

POLICY STATEMENT NO. 24

CONSERVATION AND MANAGEMENT OF
CROCODILES

JUNE 1993

1. BACKGROUND

Both of the crocodile species which occur in Australia are found in the north of Western Australia. They are the Estuarine or Saltwater Crocodile *Crocodylus porosus* and the Freshwater or Johnston's River Crocodile *C.johnstoni*.

In Western Australia the Saltwater Crocodile is found from the Northern Territory border to the Broome area, and in recent years has been found in the vicinity of Port Hedland in the Pilbara region. It inhabits coastal rivers and swamps, often occurs in the open sea and around islands, and extends well inland via major rivers and floodplain billabongs into freshwater rivers, creeks and swamps. It is concentrated in the tidal portions of large rivers where mangroves are plentiful, however Saltwater Crocodiles may occur in any salt or fresh water within their known range. Furthermore, individuals have occasionally been recorded very long distances from areas in which they are normally found.

It has been estimated that approximately 25,000 Saltwater Crocodiles were harvested in Western Australia for the skin trade from 1946 until they were legally protected in April 1970. While the pre-harvest population size is unknown, the Saltwater Crocodile apparently suffered a decline in numbers throughout its range, including Western Australia, due to over harvesting. Surveys in 1977-78 resulted in the total Western Australian non-hatchling population being estimated to number about 2,500 non-hatchlings. The proportion of large (>1.8m) Saltwater Crocodiles in the population increases from 20% in 1977-78 to 40% in 1986. Nesting habitat in Western Australia is limited in comparison with the Northern Territory.

Further surveys of Saltwater Crocodile populations and nesting activity in various parts of the Kimberley have been conducted in 1989 and subsequently, because of the commencement of crocodile farming in Western Australia.

Saltwater Crocodiles feed on crustaceans, fish, reptiles, birds and mammals, and are dangerous to humans. Courtship and mating begin in the late dry season, and nest construction and egg-laying (c.50 per nest) occur in the wet season. About 80% of mature females nest annually. The peak of hatching occurs around March in the Kimberley. Adult females typically remain close to the nest, and may actively defend it, throughout incubation (c.three months), and they excavate the nests when hatchlings begin calling from them. Subsequently creches are formed and the female may remain with the hatchlings for up to two months. Saltwater crocodiles grow slowly, with males reaching maturity at about 3.4 metres total length and 16 years of age and females about 2.3 metres total length and 12 years. They may live as long as about 70 years.

There is a high mortality of eggs due to flooding of nests, raiding of nests by predators, destruction of nests through trampling by introduced herbivores, and high temperatures. Furthermore, nesting habitat may be degraded by introduced herbivores. There is also a high mortality among hatchlings and sub-adults. The probability of a Saltwater Crocodile reaching adulthood has been estimated at less than 1%.

The Freshwater Crocodile is widespread in the Kimberley wherever there is suitable habitat. The area of most extensive habitat is considered to be the high rainfall north-west Kimberley, and it also extends well inland along the two largest river basins, the Ord and the Fitzroy. It generally inhabits the non-tidal freshwater reaches of rivers, and permanent lagoons and billabongs.

A market for Freshwater Crocodile skins was established in 1959 and commercial hunting followed, but the Freshwater Crocodile had been legally protected in Western Australia since 1958. Although no intensive legal hunting of Freshwater Crocodiles ever took place in Western Australia, there was no significant poaching in accessible habitat during the 1960's and early 1970's, but populations in the north-west Kimberley were not affected by hunting because of the rugged, inaccessible nature of the country. There are no published estimates of the numbers killed in Western Australia for the skin trade.

Freshwater Crocodiles feed on fish, frogs, crustaceans, and small reptiles, birds and mammals. Nesting occurs towards the end of the dry season and about 13 eggs are laid, although clutch size varies, in sand or other friable substrates close to water. Incubation times vary between about 65 and 95 days, and there is a high mortality of eggs and hatchlings. Hatchlings congregate in creches, and adult females often remain with them. Females mature at about 12 years of age, and males at about 17 years.

