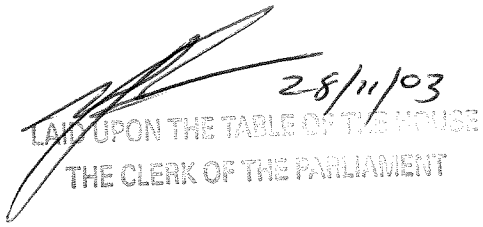
Code of Practice

Wildlife

Crocodile farming



Code of Practice
- Crocodile farming

Nature Conservation Act 1992

Environmental Protection Agency
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Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

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Prepared by the EPA in consultation with the Australian Crocodile Industry Group (and members), the then Queensland Wildlife Parks Association (now Australasian Regional Association of Zoological Parks and Aquaria Queensland), and specialist officers of the Department of Primary Industries (including those of the Bureau of Animal Welfare) and the then Department of Training and Industrial Relations (Division of Workplace Health and Safety).

Approved by the chief executive of the EPA in accordance with section 174A of the *Nature Conservation Act 1992* on 12 November 2003 and notified in the gazette on 21 November 2003.

The administering agency is the EPA, 160 Ann Street, Brisbane, PO Box 155, BRISBANE ALBERT STREET QLD 4002.

1. Introduction

This code is for use by people responsible for the welfare and husbandry of estuarine or saltwater crocodiles (*Crocodylus porosus*) and freshwater crocodiles (*Crocodylus johnstoni)* that are maintained in captivity for closed-cycle captive breeding and production of products such as meat, leather and taxidermied whole or part specimens. Unless a licence has been granted under the *Nature Conservation Act 1992*, it is illegal to capture wild crocodiles in Queensland.

Any person or organisation proposing to farm crocodiles must be prepared to do considerable research into various aspects of crocodile husbandry and farming. The Environmental Protection Agency (EPA) will only consider fully documented and soundly based proposals for crocodile farming.

This document is an interim code under the *Nature Conservation Act 1992*, and may be repealed by legislation relating to the farming of wildlife, which is being considered by the Queensland Government.

The crocodile farming industry is evolving rapidly and it is inevitable that stock-handlers will encounter circumstances not covered by this code. When this occurs, commonsense should prevail, and handlers should use their previous experience with stock to ensure crocodiles are handled humanely.

If crocodile exhibition is conducted or intended as part of a crocodile farm or farming proposal, s4(g) and s11 of this code should be read carefully and applied.

2. Definitions

In this code of practice:

'Chief Executive' means the Director-General of EPA.

'crocodile' means a crocodile of the species *Crocodylus porosus* or *Crocodylus johnstoni..*

'closed-cycle captive breeding' means a regime for breeding crocodiles that —

a) is maintained without relying on augmentation of crocodiles from the wild;

b) is managed to be demonstrably capable of reliably producing second-generation offspring;

c) maintains an environment that is managed by farm personnel to produce offspring and has a perimeter boundary that is designed and managed to prevent the unintended entry, departure, introduction or removal of crocodiles.

'crocodile farm' means a closed-cycle captive breeding establishment that is managed so that crocodiles have artificial housing, veterinary care, artificially supplied food and protection from predators. The proprietor of a crocodile farm must hold a Wildlife Farming Licence issued under the Regulation.

'crocodile farming' means the closed-cycle captive breeding and keeping of crocodiles in captivity intended for producing for sale products such as skins, meat, oil and claws.

'crocodile ranching' means the removal from the wild of crocodile eggs and/or juveniles for growth in a farm, often for the purpose of slaughter, and the manufacture for sale of products such as skins, meat, oil and claws.

'Agency' means the Environmental Protection Agency.

'the Regulation' means the *Nature Conservation Regulation 1994.*

Other terms are defined in the Act and the Regulation.

3. Purpose of code

3.1 The purpose of this code is to assist in the:

a) establishment of husbandry principles and management practices ensuring the welfare of crocodiles in captivity;

b) promotion of an understanding of the health and nutritional requirements of farm crocodiles;

c) continued development of live crocodile exhibits that promote public understanding of the value of crocodiles in the wild;

d) clarification of administrative procedures of the Agency which must be met in order to establish a new crocodile farm; and

e) compliance with any legislative requirements of the State or the Commonwealth relating to crocodile farming.

4. Farm establishment procedures

Farming ventures are to meet the present requirements of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) regarding closed-cycle captive breeding.

Ranching, when permitted in Queensland, should be undertaken in conjunction with established farms.

The Agency requires proponents to submit a detailed economic feasibility study, prepared by a qualified person, relating to the establishment of a crocodile farm.

This economic feasibility study should identify projected cash flows and the proponent's financial capacity to meet both establishment and operational funding. It should also identify an adequate source of income to support the proponent until the facility yields a return, which may take 10 years or more.

Other factors to consider in the study include proposed development stages, management structures and staffing, anticipated annual operational costs, and a detailed analysis of anticipated markets for products.

