November 2008

Ref. No. FD41
File No. FSC08/02

FINAL DETERMINATION

The *Tandanus tandanus* – Eel tailed catfish in the Murray/Darling Basin as an endangered population

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), has made a final determination to list the eel tailed catfish - *Tandanus tandanus* in the Murray/Darling Basin as an ENDANGERED POPULATION in Part 2 Schedule 4 of the Act.

Excluded from this determination are the listed impoundments; Ben Chifley Dam, Burrendong Dam, Chaffey Dam, Copeton Dam, Keepit Dam, Pindari Dam, Split Rock Dam, Windamere Dam, Wyangala Dam.

The listing of Endangered Populations is provided for by Part 7A, Division 2 of the Act.

The Fisheries Scientific Committee, with reference to the criteria relevant to this species, prescribed by Part 11B of the *Fisheries Management (General) Regulation 2002* (the Regulation) has found that:

Background

1. Eel tailed catfish – *Tandanus tandanus* (Mitchell, 1838) is a valid, recognised taxon and is a species as defined in the Act.
2. *Tandanus tandanus* is a member of the family Plotosidae, and is known by the common names eel tailed catfish and freshwater catfish.
3. The western population of *Tandanus tandanus* was originally widely distributed throughout the Murray-Darling River System in NSW, Queensland, Victoria and South Australia, with the exception of the cooler parts of the southern tributaries. It was relatively uncommon upstream of Wagga Wagga on the Murrumbidgee River and Lake Mulwala on the Murray River. There are potentially a number of eastern drainage populations and their taxonomic status is currently under investigation. There is also a current investigation of the eastern and western populations and their genetics, as a precursor to a proposed breeding and stocking program. It is found in freshwater areas, including tidal reaches of coastal rivers from the Shoalhaven River to the Tweed River in NSW. Native fish, including catfish have been translocated into coastal rivers from the Murray-Darling Basin and it is not know if the populations of *T. tandanus* in those catchments south of the Karuah River are endemic to the eastern river systems.
4. *Tandanus tandanus* is non migratory and lives in a wide range of habitats including rivers, creeks, lakes, billabongs and lagoons, and although it inhabits flowing streams, prefers sluggish or still waters. It can be found in clear to turbid waters, and over substrates ranging from mud to gravel and rock. It is rare in natural riverine habitats but can be found in farm dams through-out inland NSW and southern Queensland. Moderate remnant populations occur in the Macquarie catchment upstream of Warren, the Castlereagh catchment upstream of Mendooran, the Namoi catchment upstream of Wee Waa, the Gwydir catchment upstream of Moree and the Border Rivers catchment upstream of Goondiwindi.

Port Stephens Fisheries Centre, Locked Bag 1, Nelson Bay NSW 2315
Phone: (02)4982-1232 Fax: (02)4982-2265 Email:fsc@dpi.nsw.gov.au

It is a large plotosid growing to 900 mm and 6.8 kg, but specimens over 2.0 kg are uncommon. It is a benthic species that lives, feeds and breeds near the bottom. It is a carnivore that feeds on crustaceans (mainly yabbies and shrimp), molluscs, aquatic insects and small fish.

5. *Tandanus tandanus* has the following conservation status:

    i. Victoria: Flora and Fauna Guarantee Act 1988: Vulnerable;
    ii. South Australia: Protected.
    iii. *Tandanus tandanus* occurs in the lower Murray, Darling and Lachlan River catchments, all of which are listed as Endangered Ecological Communities.

Criteria – reduction in abundance, geographic distribution or genetic diversity (Regulation clause 340F)

1. Records show that *Tandanus tandanus* was widespread in the western rivers in NSW and that it was one of the most abundant species in western waters, especially the lagoons and back-waters.

2. It remained an abundant species through the early and mid-1900's and catfish were regularly caught by inland anglers and formed part of the inland commercial fishery in NSW through the mid and late 1900's. However, there has been a significant and rapid decline in NSW waters, and the species was absent from the commercial catch in the late 1980's. Catfish are now rare or absent from all rivers and creeks in Victoria as well as many of the major tributaries in NSW including the Murray, Darling, Murrumbidgee and Lachlan rivers. No *T. tandanus* were recorded from the Murray Region and only 58 from the Darling in the NSW Rivers Survey. There has been a significant and rapid decline in the abundance of *Tandanus tandanus* in riverine habitats in the Murray/Darling Basin. The species is currently only regularly observed in the Macquarie catchment upstream of Warren, the Castlereagh catchment upstream of Mendooran, the Namoi catchment upstream of Wee Waa, the Gwydir catchment upstream of Moree and the Border Rivers catchment upstream of Goondiwindi. The species is also present in rivers in southern Queensland, and in some waters in Victoria, including Cardross Lakes and the Wimmera River where it has been translocated.

3. In light of the above, the Fisheries Scientific Committee has found that eel tailed catfish population in the Murray/Darling Basin has undergone a large reduction in abundance and a large reduction in geographic distribution within a time frame appropriate to the life cycle and habitat characteristics of the taxon; this meets the criteria of an Endangered Population.

Criteria – threatening processes (Regulation clause 340G)

1. The causes of the decline of *Tandanus tandanus* are uncertain, but probably include: historic commercial fishing; loss of habitat (lakes, billabongs, lagoons) through river regulation; interactions with introduced species, such as carp (*Cyprinus carpio*); loss of habitat and spawning sites through siltation; reduced success of spawning and recruitment, and loss of habitat due to alterations to flow patterns and flooding regimes; reduced habitat and loss of temperature spawning cues due to cold-water discharge from the base of large dams and high-level weirs; loss of aquatic plants; chemical pollution, including agricultural pesticides.

