

The Plight of the Platypus

Habitat loss, predation by feral cats, and now wildfires wrought by climate change — how long can the world’s strangest mammal survive?



Robert Dockerill, a senior keeper at the Taronga Zoo in Sydney, with Annie, a platypus rescued after a dog attack. “Dr. Frankenstein’s first attempt,” Mr. Drockerill calls platypuses.

By Helen Sullivan

Photographs by David Maurice Smith

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- • SYDNEY, Australia — Early on the morning of Dec. 27, Phoebe Meagher, a wildlife conservation officer at Taronga Zoo, set off on a rescue mission with colleagues from the zoo and academics from the University of New South Wales. Several platypuses were trapped in quickly shrinking bodies of water in Tidbinbilla Nature Reserve in the Australian Capital Territory, and wildfires were fast approaching. There was a window of a few days before the park would be entirely closed off to the public, and two weeks until the bodies of water would be completely dry.

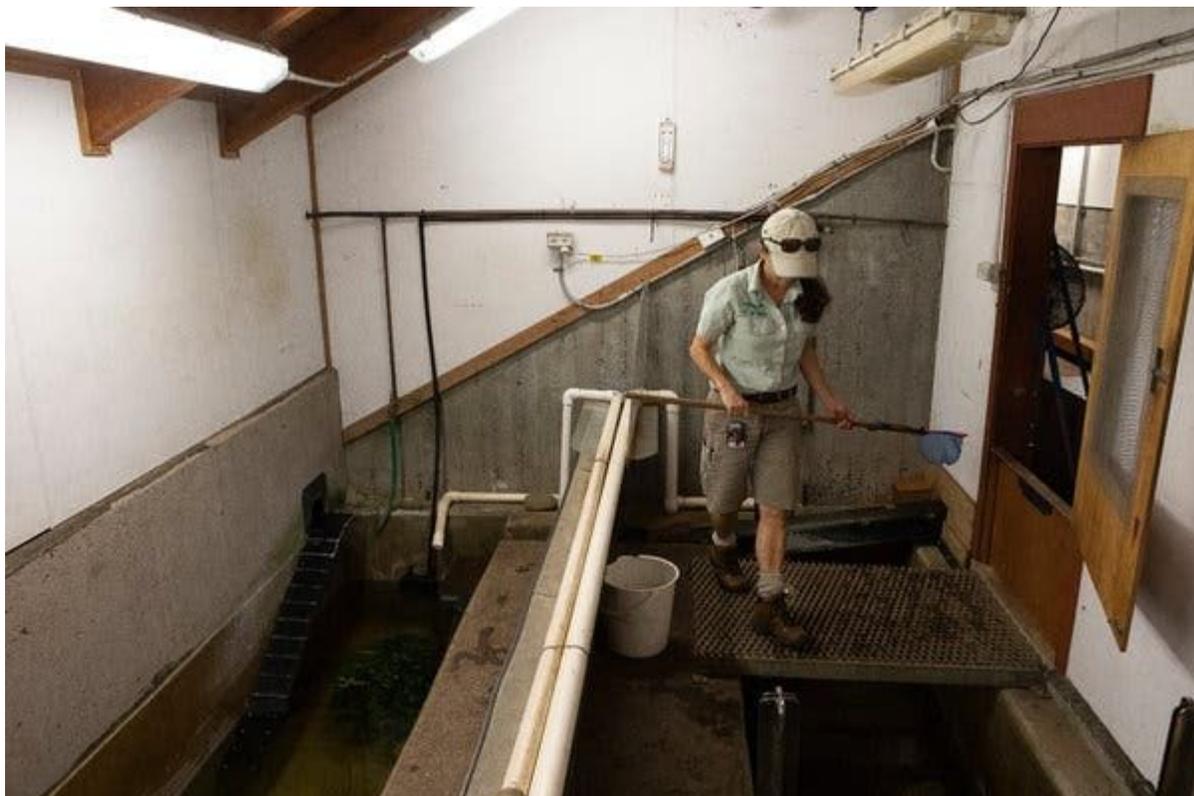
A five-hour drive brought the team to what was once a lake. Now, it was mostly deep, sucking mud. The air was hot and smoky. “Initially we thought we weren’t going to be trapping until the evening,” Dr. Meagher said. Platypuses are nocturnal, usually waking up around sunset. But these platypuses were already active, which, while concerning, meant the team could see where they were.

