

Threatened fish and crayfish in proposed Victorian timber harvesting coupes

Forest Protection Survey Program – Improving threatened species management & protection, 2018–2021



Background

Timber harvesting operations may negatively impact the habitat of terrestrial and aquatic forest-dependent species, many of which are listed as threatened under state and federal conservation legislation. In 2018, the Victorian government announced the “Delivering greater community value from our forests” initiative, which included improving the management and protection of threatened species in timber harvesting coupes and greater operational certainty for the timber industry.



Fig 1. Harvested coupe around a tributary of the Arte River (Photo credit: Tarmo Raadik DELWP).

In response to this initiative, the Forest Protection Survey Program (FPSP) was established by DELWP to ensure that our forest fauna and flora can survive and thrive where they occur in areas of State Forests that are scheduled to be harvested, and concurrently reduce disruption and uncertainty to the timber industry.

The FPSP will run for four years and is focused on State Forest in eastern Victoria, including the Gippsland, Central Highlands and North-East regions. Whilst the program will assess terrestrial flora and fauna, it importantly also focusses on aquatic fauna, as temporary and permanently flowing stream networks are an important component of forested catchments.

The broader FPSP will focus on a range of high priority, forest-dependent terrestrial species (e.g. Leadbeater's Possum, gliders and owls, Glossy Black Cockatoo, Large Brown Tree Frog, Giant Burrowing Frog, various plant species). Specifically, the Applied Aquatic Ecology section of the Arthur Rylah Institute for Environmental Research (DELWP) will focus on aquatic fauna, in particular, a group of small, highly threatened native crayfish, and a number of galaxiid fish species.



Fig 2. Threatened Barred Galaxias (*Galaxias fuscus*) (Photo credit: Michael Nicol DELWP).

Threatened fish and crayfish in proposed Victorian timber harvesting coupes

Species under threat

The target aquatic fauna includes eight species of threatened, or potentially threatened, freshwater spiny crayfish (genus *Euastacus*), three species of threatened burrowing crayfish (genus *Engaeus*) and 11 species of threatened galaxiids (genus *Galaxias*). Nearly all are endemic, occur in small, forested mountain streams where forestry activities occur, and are found within the FPSP area. Further, unidentified new species may be present in known complexes of similar looking galaxiids and spiny crayfish.

The major threat to the galaxiids is predation by the exotic species Brown Trout (*Salmo trutta*) and Rainbow Trout (*Oncorhynchus mykiss*). The native fish now only persist in small, isolated populations above barriers to trout movement, such as waterfalls. Unfortunately, the galaxiids, and the crayfish, are further impacted by soil disturbance and sediment runoff during harvesting operations. In streams, sediment can smother habitat, killing adults and eggs and reducing food availability.

Key objective

- To provide new biodiversity data to improve the protection of aquatic species from impacts from timber harvesting as part of the application of the Code of Practice for Timber Production (CoP).

Approach

The key tasks to be undertaken include the following:

- Undertake surveys for threatened galaxiids and crayfish in and/or adjacent to selected potential harvesting coupes prior to harvest.
- Accurately identify aquatic species, including potential new species of fish and crayfish.
- Rapidly provide confirmed survey records to DELWP for handover to VicForests for inclusion in harvesting planning (i.e. application of protection prescriptions for threatened species to coupes as defined by the CoP).

Planning of potential survey locations involves integration of factors such as the known or predicted distributions of target species, biological and physical constraints influencing species detection probability, location and proposed coupe harvesting date.

To date the project has provided input to survey design and prepared detailed sampling guidelines for fish and crayfish, with an emphasis on accurate identification of cryptic species complexes of fish and crayfish which may be present. See:

<https://www.forestsandreserves.vic.gov.au/forest-management/forest-protection-survey-program#resources>



Fig 3. Backpack electrofishing in the upper Timbarra River (Photo credit: Michael Nicol DELWP)

Aquatic surveys will involve electrofishing, where a pulsed electrical current is applied through the water momentarily stunning the fish and crayfish so they can be collected, identified, weighed, measured and returned alive to the water. This method allows relatively rapid sampling, is portable, and is efficient in the smaller streams in timber harvesting areas. Survey data will also be entered into the Victorian Biodiversity Atlas database so that they are publicly available.

Project benefits

This project will also benefit broader biodiversity knowledge and management, including river health, particularly in relatively remote and mid to higher elevation forested catchments. Significantly, it will contribute to resolving the species complexes of fish and crayfish in these poorly known catchments, possibly even discovering new species.

Contact

michael.nicol@delwp.vic.gov.au

Michael D. Nicol & Tarmo A. Raadik © The State of Victoria Department of Environment, Land, Water and Planning 2019



This work is licensed under a Creative Commons Attribution 4.0 International licence. You are free to re-use the work under that licence, on the condition that you credit the State of Victoria as author. The licence does not apply to any images, photographs or branding, including the Victorian Coat of Arms, the Victorian Government logo and the Department of Environment, Land, Water and Planning (DELWP) logo. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>

ISBN 978-1-76077-832-3 (pdf/online/MS word)

Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Accessibility

If you would like to receive this publication in an alternative format, please telephone the DELWP Customer Service Centre on 136186, email customer.service@delwp.vic.gov.au or via the National Relay Service on 133 677 www.relayservice.com.au. This document is also available on the internet at www.delwp.vic.gov.au.