

Should Australia cull more saltwater crocodiles?

### What they said...

*'Many locals don't like the thought of man-eating animals brazenly cruising around where we live, play and work'*

Cairns Post commentator Julian Tomlinson

*'Education on coexistence with saltwater crocodiles is needed, not culling'*

Ben Pearson of World Animal Protection Australian

**On October 2, 2024**, Queensland MP Robbie Katter criticised the Queensland government's moderate stance on crocodile culling and condemned the state's revised Crocodile Management Program as a 'load of croc'. [↗](#)

On 22 May 2024, Katter's Australia Party introduced the Crocodile Control and Conservation Bill 2024 into the Queensland Parliament. The bill called for crocodile culling in populated areas in Queensland and Indigenous-led crocodile trophy-hunting enterprises. On 1 July 2024, the Bill was ruled out of order and withdrawn. [↗](#)

The issue is far from resolved. There remain critics of the Queensland government's restrained crocodile management program [↗](#) and of the management program recently adopted in the Northern Territory which allows the removal of 1,200 crocodiles a year. [↗](#)

### Background

#### Crocodile culling in Australia

The Oxford Dictionary defines wildlife culling as 'a reduction of a wild animal population by selective slaughter'. [↗](#)

The Northern Territory and Queensland each has a Crocodile Management Program, both recently revised, which, while not referring to culling, *do* sanction the killing of crocodiles.

The Queensland government removes around 40 to 50 crocodiles each year that are considered a threat to people. [↗](#) Some of these animals are killed; however, the crocodiles are assessed to determine their most appropriate treatment. Removal practices in Queensland prioritise live capture, transport, and relocation though they acknowledge that this is not always possible. [↗](#) Immediate public safety rather than the reduction of crocodile numbers appears the main objective in Queensland, and this remains the case under the new program.

Under the Northern Territory's new Crocodile Management Program adopted in February 2024 [↗](#), 1,200 crocodiles will be trapped and destroyed annually. This is an increase of 900 crocodiles a year from the previous average figure. Under the new scheme, one of the objectives appears to be containing population growth. [↗](#) They are also considering commercial use of the 'harvested' crocodiles. This corresponds more closely to the Oxford Dictionary's definition of a 'cull'. The Northern Territory Management Program is to operate for the next ten years and includes the possibility of increasing the number of crocodiles culled.

As explained above, crocodile culling already occurs in Australia, though it is not officially referred to as such. However, some critics argue that larger numbers of crocodiles should be killed with the direct aim of reducing crocodile numbers. [↗](#)

#### Australian saltwater crocodiles [↗](#)

The saltwater crocodile is the largest species of crocodile and the largest living reptile in the world. The species is sexually dimorphic (sexes are physically different); adult males are on average 5 metres long and weigh more than 450kg, whereas females are much smaller, generally around 3 metres long and up to 150kg. There are uncommon records of male salt-water crocodiles reaching more than 7 metres in length and 1000kg in weight. The upper body is grey, brown, or almost black above, with irregular darker mottling; they are generally whitish on the underside. The snout of an adult is broad and granular; the distance from the tip to the centre of the eyes is less than twice the width of the head at eye level. The tail is highly muscular and is the main propulsion mechanism used in the water. Juveniles are generally pale tan in colour, with black stripes and spots on the body and tail. An adult salt-water crocodile generally has 65-67 teeth and is believed to have the greatest bite pressure of any living animal.

#### Australian distribution

The saltwater crocodile is found in Australian coastal waters, estuaries, lakes, inland swamps, and marshes. Despite the species' common name, the salt-water crocodile can persist in freshwater bodies. The species' distribution ranges from Rockhampton in Queensland throughout coastal Northern Territory to King Sound (near Broome) in Western Australia.

#### Conservation status [↗](#)

The species is considered of minimal concern for extinction but is protected from the effects of international trade under the Convention on International Trade in Endangered Species (CITES).

In Australia, Indonesia and Papua New Guinea wild populations are classified under Appendix II. This means the animal and its by-products can be commercially traded with export permit. The same provisions apply for all worldwide populations bred in captivity for commercial purposes.

#### History of commercial use and current regulatory protections [↗](#)

The saltwater crocodile was often hunted for its meat and eggs, and its skin is the most commercially valuable of any crocodylian.

Unregulated hunting during the 20th century caused a dramatic decline in the species throughout its range, with the population in northern Australia reduced by 98 percent by 1971.

The years from 1940 to 1970 were the peak of unregulated hunting and may have regionally caused irreparable damage to saltwater crocodile populations. Illegal hunting persists in some areas, with protection in some countries being grossly ineffective, and trade is often difficult to monitor and control over such a vast range. Many areas have not recovered; some population surveys have shown that although young crocodiles are present, fewer than 10 percent of specimens spotted are in adult size range and do not include any particularly large males. Habitat loss continues to be a major problem for the species. In northern Australia, much of the nesting habitat of the saltwater crocodile is susceptible to trampling by feral water buffalo, although buffalo eradication programs have now reduced this problem considerably.

The species currently has full legal protection in all Australian states and territories where it is found - Western Australia (since 1970), Northern Territory (since 1971) and Queensland (since 1974). This means the species cannot be hunted and animals can only be killed or relocated by authorised wildlife officers. All Australian states and territories with wild crocodile populations have management programs which include removal of crocodiles from inhabited areas.

Commercial crocodile harvesting is comprised of both wild take and captive breeding and raising activities on farms. Crocodile harvesting and farming currently occur in the Northern Territory, Queensland, and Western Australia. Crocodile products (e.g., skins, manufactured leather products, teeth, flesh, taxidermy specimens) are traded domestically and internationally. The commercial export of products derived from native species is required to be approved under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

### Internet information

On January 9, 2025, ABC News published an analysis titled 'Crocodile attacks in Timor-Leste are at an all-time high. In Australia, it's a different story'

The article looks at the large and growing number of deaths resulting from crocodile attacks in Timor-Leste and contrasts this with Australia's successful crocodile management program. It considers the different factors at play in the different countries.

The full text can be accessed at [\[link\]](#)

On January 3, 2025, BBC News published an analysis of Australia's crocodile management strategies and the arguments around additional culling.

The full text can be accessed at [\[link\]](#)

On December 28, 2024, Canberra City News published a report titled 'Crocodile count raises concerns about swimming holes' The news report indicates that though the number of crocodiles removed from public places has decreased slightly compared to 2023, there is concern about where these crocodiles have been located. There appears to be increasing numbers found at swimming holes.

The full text can be accessed at [\[link\]](#)

On December 9, 2024, the ABC ran a report titled 'Exmouth records three saltwater crocodile sightings over weekend'. The article refers to three recent sightings of saltwater crocodiles near the Western Australian town of Exmouth. The town is well outside the reptiles' normal range. Several crocodiles have been noted in the area since federation.

The full text can be accessed at [\[link\]](#)

On October 14, 2024, the ABC published a report titled 'Queensland authorities call for caution amid busy season for crocodile removals'. The article refers to the high number of crocodiles sighted in Queensland through 2024. It also refers to how rangers decide which crocodiles to act on.

The full text can be accessed at [\[link\]](#)

On August 27, 2024, The Guardian published a report titled 'Crocodile culling an ineffective and expensive way to reduce attacks, Northern Territory study finds'

The article summarises the findings of a recent study by Charles Darwin University which concluded that though crocodile attacks on humans often provoked calls for widespread culling, there was little evidence to support the measure, which was 'not an effective and cost-efficient control strategy'.

The full text can be accessed at [\[link\]](#)

On August 18, 2024, The British Ecological Society published the result of research conducted by Cameron J Baker et al through the Charles Darwin University. It was published under the title 'The influence of crocodile density on the prevalence of human attacks'. Among its findings was 'Whilst it seems logical that fewer large predators would mean fewer attacks, our scientific data analysis shows that this is not an effective and cost-efficient control strategy.'