In addition to the economic feasibility study, the proponent is required to supply the following information to the Agency.

a) The proposed source of stock from legally held captive populations. Crocodiles are protected wildlife in Queensland and must not be removed from the wild for commercial farming purposes.

   Licensed zoos and crocodile farms may be invited to participate in crocodile management procedures to remove problem *C. porosus* from selected locations. Such occurrences are not common and must not be relied upon to provide stock for a crocodile farming venture.

   The proponent is to identify the anticipated total number of stock required plus, age and sex ratios (in total and by pen grouping).

b) Details of staff expertise in the handling and husbandry of crocodiles. Past work experience in crocodile farms would be an advantage. Farm managers should address training needs for crocodile handlers and implement procedures that comply with the *Workplace Health and Safety Act 1995.*

   Animals are to be kept under the supervision of a qualified veterinary practitioner or zoologist. This requirement may be met by retaining a visiting veterinary practitioner.

c) Details of the projected annual requirements and sources of food supplies. Proposed dietary composition is also required.

d) Anticipated disease control measures and quarantine facilities.

e) A site analysis report, including proposed farm location, area, land tenure, and property description. An engineer's report on site suitability will also be necessary if the area is subject to flooding.

f) Two copies each of professionally prepared, to-scale plans of the proposed site and of the proposed animal holding structures. The plans are to include design specifications and material lists of all site works and infrastructure. This is to include all lagoons, buildings, pens, nurseries and incubators, sheds, food preparation rooms, water supplies, pedestrian access (if open to the public), and security fencing details.

   All zoning and plans must be in accordance with and approved by the local authority.

g) If it is proposed to open part or all of the farm for display to the public, the proponent is to comply with the *Code of Practice of the Australasian Regional Association of Zoological Parks and Aquaria Queensland, Part E, 'Australian Crocodiles and American Alligators'*.

It is recognised, however, that certain crocodile farm operations may result in areas of a farm not meeting all display standards set down in the above code. Such areas may, nonetheless, be of interest to the public and may provide an educational experience. In these circumstances, such areas must be designated 'off display' to the public, unless visitors are accompanied by farm guide personnel who undertake educational interpretation of those farm operations.

5. Basic crocodile welfare requirements

5.1 The basic requirements for the well-being of farm crocodiles are:

a) appropriate and sufficient food and water to sustain health and vitality;

b) sufficient area to maintain well-being and to allow crocodiles to exhibit normal behaviour;

c) protection from predation;

d) protection from disease, including disease that can be exacerbated by management;

e) protection from extremes of climate, particularly during certain phases of their lives; and

f) protection from pain, distress, suffering and injury.

6. Perimeter fencing requirements

6.1 The function of a perimeter fence is to:

a) prevent the escape of farm crocodiles from the farm complex in the event of escape from internal enclosures;

b) prevent the entry of potentially damaging animals;

c) deter the unauthorised entry of people intent on vandalism towards farm crocodiles; and

d) in the case of potentially dangerous animals, deter the unauthorised entry of people who may subsequently suffer injury or death.

6.2 The licence holder must at all times maintain the fencing to a standard of security which meets the purpose of its construction. Fencing should be closely monitored to detect any corrosion in metal components.

6.3 The area of a licensed crocodile farm, or that part of a licensed crocodile farm on which crocodiles are farmed, must be enclosed by a perimeter fence.

6.4 The perimeter fence must be constructed to a minimum height of 1.8m, except where, in the opinion of the Chief Executive, the conditions of confinement (e.g. topography) require that a specified section or sections of the fence should be of greater height, in which case the minimum height of such section or sections may be required to be higher.

6.5 The perimeter fence must be constructed of:

a) line posts of pressure-treated pine, hardwood, metal or such other material of adequate strength and durability, which must be placed at a minimum depth of 600mm in the ground and a maximum spacing of 4m between line posts;

b) strainer posts of pressure-treated pine or hardwood of a minimum diameter size of 200mm, or of metal or such other material of equivalent adequate size, strength and durability, which must be placed at a minimum depth of 900mm in the ground and braced;

c) chain mesh, welded mesh or such other wire of equivalent strength, which must be properly strained and affixed to the line posts to the side of the fence; and

d) concrete or galvanised wire mesh (or other approved material of equal resilience), footing wall, which extends at least 500mm into the earth to which the fence is attached or embedded along its length.

6.6 The perimeter fence must be constructed in a manner that prevents the movement of crocodiles into or out of the licensed crocodile farm.

Note: Other fence construction arrangements will be considered by the Chief Executive if the proponent can demonstrate their structural and functional adequacy.

6.7 The perimeter fence must incorporate sufficient gates for the efficient operation of the licensed crocodile farm. These gates must be constructed to the same height as the perimeter fence, from the same or similar material and in the manner specified in 6.4 to 6.6 above.

Internal fencing requirements where crocodiles are on display to visitors

6.8 Public safety is paramount. All enclosures within the perimeter fence that may be accessed by visitors should be fenced to comply with the requirements of the *Code of Practice of the Australasian Regional Association of Zoological Parks and Aquaria Queensland, Part E, 'Australian Crocodiles and American Alligators'.*

7. Housing

Farms must have buildings and management systems that meet the requirements dictated by four basic standards of care for crocodiles:

a) good incubation and neonatal treatment;

b) maintenance of a high metabolic rate;

c) elimination of stress; and

d) adequate nutrition.

