

# Fire dams: a lifeline for wildlife in a drying south west

By Kristen Fernandes

The rivers, streams, and wetlands of south west Western Australia are drying out, and the impact on wildlife is serious. More than 1000 species depend on freshwater flows, including woodland birds, frogs, native fish, crayfish, and mammals. As water disappears, survival becomes harder for all of them.

One unexpected lifeline could be fire water points. These are artificial dams that were built to supply water for firefighting. These dams often hold water through summer and may provide critical drinking spots for native animals. Endangered Carnaby's white-tailed black cockatoos and forest red-tailed black cockatoos have been seen using them, along with



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Research Scientist, Dr Kristen Fernandes, taking an eDNA sample from a fire water point. Photo - Dr Laurence Dugal.

quokkas and chuditch. However, as aerial firefighting becomes more common, these water points are used less and less for fire suppression, raising questions about their future role and whether there is a continued need to manage them.

Our project set out to determine how important these fire dams are for wildlife. We surveyed six dams in the Northern Jarrah Forest using cameras, audio recorders, and bird counts. At three of the dams, we also used [environmental DNA \(eDNA\)](#) to capture broad biodiversity signals. eDNA refers to genetic material shed by organisms (such as hair, skin cells, or saliva) into their environment. We collected water, sediment, and soil samples at these water points to see if we can detect the animals that frequent them.

The eDNA results were promising. We detected one fish species, one amphibian, 18 birds, one reptile, and eight mammal species across the three water points. Amongst the birds detected, we picked up the threatened white-tailed black cockatoo, although, the two species (Carnaby's and Baudin's) are too genetically similar to be teased apart using eDNA methods. We also captured birds of prey, emus, fantails, and bee-eaters. The mammals detected included western grey kangaroos, western brush wallabies, and even bats. Unfortunately, feral animals were also present, with DNA from red fox and feral pigs found at these sites. Of the three sampling methods, sediment revealed the highest diversity, although using all sampling methods helped create a broader picture of biodiversity at the water points.



An example of a fire water point, an artificial dam that holds water through summer and provides a critical drinking spot for native animals. Photo - Dr Laurence Dugal.

We are still analysing the data to understand how the different survey methods complement each other and whether novel approaches, such as eDNA, provide useful complementary information. This research will inform conservation, maintenance, and management strategies at water points, ensuring they continue to support biodiversity in a drying climate.

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