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Hairy helicopter flights reveal what keeps the Fitzroy River flowing

By hovering in a helicopter only one metre above the Fitzroy River which flows through the Kimberley in north Western Australia, scientists have discovered that underground water flows into the river where the Fitzroy meets the Cunningham River.

The groundwater is what keeps the Fitzroy flowing during the harsh dry season, making it one of only a few northern Australian rivers to flow throughout the year. This permanent river flow supports many native animals and plants and is important to Indigenous communities living on the river.

In this first ever study on the links between groundwater and the Fitzroy River, Tropical Rivers and Coastal Knowledge (TRaCK) researcher, Dr Rebecca Doble from CSIRO's Water for a Healthy Country Flagship, took water samples from 20 remote locations along the river from Willare to Fitzroy Crossing to determine where the groundwater flows into the river.

"This information is important for water planners who want to understand how extracting groundwater might affect the river's flow," she says. "We have a very limited understanding of the Fitzroy River system compared with some of the less remote rivers in Australia."

Louise Stelfox, a water scientist working with the Western Australian Department of Water at Kununurra, says TRaCK research complements her own work on groundwater in the lower Fitzroy valley: "We need to know the impacts of water extraction from the Fitzroy on the needs of Traditional Owners who want to maintain the bush tucker supplies, which are dependent on the wet and dry season cycles".

Dr Doble says the helicopter-based research was a little challenging: "When you're hovering one metre above the river, it is a bit nerve-racking. But it only takes two to three minutes to drop down a pump at the end of a hose and get the sample of water. And the pilots are very experienced."

The chemical analysis of the water samples showed where groundwater was flowing into the river.

"Our results show that relatively low levels of groundwater flows into the Fitzroy River along much of its length. However, there is a higher rate of groundwater flow into the river system where the Cunningham River meets the Fitzroy, and around the mouth of the river," says Dr Doble.

TRaCK and CSIRO colleague Dr Glenn Harrington is now trying to find out exactly how and where the groundwater flows into the River. "We want to know whether the groundwater is hundreds of thousands of years old and coming from deep underground or whether it is from floodwaters of recent wet seasons."

Drawing together more than 70 of Australia's leading social, cultural, environmental and economic researchers, TRaCK focuses on Australia's tropical rivers and estuaries in Queensland, Western Australia and the Northern Territory with a degree of intensity, coordination and integration not previously seen in the region.

TRaCK receives major funding for its research through the Australian Government's Commonwealth Environment Research Facilities Initiative; the Australian Government's Raising National Water Standards Program; the Fisheries Research and Development Corporation; and the Queensland Government's Smart State Innovation Fund.

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