There has not been a survey of the total Western Australian Freshwater Crocodile population, but it is considered to be common in suitable habitat. In particular, surveys conducted in 1989 because of the commencement of crocodile farming in Western Australia confirmed that it is abundant in Lake Argyle (population estimated at 25,000 non-hatchlings). Lake Kununurra (7,500) and in the Fitzroy River system (13,000 in 172km of the Fitzroy River and in some of its tributaries and Seventeen Mile or Camballin Dam). A 1992 survey yielded an estimate of more than 2,000 in the Ord River between the Diversion Dam and 90km downstream of the Dam.

Larger crocodiles of both species face threats from accidental drowning in fishing nets and illegal shooting.

Saltwater and Freshwater Crocodiles are protected under the Wildlife Conservation Act and may not be killed or taken from the wild, or kept in captivity, without a licence. Both are declared 'in need of special protection' pursuant to the Act.

Following the depletion of many crocodylian populations around the world as a result of uncontrolled hunting for the skin trade, international trade in their products was restricted through the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, an international treaty to which some 118 nations including Australia are now signatory) and through the domestic controls of various nations (e.g. the Australian Government banned exports in 1972). International trade in products of certain crocodylian species is now permitted subject to strict controls established under CITES.

Whether there can be "legal" (in terms of CITES) international trade varies according to the species or population of crocodylian concerned, i.e. whether it is on CITES Appendix I which essentially prohibits commercial trade unless specimens are derived from animals bred in captivity, or Appendix II which permits commercial trade using animals taken from the wild, subject to controls. There has been considerable growth in the number of crocodile farms around the world, and in more recent years various ranching operations and trade in products derived from the culling of wild populations, for which quotas are set, have been sanctioned by CITES.

Ranching is defined as the rearing in a controlled environment of specimens taken from the wild, for the purpose of trade. In order to be eligible for CITES approval, the ranching scheme must be beneficial to the wild populations and the products of it must be marked so that they may be distinguished from the products of other populations of the same species on Appendix I. In practice, ranching usually involves taking eggs or hatchlings from the wild and rearing them in captivity, resulting in both a higher level of survival than would normally occur in the wild, and a lesser impact on wild populations than would result from a harvest of adults or sub-adults. The Australian Saltwater Crocodile population was transferred from Appendix I to Appendix II of CITES in 1985 under a ranching scheme. The Freshwater Crocodile is listed on Appendix II of CITES under the family listing *Crocodylidae* spp.

In Australia crocodile farms have been established in the Northern Territory and Queensland for a number of years. Crocodile farming was also attempted in Western Australia in the 1970's but was not successful. In 1988, in response to interest being expressed in establishing a crocodile farming industry in Western Australia and following an analysis of data on crocodile populations in the State, the Western Australian Government decided to allow crocodile farming and three farms are now licensed. Products from crocodile farms include skins, meat and souvenir items. Farms can also operate as tourist attractions.

Export overseas of crocodile products must be in accordance with the Commonwealth Wildlife Protection (Regulation of Exports and Imports) Act 1982, which requires essentially that the products must be either from animals taken in accordance with a management program approved under the Act or from animals which are bred in captivity. The regulations under that Act specify stringent requirements for approved management programs and breeding in captivity. The Northern Territory approach involves ranching and a management program approved by the Commonwealth Minister, whereas the Queensland approach is based on breeding in captivity.

A key element of the Department's approach is to build and maintain broad community support for the protection of wild crocodiles and their wetland habitats. To do this in the case of a dangerous animal such as the Saltwater Crocodile, one approach is to make it a valuable asset, both as a renewable resource and a tourist attraction. Through its adoption of the ranching approach the Northern Territory Government has deliberately sought to give wild Saltwater Crocodiles and their habitat commercial value by making them integral parts of crocodile farming and therefore enhancing their value to the community. The Western Australian Government has adopted the ranching approach to crocodile farming.

Because of the danger which Saltwater Crocodiles pose to humans, an active campaign of public education and awareness is essential. The need for such a campaign will increase because of the increasing human population inhabiting the Kimberley and increasing tourist visitation. The campaign needs to promote safe behaviour in crocodile habitat and to place the onus on people to behave responsibly. While Freshwater Crocodiles generally are not dangerous, there have been instances of injuries to people, and small children and pets may be at risk.

