

Gossamer wings, slippery things and the cat's whiskers:

The Sustainable Rivers Audit turns up new Basin creatures

IN THE half-light of dusk, a secret world stirs along the banks of the Lachlan River in Australia's Murray-Darling Basin. A rare and elusive dragonfly adds a powerful hum of gossamer wings to the sounds of the encroaching night.

There is more activity beside the Lachlan River near Gooloogong this spring evening. A team of scientists and technicians gather in the fading light. They have come to collect macroinvertebrate samples as part of the Sustainable Rivers Audit (SRA) – a river health “report card” program being trialled by the Murray-Darling Basin Commission (MDBC).

Environmental Protection Authority (EPA) entomologist, and Australia's foremost dragonfly specialist, Gunther Theischinger, has asked the team to be on the lookout for the enigmatic dragonfly species *Apocordulia macrops*, aptly named Nighthawk.

The species was discovered in 1975 in the Kiewa River, Victoria and the larva has since been collected in isolated pockets



Lachlan River at Gooloogong near where dragonfly was sampled. Photograph by Glenn Johnstone (EPA)



Apocordulia macrops. Photograph Gunther Theischinger (EPA)

throughout the Basin.

“This dragonfly is very distinct from anything else,” Gunther Theischinger tells the team.

“It is a strong flier with a huge head and big thorax. It starts flying at dawn or dusk, when there is very low light, and stops when it is pitch dark – so you have only a very limited opportunity to catch this dragonfly.”

Larvae of *A. macrops* were found along the river here last autumn, but so far the adult *A. macrops* has

eluded the dragonfly nets. This evening will be different.

Dan Mawer, an environmental technician with the EPA, stands on the riverbank in near darkness. He is very still, his keen eyes and ears taking in the river nightlife. Suddenly, in the concert of humming insects, a strong whirring passes beside his head.

With smooth, swift reflexes, Dan Mawer whirls the net and snares a large insect. It is a dragonfly with a solid body, sombre colours and a head completely covered in eyes – an adult female *A. macrops*.

More secret lives revealed

A. macrops is not the only surprise discovery in the basin during the Sustainable Rivers Audit. A genus of catfish, previously unknown in the Basin, was identified in Queensland last spring.

Porochilus c.f. rendahli, also known as Rendahl's catfish, was ►



Porochilus c.f. rendahli (Rendahl's catfish). Photograph: Glynn Aland

found in two sub-catchments of Charlie's Creek near Chinchilla. Although these catfish have not yet been studied in any depth, the original field identification from fin ray counts indicates that these unique fish could be a new species.

While the Queensland Museum has initially placed this fish in the Rendahl's catfish group, further studies planned by Department of Primary Industries (DPI) scientists could identify this catfish as a new subspecies or even a species.

Meanwhile, a species of worm previously unknown in Australia was discovered in the Basin during Audit surveys last autumn and spring. *Nais barbata*, a tiny aquatic earthworm, was common in sweep net samples taken throughout the lower Murray River, from Lindsay River in Victoria to Tailem Bend in South Australia.

Australian Water Quality Centre biologist, Paul McEvoy, whose colleagues collected the samples, says they were unaware this species was present in the Murray River.

"Finding this worm is a big tick for the Audit. It shows that we cannot assume we have a good understanding of the aquatic biodiversity supported by the Basin," he says.

"In South Australia, the groups of

Life on the wing

DRAGONFLIES are among the world's fastest insects, with some reaching speeds of 70 kilometres an hour. Their flight repertoire is amazing. They can zigzag, hover or fly backwards. They will mate, lay eggs and even eat on the wing.

Their superb flying abilities, strong jaws and well-developed eyes make them formidable predators.

Even at the aquatic or semi-aquatic larval stage, dragonflies have voracious appetites, feasting on other dragonflies, insects and small animal matter. But dragonflies are completely harmless to humans.

Dragonflies are among the most ancient creatures living today. Fossil records show that

dragonflies were around long before dinosaurs existed. Some species that lived about 250 million years ago had a wingspan of more than 70 centimetres.

Dragonflies are often the top invertebrate predator in their particular habitat.

There are about 6000 dragonfly species in the world today, with more than 325 species found in Australia. They are found in all Australian states and regions, from sea level to the top of our highest mountains.

A diverse and well-balanced dragonfly fauna is a good sign of a healthy environment. Conserving these beautiful insects and their habitats is becoming increasingly important.

aquatic worm species found in the basin differ from those found elsewhere in the State."

A closer look for the big picture

The Sustainable Rivers Audit (SRA) is a proposal for a regular checkup of river health across the Murray-Darling Basin (see *Basin Checkup*). According to MDBC's Chief Executive, Don Blackmore, the SRA covers many areas overlooked in the

past. "The discovery of these species came about because the Audit covers randomly selected areas. Without the Audit, we would not have known these species existed here – and if you don't have a clear picture of what you are dealing with, how can you manage it?" he says.

"By consistently putting together a 'report card' on river health in the Basin, we are able to pick up on trends and changes in conditions over

time,” Mr Blackmore says.
 “This helps us make more informed decisions on how to best manage the rivers and catchments in the Basin.

It also lets us monitor the results of the management strategies we put in place.”

The SRA gives an unbiased picture of river health, rather than simply investigating the hot issue or area of the day.

“It takes sustained effort to assess river health beyond short-term funding cycles – the Sustainable Rivers Audit will build up an information bank that will inform our decisions today, and be invaluable for future generations,” Mr Blackmore says.

A river somewhere...

A catfish moves through the waters of Charlie’s Creek, propelled by a flick of its eel-like tail.

Sensitive, cat-like whiskers sense a potential feast among the roots and aquatic vegetation.

Tiny worms slide through the sediment of the Murray River, feeding on decaying plants and animals.

Along the banks of the Lachlan River, an adult insect slowly struggles from its larval casing.

As blood pumps around its body, the insect is transformed.

A strong, beautiful dragonfly stretches gossamer wings and takes flight.

Who can say what secrets are still to be uncovered along the streams and rivers that give life to the Murray-Darling Basin? 🇦🇺

Do you think you may have seen one of these rare creatures?

We would love to know where they are – but please don’t put them in a jar!

Contact: the MDBC, on phone (02) 6279 0141 or email <info@mdbc.gov.au>

Basin checkup

THE Sustainable Rivers Audit (SRA) is a monitoring program designed to assess and report on river health at a large scale across the Murray-Darling Basin.

The Audit will inform debates and guide management on river health, and may trigger further investigations into the causes of poor river health in the Basin.

The SRA is currently in its pilot phase, with the aim of establishing the best “toolkit” of river health indicators.

The Audit is initially being carried out in four valleys, including the

Condamine in Queensland, the Lachlan in NSW, the Ovens in Victoria, and the Lower Murray in South Australia.

The dragonfly, catfish and worm were found as part of this sampling.

This pilot project may lead to a larger sustainable rivers program, to ensure that future generations can be part of a vibrant, healthy river system and basin community.

Contact: To find out more about the SRA, visit <http://www.mdbc.gov.au/naturalresources/policies_strategies/sra.html>.



Sampling the edge of the Lachlan River for freshwater invertebrates. Photograph: Glenn Johnstone (EPA)