceros caudimaculatus*) in WA, and are also investigating the diets of these species.

Recent Publications

Anon 2001. Discovery of the pest fish, *Gambusia*. *On the Rise* (Inland Fisheries Service Newsletter) 30(2): 1-2.

Burrows, D. 2002. Managing the spread of translocated native fish into aquatic protected areas in Queensland. Conference abstract, p. 52. In, World Congress on Aquatic Protected Areas, What works best and how do we know? 14-17 August 2002, Cairn, Queensland, Australia. Australian Society for Fish Biology.

Clunie, P., Stuart, I., Jones, M., Schreiber, S., McKay, S., O'Connor, J., McLaren, D., Weiss, J., Gunasekera, L. and Roberts, J. 2002. A risk assessment of the impacts of pest species in the riverine environment in the Murray-Darling basin. Report produced for Murray-Darling Basin Commission, Strategic Investigations and riverine Program, Project R2006. Department of Natural Resources and Environment, Victoria.

Gill, H.S., Hambleton, S.J., and Morgan, D.L. 1999. Is *Gambusia holbrooki* a major threat to the native freshwater fishes of south-western Australia? Pp. 79-87. In, Seret, B. and Sire, J.-Y. (eds.). *Proceedings of the 5th Indo-Pacific Fish Conference*(Noumea, 3-8 November 1997). Societe Francais d' Ichtyologie and Institut de Recherche pour le Development, Paris.

Koster, W.M., Raadik, T.A. and Clunie, P. 2002. Scoping study of the potential spread and impact of the exotic fish Oriental weatherloach in the Murray-Darling Basin, Australia: A resource document. Report to AFFA under the Murray-Darling 2001 FishRehab Program. Freshwater Ecology, Arthur Rylah Institute for Environmental Research, Victoria. 79 pp.

Koster, W.M., Raadik, T.A. and Clunie, P. 2002. Scoping study of the potential spread and impact of the exotic fish Oriental weatherloach in the Murray-Darling Basin, Australia: A draft management strategy. Report to AFFA under the Murray-Darling 2001 FishRehab Program. Freshwater Ecology, Arthur Rylah Institute for Environmental Research, Victoria. 79 pp.

Lake, M., Hannon, S. 2002. European perch (*Perca fluviatilis*) as a driver of habitat use by flathead gudgeon (*Philypnodon grandiceps*) in the Onkaparinga River, South Australia. Conference abstract p. 49, Australian Society for Fish Biology Annual Conference, Cairns, Queensland, 14-17 August 2002.

Lockett, M.M. and Gomon, M.F. 1999. Occurrence and distribution of exotic fishes in Port Phillip Bay. Pp. 178 – 192. In, Hewitt, C.L., Campbell, M.L., Thresher, R.E. and Martin, R.B. (eds.). *Marine Biological Invasions of Port Phillip Bay, Victoria*. Centre for Research on Introduced Marine Pests. Technical Report No. 20. CSIRO Marine Research, Hobart. 344 p.

Lockett, M.M., and Gomon, M.F. 2001. Ship mediated fish invasions in Australia: two new introductions and a consideration of two previous invasions. *Biological Invasions*3(2): 187-192.

McKay, S., Clunie, P., Gillespie, G., Raadik, T., Saddler, S., O'Brien, T., Ryan, T., and Aland, G. 2001. Predation by *Gambusia holbrooki*: a review of the literature. A report to New South Wales

National Parks and Wildlife Service. Arthur Rylah Institute for Environmental Research, Victoria. 96 pp.

McNee, A. 2002. A national approach to the management of exotic fish species in the aquarium trade: an inventory of exotic freshwater species. Report for Fisheries Resources Research Fund. Bureau of Rural Science, Canberra. 40 pp.

Moore, A.S., Knight, J., Brookes, L., Breen, A., and Hume, B. 2002. Density dependent interference competition between *Gambusia holbrooki* and three Australian native fish. Conference abstract p. 60. Australian Society for Fish Biology Annual Conference, Cairns, Queensland, 14-17 September, 2002.

Morgan, D.L. and Gill, H.S. 2001. The green swordtail *Xiphophorus helleri* Heckel (Poeciliidae): another aquarium fish established in the wild in Western Australia. *Records of the Western Australian Museum* 20: 349-352.

Murray-Darling Basin Ministerial Council 2002. Draft Native Fish Strategy for the Murray-Darling Basin 2002-2012. Murray-Darling Basin Commission, Canberra.

Rowland, S.J. 2001. Record of the banded grunter *Amniataba percooides* (Teraponidae) from the Clarence River, New South Wales. *Australian Zoologist* 31(4): 603-607.

Stuart, I. And Jones, M. 2002. Control of common carp in the Glenelg River catchment: a review of options. Report to the Glenelg Hopkins Catchment Management Authority. Freshwater Ecology, Arthur Rylah Institute for Environmental Research, Victoria. 74 pp.

Useful Web Addresses

Australia

AQIS home page

<http://www.affa.gov.au/index.cfm>

AQIS Bulletin

<http://www.affa.gov.au/docs/quarantine/about/index.html>

Carp location database

<http://www.recfishoz.com/NCTF/Carpdatabase.htm>

CRIMP (Centre for Research on Introduced Marine Pests)

<http://www.marine.csiro.au/CRIMP/>

Cyprinus newsletter

http://www.recfishoz.com/NCTF/cyprinus_newsletter_of_the_natio.htm

National Carp Taskforce
<http://www.recfishoz.com/NCTF/>

Pest Animal Control CRC
<http://www.pestanimal.crc.org.au/>

International

Global Invasive Species Database:
<http://www.issg.org/database/welcome/>

Aquatic nuisance species taskforce
<http://www.ANSTaskForce.gov/>

Aquatic species introductions database
<http://www.fao.org/waicent/faoinfo/fishery/statist/fisoft/dias/index.htm>

FishBase
<http://www.fishbase.org/home.htm>

Gambusia control home page
<http://www.gambusia.net/>

Introduced Fish Section, American Fisheries Society
<http://www.afsifs.vt.edu/>

Invasive species program, US Fish and Wildlife Service
<http://invasives.fws.gov/>

IUCN Invasive Species Specialist Group
<http://www.issg.org/>

Web Publications

Arthington, A. and McKenzie, F. 1997. ***Review of impacts of displaced/introduced fauna associated with inland waters***. Australia: State of the Environment Technical Paper Series (Inland Waters), Department of the Environment, Canberra. .pdf version at <http://www.ea.gov.au/soe/techpapers/series1/14fauna.html>

National Policy for the Translocation of Live Aquatic Organisms-
<http://www.affa.gov.au/content/publications.cfm>

The National Management Strategy for Carp Control, along with Future Directions for Research into Carp and Ranking Areas for Action: A guide for Carp Management Groups, can be found at:<http://www.mdbc.gov.au/education/publications/publications.htm>

New Zealand quarterly *Aquatic Biodiversity and Biosecurity* newsletter: <http://www.niwa.co.nz/pubs/> “Aliens”, newsletter of the Invasive Species Specialist Group (ISSG): <http://www.issg.org/newsletter.html#Aliens>

