South Australia
Habitat Fact Sheet

Woody Debris

Recreational fishers fully understand the worth of fishing around felled trees or snags in rivers or standing timber in lakes. But what is it that makes snags so attractive to fish? This factsheet explains this valuable and scarce resource and its history in Australian rivers.

Snags - a precious resource for fish

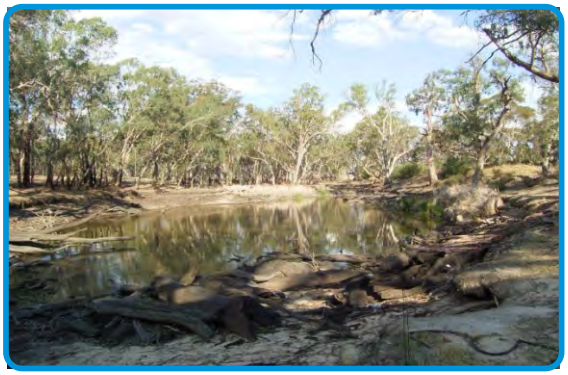
Most river snags come from the band of trees around the channel edge (riparian zone) and floodplain. It can take decades to centuaries for these trees to grow in order to contribute the largest snags to river channels.

Deposits of multiple snags together are called 'Log Jams' or 'Debris Jams' depending on the size of pieces. Log jams are highly stable and the slow decay rate of Australian hardwoods mean that log accumulations can be old and have taken long time (centuaries) to form. Most Log Jams are small, but the largest recorded can span over hundreds of metres of channel.

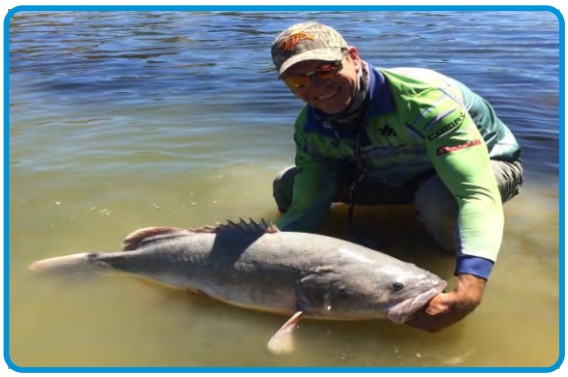
Stable deposits of snags shape the environment to make it favourable for fish. Water flows around large stable pieces scours the bottom, increasing depth and slowing water flow. Deeper, slow flowing water with abundant cover is favoured by many fish for resting, feeding or seeking refuge from floods along rivers.

Murray cod and many other Australian native fish use snags to lay their sticky eggs during reproductive periods. Murray cod typically guard deposited eggs+ until newly hatched larvae leave the nest. During reproduction, Murray cod can migrate over a 100 kilometres and amazingly return to their home snag. How they do this is still unknown, but researchers believe the fish could be using snags along the channel, like a road map, during migration.

Snags traps other organic matter (wood, bark, leaf litter) fuels fish-food production. Organic matter is consumed 'Microorganism biofilms': bacteria, fungi and algae, which are consumed by insects, bugs and other crustaceans like shrimp and in turn consumed by fish. Snags assists little fish to grow fast and survive as food and complex cover afforded to small fish make them safe places from larger predators.



A healthy river is one that has plenty of wood



Large Murray cod love their snags

Fish eggs: many fish eggs start out life on a snag

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Desnagging Historically, snags were viewed as a nuisance, and cleared by early settlers, to open up lands for agriculture and for stock assess to rivers. Vast quantities of wood were removed (Desnagging) to open up river channels for navigation.'Snagging boats' actively operated from 1855 in South Australia, with one boat 'The Grappler' alone removing about three million snags from the Murray River between 1911 and the late 1960's. Snags removed were piled on the bank and burnt, although some large snags were also destroyed with explosives.

Desnagging in conjunction with other misguided river improvement activities (channelization) was widely practised as an attempt to reduce flooding and sediment aggragation within river channels. Further clearing of riparian vegetation has meant that the replenishment of snags back to river channels could not occur. Snag removal has negatively affected rivers, resulting in channel over widening and sediment infilling deep holes. Studies have repeatedly shown fish numbers are lower in reaches with fewer snags. The legacy of desnagging still persists on many aquatic ecosystems these days.

Desnagging operations along the Murray River South Australia

Resnagging After discoveries of the critical importance of wood in aquatic ecosystems, there are now many efforts re-introducing wood back to degraded rivers. Large snags are added to rivers to re-shape channels, to slow down or deflect flowing water, to prevent further bank erosion and to provide resources for aquatic organisms. Studies investigating the benefits of resnagging to date have shown increases in fish numbers in resnagged reaches.

Returning snags back to rivers as homes for fish

Photograph acknowledgements: T. Howson, H. Bassett, State Library of South Australia, Luke Pearce and Liz Baker

Snags are a vital component of healthy rivers, and their removal has damaged rivers and contributed to declines in fish populations. Fish habitat is a key part of great fisheries!

How can I help restore our great river fisheries?

- **Join!** Establish, help, or donate to a OzFish Unlimited Chapter in your region.
- **Support!** Get involved and support community programs that aim to improve fish habitat.
- **Act!** Taking wood from floodplains for firewood destroys habitat. Source approved firewood only.

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