The full text of this article can be accessed at [\[link\]](#)

On July 8, 2024, The Conversation published an opinion piece by Brandon Michael Sideleau, a PhD student studying human-saltwater crocodile conflict at Charles Darwin University. The comment is titled 'The latest crocodile attack is tragic - but the Northern Territory doesn't have a croc problem'. The article gives reasons why Australia's current crocodile management strategies are working and why widespread culling would be ineffective.

The full text can be accessed at [\[link\]](#)

On April 24, 2024, The Northern Territory Times published a news report titled 'Targeted croc culls get green light in new NT government saltwater crocodile management plan'

The report notes that targeted culls will resume under the new crocodile management plan and indicates the number of crocodiles to be killed will be larger than previously, though not a full-scale cull'.

The full text can be accessed at [\[link\]](#)

On March 26, 2024, the ABC published an article titled 'Crocodile that stalked Herbert River residents captured in North Queensland' that refers to the eventual capture of a 3.9 metre crocodile that had behaved menacingly around people for several months.

The full text can be accessed at [\[link\]](#)

On March 19, 2024, the ABC published a report titled 'Crocodile study challenges assumptions of far-ranging behaviour finding Queensland crocs stay closer to home'

The article stated, 'A study has found 91 per cent of Queensland crocodiles stay within 50km of where they hatched.' The study has implications for crocodile management in Queensland,

The full text can be accessed at [\[link\]](#)

On March 5, 2024, the ABC published a report titled 'Townsville mum films "sizeable" crocodile in popular north Queensland swimming spot'. The article describes a mother and her children unwittingly swimming in a popular swimming spot within metres of a crocodile.

The full text can be accessed at [\[link\]](#)

On February 8, 2024, The Guardian published a news report titled 'Large crocodile trying to enter family's Queensland backyard removed by authorities'

The 2.5 metre crocodile was found at the family home following recent heavy rainfall and flooding in the Cardwell region caused by ex-Tropical Cyclone Kirrily.

The full text can be accessed at [\[link\]](#)

On June 17, 2023, The Guardian published an analytical piece titled "'It's bloody dangerous": north Queenslanders grow salty over rapidly increasing crocodile population'. The article presents the views of a several stakeholders on crocodile management in Queensland and compares it with New South Wales.

The full text can be accessed at [\[link\]](#)

On May 13, 2023, The Australian published an article titled 'Cull of the wild: Calls for action grow over crocodile attacks' which examines the range of views over how best to manage Australia's growing crocodile population.

The full text can be accessed at [\[link\]](#)

On September 26, 2021, ABC News published an analytical piece titled 'The return of crocodile rule'. The article begins with a description of a crocodile nest found within 50 kilometres of Darwin. It discusses the implications of the growing number of crocodiles in the Northern Territory.

The full text can be accessed at [\[link\]](#)

On August 14, 2021, The Australian published an analytical piece titled 'The jaws of death: crocodile numbers rise along with attacks on people'. The article gives an account of some recent crocodile attacks in Australia and then presents a range of views on the effectiveness of the way Australia's large crocodile population is managed.

The full text can be accessed at [\[link\]](#)

On August 4, 2021, Bob Katter issued a media release questioning the reliability of recent findings that the crocodile population in Queensland was growing at only 2 percent per annum. The media release also accuses governments of prioritising animal life over human life.

The full text can be accessed at [\[link\]](#)

On June 4, 2021, The Conversation published an opinion piece by Michael Bradley, Postdoctoral Research Fellow at James Cook University. The comment is titled 'Friday essay: reckoning with an animal that sees us as prey - living and working in crocodile country'. The piece argues for the importance of humanity finding a place with crocodiles in a shared ecosystem.

The full text can be accessed at [\[link\]](#)

On February 18, 2021, Australian Geographic published an opinion piece titled 'Why Australia's crocodile management works' by crocodile biologists Adam and Erin Britton.

The article defends Australia's system of crocodile management, which already includes limited culls, and claims that further culling is unnecessary and would be ineffective.

The full text can be accessed at [\[link\]](#)

## **Arguments in favour of increased crocodile culling in Australia**

### **1. Crocodiles are a threat to human beings' physical safety**

Saltwater crocodiles are known to be highly aggressive and can pose a significant threat to people who live in or visit northern Australian states and territories. Supporters of increased culling believe it can reduce this threat.

Saltwater crocodiles are apex predators, meaning they are at the top of their food chain. Saltwater crocodiles are aggressive when encroached upon and will treat humans as prey. There are about 200,000 saltwater crocodiles worldwide, with Indonesia being a major habitat. Indonesia suffers the most saltwater crocodile attacks in the world. In the past decade (the ten years pre-2023), there have been about 1,000 attacks, killing more than 450 people. [\[link\]](#)

Crocodiles have a variety of physical features which make them highly successful predators. The saltwater crocodile is the largest living reptile, and adult males can reach lengths of more than 7 metres. Those over two metres are generally regarded as most likely to attack and kill human beings. The size of the crocodile and the difference between its mass and the victim's is significant. A 75kg person attacked by a 3-metre crocodile has a 4 in 5 chance of survival. If the crocodile is four metres the victim's chances of survival drop to 1 in 5. Large crocodiles can stay underwater for at least an hour by dropping their heart rate to 2-3 beats per minute to conserve energy. A crocodile can float with only eyes and nostrils exposed, enabling it to approach prey without being detected. They can be concealed in water less than a metre deep. They have extremely good vision in low light. The tail of a crocodile is solid muscle and a major source of power, making it a strong swimmer and enabling it to make sudden lunges out of the water to capture prey. Although ungainly, crocodiles can walk on land at a speed of about 1-2 kilometres an hour. Short bursts of land speed can exceed 10 kilometres an hour. A 2012 study found the bite of one saltwater crocodile was recorded at 16,414 Newtons or 3,689 pounds of force-making it the strongest recorded bite of any individual animal. Crocodiles' bite force is so great partly because of their largest jaw-closing muscle - the ventral pterygoideus muscle - which has evolved to be so massive that it spills out behind the head. Crocodiles also have a second jaw joint that helps to distribute the extreme force of their bite. An Indian study has noted of those who survive a crocodile attack, 'Most crocodile bites can cause severe injuries, especially to the extremities, due to the substantial bite force of the crocodile, which typically leads to extensive tissue damage, fractures, amputations, and vascular injuries.' The teeth are conical and designed to penetrate and hold, rather than cut and chew, though they are very sharp. The teeth of the upper and lower jaws intermesh perfectly when the jaws are closed, giving another means of holding firmly whatever they grasp.

The saltwater crocodile has also been shown to be the most aggressive of all crocodiles. A 2013 study conducted by Charles Darwin University in the Northern Territory found that the saltwater crocodile was much more aggressive than six other species of crocodiles selected from around the world. The research, which monitored the behaviour of juveniles over two years found that the saltwater crocodile exhibited vastly more bellicose behaviour than species from Papua New Guinea, South America and south-east Asia. The saltwater crocodile was the only species to exhibit agitated tail twitching followed by lunging head strikes on its opponents.


