NOMINATION NO. 118
ITEM NO. T5890

FLORA AND FAUNA GUARANTEE - SCIENTIFIC ADVISORY COMMITTEE

FINAL RECOMMENDATION ON A NOMINATION FOR LISTING

Removal of wood debris from Victorian streams

(Potentially Threatening Process)

Date of receipt of the nomination: 5 March 1990
Date of preliminary recommendation: 22 January 1991
Date of final recommendation: 22 May 1991

File No.: 90/0757

Validity:

The nomination is for a valid item and the prescribed information was provided. The nominated process was adequately defined and described.

Wood debris in streams comprises fallen trees, limbs, leaf and other litter which originate from the surrounding vegetation. It forms a natural component of stream ecosystems, and provides important habitat diversity. The potentially threatening process, removal of wood debris from the stream, is carried out for a variety of reasons; "river management" or "river improvement" works often include "desnagging" i.e. clearing and removal of obstructions from the bed and banks of a river.

The process results in the loss of habitat for native fish, invertebrates, birds and mammals and operates throughout the State, although it is generally more prevalent in lowland streams in agricultural areas (Anon 1977, Ministry for Conservation 1983, Office of the Commissioner for the Environment 1988).

The range of flora or fauna affected or potentially affected was adequately stated in the nomination.

Significance of the threat which the potentially threatening process poses or has the potential to pose was adequately stated in the nomination.

Eligibility for listing as a potentially threatening process under the Flora and Fauna Guarantee

The nominated item satisfies at least one criterion of the set of criteria prepared and maintained under Section 11 of the *Flora and Fauna Guarantee Act 1988*, and stated in Schedule 1 of the Flora and Fauna Guarantee Regulations 1990.

Evidence that criteria are satisfied:

Criterion 5.1 *The potentially threatening process, in the absence of appropriate management, poses or has the potential to pose a significant threat to the survival of a range of flora or fauna.*

Evidence:

Instream wood debris is an essential habitat for many native fish and invertebrate species. Removal of the habitat has the potential to cause the dependent species to decine or disappear.

The dependence of a range of fish fauna on wood debris for spawning sites or habitat is well documented. Fish use instream debris as shelter from strong currents, predators and competitors, as a source of food, as resting and reference points, as breeding sites and as rearing areas for young (Lloyd & Walker 1988, Koehn & O'Connor 1990a). Of the 46 native freshwater fish species occurring in Victoria, 19 species are threatened with extinction (Koehn and Morrison 1990). Most of these species are indigenous to lowland streams where river clearing practices are most prevalent.

Sub-criterion 5.1.1 *The potentially threatening process poses or has the potential to pose a significant threat to the survival of two or more taxa.*

Evidence:

The removal of wood debris has been cited as a cause for a decline in the range and abundance of many native freshwater fishes (Cadwallader 1978, Cadwallader & Backhouse 1983, Koehn 1986b, Koehn & O'Connor 1990a). Some of these species have been recognised as threatened; e.g. Murray Cod *Maccullochella peeli* and Trout Cod *M. macquariensis*.

The decline in range and abundance of fish species dependent on stream debris is well documented (Cadwallader 1978, Cadwallader & Gooley 1984, Brumley *et al.* 1987).
This decline is likely to continue if the potentially threatening process continues to operate. An indication of the potential for faunal decline with the loss of stream debris is the large increase in the *Gadopsis bispinosus* (two-spined blackfish) population which was recorded in the Ovens River after rocks and wood were added to the river (Koehn 1987).
Fauna species for which appropriate research has been conducted, and for which wood debris are an important and/or critical habitata component, are:

- Murray Cod (vulnerable in Victoria)
- Freshwater Blackfish (indeterminate)
- Two-spined Blackfish (restricted)
- Trout Cod (endangered).

(Conservation status from Koehn & Morison 1990).
Evidence was presented that other native fish species (i.e. gudgeon and galaxiid species) have also been noted to lay eggs amongst wood, twigs, leaf litter etc. (Koehn & O'Connor 1990b). The preferred habitat of seven other fish species (Tasmanian Mudfish, Silver Perch, Spotted Galaxias, Australian Bass, Tupong, Estuary Perch and Australian Smelt) has been found to include wood debris.
The SAC accepted advice cited by the nominator from an expert in the field of invertebrates that wood debris is the major habitat for stream invertebrates, particularly in lowland streams.

Sub-criterion 5.1.2 *The potentially threatening process poses or has the potential to pose a significant threat to the survival of a community of flora and fauna.*

Evidence:

Wood debris assist in the creation and maintenance of a diversity of instream habitats (i.e. a variety of depths and flows) necessary for aquatic faunal and floral communities. The threat to a range of fish fauna posed by the process has been documented. Fish are a major component of stream ecosystems and their decline will inevitably affect other flora and fauna and the community as a whole.

Background Information:

- Murray Cod, Trout Cod and Tasmanian Mudfish have received the SAC's final recommendation for listing as taxa.

