

Native fish responses to increased connectivity and flows in a restored freshwater wetland

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Long Swamp, proposed to be Victoria's next Ramsar site, is a large freshwater wetland in south western Victoria, supporting a suite of nationally threatened species, including the Yarra pygmy perch (*Nannoperca obscura*) and little galaxias (*Galaxiella toourtkoourt*). With a complex range of factors at play (catchment land use change, climatic trends and artificial drainage), the wetland system has experienced a long-term drying trend, reducing habitat for these and other key species.

Over the last three years, Nature Glenelg Trust has successfully worked with the community and agency partners to reduce the impact of artificial drainage on the system and restore natural flows towards the Glenelg River. With funding from the Department of Environment, Land, Water and Planning (DELWP), a trial structure was completed in April 2015 and successfully closed the last remaining artificial outlet at Nobles Rocks (Figure 1). This resulted in the recovery of approximately 200 hectares of aquatic habitat upstream of the weir.

Following this year's above average rainfall for the region, water levels upstream of the Nobles Rocks weir rose to a level that saw our ultimate goal achieved: the redirection of flows downstream towards the Glenelg River. For the first time, this spring we recorded continuous hydrological connectivity throughout Long Swamp and prolonged freshwater flows. The restoration of this natural flow path has been essential in facilitating species colonisation and assisting the movement of migratory species.



Figure 1—from top: The trial structure at Nobles Rocks built of over 7000 sand bags and recreated aquatic habitat upstream of the weir. (Lauren Veale)



Figure 2—from top: the threatened Yarra pygmy perch and little galaxias, and juvenile short-finned eel and common galaxias recorded during monitoring in spring 2016. (Lauren Veale)

Ecological monitoring (funded by DELWP and Glenelg Hopkins Catchment Management Authority) conducted throughout the restoration process has been pivotal in detecting the native fish responses to restoration. During monitoring in spring 2016, an increased number of juvenile common galaxias and a single juvenile short-finned eel were detected in central Long Swamp (Figure 2). This confirmed restored connectivity and the ability of fish that migrate between fresh and salt water to utilise the reinstated original flow path to the ocean. Providing further evidence of increased connectivity, was the exciting discovery of Yarra pygmy perch in the newly inundated habitat upstream of Nobles Rocks weir. Furthermore, this restored habitat is providing critical refuge for another nationally threatened fish species, the little galaxias.

While other areas of Long Swamp (which may receive less groundwater influence) will remain susceptible to drying during periods of low rainfall, the Nobles Rocks weir should result in permanent aquatic habitat. This restored habitat will provide important refuge for fish and other fauna, and greatly contribute to their overall persistence in an ever changing landscape.

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