Zoning of Saltwater Crocodile habitat is also necessary. However, because of the Department's limited resources, the extent of Saltwater Crocodile habitat, the relatively small number of towns and settlements involved, the consequent lack of need for widespread reduction or elimination of crocodiles and the desire to conserve Saltwater Crocodiles throughout as much of their range as possible, a policy of removal of all Saltwater Crocodiles will be pursued only in a few selected areas where effective control can be achieved. Provision will be made for the removal of "problem" crocodiles in other areas, However the Department will not use or promote the notion that any area within the range of the species can be guaranteed to be "crocodile-free", as this would create a false sense of security.

Section 23(1) of the Wildlife Conservation Act provides that Aboriginals may take fauna for food for themselves and their families, without needing a licence issued under the Act. This provision applies to Crown land or any other land, other than nature reserves, but where land is owned or occupied the consent of the owner or occupier is required. National parks and other lands managed by the Department are "occupied" lands for this purpose. However, by Wildlife Conservation Regulation 63, the operation of Section 23(1) of the Act has been indefinitely suspended in relation to crocodiles , because both species are declared to be in need of special protection. Therefore crocodiles may be taken legally only under licence. Crocodile eggs and meat are traditional foods for Aboriginal people.

Considerable research has been conducted into the biology and status of Saltwater Crocodiles in northern Australia, particularly in the Northern Territory. Less research has been conducted on Freshwater Crocodiles. There is a need for further research on crocodiles in Western Australia, with emphasis on population assessment and monitoring (i.e. distribution, abundance, recruitment and population structure), and management of crocodile populations and their interaction with human activities.

2. OBJECTIVE

To conserve crocodiles in the wild in Western Australia, while at the same time maintaining as high a level of public safety as possible, and to provide for the commercial farming of crocodiles.

3. POLICY

The Department will:

- 3.1 seek to maintain viable populations of crocodiles throughout appropriate areas to maintain the estuarine and wetland habitats on which they depend;
- 3.2 seek to facilitate the recovery of Saltwater Crocodile populations which have been depleted by past harvesting, in appropriate areas;
- 3.3 seek to establish and maintain staff and resources in the Kimberley to implement this policy;
- 3.4 monitor crocodile distribution, abundance, recruitment and population structure;
- 3.5 monitor and act upon threats to crocodile populations;
- 3.6 maintain a high level of public awareness of crocodile conservation values, distribution, habits and dangers and educate people concerning safe behaviour in crocodile habitat;

- 3.7 within the limitations of staff and resources, react to the legitimate concerns of people about the "problem" crocodiles;
- 3.8 establish and manage an adequate system of conservation reserves for crocodiles;
- 3.9 provide for the commercial farming of crocodiles in accordance with Government policy and subject to appropriate controls;
- 3.10 prohibit the commercial harvesting of wild crocodiles, other than as provided for in approved farming and ranching operations;
- 3.11 carry out, cause to be carried out or promote research on crocodiles as necessary.

4. STRATEGIES

To accomplish the Department's objective and policy, the following strategies will be implemented:

- 4.1 Subject to the provision of staff and resources by Government, the Department will seek to establish, equip, train and maintain staff in the Kimberley to implement Departmental policy and strategies.
- 4.2 The Department will seek to establish and manage a system of conservation reserves that protect adequate areas of crocodile habitat, including:
 - Ord River Nature Reserve (including the False Mouths of the Ord), and the proposed marine nature reserve in the lower reaches of the Ord and waters adjacent to the False Mouths;
 - Parry Lagoons Nature Reserve;
 - proposed Packsaddle Swamps reserve;
 - proposed Lake Argyle and Carr Boyd Range National Park;
 - Drysdale River National Park;
 - Prince Regent Nature Reserve and the proposed extension to it (proposed to become national park);
 - proposed marine park in St George Basin;
 - proposed marine park in Prince Frederick Harbour;
 - proposed Walcott Inlet National Park and marine park;
 - proposed Lawley River National Park and marine park;
 - Purnululu (Bungle Bungle) National Park and conservation reserve;
 - Geikie Gorge National Park;
 - Windiana Gorge National Park;

- proposes Mt Hart National Park.