Many Australians have been killed and injured by saltwater crocodiles. On average, one or two people are killed by saltwater crocodiles every year in Australia. The attacks usually occur in Queensland and the Northern Territory and occasionally in the northern parts of Western Australia and have been steadily increasing since crocodiles ceased to be hunted in the early 1970s. In the 28 years between 1971 and 1999, 14 people were killed. In the 25 years between 2000 and 2024 30 people died because of crocodile attacks. The largest number of people died in 2014 when four people were killed. 2024 saw the second highest number of fatalities in a year with three people dying. Figures for non-fatal attacks reveal a similar pattern. A report published in the Australian on May 13, 2023, stated, 'The regularity [of crocodile attacks in Queensland] has increased from four in the 1980s, to six in the '90s, 13 in the 2000s and 12 in the 2010s. Since 2020 there have been 10 attacks, three of which happened this year [in 2023].' There were three fatal crocodile attacks in 2024. This gives a total of 45 confirmed non-fatal crocodile attacks in Queensland since the 1980s.





## 2. There is an overpopulation of crocodiles which increased culling could bring under control






Those who support increased crocodile culling argue that the enormous growth in crocodile numbers since the species was protected in the 1970s is a major concern. Researchers claim this population growth has been partly enabled by crocodiles finding new food sources. Those supporting further culls claim that the present population growth and changed behaviour has brought crocodiles into dangerous contact with human beings.

There is a large and growing population of crocodiles in Australia. It is currently estimated that there are between 150,000 and 200,000 saltwater crocodiles in the wild, with most found in the areas surrounding Darwin and the Mary River. There are believed to be over 100,000 crocodiles in the Northern Territory (not including the 135,000 reared in captivity on crocodile farms). Queensland's crocodile population of between 20,000 and 30,000 is split broadly between six populations, stretching from Rockhampton to the Gulf of Carpentaria, with 80 per cent north of Cooktown. Survey work along major West Australian rivers has found that crocodile numbers are continuing to grow, with the Ord River, at 2,000 crocodiles, having the largest crocodile population of the rivers surveyed. These figures represent a huge increase from the approximately 3,000 crocodiles believed to have been surviving in natural habitats across Australia prior to the early 1970s when crocodiles were protected. The Northern Territory's new Crocodile Management Program states that 'the crocodile population has recovered to near carrying capacity'. This implies that crocodiles may be at the point of exhausting their current habitats.

Though some experts suggest that crocodile population growth is likely to have plateaued, except in Western Australia, they also observe that crocodiles are spreading across a wider range. They note that crocodiles, once they reach maturity, have no natural predators, and that introduced species are providing them with additional food sources they did not traditionally have. Professor Stuart Bunn, director of the Australian Rivers Institute, has commented, 'As the crocodile population has recovered, they've moved back into the extensive river/floodplain systems in the Northern Territory and now seem to be much more dependent on terrestrial prey'. An introduced species, feral pigs, has become an important part of crocodiles' diet. Professor Bunn states, 'Without the local surge in feral pig abundance over the last 50 years and the crocodiles' shift in diet, the substantial growth in their numbers would not have been possible.' Dr Mariana Campbell of Charles Darwin University has similarly noted that crocodiles have moved away from estuarine prey - fish, turtles, crabs - and now have a more land-based diet. Dr Campbell notes, 'Now they are primarily feeding upon the terrestrial environment, taking up feral pigs, buffalo, wallabies.' Some farmers have expressed concern that this more land-based diet is encouraging crocodiles to move further away from waterways. A far north Queensland cane farmer living 65 kilometres from the coast and 400 metres above sea level has





complained that crocodiles are overrunning his property. 


In addition to a huge growth in total numbers, crocodile density has increased significantly in most of the areas where they are found. The Northern Territory has the highest average density of 5.3 crocodiles per kilometre.  The Mary River has some of the highest recorded densities for the species, with 11 per kilometre in the tidal section and 5 per kilometre in the upstream freshwater section.  In Queensland, the density of crocodiles is highest in the northern Cape York Peninsula, at 3 crocodiles per kilometre, and decreases to 1.2 crocodiles per kilometre in the Cairns region.  Overall, Queensland has an average crocodile density of 1.7 per kilometre in the surveyed catchments. 




Though this is contested,  many of those who support increased culling argue that high crocodile numbers and densities must increase the probability of human encounters with crocodiles and that this makes attacks more likely. The Queensland Government's draft Crocodile Management Plan states, 'The recovery of the crocodile population since hunting was stopped in the mid-1970s . . . means there is an ever-increasing likelihood of contact between people and crocodiles.'  The same point is made in the Northern Territory's new Crocodile Management Plan which refers to 'increasing high crocodile numbers and an increase in the negative interactions between crocodiles and people'.  A 2022 study of the impact on Indigenous communities of increased crocodile numbers noted, 'The increased threat to life posed by the increased saltwater crocodile abundance is very real. Local Aboriginal families have suffered the loss of family members.'  Apprehension over the growing number of crocodiles relative to the human population was recently expressed by the Northern Territory's Chief Minister, Eva Lawler. Following a fatal crocodile attack on a 12-year-old Indigenous girl, Lawler stated, 'We can't have the crocodile population outnumber the human population in the Northern Territory. We do need to keep our crocodile numbers under control.' 

### 3. Increased crocodile culling could help reduce the damage crocodile attacks cause the tourist industry

Supporters of increased crocodile culling argue that international reports of growing crocodile numbers and increasing attacks can discourage tourists, undermining the tourist industry in northern Australia. Fear of crocodiles may deter tourists from visiting beaches, river areas, or national parks, negatively affecting the economy. Increased crocodile culling can reassure tourists. This will maintain economic activities such as fishing, boating, and eco-tourism.

Crocodile attacks in Australia attract substantial overseas media attention which can negatively affect tourism. When, for example, a 12-year-old girl was reported missing in the Northern Territory, in July 2024, and was subsequently found to have been killed by a crocodile, the incident received immediate widespread media coverage. A report in the British outlet Metro was headlined "'Gruesome' remains of 12-year-old found after crocodile attack'. It included information such as 'Saltwater crocodiles can grow up to 18ft (6 metres) in length and are larger and more aggressive than freshwater crocodiles, which also live in the waterways of the West Daly region. There have been at least two other crocodile attacks against humans in the Northern Territories in the last year.'  The Mirror US covered the event when the crocodile that had taken the girl was euthanised. The Mirror's headline read, 'Ferocious 16-foot crocodile killed after mauling girl, 12, and fisherman to death in horror attacks'.  An American publication, Voice of America, produced an article discussing Australian politicians' concern about the bad publicity the 12-year-old's death had generated. The treatment was titled 'Crocodiles cannot outnumber people in Australian territory where girl was killed, leader says'.  A month later in response to another death, the Canadian newspaper, The Halifax City News, published an article headlined, 'Human remains found inside a crocodile in Australia believed to be that of a 40-year-old tourist' The report included the observation, 'The crocodile population has exploded across Australia's tropical north since the predators became a protected species in the early 1970s.'  Graphic reportage such as this is seen as compromising the tourist industry in the areas where the reported attacks occurred. There are also concerns that there may be a more general negative effect on tourism. Its supporters believe increased culling would allow Australian states and the Northern Territory to demonstrate to potential visitors that they are taking strong action against crocodile attacks.

Media coverage of crocodile attacks mean they are a well-identified tourist risk that tourists are warned about in travel advice publications. Backpacker Advice, an international online advice service targeting young travellers and those travelling on a budget, has a section in its Australian information headed 'How Dangerous Are the Animals in Australia?' The overall tone of this section is reassuring, offering advice on how to minimise risks, and suggesting that many of the supposed perils tend to be exaggerated. However, when referring to crocodiles, it states, 'A saltwater crocodile is the only animal in Australia that is actively looking to kill you, they will eat anything that moves and hunt on instinct . . .' The advice indicates that most tourist destinations in northern Australia pose a low crocodile risk; however, it specifically names some hazardous locations, stating, 'The only two popular backpacker destinations where you may come in to contact with them are the areas around Darwin, such as Kakadu and Litchfield National Parks and Northern Queensland, including Cairns.'  Many of those concerned to foster tourism in the far north of Australia believe that increased culling could reduce the hazards sites such as this warn about. Increased culling would also reassure tourists that they were being protected.

