

Department of the Environment, Tourism, Science and Innovation

Written Briefing for the Health, Environment and Innovation Committee

Crocodile Control and Conservation Bill 2025

The Health, Environment and Innovation Committee (the Committee) has requested the Department of the Environment, Tourism, Science and Innovation (the department) provide a written briefing on matters relevant to the Crocodile Control and Conservation Bill 2025 (the 2025 Bill), introduced into the Queensland Parliament on 19 February 2025 by Mr Shane Knuth MP, Member for Hill.

1. General Information

Location of crocodiles

In Queensland, crocodiles are known to occur throughout the Gulf of Carpentaria, Cape York Peninsula, Torres Strait, and along the east coast. Crocodiles are regularly present as far south as the Boyne River, near Gladstone, and occasionally as far south as the Mary River.

Estuarine crocodiles most commonly live in the tidal reaches of rivers and associated inlets and wetlands. However, they also occur along beaches and offshore islands in the Great Barrier Reef and Torres Strait, and in freshwater lagoons, rivers, and swamps up to hundreds of kilometres inland from the coast.

As a result, there is a possibility that crocodiles may be present in or near almost any water body north from the Gladstone area, all the way to the Northern Territory border.

Population and density

In 2020, the department completed a comprehensive, four-year monitoring program to assess estuarine crocodile populations and trends across the species' range. Key findings include.

- the current crocodile population in Queensland is between 20,000 to 30,000;
- due to the lack of suitable nesting habitat, the Queensland crocodile population cannot reach the size or density of that in the Northern Territory;
- the average rate of population growth across the species' range has been 2.2 per cent per year and is slowing;
- crocodile numbers have increased relatively slowly along Queensland's east coast from a low base following the cessation of commercial hunting in the mid-1970s; and
- the average size of crocodiles along the east coast has decreased, which is likely due to the ongoing removal of problem crocodiles from the wild under Queensland's Crocodile Management Program.

These figures are indicative of a crocodile population returning to 'normal' after widespread commercial hunting ceased and crocodiles were protected in 1976. Crocodiles were harvested extensively in the wild throughout northern Australia, during the 1940's, 1950's and 1960's, resulting in an estimated 95 per cent reduction of the Australian crocodile population¹.

Crocodile populations are highest on the north-west Cape York Peninsula and decline southward, with 1.2 crocodiles per kilometre of waterway in the Gulf of Carpentaria and the Cairns region, reducing to 0.2 crocodiles per kilometre in the Fitzroy River at Rockhampton.

The section of coastline from Cooktown to Rockhampton accounts for only 20 per cent of the Queensland estuarine crocodile population.

¹ <http://theconversation.com/staying-safe-in-crocodile-country-culling-isnt-the-answer-60252>

Population genetics

A joint research project between the department and CSIRO into the genetics of estuarine crocodiles in Queensland found that the estuarine crocodile population can be described broadly as six sub-populations.

A sub-population contains genetically similar individuals, with individuals in one sub-population having distinct genetic differences to individuals in another sub-population. These differences between sub-populations occur when interbreeding between sub-populations is limited. This may be associated with factors such as geographic barriers between different areas of crocodile habitat, preventing crocodiles from different subpopulations coming into contact with each other.

The study indicated that most crocodiles in Queensland remain close to their place of hatching, with 90 per cent of crocodiles dispersing less than 50 kilometres from where they hatched. The study also found that there is greater genetic connectivity between populations along the Western Cape and Gulf compared to the east coast, and that crocodiles in areas such as the Fitzroy and Proserpine Rivers have been historically isolated from crocodiles in other parts of the State for long periods.

Knowing where crocodiles come from (source), where they go to (sink), and how far they travel, will help improve crocodile management and the protection of people in Queensland.

This information is particularly important for the Fitzroy River where the results indicate that the removal of additional animals needs to be considered with regard to sustainability of the world's southernmost breeding population of estuarine crocodiles. This is because of existing low crocodile population numbers and lack of genetic diversity, meaning no new crocodile entering the population from outside of the Fitzroy River system.

While Queensland and the Northern Territory have similar levels of genetic differentiation, migration appears to be far greater in the Northern Territory—where 42 per cent of crocodiles were found to be migrants from distant populations.

