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PROPOSED DETERMINATION

Craterocephalus fluviatilis – Murray hardyhead

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), is proposing to omit *Craterocephalus fluviatilis* - Murray hardyhead from Part 1 of Schedule 4 Endangered Species of the Act and insert *Craterocephalus fluviatilis* - Murray hardyhead into Part 1 of Schedule 4A Critically Endangered Species of the Act. The amendment of the threatened species lists 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. Murray hardyhead, *Craterocephalus fluviatilis* McCulloch, 1912 is a valid, recognised taxon and is a species as defined in the Act.

2. *Craterocephalus fluviatilis* is a member of the family Atherinidae. It is endemic to the lower reaches of the Murray and Murrumbidgee rivers. Two other congeneric atherinids, *C. stercusmuscarum* and *C. amniculus* are found in the Darling River and its northern tributaries respectively.

3. *Craterocephalus fluviatilis* is a small, moderately deep bodied fish, generally less than 72 mm in length. It has a small mouth with protrusible lips and a restricted gape. Its body is predominantly luminescent silver to dark golden dorsally with a distinct mid-lateral stripe, and a pale abdomen. It is a highly mobile, schooling fish that inhabits open water, often foraging over sand and silt flats. *Craterocephalus fluviatilis* is found principally in floodplain habitats, in particular lakes and billabongs. It is reported to thrive in ephemeral deflation basin lakes (characterised by lunette formation along eastern shorelines), and tolerates temporarily or permanently elevated salinities.

4. *Craterocephalus fluviatilis* – Murray hardyhead has the following conservation status:
    i. NSW *Fisheries Management Act 1994*: Endangered;
    ii. IUCN 2000: - Endangered;
    iii. Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*: - Vulnerable;
    iv. Victoria *Flora and Fauna Guarantee Act 1988*: - Endangered;
    v. South Australia *National Parks and Wildlife Act 1972*; Endangered;
    vi. Australian Society for Fish Biology 2001: - Endangered.

5. *Craterocephalus fluviatilis* is part of the Endangered Aquatic Ecological Community in the Natural Drainage System of the Lower Murray River Catchment.

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

1. *Craterocephalus fluviatilis* was widespread and abundant throughout the lower reaches of the Murray and Murrumbidgee rivers and associated floodplain and wetlands habitats. The distribution of the species is characteristically patchy and fragmented according to availability of suitable habitat.

2. *Craterocephalus fluviatilis* has suffered a reduction in distribution and an extremely large reduction in abundance in NSW such that no viable populations are currently known. The last recorded specimen in the Australian Museum was from the 1970s, and despite considerable efforts by scientists over the past 20 years, few specimens have been reported from NSW waters. In a major survey, only a single *Craterocephalus fluviatilis* was caught at Rocky Waterholes, in Bundidgery Creek, near Narrandera in 1995. This is very close to north Yanco Creek, the type locality of the species. Since 2000, only one individual has been collected in extensive surveys in NSW. In this period, no *C. fluviatilis* were sampled at three locations in the lower Murrumbidgee River catchment where the species had been previously found, and it is now considered to be locally extirpated.

3. In light of the above, the Fisheries Scientific Committee has found that the species has undergone an extremely large decline in abundance and a large decline in geographic distribution within a time frame appropriate to the life cycle and habitat characteristics of the taxon; this meets the criteria of Critically Endangered.

Criteria – threatening processes (Regulation clause 340G)

1. The causes of declines in abundance and geographic distribution of *Craterocephalus fluviatilis* are uncertain but may include: loss or altered connectivity between rivers and floodplains; loss of habitats such as lakes, wetlands and billabongs; spawning and/or recruitment failure due to river regulation and cold-water pollution from impoundments; predation by, and competition with, introduced species such as carp (*Cyprinus carpio*), redfin perch (*Perca fluviatilis*) and gambusia (*Gambusia holbrooki*); loss of aquatic vegetation such as ribbonweed (*Vallisneria gigantea*); habitat changes due to agricultural practices such as loss of riparian vegetation and siltation; and construction of barriers to migration and recolonisation such as weirs and dams without fishways.

2. In light of the above, the Fisheries Scientific Committee has found that these threatening processes continue to operate throughout the geographic distribution of *Craterocephalus fluviatilis*, and existing reserve systems or other forms of refuge do not protect the species.

Conclusion pursuant to section 220F(2) of the Act

In the opinion of the Fisheries Scientific Committee:

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a. *Craterocephalus fluviatilis* – Murray hardyhead is facing an extremely high risk of extinction in New South Wales in the immediate future, as determined in accordance with the criteria prescribed by the Regulation as discussed above.

The species is eligible to be listed as a CRITICALLY ENDANGERED SPECIES.

Sources and Links

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Dr Walter Ivantsoff (Macquarie University), personal communication.

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