Politicians and other spokespeople for northern Australia have demanded culling be extended to safeguard the tourist industry. Federal Queensland MP, Bob Katter, has stated that one-third of Far North Queenslanders worked in tourism and warned that if visitor numbers dropped because of crocodile attacks, 'the whole of the economy in the northern part of Queensland will collapse'.  Local Cairns tourism entrepreneur Fred Arial has stated, 'If a croc is spotted on our beach or in a popular swim hole, whether it is two feet or 10 feet, it has to be culled or captured and removed. We are not only risking lives but our international reputation as a tourism destination.'  Another Queensland spokesperson calling for crocodile culling to preserve the state's tourism industry is Jason Costigan, a radio commentator and former leader of the North Queensland First Party. Speaking in the Queensland Parliament on April 2, 2019, in support of a bill to institute crocodile culling, the member for Whitsundays stated, 'Investors are pouring millions and millions into rebuilding our tourist resorts in the Whitsundays, the place that I call paradise, yet there is a growing menace out there [crocodiles].' Costigan went on to warn of the harm that would be done to Queensland's brand as a tourist destination if there were further attacks. He stated, 'I do not want to have to take a phone call from the BBC or CNN as we go into damage control. We would never ever hear the end of it.'  Similar concerns

have been expressed in the Northern Territory. In July 2023, it was widely reported that a 67-year-old man had been attacked by a two-metre saltwater crocodile in Litchfield National Park. The park receives 300,000 visitors a year. Northern Territory political leaders expressed immediate apprehension, in part looking to protect the Territory's \$3bn tourism industry. The day after the attack, the then Northern Territory Chief Minister, Natasha Fyles, asked, 'It's time to consider: do we need to go back to culling?' For political leaders and business representatives, increased crocodile culling could lessen the risk crocodiles pose to tourists and reduce reputational damage.

#### 4. Increased crocodile culling could protect livestock and those living and working on cattle stations and in other remote areas

Supporters of increased culling argue that crocodiles are apex predators that prey on domestic animals such as cattle and horses. They claim that increased culling can help protect livestock at risk from crocodile attacks. They also claim that those working on cattle stations would be safer if crocodiles were culled more vigorously.

Complaints have been made in far north Australia that increasing numbers of crocodiles are posing a threat to livestock. Kimberley fisherman Leanne Kum Sing, who has photographed cattle taken by crocodiles, states, 'Station owners don't have established fencing or install drink troughs for their cattle, to prevent their cattle entering the river to drink. This means their livestock are at constant risk of crocodile attack.' Other fishermen have witnessed such attacks, one stating, 'We actually saw it [a crocodile] drag this cow off the bank a bit further up.' Kimberley fisherman, Rodney Fischer, who has also taken photographs of crocodile predation, claims the incident he photographed reflects the fact cattle stations in the region are losing hundreds of thousands of dollars in livestock because of wandering cows being snatched by crocodiles. The financial burden caused by crocodile management and livestock losses to crocodile attacks have also been noted in the Northern Territory. One cattleman in the Territory has claimed he is spending \$100,000 a year trying to overcome the stock losses caused by crocodiles. He has used a range of management tools to combat the property's crocodile problem. As well as fencing off river frontage, he has constructed dams and has sunk bores to give cattle other water options.

Problems of livestock loss have also been noted in Queensland. When making a submission to the Queensland Parliament in 2018, Ross Benstead of Far North Queensland Consultants noted, 'Gulf grazier Jack Fraser related to me how crocodiles were causing huge losses of cattle in the Gulf District. He was present several years ago when a large croc was cut open after it died, and 63 plastic cattle ear tags were found in its stomach contents. If this number of tags is correlated across the extensive river and estuarine system in the Upper and Lower Gulf grazing areas, the cattle number and economic loss to innumerable crocodiles is staggering.' Benstead also noted that other Queensland livestock were being taken by crocodiles. He stated, 'A former Cairns politician de-pastured a number of horses in the upper reaches of the Russell River about eight years ago. I saw some of them in the paddock at the time. Initially he put 30 horses into the paddock where the only water source was the Russell River. When he came back for them some 12 months later, he could only find about 15. A local landowner told me at the time he had seen large crocs kill several horses when going for water.'

Station owners and crocodile catchers have noted that the problem of crocodile management is becoming more difficult as crocodiles increase in number, become larger and are more aggressive. The West Australian Department of Parks and Wildlife reported shooting a 3.5 metre crocodile after it spent six months venturing on to multiple properties around the Lower Ord River and being aggressive towards farmers and their livestock. The animal killed a horse, attacked a cow, and was suspected of killing a dog. Crocodile management around cattle stations is also a growing problem in the Northern Territory. Crocodile catcher Roger Matthews had reported removing 18 crocodiles from the station where he works in a single month. The year before he removed 40 crocodiles over a whole year. High water levels make it difficult to control crocodiles' movements. Matthews explains, 'Our aim is to fence off the majority of the river and major creek systems so that crocodiles and livestock can co-exist. The problem we have, however, is that in a good wet season as we have now, there is water everywhere.' Matthews has also noted 'Other areas of major concern are the deep holes in creeks where we pump water to supply water tanks that feed to troughs for cattle to drink. There have been a few instances where we have had to dispatch crocodiles due to them raising up on all four feet and hissing and growling at us, ready to attack. These crocodiles are usually over 3.5 metres and are extremely brazen.'

Crocodile critics also claim that those managing and working on cattle stations are finding it increasingly difficult to maintain their personal safety. The increasing number and size of crocodiles together with the variable weather conditions in northern Australia create problems. Crocodile catcher Roger Matthews has noted, 'The bigger guys mate, they can move anywhere and it's a real wake up call. . . stay away from water courses because what might've had nothing in it for years, with all the rain we've had, there could be a potential crocodile anywhere. . . All the kids playing in dams and things, keep out of it. If you see your mates playing in them, tell them to get out of it.' In January 2023, a man collecting crocodile eggs was attacked and badly injured by a crocodile on a remote cattle station near Daly River in the Northern Territory yesterday. In November 2023, a Northern Territory cattle producer in his mid-sixties was attacked by a crocodile while on his way to do some fencing. He had stopped to check the water level in a local billabong. Those who favour increased culling argue that reducing the number and size of crocodiles in remote areas would help prevent livestock losses and enhance the safety of those living in these regions.

#### 5. Increased culling could reduce the number of crocodiles found in urban areas

Supporters of culling argue that crocodiles in built up areas must be reduced. Expanding human occupation of previously undeveloped areas together with changing crocodile ranges is bringing urban populations into contact with crocodiles. Culling, they claim, may be necessary to keep crocodiles away from urban and suburban environments, ensuring human safety.

Those supporting increased culling note that crocodiles are increasingly being found in areas occupied or regularly visited by humans. What those supporting greater culls find disturbing is that these are areas where crocodiles were previously rare or unknown. Though a recent study has indicated that crocodiles do not appear to be moving south in significant numbers, there are many reports of crocodiles being sighted in places, within their overall range, where they are not usually found. In January 2021, wildlife rangers removed a crocodile nest from the edge of Palmerston, a city of approximately 40,000 people, about a 15-

minute drive south of Darwin. This was the first time crocodiles had been found nesting so close to Darwin. Yusuke Fukuda, a leading crocodile researcher in the Territory, sees this as a sign that migratory crocodiles are moving into new places. He stated, 'I think it means good crocodile breeding habitats are getting saturated. We might be finding more and more nests where we think they should not be, or where we do not think they would be.'