Sightings

In 2024, the department received 1,335 estuarine crocodile sighting reports, and removed 93 problem crocodiles from the wild. So far in 2025 (as at 7 March 2025), the department has received 299 estuarine crocodile sighting reports, and removed 12 problem crocodiles from the wild. The number of crocodile sightings received by the department has increased in recent years. This increase is likely due to:

- the greater ease of reporting through the QWildlife App, which was introduced in 2020;
- increased public awareness through the department's education program; and
- human population growth.

Human-crocodile interactions

Managing human–crocodile interactions is a complex and wide-ranging issue. Since the cessation of crocodile hunting in the 1970's, and the continuing growth of the human population in north Queensland, there is an ever-increasing likelihood of unintentional contact between people and crocodiles.

Crocodiles can also learn habits and behaviours that put them in closer proximity to humans. For example, if humans leave fish scraps at boat ramps, crocodiles in the area are likely to learn very quickly that if they spend time around boat ramps, they are highly likely to find an easily accessible food source there. In addition, a crocodile displaying dangerous behaviour can pose a significant risk to public safety as once a crocodile has learned a particular behaviour, the same behaviour is likely to be repeated, and therefore the crocodile presents a much higher threat or potential threat to human safety and wellbeing than it did before it learnt the behaviour.

Queensland Government records indicate that between 1975 and May 2023, 36 non-fatal attacks and 17 fatal attacks by estuarine crocodiles have occurred in the wild. While the absolute rate of non-fatal attacks (0.9 per year) in Queensland has increased over time, there has been no increase in the rate of fatal attacks (0.3 per year) since the early 1970's. According to the Australian Bureau of Statistics (2016), the risk of death from:

- contact with venomous snakes is 3.747 times more likely than contact with a crocodile;
- contact with wasps and bees is 2.747 times more likely than contact with a crocodile; and
- being bitten or struck by a dog is 2.497 times more likely than contact with a crocodile

The removal of larger crocodiles capable of causing fatalities in and around populated areas on the east coast has likely contributed to this lack of increase in fatalities.

Culling and waterway safety

The department does not support indiscriminate culling of crocodiles however it recognises the necessity of targeted removal. The proposition that culling large numbers of crocodiles would make waters safe is untrue. No amount of crocodile removal can guarantee that all crocodiles have been removed and make an area completely safe to swim or fish.

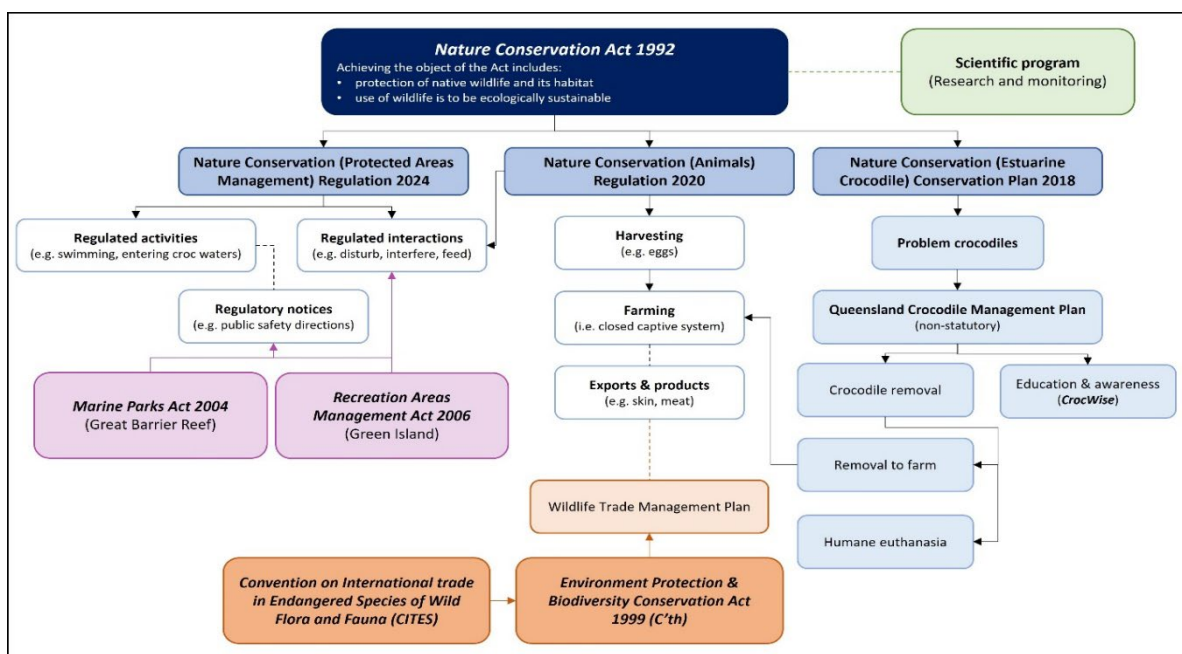
Crocodiles are a highly mobile species capable of travelling many kilometres in a day. More crocodiles will continue to enter an area without necessarily being seen. That is why the enhanced education program public safety initiatives to promote the uptake of safe behaviours in crocodile habitat areas continue to be so important in the future.

