



Ref. No. FR16(2)
File No. FSC 01/01

RECOMMENDATION

AQUATIC ECOLOGICAL COMMUNITY IN THE NATURAL DRAINAGE SYSTEM OF THE LOWER MURRAY RIVER CATCHMENT.

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), has made a recommendation to list the Aquatic Ecological Community In The Natural Drainage System Of The Lower Murray River Catchment as an ENDANGERED ECOLOGICAL COMMUNITY in Part 3 of Schedule 4 of the Act.

Included in the recommendation are all natural creeks, rivers, and associated lagoons, billabongs and lakes of the regulated portions of the Murray River (also known as the River Murray) downstream of Hume Weir, the Murrumbidgee River downstream of Burrinjuck Dam, the Tumut River downstream of Blowering Dam and all their tributaries anabranches and effluents including Billabong Creek, Yanco Creek, Colombo Creek, and their tributaries, the Edward River and the Wakool River and their tributaries, anabranches and effluents, Frenchmans Creek, the Rufus River and Lake Victoria. Excluded from this recommendation are the Lachlan River and the Darling River and their tributaries, and man made/artificial canals, water distribution and drainage works, farm dams and off-stream reservoirs.

Listing of Endangered Ecological Communities is provided for by Part 7A, Division 2 of the Act.

The Fisheries Scientific Committee has found that:

The aquatic ecological community of the lower Murray, Murrumbidgee, and Tumut Rivers is characterised by the following assemblage of native animal species:

CRUSTACEANS	
<i>Austrochiltonia australis</i> (water scud)	<i>Paratya australiensis</i> (freshwater shrimp)
<i>Austrochiltonia subtenuis</i> (water scud)	<i>Macrobrachium australiense</i> (freshwater prawn)
<i>Bosmina meridionalis</i> (water flea)	<i>Cherax destructor</i> (Yabbie)
<i>Daphnia lumholtzi</i> (water flea)	<i>Euastacus armatus</i> (Murray cray)
<i>Boeckella fluviialis</i> (copepod)	<i>Tachea picta</i> (shrimp lice)
<i>Caridina mccullochi</i> (fresh water shrimp)	<i>Heterias pusilla</i> (freshwater slater)

Established Under Part 7A (Threatened Species Conservation) of the NSW *Fisheries Management Act 1994*

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FISHES	
<i>Mordacia mordax</i> (Shortheaded lamprey)	<i>Nematalosa erebi</i> (Bony bream)
<i>Galaxias olidus</i> (Mountain galaxias)	<i>Galaxias rostratus</i> (Murray jollytail)
<i>Retropinna semoni</i> (Southern smelt)	<i>Tandanus tandanus</i> (Freshwater catfish)
* <i>Craterocephalus fluviatilis</i> (Murray hardyhead)	<i>Craterocephalus stercusmuscarum fulvus</i> (Nonspecked hardyhead)
<i>Melanotaenia fluviatilis</i> (Crimsonspotted rainbowfish)	* <i>Ambassis agassizi</i> (Olive perchlet)
* <i>Maccullochella macquariensis</i> (Trout cod)	<i>Maccullochella peeli peeli</i> (Murray cod)
<i>Macquaria ambigua</i> (Golden perch)	* <i>Macquaria australasica</i> (Macquarie perch)
* <i>Nannoperca australis</i> (Southern pygmy perch)	<i>Gadopsis marmoratus</i> (River blackfish)
* <i>Bidyanus bidyanus</i> (Silver perch)	<i>Hypseleotris klunzingeri</i> (Western carp gudgeon)
<i>Hypseleotris</i> sp. 4 (Midgley's carp gudgeon)	<i>Hypseleotris</i> sp. 5 (Lakes carp gudgeon)
* <i>Mogurnda adspersa</i> (Purplespotted gudgeon)	<i>Philypnodon grandiceps</i> (Flathead gudgeon)
<i>Philypnodon</i> sp. (Dwarf flathead gudgeon)	
INSECTS	
<i>Antiporus femoralis</i> (water beetle)	<i>Micronecta gracilis</i> (water bug)
<i>Antiporus gilberti</i> (water beetle)	<i>Microvelia paramoena</i> (water bug)
<i>Chironomus cloacalis</i> (midge)	<i>Xanthagrion erythroneurum</i> (dragonfly)
<i>Coelopynia pruinosa</i> (midge)	<i>Hemicordulia tau</i> (dragonfly)
<i>Cryptochironomus grisiedorsum</i> (midge)	<i>Austrogomphus cornutus</i> (dragonfly)
<i>Kiefferulus martini</i> (midge)	<i>Notostricta solida</i> (dragonfly)
<i>Procladius paludicola</i> (midge)	<i>Anisocentropus latifascia</i> (caddis fly)
<i>Tanytarsus fuscithorax</i> (midge)	<i>Ecnomus pansus</i> (caddis fly)
<i>Micronecta annae annae</i> (water bug)	<i>Helyethira eskensis</i> (caddis fly)
MOLLUSCS	
<i>Alathyria condola</i> (bivalve)	<i>Austropeplea lessoni</i> (snail)
<i>Alathyria jacksoni</i> (bivalve)	<i>Glyptophysa gibbosa</i> (snail)
<i>Corbiculina australis</i> (bivalve)	* <i>Notopala sublineata hanleyi</i> (snail)
<i>Sphaerium problematicum</i> (bivalve)	<i>Thiara balonnensis</i> (snail)
<i>Sphaerium tasmanicum</i> (bivalve)	<i>Velesunio ambiguus</i> (bivalve)
OTHER	
<i>Ephydatia ramsayi</i> (freshwater sponge)	<i>Brachionus falcatus</i> (rotifer)
<i>Eunapius fragilis</i> (freshwater sponge)	<i>Brachionus novaezealandia</i> (rotifer)
<i>Heterorotula contraversa</i> (sponge)	<i>Microscolex dubius</i> (oligochaete worm)
	<i>Temnocephala chaeropsis</i> (flatworm)

