

Spotlight on the Swan

A fishy business

REPORTS by DAVID BELL

FISH stocks in the Swan River have plummeted since the 1970s.

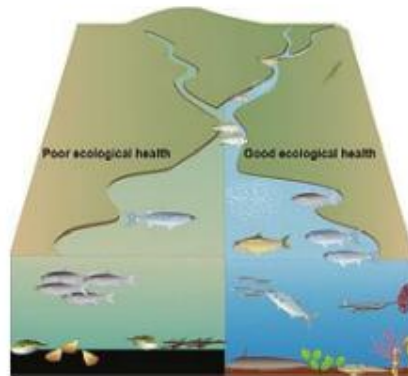
Fiona Valesini from Murdoch Uni says numbers of the sea mullet, yellow eye mullet, mulloway and the endemic Perth herring have all dropped.

These days the average summer catch rate is down three-quarters from 1993, and species diversity has more than halved.

Only the opportunistic black bream—which will eat pretty much anything—has seen its numbers increase, though only in shallow waters. Like other fish its numbers are down in deep water.

Chris Hallett from the centre for fish, fisheries and aquatic ecosystem research says fish provide a useful measure to show how healthy the river is on a zero to 100 scale: "We're using fish as an indicator because there are various characteristics of fish which respond to different stresses on the estuary."

Dr Hallett says in a healthy river system you can expect high species diversity, and fish will tend to spawn in



• Image from The Integration and Application Network (ian.umces.edu)

the estuary. In an unhealthy system, fish which eat anything (including detritus) tend to dominate, and not many fish spawn in the estuary.

In 2011 the river had an average score of 60 (fair) across its four regions. But in mid-May when the algal bloom hit some areas of the Canning river dropped down to 42 indicating poor health, suggesting

Unhealthy river	Healthy river
<ul style="list-style-type: none">• Low species diversity• generalist feeders dominate• few benthic species (under the riverbed)• few species spawning in estuary• many detritivores (bottom feeders)	<ul style="list-style-type: none">• high species diversity• specialist feeders dominate• high benthic diversity and abundance• many estuarine spawners• relatively few detritivores

most fish had gone elsewhere seeking higher oxygen levels.

Dr Hallett says there's a lot to be done to help fish habitat: "If you're looking at overall ecological health like this there's a whole variety of things that can affect it. Improving water quality is one, reducing nutrients and trying to reduce that burden on the system, but also pollution and contaminants."

The near-shore also has to be protected as that's where many fish spawn in the river.

There's no air in there

UNDERGROUND critters living in the bed of the Swan River don't seem to be benefiting from four oxygenation devices that cost \$4 million to install.

The WA government says the plants are designed to take in water, oxygenate it and then release it back into the river, which suffers from low-oxygenation during algal blooms.

More oxygen helps fish breathe better but does not appear to be aiding benthic macroinvertebrates (underground critters

like muscles and worms).

"There's almost no oxygen in the sediment below half-a-millimetre," says Chris Hallett from Murdoch Uni's centre for fish, fisheries and aquatic ecosystem research.

He stresses the findings are only preliminary but at this stage there doesn't seem to be a benefit for benthics whose numbers and diversity continue to dwindle, threatening the food source of higher order predators like black bream.

"We certainly have some evidence that long term there have been declines

in the diversity and abundance of these invertebrates," he says.

"If you lose those, they're on the bottom of the food chain, and we think a lot of species might be reliant on them."

Attacking the root cause of the oxygen loss—algal blooms caused by excess nutrients from things like fertilisers and leaves from exotic trees—is considered a better approach.

"Certainly we'd like to look at [continuing] to reduce the amount of nutrients, hopefully that'll have beneficial effects."