2. How crocodile safety is managed in Queensland

Estuarine crocodiles are a protected species in Queensland, listed as vulnerable under the *Nature Conservation Act 1992* (NC Act). They are also protected nationally under Commonwealth legislation and internationally under the Convention on the International Trade of Endangered Species. These arrangements affect how crocodiles are managed.

Queensland's crocodile management framework supports a holistic and strategic approach to improve public safety through reducing risks, ensuring the ongoing protection and conservation of the species, and enabling the ecologically sustainable use of wild animals. It consists of a number of key components, including a regulatory framework, an operational management framework for dealing with problem crocodiles, a community education and awareness program, and a scientific research program. **Figure 1** outlines how these components work together to manage Queensland's crocodile population.

Figure 1: Queensland's management framework for managing crocodiles.



Legislative framework

Queensland

The current regulatory approach for crocodiles is established under NC Act. The NC Act establishes the objectives for the management of native wildlife (plants and animals) in Queensland. These objectives include protection of native wildlife and its habitat, and that the use of wildlife is to be ecologically sustainable. The estuarine crocodile remains listed as vulnerable under the NC Act.

The Nature Conservation (Animals) Regulation 2020 (Animals Regulation) and the Nature Conservation (Estuarine Crocodile) Plan 2018 (Conservation Plan) establish the permit and licensing arrangements for crocodiles and the harvesting of crocodile eggs in Queensland, to ensure the take and use remains sustainable.

The Animals Regulation and Conservation Plan also establish offences to manage human-crocodile conflicts, particularly those behaviours that pose an ongoing risk to community safety, such as feeding and disturbing animals and tampering with crocodile traps. In addition, the Conservation Plan provides the statutory framework for day-to-day management of estuarine crocodiles in the wild to protect humans from problem crocodiles.

Commonwealth/International

Where crocodile products are to be exported, requirements of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) apply. This convention is applied by the Commonwealth Government through requirements under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In order to meet these requirements, an approved Wildlife Trade Management Plan (WTMP) is required for Queensland's crocodile industry.

To the extent that harvesting of crocodiles is permitted in Queensland, this must also be reflected in the WTMP – even if the harvested crocodiles will not be part of the export industry. This is required to ensure Australia can satisfy the requirements of CITES and that Queensland's approach for allowing the harvesting of crocodiles from the wild is sustainable. To date, crocodile WTMPs approved by the Commonwealth – for Queensland and the Northern Territory – address this requirement through approving maximum quotas of animals that can be taken from the wild, and/or the purpose for which they can be taken from the wild.

Farming

Crocodile farms in Queensland are predominantly closed-cycle captive breeding facilities. However, there is some augmentation from the wild in the form of egg harvesting and live crocodiles imported into Queensland from the Northern Territory.

The value of the industry can be measured in terms of skins, meat, and employment. Based on data available in 2018, prices for skins range from around \$600 up to \$1,000². At three years of age, the meat value of a crocodile is about \$75 to \$100. While a young crocodile carries only about five kilograms of quality meat, it is worth about \$20 per kilogram³. The number of people employed by crocodile farms varies according to the size of the venture and operating structure, as well as the extent to which products are processed on site. Detail in relation to each farm's employment would need to be sourced directly from each farm operator.