“There was hardly any water there,” Dr. Meagher said. “So they couldn’t duck down and hide and be cryptic like they usually are.”

Platypuses are difficult to catch; they are fast, slippery swimmers and desperately shy. The males also have a sharp, venomous spur behind one of their hind feet. The venom is not lethal to humans, but there is no antidote, and the pain can last months.

The scientists dragged a net through the remaining water in four areas of the reserve. With the help of a small aluminum boat and a pool scooper, they caught two males and five females. The animals were placed into cotton pillowcases, then given health checks — while suspended upside down by their tails — and driven to the zoo in Sydney, where they will probably remain for months, until enough rain has fallen to replenish Tidbinbilla’s supplies.

One of the biggest issues facing the zoo was that other reserves were asking them to rescue their platypuses, too, but Taronga didn’t yet have the space. “I don’t think drought and bushfires are going away,” Dr. Meagher said. “We have to prepare for these types of climatic disasters moving forward more and more.” She was spending her days asking, “How do we have the resources to be able to say, ‘All right, let’s go rescue 50 platypus?’”



Claudia Bianchi, a keeper at the Taronga Zoo, with holding tanks containing two female platypuses recently rescued from the wild.

The International Union for Conservation of Nature lists the platypus as near-threatened. In January, [a study](#) by scientists from the University of New South Wales and the University of Melbourne estimated that climate change could lead the number of platypuses to decline by as much as 73 percent in the next 50 years. Last October, scientists from the University of New South Wales published [a study in Global Ecology and Conservation](#) showing that for the last decade there had been no records of platypuses in 41 percent of their previous range.

December was Australia's [hottest and driest December on record](#); 2019 was its [hottest and driest year on record](#); and the country has been experiencing a severe drought for three years, a key factor in why the ongoing wildfires have been so severe. Platypuses are found mainly along the east coast of Australia, which has been the area worst impacted by the fires. The eastern states are also home to [80 percent of Australia's human population](#).

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In January, Aussie Ark, an animal welfare organization, discovered two dead platypuses in dried up waterways. The group relocated four others and took five more into their care. Platypuses are also threatened by pollution, land clearing and predation from invasive species, including foxes and feral dogs and cats — especially when platypuses choose to travel over land to seek out new bodies of water. (They can retract the webbing on their feet to walk with their claws.) In the 19th century, tens of thousands of platypuses were killed for their thick pelts, which were turned into slippers or rugs.

Gilad Bino, a researcher at the University of New South Wales and the lead author on the January platypus study, said that old newspapers and studies described seeing “a dozen platypus in a pool, and using words that we would never use now, like ‘platypus migration’.” Today there are nothing like those numbers. Australia has the [worst mammal extinction rates](#) in the world.

In 2018, scientists at Monash University estimated that some platypuses could be ingesting [half a human dose of antidepressants](#) from aquatic insects in streams near Melbourne, which have been shown to have high levels of these and other drugs.

‘Dr. Frankenstein’s first attempt’



Image

A rescued male in a tank at Taronga’s platypus exhibit. Platypuses are venomous and egg-laying, offering insight into the link between mammals and reptiles, and may be of use to human medicine.

An Aboriginal dreamtime story about the platypus (one indigenous name for the animal is Dharragarra) explains its origin as the product of a courtship between a water rat and a duck. Platypuses have fur, bills, webbed feet and a beaver-like tail, and they lay eggs. The only other egg-laying mammal is the echidna, also endemic to Australia. Young platypuses live with their mothers for up to four months, suckling on milk released through pores on the mother’s chest. They evolved 120 million years ago and offer insight into the link between mammals and reptiles.

Platypuses may be of value for human medicine. Their milk contains a unique antibacterial protein that could lead to [new, superbug-resistant antibiotics](#), according to scientists at Deakin University in Australia. Their venom might help [fight Type 2 diabetes](#); in 2016, scientists at Flinders University and the University of Adelaide discovered that platypus venom contained a long-lasting hormone that promotes the release of insulin.

