

Fisheries Scientific Committee

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PROPOSED DETERMINATION

Smeagol hilaris, a marine slug, as a CRITICALLY ENDANGERED SPECIES

The Fisheries Scientific Committee, established under Part 7A of the *Fisheries Management Act 1994* (the Act), is proposing to list the marine slug, *Smeagol hilaris* as a CRITICALLY ENDANGERED SPECIES in Part 1 of Schedule 4A of the Act.

The listing of Critically 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, prescribed by Part 11B of the *Fisheries Management (General) Regulation 2002* (the Regulation) has found that:

Background

1. *Smeagol hilaris* Tillier & Ponder, 1992 is a valid, recognised taxon and is a species as defined in the Act.
2. The marine pulmonate mollusc, *Smeagol hilaris* of the family Smeagolidae (Gastropoda: Pulmonata), has not formally been known by any other name, although sometimes it has been referred to as the “blind slug”.
3. *Smeagol hilaris* is one of five species in the genus *Smeagol*. The others are *Smeagol manneringi* Climo, 1980 from Kaikoura Peninsula (South Island, New Zealand), *Smeagol climoi* Tillier & Ponder, 1992 from Wellington (North Island, New Zealand), *Smeagol phillipensis* Tillier & Ponder, 1992 from Sunderland Bay (Phillip Island, Victoria, Australia), *Smeagol parvulus* Tillier & Ponder, 1992 from Kitty Miller Bay (Philip Island, Victoria, Australia), and there is potentially a sixth undescribed species from Tasmania (Ponder, pers. com.).
4. Smeagols are considered direct developers due to the yolkeness of their eggs (Tillier & Ponder 1992). No information exists about the seasonality of their breeding or their life span. No other information exists regarding their reproductive biology.
5. All species are restricted to the upper littoral of very small areas of gravel or cobble beaches in southeastern Australia and New Zealand (Climo 1980, Tillier & Ponder 1992). These gravel habitats are themselves uncommon and extremely discontinuous in southeastern Australia. As far as is known, all smeagols are coupled with these habitats and thus have very small geographic distributions (Ponder *et al.* 2002). Short-range marine taxa with direct development and restricted habitat are considered potentially vulnerable (Ponder 2004).

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

1. *Smeagol hilaris* has only been collected from a small isolated location at Merry Beach, south of Ulladulla, New South Wales, Australia (Tillier & Ponder 1992). It is likely that the species is comprised from only one population. More than 25 individuals were first collected in October 1987. In February 1991, only ten individuals were located despite two days of active searching (Tillier & Ponder 1992). The species has an extremely limited distribution (Tillier & Ponder 1992, Ponder *et al.* 2002) and has not been located in other gravel or cobble gutters and beaches despite active searching over several years (Ponder, pers. com.).
2. In light of the above, the Fisheries Scientific Committee has found that the species has undergone an extremely large reduction in abundance within a time frame appropriate to the life cycle and habitat characteristics of the taxon, meeting the criteria of a Critically Endangered Species.

Criteria – threatening processes (Regulation clause 340G)

1. *Smeagol hilaris* on Merry Beach may be negatively impacted by several human activities. Habitats such as the one on Merry Beach that *Smeagol hilaris* inhabits are very likely to be impacted by oil spills should they occur. For example, two other species in the genus *Smeagol* have already likely been impacted from an oil spill on the southern shore of Phillip Island (Ponder *et al.* 2002). Ponder *et al.* (2002) suggest “oil spills can result in the contraction of suitable habitat for certain species or potentially even cause extinction if the species has a restricted distribution within the affected area”.
2. Other threatening processes include habitat damage and/or modification due to development and urbanisation in the nearby habitat, particularly storm water run-off. Also threatening are increasing anthropogenic impacts on the beach and adjacent habitats, including the collection of animals for food or bait, pesticide inputs and other pollution events, climate change and invasive species.
3. In light of the above, the Fisheries Scientific Committee has found that these threatening processes continue to operate within the geographic distribution of the species 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:

- a. *Smeagol hilaris*, a marine slug, 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, and

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

Sources and Links

Climo, F. M. (1980). Smeagolida, a new order of gymnomorph mollusc from New Zealand based on a new genus and species. *New Zealand Journal of Zoology* 7: 513–522.

Ponder, W. F. (2004). Narrow range endemism in the sea and its implications for conservation. *Australian Zoologist*. pp. 89–102. In *Conserving Marine Environments* (ed. P. Hutchings and D. Lunney), Royal Zoological Society of NSW, Mosman.

Ponder W. F., Hutchings P. & Chapman R. (2002) *Overview of the conservation of Australian marine invertebrates. A report for Environment Australia*. Australian Museum. 588 pp.

Tillier, S. & Ponder W. F. (1992) New species of *Smeagol* from Australia and New Zealand, with a discussion of the affinities of the genus (Gastropoda: Pulmonata). *Journal of Molluscan Studies* 58: 135–155.

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