Queensland's current crocodile management framework supports the farming industry as it upholds Commonwealth and international obligations. Any changes to the take of crocodiles from the wild in Queensland would need to be approved under a Commonwealth WTMP in order for farming practices to continue.

² <http://www.theaustralian.com.au/life/weekend-australian-magazine/saltwater-crocodiles-high-fashion-meets-evolutionary-design/news-story/5dd554716513843885959a63afb150f0>

³

http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/Completed_inquiries/1996-99/wild/report/c11

Operational framework (Queensland's Crocodile Management Program)

The Queensland Government, through the department has implemented a comprehensive Crocodile Management Program, with a number of Program elements working together. The Crocodile Management Program consists of:

- the 'Queensland Crocodile Management Plan' (setting out how crocodiles are managed across their range, based upon a series of zones);
- an education program (public safety education program); and
- a scientific research and monitoring program.

The aim of the Crocodile Management Program as a whole is to promote the highest possible levels of public safety and safe behaviour by people, while conserving viable populations of crocodiles in the wild.

The department employs 22 specialist staff to respond to crocodile sightings, capture 'problem crocodiles', deliver safety education, and undertake research and monitoring to inform adaptive management.

Queensland Crocodile Management Plan

The Queensland Crocodile Management Plan (QCMP) sets the overarching approach for how the department responds to crocodile sighting reports and responds to 'problem crocodiles' that are assessed as posing a threat to public safety.

The current QCMP has been in place since 2017 and can be accessed on the department's website at <https://environment.desi.qld.gov.au/wildlife/animals/living-with/crocodiles/management>. The QCMP is not a statutory document but provides for a consistent approach to crocodile management for Queensland by setting out how the department manages the risks associated with human – crocodile interactions in different areas or crocodile management zones.

The QCMP outlines the risks posed by crocodiles and how the department responds to, and manages, crocodiles in each zone. The current QCMP includes six zones, mapped Queensland-wide and on a local government area basis. Depending on the zone, management actions include:

- the removal of any crocodiles found, regardless of size or behaviour;
- the removal of any crocodiles greater than two metres in length;
- the removal of 'problem crocodiles' found to pose a threat to public safety based on consideration of their size, behaviour and location; and
- no removal of the animal.

The QCMP mapping also describes the extent of crocodile habitat in Queensland, which extends from coastal areas from the Boyne River near Gladstone to the northern tip of Queensland and west to the Northern Territory border.

Estuarine crocodile removal is undertaken by the department's Wildlife Operations teams and, in the Cairns region, also by external contractors. The department also maintains a public reporting tool, the QWildlife App. The App allows members of the public to report sightings of crocodiles, and find out where sightings have been made and the locations where any 'problem crocodiles' have been declared, within the previous 30 days.

Regardless of location, size, or zoning in the QCMP, any crocodile displaying dangerous behaviours around or towards humans is targeted for removal. Most problem crocodiles removed from the wild are placed in crocodile farms or zoos – euthanasia of crocodiles is only conducted where other options have been exhausted, on ethical and animal welfare grounds, or at the request of Traditional Owners on country.

The QCMP is currently under review by the department. Consultation on draft amendments to the QCMP occurred in 2024 and is continuing.

Any proposed changes will be tested against evidence for effective public safety measures, together with leading scientific analysis and insights. This will include the findings of key monitoring, modelling and genetic research work undertaken by the Queensland Government and external crocodile experts.

“Be Crocwise” Public Safety Education Program

In combination with management actions taken by the department in accordance with the zones set out in the QCMP, the department also implements a long running estuarine crocodile public safety program – the education program. The delivery of public safety education is considered the most effective way of influencing people to behave safely in

The Queensland education program has been in place in various iterations since the early 2000’s and is one of three so-named public safety programs across northern Australia (with both the Northern Territory and Western Australia having concurrent programs delivered at a State and Territory level).

Using a broad range of communication tools, the education program aims to increase public safety by making people aware of the risks posed by crocodiles, and empowering individuals to stay safe when they are in and around waterways that may be inhabited by crocodiles.

