



Saltwater crocodile harvest and ranching in Australia's Northern Territory

Introduction: Species, Use and Trade

The saltwater crocodile *Crocodylus porosus* is a large (up to over 5 m in length) crocodile distributed across northern Australia. It occupies a variety of water bodies along the coastal regions, usually less than 150 km inland from the sea.

It was listed in CITES Appendix II in 1975 then Appendix I in 1979 globally, with the exception of Papua New Guinea. The Australian population was transferred back to Appendix II for ranching in 1985 and later for unrestricted use and trade in 1994. It is assessed as Least Concern in the IUCN Red List. Trade is primarily of skin for high-value leather products.

The Australian populations were severely depleted by uncontrolled hunting during the 1940s to 1960s. The species was protected in 1969-1974 in different States and the Northern Territory (NT), initially with no hunting or other wild take (states and territories have responsibility for most wildlife management measures in Australia). Since the introduction of protection measures and subsequent sustainable use programmes, all populations have recovered significantly. The largest wild stock is in the NT, with an estimated 80,000-100,000 animals older than hatchling stage. Queensland and Western Australia have smaller populations. The NT populations are considered nearly fully recovered and at carrying capacity.

Rural community members, both Indigenous and non-Indigenous, are involved in almost all aspects of crocodile harvesting and trade. Indigenous people are heavily involved in the harvesting of crocodile eggs, constituting around half the collectors. Many rural community members (Indigenous and non-Indigenous) also work on crocodile farms and other related sectors, from collecting and incubating eggs to raising and processing crocodiles for skins and meat. Further, a number of Aboriginal Ranger groups (which have formal, paid conservation responsibilities on Aboriginal land and sea country) are now involved in crocodile management and harvest, with several involved in incubation and crocodile farming themselves (such as the Djelk Rangers at Maningrida and the Arafura Swamp Rangers at Ramingining).

Harvest of crocodiles from the wild in the NT primarily involves collecting wild eggs for ranching (i.e. incubation and rearing in captivity within crocodile farms), with a limited direct harvest of sub-adult/adults. Around 30% of the NT land area is Indigenous land, and over half of the eggs harvested come from these lands. While the main product of crocodile ranching is skins for the luxury leather market, the meat and various other by-products (e.g. skulls as souvenirs, feet with claws as backscratchers, oil, pet food) are also used. Australia (and particularly the NT) is among the world's largest producers of high-quality saltwater crocodile skins.

Wild egg harvesting was introduced in 1983 following the initial population recovery, under an adaptive NT Government programme for the long-term conservation of the species and its habitat

while deriving benefits for the local population of people. The NT Government sets quotas and issues permits to crocodile harvesters and farmers. Over the years, the harvest quota has been regularly reviewed and increased as standardized spotlight surveys have quantified the recovery of the wild population. A limited harvest of subadult/adult crocodiles has been permitted since 1997. Currently (2019) the annual quota is set at 90,000 viable eggs and 1,200 crocodiles.

Most crocodiles are slaughtered and processed locally at a specialist abattoir and the skins are exported with CITES tags for further processing overseas (eg. tanning, dying, manufacturing into final products). High-quality crocodile skin tanning is carried out by only a small number of specialised firms globally. There is a small domestic manufacturing industry.

In the NT, the owner of land on which eggs are collected (private individuals or Aboriginal traditional owners¹) receives a payment for each egg collected. Around 30,000-50,000 eggs per year are harvested from Aboriginal lands.

Women are involved in most aspects of the harvesting of saltwater crocodiles in Australia. While female egg collectors are uncommon, a substantial number of women (including Aboriginal) work in hatcheries or farms, constituting an estimated 20% of workers. Women are also involved in the processing of captive crocodiles for skins and meat, and in the production and sales of crocodile skin products.

Traditional knowledge is an important element of the crocodile harvesting and ranching programme. Indigenous egg collectors are typically local to the area, and they use traditional knowledge to search and locate crocodile nests. Saltwater crocodiles lay eggs during the wet season and nests need to be harvested before the eggs are killed by flooding. Indigenous people often use their traditional seasonal calendars to decide on appropriate times to locate and visit nests.

Livelihood Benefits

Saltwater crocodiles are recognized as a valuable commercial resource, generating income and employment to local communities, both Indigenous and non-Indigenous. The economic value of the crocodile farming industry to the NT as a whole has been estimated to be AUD \$107,000,000 per year (approximately USD 74,600,000).

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 (AUD 20-40 per viable egg (approximately USD 14-28), average AUD 25 (approximately USD 17) 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 (approximately USD 515 000) 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.

Crocodile harvest and the ranching industry also provides local communities with significant opportunities to learn important skills and knowledge on the species and its management. This includes deep, extensive understanding of the natural environment and crocodile biology, technical skills on animal handling and husbandry, operative and management skills of local business dealing with international markets, administration and advocacy within government processes, and so on.

¹ Traditional Owners are the Aboriginal people who hold customary rights and responsibilities in relation to an area of land or sea.

Many Indigenous groups in the NT have strong cultural and spiritual relationships with crocodiles as a totem, and saltwater crocodiles are an important motif in Aboriginal art. Involvement in the crocodile harvest and management builds on and strengthens cultural and traditional knowledge and practices of indigenous people, enabling them to stay “on country” and use traditional skills rather than needing to move to urban areas for jobs. The engagement of Indigenous communities (including ranger groups) with crocodile harvest and broader management entrenches their ongoing connection to the species and land.

