

## **Crocodiles V. People: A Possible Solution?**

**Text by Steve and Terri Irwin and Barry and Shelley Lyon**

**All photographs courtesy of Steve and Terri Irwin**

Two species of crocodiles, the Freshwater Crocodile (*Crocodylus johnstoni*) and the Saltwater Crocodile (*C. porosus*) occur in Australia. Only 'salties', which can grow very large, have been responsible for fatal attacks on people.

In Australia, the saltie ranges across the north and east between Broome, Western Australia and Maryborough, Queensland. Notwithstanding its common name, this crocodile lives in fresh, brackish and salt waters. It can be encountered in the open ocean, near the shore and in and near estuaries, freshwater rivers and the swamps and lagoons associated with them, sometimes hundreds of kilometres from the coast.

Skins from salties, especially big ones, make excellent, highly prized leather. Demand for skins (for use in shoes, belts, suitcases, briefcases and handbags), supported a significant crocodile-harvesting industry in northern Australia between the end of World War II and the 1960s. Two factors led to the industry's decline and final cessation.

Firstly, saltwater crocodiles progressively became more difficult to find as populations declined, due to relentless, skilled hunting. Secondly, by the late 1960s-early 1970s, conservationists and governments were concerned that the species might become extinct in Australia. At a time when the industry had almost literally 'killed the goose that laid the golden egg', federal and state governments protected crocodiles by legislation.

In Queensland, despite such protection since 1974, the Saltwater Crocodile remains on the threatened species list as 'vulnerable'. Since the 1970s, populations of salties have grown. Big crocodiles (usually male) are once again fairly common. They, and smaller crocodiles, have been encountered with increasing frequency, not only by adventurers in remote areas, but also by people in and near cities and towns. Some of these encounters have resulted in fatalities.

This problem can be reduced, possibly even eliminated, by instilling cautious, commonsense attitudes in people whose activities place them in potential contact with salties.

However, despite wide community awareness of, and response to, warning signs

and educational information provided by fauna authorities, occasionally crocodiles continue to pose a threat to people.

One response to this problem has been devised by the Department of Environment in Queensland. The East Coast Crocodile Management Program was established in 1985 to deal with rogue or nuisance crocodiles. Under this program, potentially dangerous animals are captured and transferred to crocodile farms, wildlife institutions or back to the wild in areas remote from settlement. This strategy is costly and sometimes risky, but seems to work. Certainly the problem is alleviated — at least in the short term. However, removing a crocodile from its domain does not mean an area is completely safe, but merely that it is safer than it was.

Where there are healthy populations, salties usually live in communities. A permanent, deep, 1 km-long lagoon where there is a constant food supply, could easily support between six and ten crocodiles. Such a community would have a well-defined 'social ladder'. On the top rung would be a dominant, large male; next would be two or three breeding females; and then, at the bottom of the ladder would be varying numbers of immature crocodiles. Depending on the availability of food, the lagoon might also support another two or three young, sexually mature males. However, the dominant 'boss' of the lagoon would always keep these on the outer through intimidation and fights.

In such a situation, removal of the dominant male might solve a people problem temporarily. But, following battles for supremacy, another dominant male will reign, restore order to the lagoon and may again threaten people. Thus, while removal may eliminate immediate threats to human safety, it is hardly a definitive long-term solution. There are problems too for big crocodiles removed from their habitats. Capture and handling can be harsh, sometimes brutal and adaptation to captivity in what are sometimes far from ideal conditions can be difficult, sometimes impossible.

In Queensland, Saltwater Crocodiles occur most commonly in rivers and lagoons associated with the Gulf of Carpentaria. Populations of salties in eastern waters are, by comparison, low with one exception — Lakefield National Park, on south-eastern Cape York Peninsula. Lakefield protects the largest population of Saltwater Crocodiles in eastern Queensland. The national park of 537,000 ha is one of only five key areas for *C. porosus* conservation in Queensland.

In 1994, there were many reports about a large saltie at Old Faithful Water hole, a popular fishing and camping area on the Normanby River. The crocodile, estimated to be 4 metres long, was swimming close to and approaching people

fishing in boats and from the high riverbank. Following assessment by park staff, the area was closed to visitors to reduce potential risks to them and the crocodile (illegal shooting had been a problem in the park before). A decision was made not to attempt to move the crocodile, but to trial a new management strategy that might maintain the well-established social structure in the water hole, yet make it safe again for people. Because of the problems associated with relocation of large crocodiles, the experiment involved capture and harassment of the crocodile and its release to the same waterhole. The aim was to instill fear of people ('people shyness') in the crocodile so that he would be reluctant to approach them.

With Lakefield's Ranger-in-Charge, Ron Teece, the crocodile was trapped and educated with what appears to be some success. The aversion experiment had three main objectives: Instilling 'people shyness'; maintaining existing social structures in the waterhole; and making it possible to reopen the waterhole to visitors, appropriately educated about his presence.

We arrived at the waterhole on 12 December 1996. A large crocodile, apparently curious, could be seen watching from a distance of about 50 metres. He continued to watch as a survey dinghy was prepared and as the boat slowly moved upstream.