A five-year education Strategy, based on leading edge approaches to public communication and human behavioural change, has been released. The Strategy includes working with First Nations peoples, local governments, and the tourism sector to promote education and safety behaviour.

Independent social research work into the opinions and attitudes, as well as behaviours of people that live in and visit areas where crocodiles may be present, is underpinning the next phase of the education program Strategy. The Strategy is based on:

- strengthening evidence-based practice;
- empowering locals and visitors to enjoy natural areas safely – reducing fear/increasing situational awareness;
- acknowledging, respecting and building on the lived experience of locals;
- incorporating First Nations peoples’ perspectives and culture; and
- development of a new, consistent messaging framework.

The education program will continue to roll out educational campaigns including with community groups, and schools and expand to include:

- new targeted advertising campaigns, interpretative products and signage;
- partnering with local wildlife zoos and tourist facilities to provide engaging interactive education program that can be experienced by people of all abilities using technology and other sensory elements; and
- infrastructure trials with local governments to design, install and assess ‘safe’ infrastructure in public areas.

Research and Monitoring

The Crocodile Management Program includes ongoing crocodile population monitoring which includes results dating back to 1979. The monitoring program provides information on crocodile habitat, numbers and characteristics of the crocodile population, changes in populations over time, and the impacts of the crocodile removals through the Crocodile Management Program itself.

Population estimates are based on surveys of key river systems across areas where crocodiles may be present by boat and helicopter. This is supplemented by detailed population modelling work. In combination with human population density, the information provided by the crocodile monitoring program helps increase our understanding of the threats posed by crocodiles and is used to determine the appropriate management response and zoning set out in the QCMP.

The crocodile research and monitoring team is also progressing a range of research projects aiming to increase public safety. Researchers from the department are collaborating with external partners to develop a device that can reliably detect estuarine crocodiles underwater (day or night) using multi-beam sonar and deep-learning recognition artificial intelligence computer software.

The goal is to be able to develop public safety devices to detect estuarine crocodiles at key high-risk locations where people come in close contact with crocodile habitat (such as boat ramps or jetties), or as mobile devices that could be used to maintain the safety of police and other occupational divers undertaking necessary underwater works in crocodile habitat. Once crocodiles are detected a warning siren device would be activated to advise people near the waterway of the danger present.

Other key areas of research aimed at public safety objectives include:

- drone based monitoring and capture;
- crocodile aversion conditioning (also known as 'hazing'); and
- the detection of estuarine crocodiles in waterbodies through the detection of crocodiles DNA in water samples.

Program Evaluation

In 2021, an independent Committee chaired by Queensland's then Chief Scientist reviewed three key components of the Queensland Crocodile Management Program:

- responding to crocodile sighting reports and removing problem animals;
- delivering the community safety education and engagement; and
- undertaking research and monitoring to ensure the department's Crocodile Management Program is informed by the most up-to-date scientific data and findings.

The Committee's Findings can be found on the department's website at https://environment.desi.qld.gov.au/data/assets/pdf_file/0032/276764/independent-evaluation-qld-croc-mngmt-program-report.pdf.

Overall, the Committee was very complementary of the existing Queensland Crocodile Management Program, describing it as 'robust and fit for purpose'. The department is currently implementing the 22 recommendations designed to further strengthen and improve the crocodile management program.

3. Other relevant matters that may inform the Committee's examination of the Bill

General considerations

Aside from the establishment of a Queensland Crocodile Authority, the core elements of the Bill are already provided for under the current management framework.

However, this current framework provides a balance between community safety, conservation, and use.

The NC Act upholds the objective of maintaining viable populations of protected species, which is absent from the Bill.

The actions foreshadowed in the Bill suggest that estuarine crocodiles could be culled to the point of being considered endangered or critically endangered in Queensland, which has implications, not just for the long-term survival of the species, but also for commercial use, tourism and trade.

The current framework is underpinned by rigorous scientific research and monitoring which informs the management actions undertaken.

International and Commonwealth trade obligations

The Bill does not provide any clear indication that crocodile and crocodile egg harvesting will remain sustainable and also appears to have a fairly open ended approach to killing of crocodiles. Actual or perceived unsustainable harvesting could jeopardise Australia's obligations under the CITES.