There are several factors forcing crocodiles to move outside their established territories. One of these is climate change and associated sea-level rises. Crocodiles nest and breed on land and require freshwater habitats for this. These breeding areas typically lie at a low elevation along coasts or rivers and are, therefore, vulnerable to flooding as seas rise. A recent study has revealed that sea-levels rising is likely to mean that approximately 50 percent of current crocodile nesting areas within the Kakadu Region will be lost. Though the same study found that there should be sufficient alternate sites available, there is the problem that these may bring more crocodiles within close proximity to areas occupied by people.

Another factor leading to crocodiles appearing to encroach on areas of human habitation is that human populations and crocodile populations have both grown. James Walker, writing for The Australian in an article published on August 14, 2021, stated, 'The debate is particularly animated in Queensland because ballooning regional centres - think Cairns, Townsville and Mackay with a combined population of more than 500,000 - are eating into croc habitat, the brick-and-tile subdivisions displacing coastal lowlands that were formerly swamp or given over to sugarcane.' The population of far north Queensland is growing rapidly. In 2017, the population was 287,000, and it is expected to grow to 362,000 by 2036. Increasing human occupation leads to land use changes which are a major cause of loss of crocodile habitat and crocodile displacement according to Professor Gordon Grigg of the University of Queensland.

There is significant anecdotal evidence that crocodiles are being found more often in urban areas where the animals are usually not seen. In January 2024, a crocodile sighting was reported in Bundaberg in Queensland's Zone F, which is atypical crocodile habitat under the Queensland Crocodile Management Plan. Crocodile sightings are rare in this area, and any crocodiles found will be removed from the wild. Matt Brien, program co-ordinator of the Queensland government's northern wildlife operations, has stated, 'People are not wrong in believing that there are more crocodiles in more places.' Far North Queensland is the area where independent federal politician Bob Katter and his son Robbie, a state MP who heads the Katter's Australia Party, have become the spokespeople for north Queensland town dwellers who believe their concerns about crocodile encroachment are being ignored by southern-based politicians who do not have to deal with the problem. Robbie Katter has stated, 'Saltwater crocodiles and human communities do not mix. I find it mind-boggling that not wanting your pets, friends and family members eaten by crocs is considered radical these days.' Bob Katter has complained about a loss of amenity in Queensland towns encroached upon by crocodiles. In March 2021, he stated, 'Lake Placid used to be where kids went to swim, it was a playground for Cairns. But now, you'd only do it if you're mad.' Bob Katter and Katter's Australia Party are long-time advocates of a general cull of crocodiles in Queensland. evidence crocs in India. The problem is that we now have more people living in those areas,

## Arguments against increased crocodile culling in Australia

### 1. Increased crocodile culling is unnecessary and ineffective as a means of reducing attacks on humans

Opponents of greater crocodile culling claim there is no clear link between increased crocodile numbers and increased risk to human life. They claim that people can reduce their likelihood of being attacked by behaving responsibly and that culling may put people at greater risk by making surviving crocodiles more dangerous.

A recent study has found there is no simple connection between increased populations of crocodiles and increased frequency of crocodile attacks and human deaths. The study released in August 2024 examined data covering the last fifty years in the Northern Territory. It showed that between 1979 and 2022 there were 76 crocodile attacks resulting in 23 deaths. However, the data did not demonstrate that these deaths were primarily related to growing numbers of crocodiles and people inhabiting the same area.

The study notes, 'The human population in the Northern Territory (NT) has almost tripled in the last 48 years, increasing from 92,869 people in 1975 to 250,635 people in 2022.' It further claims, 'There has also been a substantial increase in the density of estuarine crocodiles greater than 2 m over the past 48 years, with the density increasing from 0.07 crocodiles/km in 1975 to 3.07 crocodiles/km in 2019.' Despite these high rates of human and animal population growth, the data shows that since peaking in 2009, the frequency of crocodile attacks has decreased by 10 percent per year for the ten following years.

The number of deaths resulting from crocodile attacks follows a similar trajectory. Growing numbers of people and crocodiles are inhabiting northern regions but there is no corresponding increase in the number of deaths. The one of the most recent fatal crocodile attacks in the Northern Territory was reported in July 2024. Crocodile researcher Brandon Michael Sideleau, based at Charles Darwin University, acknowledged this tragic event but claimed, 'Amid the emotion surrounding this latest incident, it's important to remember fatal crocodile attacks are extraordinarily rare in Australia - and there is no evidence to suggest [crocodile] numbers are too high.' To substantiate his claim Sideleau noted that prior to the 2024 death, the last fatal incident occurred in 2018, while the highest number of fatalities on record occurred in 2014 when four people died. He also noted that the fatality rate in Australia is far below that found elsewhere in the saltwater crocodile's range. In Indonesia, where crocodile population density is only about a third of that in Australia, at least 85 people were killed in 2023 alone.

One of the reasons offered for the low rate of crocodile attacks and fatalities in Australia is the public education programs that are in place. Ben Pearson of World Animal Protection's Australian team has stated, 'Education on coexistence with saltwater crocodiles is needed, not culling.' The Northern Territory has an extensive crocodile safety education program, Crocwise, as well as a comprehensive management plan. Crocwise aims to make people aware of the locations where crocodiles pose a threat and how to conduct themselves to reduce their risk of attack. It also has a reporting system which allows people to report

crocodile sightings to increase public safety. [↗](#)

Queensland offers the same public education program and as of December 2024 is targeting high risk demographics (men over 30) to ensure that they are aware of how to minimise their chances of attack. [↗](#) Brandon Michael Sideleau has argued that human beings can reduce their risk. He claims that where human beings recognise the danger and behave cautiously and appropriately, the likelihood of attack is significantly reduced. He states, 'It appears human behaviour and human population densities are correlated with increased attack frequency.' [↗](#)

It has also been claimed that increased crocodile culling may increase human risk by making those crocodiles that survive the cull more aggressive. Crocodile researcher Brandon Michael Sideleau has warned that when large crocodiles are culled in a particular crocodile territory this upsets the power balance within that community. Smaller, inexperienced subdominants will move in and fight for dominance. [↗](#) The result of this struggle can be increased danger of crocodile attack. [↗](#) Wildlife and environment writer, Robert Onfray, has noted, 'The younger males fight each other to claim ownership of the newly vacant territory and they are much more aggressive and secretive. They may not be as big but they're big enough to kill someone.' [↗](#)

## 2. Crocodiles perform several important ecological functions

Crocodiles are apex predators, and it has been claimed that they help to keep the population numbers of other species in balance. They are also opportunistic predators, eating many types of prey including injured animals and carrion. This may help to maintain the health of other species populations and make waterways less polluted. Increasing crocodile culling would reduce the ecological benefits they offer.