Advertisement for public comment

In accordance with the requirements of Section 14 of the *Flora and Fauna Guarantee Act* 1988, the preliminary recommendation was advertised for public comment for a period of at least 30 days.
The preliminary recommendation was advertised in:

"The Age" - on 6 February 1991
"Weekly Times" - on 6 February 1991
Government Gazette - on 6 February 1991

Submissions closed on 8 April 1991.

Further evidence provided:

No new evidence was provided to warrant a review of the Scientific Advisory Committee's preliminary recommendation that the taxon is eligible for listing.

Documentation

The published information and research data provided to the SAC have been assessed. To the best of their knowledge, the SAC believes that the data presented are not the subject of scientific dispute and the inferences drawn are reasonable and well supported.

Final Recommendation of the Scientific Advisory Committee:

The Scientific Advisory Committee concludes that on the evidence available the nominated item is eligible for listing in accordance with Section 11 of the Act because primary criterion 5.1 is satisfied.
The SAC also concludes that sub-criteria 5.1.1 and 5.1.2 have been satisfied and that no evidence exists to suggest that primary criterion 5.1 cannot be satisfied as a consequence of sub criteria 5.1.1 and 5.1.2 being satisfied.

The Scientific Advisory Committee recommends that the nominated item be supported for listing on Schedule 3 of the *Flora and Fauna Guarantee Act* 1988.

Selected references:

Anon. (1977) *River Improvement*. Conservation Council of Victoria, Environment Awareness Publication No. 2, 32pp.

Brumley, A.R., Morison, A.K. & Anderson, J.R. (1987) Revision of the conservation status of several species of warmwater native fish after surveys of selected sites in Victoria. *Arthur Rylah Inst. Env. Res. Tech. Rep. Ser. No.* 33. Dept. of Conservation, Forests and Lands, Victoria.

Cadwallader, P.L. (1978) Some causes of the decline in range and abundance of native fish in the Murray Darling River System. *Proc. R. Soc. Vict.* **90:** 211-224.

Cadwallader, P.L. & Backhouse, G.N. (1983) *A Guide to the Freshwater Fish of Victoria.* Fisheries & Wildlife Service, Ministry of Conservation. VGPO

Cadwallader, P.L. & Gooley, G.J. (1984) Past and present distributions and translocations of Murray Cod *Maccullochella peelii* and Trout Cod *M. macquariensis* (Pisces: Percichthidae) in Victoria. *Proc. R. Soc. Vict.* **96**(1): 33-43

Harris, J.H. (ed.) (1987) Proceedings of a conference on Australian threatened fishes. Conducted by the Australian Society for Fish Biology, Melbourne 15-16 August 1985. Published by Division of Fisheries, Department of Agriculture NSW.

Koehn, J.D. (1986a) Western Port catchment: Fishes, their habitat and management recommendations. *Arthur Rylah Inst. Env. Res. Tech. Rep. Ser. No.* **40.** 34 pp. Dept. of Conservation, Forests and Lands, Victoria.

Koehn, J.D. (1986b) Approaches to determining flow and habitat requirements for freshwater native fish in Victoria. *In*: Campbell, I.C. [ed.] *Stream Protection, the Management of Rivers for Instream Uses*. (Water Studies Centre, Chisholm Institute of Technology, Melbourne.) pp. 95-113.

Koehn, J.D. (1987) Artificial habitat increases abundance of two-spined blackfish (*Gadopsis bispinosus*) in Ovens River, Victoria. *Arthur Rylah Inst. Env. Res. Tech. Rep. Ser.* No. **56.** Dept. of Conservation, Forests and Lands, Victoria.

Koehn, J.D. & Morison, A.K. (1990) A review of the conservation status of native freshwater fish in Victoria. *Vict. Nat.* **107**(1): 13-25.

Koehn, J.D. & O'Connor, W.G. (1990a) Threats to Victorian native freshwater fish. *Vict. Nat.* **107**(1): 5-12.

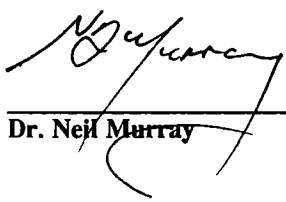
Koehn, J.D. & O'Connor, W.G. (1990b) *Biological Information for Management of Native Freshwater Fish in Victoria.* Freshwater Fish Management Branch, Department of Conservation and Environment, Victoria VGPO.

Lloyd, L.N. & Walker, K.F. (1988) Management of snags (woody debris) and river floodplain vegetation for native fish in the Murray Darling River System. *In: Proceedings of the Workshop on Native Fish Management, Canberra, 16-17 June 1988.* (Murray Darling Basin Commission: Canberra) p. 99.

Ministry for Conservation (1983) *The State of the Rivers*. (Government Printer, Melbourne)

Office of the Commissioner for the Environment (1988) Physical Modification to Rivers and Streams. In: *State of the Environment Report 1988* (Government Printer, Melbourne) pp. 168-176.

Endorsement by the Convenor of the Scientific Advisory Committee **Date**



19 June, 1991

Dr. Neil Murray