Details of most of these areas are provided in Nature Conservation Reserves in the Kimberley (A.A. Burbidge, N.L. McKenzie and K.F. Kenneally. 1991. Department of CALM).

- 4.3 The Department will seek to identify priority areas for the application of specific conservation measures such as netting controls and protection of nesting habitat against damage by introduced animals.
- 4.4 Crocodiles will be completely protected on lands and waters managed by CALM, except in the case of problem crocodiles (see 4.7 below) and where permission is given either to Aboriginals to pursue traditional hunting activities or for the taking of crocodiles for scientific purposes. Crocodiles are also protected elsewhere and may be taken only with the appropriate licence.
- 4.5 Saltwater Crocodile habitat will be zoned as follows:

- 4.5.1 Crocodile Control Zones will be areas around selected centres of human population or activity. They will be areas where effective control is possible, taking into account the availability of staff and resources and the potential for re invasion by Saltwater Crocodiles. The aim will be to remove all Saltwater Crocodiles, regardless of size, that enter the area. However, a Crocodile Zone does not guarantee that an area is "crocodile free" and therefore absolutely safe, but it seeks to significantly reduce the risk of attack.

The following areas will be zoned as Crocodile Control Zones:

- three areas in the Pilbara region:
 - Cape Keraudren to Point Poolingerina;
 - within 15km of Finucane Island and Port Hedland;
 - west and south-west of Cossack;
- Broome area, from Barred Creek (35km north of Broome) south to Fall Point (10 km east of Broome) inclusive;
- Ord River, upstream of the Diversion Dam (i.e. including Lake Kununurra and Lake Argyle).

- 4.5.2 Crocodile Management Zones will be areas where Saltwater Crocodiles may be managed as a renewable resource through ranching. Crocodile Management Zones would normally include only private property or pastoral lease, but may be declared over Aboriginal reserves with the agreement of the relevant community. The Department will specify the numbers and age-classes which may be taken and the localities from which they may be taken.

A Crocodile Management Plan Zone will be defines within the Cambridge Gulf and its associated river systems, but will not include existing or proposes conservation reserves.

4.5.3 Crocodile Protection Zones will be all areas not zoned as Crocodile Zones or Crocodile Management Zones and will include all national parks, nature reserves, marine parks and marine nature reserves.

4.6 Given that the objective in a Saltwater Crocodile Control Zone is the removal of any Saltwater Crocodile as soon as possible after its presence is known:

- within the limitations of staff and resources, CALM will investigate, as quickly as possible, reports of Saltwater Crocodiles in Crocodile Control Zones;
- whenever practical such animals will be caught alive and relocated to crocodile farms or crocodile parks (because of their homing tendencies, it is generally impractical to relocate these animals in the wild);
- however, because of the unacceptable risk to public safety in Crocodile Control Zones, CALM officers may destroy any Saltwater Crocodile in a Crocodile Control Zone whenever it is deemed necessary;
- whenever necessary, persons other than CALM officers may be authorised in writing to remove Saltwater Crocodiles from Crocodiles from Crocodile Control Zones.

4.7 Within the limitations of staff and resources, the Department will implement and maintain an active program Saltwater Crocodiles. Problem animals are defined as animals within or near settled areas or areas of human use (e.g. for recreation) and which present a threat to humans, and animals which are attacking livestock. Decisions on problem animals will be made by the Department on a case by case basis, having regard to whether the risk associated with not removing the animal is acceptable so long as people behave in a responsible manner. Whenever practical such animals will be caught alive and relocated to crocodile farms or crocodile parks. In other cases they may be destroyed by CALM officers or by other persons authorised in writing by CALM. The decision to remove a problem animal will take account of where it occurs:

- in a Crocodile Control Zone all Saltwater Crocodiles are, by definition, problem animals and will be removed;
- in national parks and marine parks, where humans use and recreation are provided for and encouraged, removal will normally be permitted only where human safety is endangered in areas of established recreational use;
- in nature reserves and marine nature reserves, which are declared primarily for nature conservation purposes, removal will be permitted only in very exceptional circumstances.

Within these criteria, particular emphasis will be given to problem Saltwater Crocodiles at Wyndham, Derby, Aboriginal settlements and popular recreational areas along the Ord and Fitzroy Rivers.

