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PROPOSED RECOMMENDATION

Rexea solandri - Gemfish

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), is proposing to list *Rexea solandri* - Gemfish as an ENDANGERED SPECIES in NSW in Schedule 4 of the Act.

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

The Fisheries Scientific Committee, with reference to the criteria relevant to this species, has found that:

Background

1. *Rexea solandri* - Gemfish is a valid, recognised taxon and is a species as defined in the Act.

2. Gemfish inhabit oceanic continental shelf and upper slope waters, and are distributed throughout southern Australian and New Zealand waters. The eastern Australian population is genetically different to the western Australian population, and different to the two populations of gemfish found in New Zealand waters.

3. Eastern gemfish are caught at depths from 100 to 600 metres (approx. 50 to 300 fathoms) from northern New South Wales / southern Queensland to southern Tasmania. The majority of the catch is taken north of 40°S latitude. Off New South Wales, the 100 m-depth contour generally lies between 5 and 10 nautical miles (n.m.) from the coastline; however, in some areas (off Kurnell, Jervis Bay and Montague Island) the 100 m depth contour can be found 2 to 3 n.m. from the coast.

4. Historically, the Commonwealth-managed South East Trawl Fishery took the main catches of eastern gemfish. However, eastern gemfish are also taken by fisheries managed under the NSW *Fisheries Management Act 1994* (the trawl fishery north of Barrenjoey Pt, the dropline fishery which operates along the length of the NSW coast, and the recreational fishery).

5. Before 1993, the very limited recreational fishery and the large commercial fishery were based on targeting of the northerly pre-spawning migration along the NSW coast in winter. The post-1993 commercial fishery is a by-catch fishery of juveniles and sub-adults in the trawl sector and mature fish in the dropline sector of the fishery.

6. In the National Recreational and Indigenous Fishing Survey database there are no records of eastern gemfish caught in NSW.

7. The eastern population of gemfish *Rexea solandri* has the following conservation status:

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i. IUCN 2004: - no listing;
ii. Pogonoski *et al.* 2002: - Lower Risk (conservation dependent) or Vulnerable;
iii. Australian Society for Fish Biology 2004: - Vulnerable.

Criteria – reduction in abundance, geographic distribution or genetic diversity

1. Heavy commercial fishing pressure has led to a large, rapid and significant decline in catch rates and a steady decline in size at maturity of eastern gemfish since the 1970's: this is well documented in the listed references.

2. The peak catch of eastern gemfish in 1980 was 5,000 tonnes (t). Significant fisheries management intervention commenced in 1988 when regulations were changed. A 3,000t total allowable catch (TAC) was introduced. This was reduced to a zero TAC from 1993 to 1996. In 1997, the fishery was given a TAC of 1000t, however, less than 500t of eastern gemfish were caught. Consequently a zero targeted TAC was set in 1998 to 2006 and a reducing by-catch management TAC was introduced. In 2004, with a zero targeted TAC, but a by-catch management TAC (of 97t), 98t of eastern gemfish were landed.

3. The different resource assessment models applied to the available data show various outcomes. The last quantitative stock assessment in 2000 by the eastern gemfish advisory group (EGAG) estimated the current spawning biomass of eastern gemfish to be <1% to 4% of the 1979 biomass. The 2005 Australian fishery status report based on qualitative assessments states that the "stock is still well below AFMA's limit reference biomass (20% of 1979 biomass)".

4. A species can be recruitment overfished, and when fishing mortality is reduced or removed, the population abundance increases. If recruitment declines more rapidly than the spawning stock declines in the absence of fishing pressure, 'critical' depensation may be occurring and this can result in extinction of the species. The stock assessments for eastern gemfish, on which targeted fishing was reduced in 1988 and set to zero in 1993, suggest the possibility of depensation. While some cohorts of fish in the eastern gemfish population are extremely small in number, none are completely missing at this time. If one or more cohorts of eastern gemfish do disappear from the population, the eastern gemfish population is unlikely to recover. Under such conditions eastern gemfish have an extremely high risk of extinction in NSW.

5. In light of the above, the Fisheries Scientific Committee has found that the species has undergone a very large reduction in abundance within a time frame appropriate to the life cycle and habitat characteristics of the taxon; this meets the criteria of Endangered.

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Criteria – threatening processes

1. Current threatening processes affecting the species are non-targeted commercial and recreational fishing in eastern Australian waters.

2. Currently, eastern gemfish are captured as by-catch in a number of commercial fisheries managed by both the Commonwealth and NSW. Total catch managed by this by-catch quota is approximately 100t per year.

3. Records of retained catch of eastern gemfish from the NSW recreational Charter Boat Fishery from 2000/01 to 2004/05 for all recorded charter fishing activities (nearshore, deepsea and gamefishing) show an increasing catch from 186 (~0.6t) fish to 792 (~2.5t) fish per year. This represents less than 1% of the overall catch in the Charter Boat Fishery. It should be noted that eastern gemfish has not traditionally been a significant recreational species and the catch primarily resulted when a small sector in the recreational fishery targeted blue-eye trevella using drop-lines. There are no records of recreationally tagged eastern gemfish in the Australian wide gamefish-tagging database.

4. In light of the above, the Fisheries Scientific Committee has found that these threatening processes continue to operate throughout the geographic distribution of the species and existing reserve systems or other forms of refuge do not protect the species. Furthermore, fisheries management intervention since 1988 has not resulted in significant recovery of the species.

Conclusion

In the opinion of the Fisheries Scientific Committee:

Rexea solandri - Gemfish is facing a very high risk of extinction in New South Wales in the near future.

The species is eligible to be listed as an ENDANGERED SPECIES.

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