Crocodile conservationists claim that as apex predators crocodiles are necessary to maintain ecological balance. The World Animal Protection Organisation has noted, 'As adults they regulate the populations of other animals - stopping them from overcrowding and degrading ecosystems. Crocodiles also create habitats for other animals by burrowing and nest building. During the dry season, the presence of crocodiles deters land animals from using and drinking the limited water supplies. This protects aquatic life and systems.' [↗](#) One promising development is that the resurgence of saltwater crocodiles in the Northern Territory may help to control destructive introduced pest animals such as feral pigs. A 2022 study suggests that by shifting their food preferences to feral pigs, the rising saltwater crocodile population is helping to suppress pig population growth. [↗](#) Kakadu tour guide and Murumburr man Dennis Miller has similarly stated, '[Crocodiles] keep our feral animals down, especially the pigs, that do a lot of damage to our ecosystem, our flood plains and rivers. Also, they eat buffalo, so they eat all the feral animals, that we have had trouble to control because of a lack of funding.' [↗](#) Not only do crocodiles help to regulate the numbers of other species, but their behaviour also makes them unlikely to overpopulate. Though the saltwater crocodile lays between 40 to 60 eggs, they cannibalize their own young, when necessary, thus preventing overpopulation and overstraining their ecosystem. [↗](#)

Studies of the Philippine crocodile have found it eats ailing fish in a significantly higher proportion than healthy fish, thus improving the common health of the fish stock. By preying on the most common fish, they balance the fish population; any species which suddenly becomes dominant is put back in its proper proportion. [↗](#) It has been speculated that Australian crocodiles may behave similarly, preferring prey that is more easily caught and so helping to keep preyed upon populations healthier by removing sick or injured animals. Recent research has not been able to substantiate these claims and more studies been called for to confirm this probable effect. [↗](#)

Crocodiles are credited with helping to keep Australian waterways in crocodile territory clean because of the manner in which they consume their prey. Crocodiles tend to eat their entire prey, reducing the likelihood that carcasses will be left to rot. The geography resource WorldAtlas states, 'Crocodiles and other members of the Crocodylian family have a ferocious digestive system that is immune to bacteria, viruses, and microbes. . . This immunity and their ferocious eating habits make crocodiles the guardians of the freshwater ecosystem. They feed on every part of a prey preventing flesh from decaying and spreading harmful infections.' [↗](#) A report from PBS Nature states, 'A croc's metabolism is so evolved that its body uses and stores nearly the entirety of the food it consumes.' [↗](#)

The Australian Museum's entry on crocodiles notes, 'Small prey is simply crushed and swallowed, however larger prey may be dragged to deeper water before being dismembered and eaten. If the meal is too big to be swallowed whole, the crocodile will grab hold with its jaws and shake violently. . . After eating its fill (a crocodile's stomach is relatively small), the crocodile will store the remains in mangroves or underwater to feed on again later.' [↗](#) The PBS Nature report also noted, 'A croc's stomach is the most acidic of all vertebrates, allowing it to digest bones, horns, hooves, or shells. Nothing gets left behind in a crocodile's dinner. In fact, these hard objects are used as "gizzard stones" in the croc's stomach to help grind coarse food.' [↗](#)

It has also been noted that crocodiles help to keep waterways clean by eating dead or dying animals that would otherwise pollute the water. Ashley Reilly, part of James Cook University's student placement program studying wildlife around Cairns, has noted, 'Scavenging is a natural behaviour for many apex predators, and crocodiles will eat carrion, including dead animals that wash up in rivers or lakes, or even those killed by other animals.' [↗](#) The World Animal Protection Organisation has stated, 'Protecting and restoring crocodile habitats benefits people by creating clean water supplies.' [↗](#)

## 3. Crocodiles provide economic and promotional benefits which would be undermined by increased culling

Opponents of increased culling note that crocodile tourism generates significant revenue in Australia. It is claimed that culling could damage this industry and negatively impact local economies. It is further claimed that crocodile culling might damage the reputation of both the Northern Territory and Queensland as unspoilt, eco-friendly tourist destinations and have a wider negative impact on north Australian economies.

Crocodile supporters claim the animals are vital to the Northern Territory's tourist industry. Crocodile researcher Brandon Michael Sideleau, based at Charles Darwin University, has stated. 'The entire economy here depends on wild crocodiles. It's the reason



people come here more than anything else. [Culling] wouldn't have an impact on the crocodile population as a whole, but it would have an impact on large crocodiles.' Sideleau went on to explain that reducing the number of large crocodiles would harm tourism.' He further claims, 'Hunters [when culling] are going to want to go after the absolute largest crocodiles, and these are precisely the ones that tourists want to see. I think it's counterproductive.' [↗](#) A 2009 Queensland report on the commercial use of crocodiles in Australia stated, 'The fascination with crocodiles as powerful and dangerous beasts in the wild has spawned a vibrant tourism industry based on crocodile viewing in the Northern Territory, Western Australia and Queensland.' [↗](#) Travel guide publishers 'Lonely Planet' are an example of the way tourist experiences with crocodile in the wild are used to promote the Territory. One of their publications begins, 'The closest living relative to the dinosaur, with a bite force thought to rival that of a T.Rex, saltwater crocodiles are the ultimate apex predators. With more than 100,000 of them patrolling the waterways of Australia's Northern Territory alone - that's one saltie for every two human residents - it's the best place on the planet to see these reptilian relics in action.' The publication goes on to list Corroboree Billabong boat tours, Cahill's Crossing. outback floatplane adventures, Crocodylus Park and jumping croc boat tours. [↗](#)

Studies have been done to demonstrate how widely crocodiles have been used to promote the Northern Territory and to a lesser extent Queensland. A 1998 academic study produced in the relatively early stages of the Northern Territory's use of crocodiles as promotional material noted, 'The crocodile features strongly in tourist brochures and advertising. One Darwin car hire company used a crocodile in an advertising campaign aimed at Northern European markets in tourism trade fairs in late 1997/ early 1998. In personal communication the marketing manager stated that this was done because the crocodile is equated with the Territory, it reflects adventure and natural settings, evokes an image of excitement and is consistent with an image that Europeans and North Americans had of Northern Australia derived from films like "Crocodile Dundee". Crocodile soft toys with wide grins can also be found in souvenir shops, and large plastic models can be found by the side of the Arnhem highway being used to advertise accommodation in much the same way as dinosaur models are used in North America at locations like Drumheller, Alberta, Canada.' [↗](#) Studies such as this indicate the potential damage that could be done to Australia's reputation as a wildlife tourist destination if a larger scale crocodile culling program was adopted.

Concern has been expressed about the impact of increased crocodile culling on Australia's international brand as an eco-friendly nation. Referring specifically to the Northern Territory, crocodile researcher Brandon Michael Sideleau has stated, 'I think it's a bad look, because it's going to really negatively impact the Northern Territory's reputation as an eco-tourism destination.' [↗](#) A 2017 report on the economic value of the crocodile industry in the Northern Territory stressed crocodiles' 'brand recognition' value. The report claims that the reptiles have an 'iconic status' and stated, 'Brand recognition adds value at the level to which it may induce further tourism and business opportunities that would not have otherwise occurred without it.' The report noted that crocodiles had made the Territory an attractive location for films, documentaries, and other media products. The report concludes, 'This generates economic value not only in terms of the direct expenditure of the film crews when they visit the NT, but also in the further development of the NT brand.' [↗](#)


Tourism plays an important role in the economies of the Northern Territory and Queensland. A report published in 2023 indicated that tourism is a major employer in the Northern Territory, supporting 12,500 jobs or 8.5 percent of all jobs in the Territory. Tourism is even more critical in some of the Territory's regions, such as Kakadu Arnhem and Katherine Daly, where tourism accounts for 14 percent and 11 percent of jobs, respectively. [↗](#) The Northern Territory's 2023 budget figures indicated that visitor expenditure in the Territory decreased by 4.7 percent from the previous year to \$2.6 billion. [↗](#) Critics note that care must be taken to ensure that this decline in visitor expenditure does not become an entrenched trend.




#### 4. Increased crocodile culling disregards animal habitat rights and could threaten the species' survival. Not all culling methods are humane.




Critics maintain that increased culling ignores the animals' right to live within their natural habitat and could threaten their continued survival. It is also claimed that some culling methods are cruel.