4.8 Any person (other than CALM officers) authorised to take problem Saltwater Crocodiles pursuant to 4.6 and 4.7 above will be required to do so in accordance with a Regulation 4 'Licence to Take Dangerous Fauna'. Wherever appropriate (e.g. where a licence is requested to cover short-term activities in a remote area), the licence conditions will require that scaring be attempted. rather than killing.

4.9 The Department will provide for the development and operation of a crocodile products industry in Western Australia in accordance with Government policy and the Wildlife Conservation Act, and bases upon the following considerations:

- the Department will licence operators in the industry to farm and process crocodiles and trade in their skins and other products;
- licensed operators will be subject to appropriate controls including the keeping of records, provision of returns, and tagging/marking of parts and products;
- farms will be encouraged to maximise captive breeding, in addition to which the ranching approach to crocodile farming will be adopted with respect to the harvesting of eggs and hatchlings from the wild, and harvesting of adult and juvenile crocodiles for farms may also be permitted;
- the ranching approach will be kept under review and the Department will recommend that it be discontinued if monitoring indicates that wild crocodile populations cannot sustain ongoing harvesting, particularly in the case of Saltwater Crocodiles given their relatively low population levels;
- all taking of crocodiles from the wild for farming will be subject to licences issued by the Department, stipulating numbers, age-classes and localities so that the conservation status of the two species is not jeopardised;
- overseas export of products will be in accordance with a crocodile management program approved by the Western Australian Minister responsible for the Wildlife Conservation Act and by the Commonwealth Minister responsible for the Wildlife Protection (Regulation of Exports and Imports) Act, and in accordance with CITES;
- once a management program is approved, all taking of crocodiles from the wild for farming will be in accordance with the management program;
- farms will be required to accept problem Saltwater Crocodiles as stipulated by the Department and subject to such conditions as the Department may impose with respect to use of the animals for breeding and their disposal, and subject to agreement with respect to payment of a fee or any costs incurred by the Department for capture and transport;
- it will be the responsibility of the industry to make a significant contribution to the costs of satisfying State, Commonwealth and CITES requirements (e.g. for ongoing monitoring) and appropriate licence fees and royalties will be imposed.

4.10 The Department will maintain an active, ongoing program of public education and awareness, directed towards both residents and tourists. Emphasis will be placed on the importance of and reasons for crocodile conservation. The Department will make use of a range of techniques and avenues which may include the following:

- literature (e.g. posters, brochures and drink coasters), videos (e.g. Northern Territory Conservation Commission documentary "Living with Crocodiles") and slide kits;

- media releases, feature articles, advertisements and announcements, directed towards Kimberley and State-wide media (newspapers, newsletters, tourism publications, radio and television), at appropriate intervals and particularly at the onset of the Saltwater Crocodile breeding season and the Kimberley tourism season;
 - warning signs at sites frequented by people within Saltwater Crocodile habitat (e.g. boat ramps, river crossings, camping grounds) and sale of warning sign replicas as souvenirs;
 - talks to school, service club, community and tour groups;
 - displays at town and agricultural shows.
- 4.11 The Department will implement procedures for dealing with fatal and non-fatal attacks on humans, pets and livestock, and will maintain records of all attacks and other incidents.
- 4.12 The establishment of crocodile parks will not be encouraged in an area where there is already a farm that is open to the public. The distinction between a crocodile farm and crocodile park is that the former raises crocodiles for the skin and meat trade and may be open to the public, while the latter is a wildlife park specialising in the display of crocodiles to the public but it does not raise crocodiles for their commercial products.
- 4.13 The keeping of crocodiles in private or hobby collections is inappropriate (e.g. because of the potential dangers and animal welfare considerations) and no licences will be issued.
- 4.14 The Department will liaise with Commonwealth, State and Northern Territory wildlife authorities, local government and other relevant authorities and groups on appropriate matters including research and monitoring, commercial utilisation, enforcement and joint strategies for public information and education.
- 4.15 The Department will encourage the promotion of crocodiles in their natural habitat as a tourist attraction, provided that safe behaviour is observed.

Syd Shea
EXECUTIVE DIRECTOR

Distribution Lists: A, B, D, E and L