This could serve to compromise Queensland's existing crocodile farming industry. This is because the Commonwealth will need to agree to the proposed approach and quota through the State's WTMP. Should the Commonwealth not agree to the proposed approach, and the existing WTMP lapses, the farming industry cannot continue with any export of crocodile products until such time that a WTMP is agreed.

Conservation and welfare

As stated in this brief, estuarine crocodiles are a protected species and listed as vulnerable under the NC Act.

The Bill provides that it prevails over other legislation to the extent of any inconsistency. As such the Bill may override the declared management intent for vulnerable species under the NC Act, which is to reduce the risk of extinction by ensuring take from the wild is not likely to reduce the ability of the animal's population to expand.

There are also concerns that culling activities proposed under the Bill will not be held accountable to the standards for humane treatment of animals under the *Animal Care and Protection Act 2001*.

Any increase in human interactions with wild crocodiles would cause habituation and we would see a significant increase in problem crocodiles because of this. The end result would be an increased threat to humans.

Proposed Queensland Crocodile Authority (QCA)

The Bill proposes that all staff for the proposed Queensland Crocodile Authority (QCA) will reside in Cairns. At present departmental staff are distributed throughout the range of crocodiles in Queensland. Given the large geographic extent of the crocodile's range in Queensland, requiring the staff of the QCA to reside in Cairns would limit their capacity to respond to crocodile sightings and incidents, and may have the effect of increasing distance of deployment, thereby reducing public safety.

Arrangements for funding and resourcing for the QCA are currently unclear. Should it rely on existing departmental allocations as stated in the Bill's explanatory notes, it is unlikely to provide any greater benefit for crocodile management than the current arrangements.

Proposed regulation (permits, licences and other authorities)

The Bill requires that the Minister must within two months after the commencement, table in the Legislative Assembly a document containing proposed subordinate legislation implementing action to achieve the objectives, including providing for licences, permits or other authorities under the NC Act, relating to crocodiles or crocodile eggs.

The exact relationship between the authorities proposed under the Bill and the NC Act is unclear. Other than authorising "commercialised hunting", there is already a well-established authorisation framework under the NC Act that regulates many of the activities highlighted in the Bill, including farming, egg harvesting and problem crocodile removal.

The Bill proposes referring crocodile and crocodile egg offences to the Queensland Police Service. It is unclear how existing conservation officer powers under the NC Act will apply, and why the Queensland Police Service is the preferred entity for the exercise of these powers.

Any increase in people able to keep crocodiles would need to be managed under the Commonwealth Code of Practice on the Humane Treatment of Wild and Farmed Australian Crocodiles, and would take significant ongoing resources to ensure newly authorised keepers are compliant.

Resourcing

Further consideration needs to be given to resourcing implications, including monitoring and compliance and enforcement for the take (culling and hunting) of crocodiles and ensuring the legal, sustainable trade and movement of both wild and farmed specimens, locally and internationally.

The skillset required to safely and humanely undertake crocodile management activities takes a considerable amount of time to bring people up to an acceptable level of competency (two to three years minimum). Outside of the staff in the Queensland Parks and Wildlife Service Northern Wildlife Operations Team, there are very few people who currently have these skills.

If staff in the QCA were responsible for managing permits/licences (currently managed by the Wildlife Assessments Team), additional resources would be required to manage this.

Proposed crocodile sanctuaries

The Bill establishes that the QCA director has the power to declare and manage an area of land as a crocodile sanctuary for the purpose of protecting particular crocodiles in, or relocated to, the sanctuary. The declaration is conditional of persons who have an interest in land providing consent.

The Bill does not provide any further detail about tenure protection mechanisms, what activities will be permitted within a sanctuary, what resourcing will be made available to the QCA to manage the reserves, and whether sanctuaries will bind future successors in title.

Declaration of populated waterways

Protection of members of the public can never be guaranteed, risk is not reduced by simply declaring a waterway and attempting to remove all crocs. This will ultimately breed complacency in the community and thereby increasing the risk

Zero tolerance zones do not reduce risk and will encourage complacency in the community. Members of the public will still not be able to enter the water and recreate, that is, swimming with any increase in safety.