Critics object to the anthropocentric view that natural habitats and the creatures that live in them are of secondary importance to human beings. They claim that this view has led to the destruction of many habitats and the extinction of innumerable species. Supporters of animal rights claim that as sentient beings, all living creatures are entitled to humane treatment. They also have the right to enjoy life within their natural habitat. The Australian Royal Society for the Prevention of Cruelty to Animals' (RSPCA) Animal Charter states, 'Animals have an intrinsic value of their own and, accordingly, must be considered to possess the right to live in a way which enables them to have a positive life and to develop and enjoy their inherent qualities.' The Society claims that in addition to being treated humanely, 'Native animals and birds should be maintained safely in their natural environment and should be free from hunting, trapping and captivity.' The RSPCA states that culling should only occur when animal welfare considerations require it, for example, when a natural habitat has become over-populated and other means of population control are ineffective. It further states that all killing methods must be humane. [↗](#)

Critics note that when animals' right to their habitat is over-ridden the result is often extinction. Crocodile numbers were in serious decline in Western Australia, the Northern Territory and Queensland after World War II when the ready availability of hunting rifles saw the growth of the crocodile leather industry and widespread hunting for sport. [↗](#) In an article published by Physics.org on February 29, 2024, Andrew Leeton noted, 'Before government protection in the 1970s, an estimated 98 percent of the wild saltwater crocodile population had disappeared in the Northern Territory, driven by leather demand and culling.' [↗](#) In 1971, crocodile numbers in Australia were put at only 3,000. [↗](#) Worldwide, crocodile numbers are falling. In an article published in 2015, Professor Gordon Grigg of the University of Queensland noted, 'The chances for about half of the 27 species are pretty slim if the trend in human land use continues . . . Habitat is being destroyed, crocodiles are being caught in nets, feral pigs are eating croc eggs.' [↗](#) It has also been suggested that in Australia, climate change could have a negative effect on the country's crocodile population. Professor Sam Banks, director of Charles Darwin University's research institute for environment and livelihoods, has said that although crocodiles preferred warm weather, a changing habitat would limit their ability to breed. Professor Banks explained, 'They need vegetation for females to make nests, those low areas around waterlines with particular




kinds of reed and grasses.'  These breeding areas are being threatened by rising sea levels.



There is concern that if the trend away from crocodile conservation continues, the species could once again be threatened with extinction. Australian crocodile management experts claim that the country's crocodile safety education programs and selective removal of animals have resulted in the lowest crocodile-related fatality rate in the world. However, they claim, that while crocodiles continue to live in the wild and encounter human beings there will always be a certain number of attacks and deaths.  Some supporters of culling do not appear to accept this and want higher culling rates than currently adopted. Queensland MP Robbie Katter is a long-time supporter of increased culling. He has stated, 'No one wants to kill loads of crocodiles, that's ridiculous . . . It's just a matter of trying to bring them back [to] normal numbers - 20 percent might be a good start.' Crocodile conservationists are concerned that reducing crocodile numbers so significantly could precipitate a return to previous widespread culls. Professor Grahame Webb, a zoologist who founded Crocodylus Park in the Northern Territory in 1994, has warned that the adoption of practices such as those proposed by the Katter Party 'would just return things back to where they were a long time ago'.  Researchers have claimed that very large numbers of crocodiles would need to be killed to reduce the risk of attacks on humans. Dr Cameron Baker from Charles Darwin University has noted that data-based modelling has shown that to reduce the frequency of attacks by one a year, culling would need to remove 90 percent of the crocodile population. Dr Baker has claimed that this approach would 'push the species back into the critically endangered category'. 

Finally, it has been claimed that some of the methods used to kill culled crocodiles are cruel and so violate the animals' right to humane treatment. The methods used to kill crocodiles on Australian crocodile farms have been criticised by animal rights groups because of the distress they can cause. The group World Animal Protection has stated, 'The killing of crocodiles on farms is a confronting and brutal process. Footage of this process obtained by PETA Asia on an Australian crocodile farm shows a crocodile in obvious distress and moving while a rod is being repeatedly jammed into its brain.'  Similar criticisms have been made of the killing methods used when culling crocodiles. Among the methods used is a captive bolt. This process involves shooting a metal bolt into the crocodile's brain and then retracting the rod. This killing method has the potential to cause the sort of distress described by the PETA report. The Queensland Code of Practice for the Taking, Handling and Transportation of Crocodiles states, 'The use of a captive bolt is considered an acceptable method of euthanasia with reservations. These reservations are based on equipment being fully functional and personnel that are trained and skilled in the procedure to ensure operator safety and animal welfare.'  Critics note that given authorities' reservations about this practice there is an obvious likelihood that not all crocodiles will be killed humanely. Similar criticisms have been made of the stunning procedure sometimes used before killing crocodiles. A scientific study released in 2023 found that electrical stunning did not always result in unconsciousness. The report stated that the process 'was not consistent across all animals...[poor animal response] could indicate alertness, pain or distress.' 

#### **5. Human carelessness is the primary factor leading to crocodile attacks and fatalities. Increased crocodile culling is likely to increase incautious behaviour by residents and tourists.**

Critics claim that it is human carelessness, not increased crocodile numbers that is the primary factor leading to crocodile attacks and human fatalities. There are also concerns that culling could have a negative effect on human behaviour around crocodiles, causing a false sense of security which could encourage reckless behaviour.

Opponents of increased culling claim that attacks and human death rates are determined not by crocodile numbers but by human behaviour. They note that despite the Northern Territory having one of the highest crocodile densities in the world the area also has the lowest rate of crocodile attacks and human deaths for an area that is a crocodile habitat. Research has indicated that in the Northern Territory there are about five crocodiles for every kilometre of waterway, yet the fatality rate is far lower than elsewhere in the saltwater crocodile's range.  In comparison, Indonesia has only one crocodile per kilometre of waterway yet in 2023 had 85 fatal crocodile attacks. In the same year Australia had only two deaths resulting from crocodile attacks.  Crocodile researcher Brandon Sideleau attributes this difference primarily to human behaviour. Sideleau has noted that there are differences in Australian wealth and living standard which allow people to behave more safely within crocodile territories. He notes, 'Australians generally have access to fresh water in their homes. Unlike people in . . . Indonesia, they do not need to travel to waterways to bathe, carry out domestic chores and collect drinking water. That means they are less likely to encounter crocodiles. . . Australians [also] have access to fishing equipment which does not require them to submerge themselves in waterways to fish, and safer fishing vessels which, unlike in Indonesia, are not prone to capsizing.' Sideleau notes that Australians also have the advantage of a widespread public education program that shows them how to behave safely around crocodiles. 

Critics of increased crocodile culling argue that when attacks and fatalities do occur in Australia, they are generally the result of ill-judged, careless human behaviour. It has been claimed that repeated hazardous human actions are creating situations where crocodile attacks and human deaths are more likely to happen. As an example, a 40-year-old New South Wales man was fatally attacked by a crocodile in the Annan River area in far north Queensland on August 3, 2024. Video footage was subsequently discovered on social media showing a fisherman feeding crocodiles from fish frames at the same location, prior to the man's death.  Critics have claimed that feeding crocodiles attracts the animals to a certain area, leads them to associate humans with food and reduces their caution around human beings. Daniel Guymer, a Department of Environment, Science and Innovation senior conservation officer, has noted that crocodiles are apex predators with the capacity to modify their hunting methods based on interactions with humans. He has warned, 'If people are feeding this animal, or feeding crocodiles in general at other locations, it will encourage that animal to stay in that area and that will, of course, present a safety risk to any individuals who attend that location after.' One local fisherman complained, 'You've got locals and tourists throwing who knows how many frames into the water there [at Crocodile Bend] because everyone knows it's probably the guaranteed spot close to Cooktown to see a croc . . . Crocs are part of life up here on the Cape but the actions of those idiots feeding them week after week at that part of the river probably contributed to the death of that poor bloke.' 