Loss of this harvest and trade would have extensive and serious detrimental impacts on remote rural livelihoods, particularly of Aboriginal people, in the NT. Recent moves by some actors in the fashion industry to stop using crocodilian skins – in response to lobbying from animal rights groups - have raised serious concerns about knock-on impacts on these communities. Ecotourism such as river cruises is an additional use of crocodiles as a natural resource for some rural communities, such as the Guluyambi Cultural Cruise on the East Alligator River in the Kakadu National Park. However, the benefits currently derived are a small proportion of those currently obtained from sustainable use of wild crocodile populations, and the potential for meaningful expansion of such tourism across vast and remote areas is limited.

To improve livelihood benefits from the crocodile harvest, more stable demand for crocodile skins by the international market, particularly for skins from sustainable wild-harvested sources, is needed.

Conservation Impacts

Wild crocodile populations have steadily increased in the NT under sustainable harvesting (see Fig 1). The incentives generated by the wild harvest are a key factor in winning public and political tolerance for re-establishment of a large and healthy wild population, and hence a significant contribution to conservation. Saltwater crocodiles are dangerous predators, and regularly kill both people and livestock. Without the crocodile industry and the jobs and other social benefits it provides, local communities would be much less tolerant to crocodiles being around human settlements. Extensive wetlands are now highly valued and protected by landowners to ensure an annual supply of eggs. This motivates not only habitat retention, but active habitat management for crocodiles through means such as control of feral pigs and invasive plants that damage wetland habitats. Further, the involvement of Indigenous ranger groups in harvest programs, as both harvesters and regulators, has built and strengthened community-based wildlife management on Aboriginal lands.

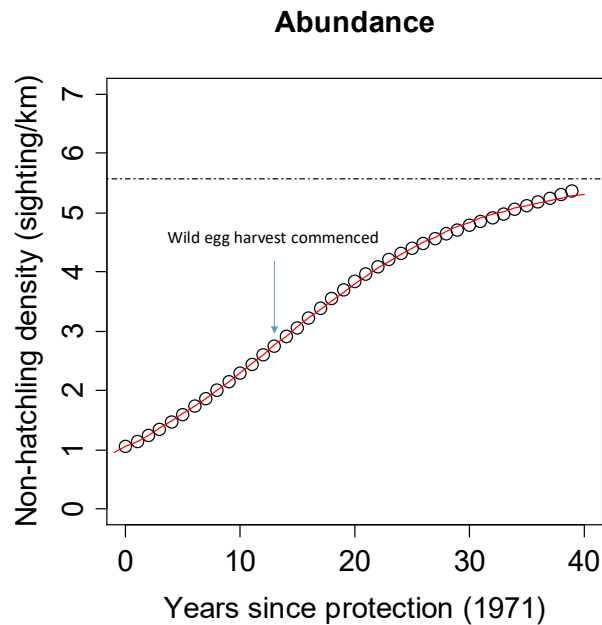


Fig 1. Increase in NT wild saltwater crocodile abundance since legal protection in 1971 and establishment of a sustainable use program in 1983 (reproduced from Fukuda *et al.* 2011).

Lessons for CITES implementation: Challenges, Successes and Failures

Key factors that have made trade in CITES-listed species work in this case are:

- the strong and cooperative roles played by multiple stakeholders, including traditional Aboriginal communities, indigenous support organisations, landowners, and the Northern Territory Crocodile Farmers Association;
- strong NT and Commonwealth government oversight and management, including development of a robust, strictly observed Management Program for the Saltwater Crocodile by the NT Government, approved by the Commonwealth Government (reviewed every five years), involving consistent monitoring;
- generation of revenues through good prices for the consistently high-quality skins produced by the NT, and equitable benefit-sharing between harvesters, farmers and landowners, providing clear incentives for conservation of species and habitat;
- building of wildlife management capacity in remote, Indigenous communities;
- sound market strategies to sustain and build the industry that underpins this conservation approach;
- a strong history of commitment in the Management Program to monitoring and research.

There have been failures or weaknesses in management at some points. Between 2005 and 2007, the Northern Territory Government lost its functionality in monitoring and regulating the crocodile harvest programme. As a result, crocodile eggs were harvested in a number higher than the annual quota set by the management programme (25,000 viable eggs). Although the overharvesting had no detectable impact on crocodile populations, it caused significant confusion and inconvenience to the stakeholders. This triggered the governments and industry to revise and re-form the entire programme. The management programme since then has been improved considerably.

A key current threat to this example of sustainable use and livelihoods, however, are the recent moves in the fashion industry to stop using wild reptile skins, apparently in response to animal rights lobbying campaigns. Such moves would undermine Aboriginal livelihoods and social tolerance for large saltwater crocodile populations.

Key Resources

Austin, B & Corey, B (2012). Factors contributing to the longevity of the commercial use of crocodiles by Indigenous people in remote Northern Australia: a case study. *The Rangeland Journal*. 34. 239. 10.1071/RJ11082.

Corey B, Webb GJW, Manolis C, Fordham A., Austin B., Austin B, Fukuda Y, Nicholls D, & Saalfeld K (2017). Commercial harvests of saltwater crocodile eggs by Indigenous people in northern Australia: lessons for long-term viability and management. *Oryx*, 1-12.

Fukuda Y, Webb G., Manolis C, Delaney R, Letnic M, Lindner G & Whitehead P (2011) Recovery of Saltwater Crocodiles following unregulated hunting in tidal rivers of the Northern Territory, Australia. *Journal of Wildlife Management* 75(6): 1253-1266.

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