By two pm that day, the first trap had been erected in a deep, shady location where basking and ambushing sites of crocodiles were located (the trapping method was developed by Steve and Bob Irwin). An undulating, melaleuca-lined bank was cleared of foliage and debris, and then leveled with shovels to create a large clearing about 2 metres from the water's edge for the-nylon mesh trap. The trap was rated at 16 tonnes and was supported by sticks hammered into the ground and hemp twine.

The completed rectangular trap was 5m x 1.5m x 0.9m. The entrance was 60 centimetres from the water's edge and was evenly interwoven with rope attached to 100 kilogram weight bags. The bags were suspended from a trap ring about 7 metres up a tree (on a branch estimated to be able to withstand a force of 400 kilograms) and attached to a steel rod trigger mechanism.

The trap was baited with 40 kg of fresh feral pig and secured by a short rope spliced over the trigger mechanism. Any jerking or pulling of the bait would cause the weight bags to fall, pulling the mouth of the trap closed in a drawstring effect.

Early next day, a stocky 2.6m female was found in the trap. She was easily released and the trap re-set; it was surmised that the capture of one of the target

crocodile's mates may have made him wary of the trap, so a second trap was set on a mud bank.

The next morning 'Old Faithful' was in the trap. Within half an hour, two top jaw ropes were in place and the crocodile was secured. The mouth of the trap had closed around the base of the crocodile's tail and cloaca, a common occurrence in trapping animals over 3.6 m. To ensure the crocodile was not injured, he was induced to move fully into the trap. Once inside, a canvas shelter was erected to keep the crocodile damp and so it could be closely monitored. Old Faithful measured 4.2 m from head to tail with a head length of 56.5cm.

During the first day of capture, team members circled the water immediately in front of the crocodile in two different dinghies, hoping he would learn to fear noise and people. The crocodile soon became agitated whenever an outboard was started and became even more agitated when approached by a 4WD vehicle. The campsite was in the animal's full view, and Steve and Terri Irwin camped very close to the crocodile for eight hours so he was forced to see, hear, smell and sense people close by.

During the night, the crocodile was further harassed with spotlights from a dinghy with an outboard motor. Next morning the animal was calm and motionless, but when an outboard motor was started he became distressed and fought to escape. A similar escape attempt occurred when a vehicle approached the camp. These reactions were considered positive signs of stress in response to human activity.

Before his release, a team of eight people straddled and restrained the big crocodile for 15 minutes, while the trap and top jaw ropes were removed. Under the weight and power of the people, the crocodile hardly attempted to fight. Such passiveness was a desired response. Then, on the count of three, everyone jumped clear and the crocodile was free. Without hesitating, he walked slowly into the shallow water, swam to the middle of the waterhole with his head above water and then headed straight towards the deepest section. The team was fairly confident that Old Faithful had responded to the aversion therapy, and that the animal would remain dominant in his territory.

## **Follow-up**

In February 1997, Old Faithful Waterhole was reopened to visitors. All three campsites were occupied, but campers did not report any nuisance crocodile. In July 1997 the waterhole was surveyed again to determine the extent of the

crocodile's 'people shyness'. Old Faithful could not be found by day or night, even though fresh tracks, slides, claw marks and basking areas were evident.

During this survey, fishermen at the waterhole reported seeing a big crocodile lurking at the boat ramp. Subsequent examination of the bank where their dinghy was moored revealed a crocodile slide, but matching an animal less than 3 m long! This crocodile had apparently been feeding on fish offal, backbones and carcasses left on the bank.

The waterhole was surveyed again in October 1997. Old Faithful and a female (about 2.5m long) were first observed sunning themselves on the opposite bank. The animals quickly responded to the approach of the vehicle and slid into the water and submerged. This was judged to be people shyness.

In subsequent surveys of the waterhole by Dr Geoff Miller and Dr Mark Read of the Department of Environment, several large crocodiles (more than 2.4m) were recorded; however, none posed any problem.

This is the second time Steve and Terri Irwin have attempted to deter a declared 'nuisance' crocodile from approaching people. Such a strategy was used in May 1995 at Escott Station in northern Queensland. A 4.2m saltie, 'Nobby', was captured, educated and released. Three years after his 'education', Nobby is still only rarely seen by property managers and staff. It is hoped that a similar people shyness will deter Old Faithful from approaching people for some considerable time. It is worth noting that large, old crocodiles in Lakefield National Park that survived the shooting era are only rarely sighted by rangers or visitors. These crocodiles (longer than 4 metres and more than 24 years old) appear to have maintained their fear of humans for at least 20 years.

To be sure Old Faithful remains wary of people, the crocodile will have to be observed often, at least biannually and there is no guarantee that he will not again pose a threat. Visitors will have to continue to be vigilant! There is only one track into Old Faithful's Waterhole. A single sign on this track could educate visitors about potential crocodile sightings, Old Faithful's history, and the value of crocodiles and their conservation in the national park.

All information so far indicates that Old Faithful and Nobby remain dominant in their territories, but avoid any contact with people. In this method, there may be hope for increasing peaceful co-existence between salties and people.

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