Conservationists have observed that several different categories of people act irresponsible around crocodiles. Tourists

sometimes act carelessly because they do not accept public safety warnings. In February 2023, a 37-year-old man was attacked by a crocodile at a boat ramp near Cooktown in far north Queensland after ignoring reports of a crocodile in the area. The man was able to escape when the crocodile that attacked him took his dog. The man's social media posts indicate that he had wanted 'to go full bush' and he appears to have been attempting to catch a water python. He subsequently admitted, 'I have, unfortunately, learned the hard way.'<sup>1</sup> However, critics have noted that the Australians most likely to adopt careless attitudes around crocodiles are locals, especially men over thirty. Queensland has just begun a public safety program targeting this demographic. The Queensland Department of Environment, Tourism, Science, and Innovation has stated, 'Research has found the most likely victims of croc attacks are men above the age of thirty who live in north Queensland, with most attacks happening while they're fishing or boating. It is an urban myth that interstate and international tourists are more likely to ignore Crocwise signs and messaging than locals. Over time, some locals become complacent around the water because they haven't seen a crocodile for a long time or have never seen a crocodile at a particular location.'<sup>2</sup> Finally, opponents of increased crocodile culling argue that it may be counterproductive as it could lead to an increase in careless human behaviour. In July 2022, a Queensland committee on crocodile management recommended a return to limited crocodile culling. Professor Craig Franklin of the University of Queensland advised that this could reduce human safety. Professor Franklin stated 'My sense is it's going to lead people to have a false sense of security and complacency, [with people] thinking, "Gee, the Queensland government got rid of all the large animals. It's OK to go swimming in this waterhole".'<sup>3</sup> David White, who operates the Solar Whisper sightseeing tour on the Daintree River, has similarly stated, 'I know people want guns and want to shoot crocs and they think that's the answer but it's not . . . the biggest problem removing crocs is people then assume it is safe, so there's increased complacency.' Warning against complacency, Mr White cautioned, 'It is not the croc you see that's involved in the attack, it's the one you don't see, they are the perfect ambush predator, and we simply don't know they are there.' Cairns crocodile advocate Tommy Hayes has advised against culling, concluding, 'Humans need to be held accountable for their idiotic decisions as well as complacency-driven lapses in judgment.'<sup>4</sup>

### Further implications

One of the intended consequences of the Northern Territory's new Crocodile Management Program is to provide more economic opportunities for the Territory's indigenous citizens.


Most of the areas where Indigenous populations are concentrated in the Northern Territory have limited potential for conventional economic growth. Economic activity has been restricted to a handful of industries, such as mining, tourism, and arts and crafts, and more recently payment for environmental services. To expand and diversify income and establish more sustainable livelihoods, Indigenous people have become involved in the commercial use of wildlife, including crocodiles.<sup>5</sup>




The harvesting of crocodile eggs is already an established source of income for Indigenous people in the Northern Territory even before the recent increase in the number of crocodile eggs that could be legally harvested from the wild. A 2019 CITES report on the economic impact in The Northern Territory of harvesting wildlife stated, 'The livelihood benefits of the crocodile harvest and trade to rural communities are diverse, significant, and hard to replace. Hundreds of people from rural communities, including many Indigenous communities, are employed in the harvest, and farming of saltwater crocodiles. Most of these jobs are in remote rural areas with very few alternative sources of employment or non-welfare income. Egg payments at an average AUD 25 are an important source of additional income. At 30,000 eggs harvested from Indigenous lands, at an average of approximately AUD 25, the egg harvest generates around AUD 750, 000 per year to Aboriginal Traditional Owners of land from the egg payments alone. The Aboriginal communities that have established facilities for incubating eggs and raising stock to a yearling stage locally, within their community, gain increased benefits from selling yearling crocodiles.'<sup>6</sup>


Under the new Northern Territory Crocodile Management Program, the egg harvesting quota has been lifted from 70,000 to 90,000 crocodile eggs per annum which should increase the earning opportunities of Indigenous harvesters. Though the income provided to individuals through this employment is only moderate, as the CITES report notes, it is important in regions offering few employment opportunities to Indigenous workers. In 2012, a study was undertaken of the success of an Indigenous owned and operated crocodile egg harvesting operation in the Maningrida region. The Djelk Rangers of Maningrida in Arnhem Land represent over 102 clans and 12 language groups. One of the areas the collaborative (Djelk Wildlife Enterprises or Djelk) operates in is crocodile egg harvesting. Commercial crocodile egg-harvesting first began in this area in the 1980s and was primarily conducted by non-indigenous operators who did not focus on Indigenous livelihoods. The Djelk enterprise is an example of an Indigenous ranger collaborative owning and managing a business which harvests and incubates crocodile eggs before selling them on to crocodile farms. Again, the income opportunities this offers are moderate, however, having Indigenous people running the enterprise offers larger incomes and more stability of employment than simple egg collection.<sup>7</sup> The Arafura Swamp Rangers Aboriginal Corporation (ASRAC) has taken the process a stage further with the establishment of a hatchery and grow out facility. The Corporation has stated, 'As well as boosting employment opportunities and providing increased economic independence, the hatchery is a source of pride as people can work with an animal with which they have a close cultural connection. For many years harvested crocodile eggs have been sold to farms elsewhere but returns can be significantly increased by hatching and growing the animals on-site. Crocodiles grown by ASRAC will be sold once they are almost a metre in length. The profits will fund land management activities that protect crocodile habitat in Gurruwiling.'<sup>8</sup>

Indigenous people appear to want greater involvement and control in the harvesting and farming of crocodiles. One of the Central Arnhem Land Traditional Owners, Balngarra man Otto Bulmaniya Campion, has called for more Indigenous involvement in the crocodile industry. He has stated, 'My father, all the elders, used to go and harpoon crocodiles, get a skin, and go and trade it for tea, flour, and sugar. . . Now, we want to see our own people handling reptiles.'<sup>9</sup>

A more controversial area where some Indigenous people are seeking greater involvement is in the physical harvesting of live crocodiles. Currently killing fully grown crocodiles is a carefully monitored activity in Western Australia, Queensland, and the Northern Territory. Jida Gulpilil, son of the world famous Yol?u actor David Gulpilil, is calling for more involvement of Aboriginal landowners in live crocodile harvesting. Gulpilil's interest is in the hunting of crocodiles. Gulpilil has stated, 'People do want to live and prosper on their own homelands.' Referring to his own plans, he has stated, 'We are seeking the support and approval

towards the sustainable use of saltwater crocodile live harvest commercially. . . You have the potential to bring in high-paying clients to live harvest saltwater crocodiles around our community areas . . .' Gulpilil has been careful to stress that the business model he is proposing would be very different from 'safari-hunting . . . This is not Africa, this is Australia, we don't do safari,' 

Crocodile safaris have been proposed intermittently in the past and have always proved controversial. In 2014, the then federal government rejected a Northern Territory proposal for safaris. The then federal environment minister Greg Hunt stated, 'My view is that there was a risk of cruel and inhumane treatment.'  Other federal governments have been similarly unsupportive. Under Northern Territory law, including the new Crocodile Management Program, saltwater and freshwater crocodiles are protected and can only be killed or removed with a permit. Permits may be given to ranger groups, shires, or land managers to trap or shoot problem crocodiles where there is a clear need to do so and there is no other alternative.  Protected species also need federal approval to be killed or culled. Jida Gulpilil appears to hope that there will be scope within the current regulations to run crocodile hunts and charge those who take part. He has stated, 'We are reframing it to be more of a sustainable management system, [as] part of our land management and conservation efforts.'  He has indicated he hopes to set up an enterprise where permitted clients would be able to take a trophy such as a skull or a skin of a crocodile pegged for removal.

The Northern Territory government clearly favours Indigenous businesses built around crocodile harvesting. The Northern Territory Environment Minister Kate Worden has stated, 'Whether it's trophy hunting or it's starting a small enterprise in a remote community, what we do want is to get Aboriginal people across the Northern Territory working.'  The response of federal governments is more uncertain.