An * beside the species denotes a proposed or listed threatened species in the Act.

1. The total species list of the community is much larger than that given above. Only

fishes, most macro-molluscs and most macro-crustaceans have been listed comprehensively. With more than 400 aquatic invertebrate species recorded from the Murray, only representative species of each of the major invertebrate groups are included here. At any particular site, not all of the assemblage listed above may be present at any one time. The species composition of a site will be influenced by the size and ecological characteristics of the area and the level of threatening processes present.

2. In its natural state, the particular area occupied by this community was characterised by a seasonal pattern of winter/spring high flows and floods and summer/autumn periods of low flow. Many species rely on this seasonal flow pattern for successful reproduction. Regulation of the system by numerous dams and weirs has reversed the seasonal flow regime and has stopped migrations upriver because passageways over or around the barriers were few. The release of cold water from the bottom of dams and weirs has also upset the natural temperature regime, with further deleterious effects on fish reproduction by cold water pollution.

3. The presence of at least six different species of introduced fishes, (carp, goldfish, redfin perch, eastern mosquitofish, oriental weatherloach, and tench) is an additional threat to the community. Such introduced species can act as predators, competitors, disease carriers, and/or habitat modifiers. Carp, redfin perch, and eastern mosquitofish have all been identified as having deleterious effects on native species.

4. The clearing of riparian vegetation and continued stock access to the riparian zone, in addition to the removal of logs and snags from the river bottom, detrimentally increases erosion and sedimentation with the former and removes critical habitat, including reproductive sites, with the latter. Clearing of floodplain vegetation for agriculture also increases sedimentation and reduces carbon inputs to rivers that are an important food source for instream invertebrates.

5. Some types of agriculture can produce threatening processes to native aquatic animals. The reduction of river flow by irrigation and pollution through insecticide and fertilizer runoff are both detrimental to aquatic life. Salinisation of inland waters, exacerbated by both forest clearing and irrigation, is also detrimental to some freshwater species.

6. Overfishing has reduced populations of species such as Murray cod and the Murray Cray. For species listed as endangered or vulnerable, such as trout cod, Macquarie perch, and silver perch, targeted or incidental recreational catch must be considered as a threatening process.

7. Eight of the 23 native fish species of this community are listed in NSW and/or Victoria as endangered or vulnerable, with two of these endemic to the community. Two species are considered extinct in Victoria and one or two may be extinct in N.S.W. One species of freshwater snail is endangered. A further two species of fishes and the Murray Cray have documented declines. Some species, like the sponges, may no longer occur in the Lower Murray, owing to changes in the flow regime. The Lowland Riverine Fish Community of the Southern Murray-Darling Basin was listed as a Vulnerable Ecological Community by the State of Victoria in 2000.

8. The Committee recognises and greatly appreciates the initiatives undertaken by the Murray-Darling Basin Commission, State, Commonwealth and local governments, community

groups and private interest stakeholders to address concerns about the decline in the health of this aquatic community. Improvements have been, or are being, made in numerous areas, including water sharing allocations, riparian vegetation management, irrigation runoff and fish passage around smaller weirs. The Committee also recognises that changes to commercial and recreational fishing regulations have been made in the interests of protection of threatened species and stock conservation for exploited species. Restocking of angling species is also widespread and likely to be having an impact on the availability of fish for anglers. Where these programs are found to be of benefit, it is the wish of the Committee to see them incorporated into the recovery plan for the ecological community. However, the Committee does not consider that the benefits of these programs have, at this stage, reversed the decline of the aquatic community.

9. In light of the above, the Fisheries Scientific Committee is of the opinion that the Aquatic Community of the Lower Murray River Drainage is likely to become extinct in nature, unless the circumstances and factors threatening its survival cease to operate. Therefore, the community qualifies for inclusion in Part 3 of Schedule 4, as an **ENDANGERED ECOLOGICAL COMMUNITY**.

Dr Patricia Dixon
Chairperson
Fisheries Scientific Committee