Robert Dockerill, a senior keeper at Taronga Zoo, describes platypuses as “Dr. Frankenstein’s first attempt.” He likes to joke that platypuses and echidnas are the only animals that can make custard, because they produce both eggs and milk. Forty years ago, he said, he watched platypuses swimming at his great-uncle’s farm in Armidale, on the North Coast of New South Wales. The town has been hit particularly hard by the drought. Then, in January, rain washed soil and ash from the bushfires into the Macleay River, [causing thousands of fish to die](#).

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As he spoke, Mr. Dockerill stood in front of a tank at Taronga Zoo that held one of the rescued platypuses, a male. “He’s pretty much done nothing but eat since he got here,” he said. He noted that one way to tell the health of a platypus was to use the “tail volume index.” Platypuses store fat in their tails; the more a tail can bend, the less fat it holds. When the male had come in, he had a T.V.I. of four, five being the worst. He was now almost a one.

The room housing the platypuses was dark, so that they would be active, thinking it was nighttime. Their tanks, decorated with fresh eucalyptus branches and fern fronds, glowed faintly. The rescued platypus dove through the leaves, wriggling its head as it searched the small pebbles in the tank floor for food. Platypuses use their bills to detect the electric fields emitted by their prey, which consist mostly of invertebrates. They are particularly fond of “yabbies,” small blue freshwater crayfish.



Image

A tail fragment of a yabby shell, a type of crayfish that platypuses feed on. Zookeepers noted the voracious appetites of the newly rescued platypuses.

Yet another threat faced by platypuses are yabby traps, also known as Opera House traps because of their shape. Platypuses need to surface in order to breathe, but the traps keep them underwater, and they drown. Opera House traps are illegal in Victoria, parts of New South Wales and the Australian Capital Territory.

A refuge at the zoo

As the rescued male dived, a steady stream of bubbles emerged from his body. The effect, actually caused by air trapped in their fur, gave rise to an early misconception about platypuses, that they “breathed through their butts,” Mr. Dockerill said.

The male climbed onto a platform and changed positions like a swimsuit model posing for a photograph — at one point pressing his belly against the glass. In a nearby tank, Annie the platypus, a longtime Taronga resident, rolled onto her back, scratching herself with a webbed foot. Mr. Dockerill raised Annie by hand after she was brought into the zoo with injuries inflicted by a dog.

“I don’t care what the zoo says, she’s mine,” he said, smiling. Often, he gives her a scratch in the mornings, but that day he could not visit any of the zoo’s platypuses; he had already worked with the wild ones, which were under quarantine, which meant he was too.

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Through a private door leading away from the public exhibit, and up narrow metal stairs were two more tanks — and the opening above the rescued male’s tank, into which Mr. Dockerill scattered live beetle larvae and fly pupae. The other tanks each held a rescued female and several bright blue yabbies, which appeared to wait nervously on branches of eucalyptus floating in the water. Suddenly, one of the females caught a yabby and proceeded to roll and shake it to death, like a tiny, furry crocodile.



Image

Ms. Bianchi checked the platypus exhibit at the Taronga Zoo.

Richard Kingsford, an aquatic ecologist at the University of New South Wales and another author of the recent study documenting the decline in platypus numbers, also grew up watching platypuses in the river, in his case the Abercrombie River, west of Sydney.

He described their courtship ritual. “They seem to do this weird tumble turning, where they sort of go around in circles within the water, chasing each other,” he said. During the ritual, the male and female nip at each other’s tails.

Australia is the world’s driest inhabited continent. Man-made dams, and the diversion of water to irrigated agriculture, have had a significant impact on biodiversity, Dr. Kingsford said. Last week, fires flared up again in the Australian Capital Territory, moving closer to Tidbinbilla. Rangers at the reserve began catching and relocating other species, including brush-tailed rock wallabies, Northern Corroboree frogs and bettongs (also known as rat-kangaroos), the [Canberra Times reported](#). On Jan. 31 the government declared a state of emergency in the territory.

Dr. Bino, the lead author on the paper published in January, said that the current trajectory — “if we continue to clear land and not improve the habitat, and if you’re assuming that demand for fresh water is going to increase over time, and then you add climate change” — will only further the disappearance of the platypus. As local populations fragment and grow ever smaller, he said, “it becomes quite easy for us to drive a species to extinction.”