2. In light of the above, the Fisheries Scientific Committee has found that most of these threatening processes continue to operate throughout the geographic distribution of the

Port Stephens Fisheries Centre, Locked Bag 1, Nelson Bay NSW 2315
Phone: (02)4982-1232 Fax: (02)4982-2265 Email:fsc@dpi.nsw.gov.au

species, and existing reserve systems or other forms of refuge do not protect the species.

Conclusion pursuant to section 220FA(1) of the Act

In the opinion of the Fisheries Scientific Committee:

a. *Tandanus tandanus* in the Murray/Darling Basin is facing a very high risk of extinction in New South Wales in the near future, as determined in accordance with the criteria prescribed by the Regulation as discussed above; and

b. The population in the Murray/Darling Basin is eligible to be listed as an ENDANGERED POPULATION. Excluded from this determination are the listed impoundments; Ben Chifley Dam, Burrendong Dam, Chaffey Dam, Copeton Dam, Keepit Dam, Pindari Dam, Split Rock Dam, Windamere Dam, Wyangala Dam.

Sources and Links

Clunie, P. and Koehn, J. (2001a). *Freshwater Catfish. Volume 1 A Recovery Plan*. Final Report for Natural Resource Management Strategy Project R7002 to the Murray Darling Basin Commission. Department of Natural Resources and Environment, Melbourne.

Clunie, P. and Koehn, J. (2001b). *Freshwater Catfish. Volume 2 A Resource Document*. Final Report for Natural Resource Management Strategy Project R7002 to the Murray Darling Basin Commission. Department of Natural Resources and Environment, Melbourne.

Davis, T.L.O. (1977). Reproductive biology of the freshwater catfish *Tandanus tandanus* Mitchell in the Gwydir River, Australia. II. Gonadal cycle and fecundity. *Australian Journal of Marine and Freshwater Research* 28, 159-169.

Gehrke, P. C. and Harris, J. H. (1996). *Fish and Fisheries of the Hawkesbury-Nepean River System*. Final Report to the Sydney Water Corporation. NSW Fisheries, Cronulla.

Gilligan, D. (2005a). *Fish Communities of the Murrumbidgee Catchment: Status and Trends*. NSW Department of Primary Industries – Final Report Series No. 75.

Gilligan, D. (2005b). *Fish Communities of the Lower Murray-Darling catchment: Status and trends.* NSW Department of Primary Industries – Final Report Series No. 83.

Jerry, D. R. and Woodland, D. J. (1997). Electrophoretic evidence for the presence of the undescribed 'Bellinger' catfish (*Tandanus* sp.) (Teleostei: Plotosidae) in four New South Wales mid-northern coastal rivers. *Marine and Freshwater Research* 48: 235-240.

Jerry, D.R. (2008). Phylogeography of the freshwater catfish *Tandanus tandanus* (Plotosidae): a model species to understand evolution of the eastern Australian fish fauna. *Marine and Freshwater Research 59*: 351-360.

Lake, J. S. (1967). *Freshwater Fish of the Murray-Darling River System*. New South Wales Fisheries Research Bulletin No. 7.

Lake, J. S. (1971). *Freshwater Fishes and Rivers of Australia*. Thomas Nelson Ltd, Sydney.

Macleay, W., Cox, J. C., Dalley, W. B., Dangar, H. C., Driver, R., Farnell, J. S., Hill, R., Hixson, F., Holt, T., Oliver, A., Ramsay, E. P., Skarratt C. C., Thornton, G. and Want, G. F. (1880). *Fisheries Inquiry Commission. Report of the Royal Commission, to inquire into and report upon the Actual State and Prospect of the Fisheries of this Colony*. Government Printer, Sydney.

Port Stephens Fisheries Centre, Locked Bag 1, Nelson Bay NSW 2315
Phone: (02)4982-1232 Fax: (02)4982-2265 Email:fsc@dpi.nsw.gov.au

Merrick, J. R. and Schmida, G. (1984). *Australian Freshwater Fishes, Biology and Management*. John R. Merrick, Macquarie University, North Ryde.

Morris, S. A., Pollard, D. A., Gehrke, P. C. and Pogonoski, J. J. (2001). *Threatened and Potentially Threatened Freshwater Fishes of Coastal New South Wales and the Murray-Darling Basin*. NSW Fisheries, Sydney.

Musyl, M. K. and Keenan, C. P. (1996). Evidence for cryptic speciation in Australian freshwater eel-tailed catfish, *Tandanus tandanus* (Teleostei: Plotosidae). *Copeia* 1996(3): 526-534.

Paxton, J. R., Hoese, D. F., Allen, G. R. and Hanley, J. E. (1989). *Zoological Catalogue of Australia, Vol. 7 Pisces Petromyzontidae to Carangidae*. Australian Government Publishing Service, Canberra.

Reid, D. D., Harris, J. H. and Chapman, D. J. (1997). *NSW Inland Commercial Fishery Data Analysis*. NSW Fisheries, Sydney.

Roberts, J. and Sainty, G. (1966). *Listening to the Lachlan*. (Sainty & Associates: Sydney).

Schiller, C. B., Bruce, A. M. and Gehrke, P. C. (1997). Distribution and abundance of native fish in New South Wales rivers. In, *Fish and Rivers in Stress the NSW Rivers Survey*. NSW Fisheries Office of Conservation and the Cooperative Research centre for Freshwater Ecology, Cronulla.

Assoc Prof Ron West
Chairperson
Fisheries Scientific Committee

Port Stephens Fisheries Centre, Locked Bag 1, Nelson Bay NSW 2315
Phone: (02)4982-1232 Fax: (02)4982-2265 Email:fsc@dpi.nsw.gov.au