7.1 General

7.1.1 People intending to erect new housing and yards, or to modify housing that has been used for other species, should seek advice from the Fisheries Branch of the Department of Primary Industries or other organisations with appropriate expert knowledge.

7.1.2 The type of housing and yard dimensions required by crocodiles will vary with the geographic location of the crocodile farm, the age of the crocodiles, the management practices to be employed and the stocking density. The stocking density should be reviewed regularly and adjusted, taking into account the age of the crocodiles, the pen conditions, the behavioural needs of the crocodiles and the likely occurrence of disease.

7.1.3 All crocodiles need to be protected from climatic extremes, and crocodiles kept in pens, or an extensive impoundment, should be provided with adequate shade and protection from the elements.

7.1.4 All crocodiles must have unlimited access to clean water.

7.1.5 Pens must be constructed to prevent movement of crocodiles into or out of enclosures.

7.2 Breeding facilities

7.2.1 Breeding facilities for *C. porosus* must be designed to reduce interaction between breeding males and other males, and between breeding females and other females. A minimum area of 25sq.m per breeding pair is required in a complex pen habitat, or separate pens should be provided.

Comment:

The two most common breeding systems used on crocodile farms are large communal pens, typically with multiple females and males in large ponds, and/or small breeding enclosures with one male and one to five females. The proportion of adult females that nest in large communal pens varies from year to year, and this may reflect general ambient weather conditions (the same variation occurs in the wild) as well as other factors (food, pen design, stress, etc.). In small breeding groups, mixed results have been obtained. Pen design, water quality, and food may be far more important than hitherto realised. The pens should be partly subdivided so that the male and female can separate from each other, they should be visually isolated from adjacent pens, and they should have constant water levels and water at least 1–1.2m deep.

7.3 Handling

7.3.1 Excessive or rough handling of eggs is to be avoided.

Comment:

Eggs should be carefully removed from the nest, preserving their orientation in the horizontal plane. A pencil line drawn along the top of the egg will allow orientation to be maintained.

7.3.2 Where possible, eggs should be collected and moved as soon as possible after laying — ideally within the first 24 hours.

Comment:

Eggs can be successfully collected and transported at any stage of development, although more care is needed between eight and twelve days after laying.

7.3.3 Regardless of embryo age, the eggs must not be overheated or dehydrated during collection and transportation.

Comment:

Temperatures around 30o C or less will not cause problems, whereas temperatures of 34o C or more are more likely to do so. Eggs should not be kept in dry, exposed positions where they are likely to dehydrate.

7.4 Incubation

The incubation environment is extremely important. The three major variables of the incubation environment are temperatures, humidity and gas exchange.

7.4.1 Eggs should be incubated at constant temperature between 30o C and 33o C. Within this range, 32±0.5o C is usually considered optimal for post-hatching growth.

7.4.2 Crocodilian eggs need to be incubated under conditions of high humidity (99+%), but should not be incubated in direct contact with water. Availability of air to eggs should not be restricted.

7.4.3 A wide variety of incubators is used successfully for crocodile eggs, and no single system is recommended. Eggs are typically laid out on racks, and humidity is maintained by pumping air through a reservoir within the incubator (i.e. temperature is maintained precisely and humidity and gas exchange are maximised).

7.5 Neonatal treatment

7.5.1 Hatchlings must always be treated gently.

Comment:

In general, hatchlings should immediately be subjected to the conditions they will experience later, and these should be unchanging. With *C. porosus*, transferring hatchlings directly from the incubator to the raising pens at 32o C gives high survival and growth rates.

7.5.2 Crocodiles should be held at temperatures above 32o C.

Comment:

Temperature affects the metabolic rate of crocodilians and, by and large, their environment determines their temperature.

7.5.3 Obvious stimuli, such as inordinately high or fluctuating temperatures, dehydration, noise, movement and handling, should be avoided.

Comment:

There are three principal approaches to coping with disturbance stress in commercial production. In the first, artificial screens are provided, often low over the water, to take advantage of the hatchling's natural desire to find cover, under which it feels secure. In the second, the animals are reared in reduced light, isolated from many stimuli. In the third, the animals are acclimatised to disturbance through constant background music or other noise and activity.

7.5.4 Hatchling and juvenile crocodiles must be provided with adequate nutrition.

Comment:

A typical juvenile crocodilian will consume about 15–20 percent of its body weight in food every week at a constant temperature above 32o C. However, in outdoor pens, food consumption will vary greatly depending on ambient conditions and season.

The most common dietary deficiencies are those associated with calcium, vitamin A and, in fish-fed animals, vitamin E/selenium. Calcium is usually added at 1–2 percent by weight in a palatable form such as bone-meal. A standard vitamin supplement is widely used, but even in this, vitamin A is readily oxidised and degraded. Vitamin supplements should therefore be fresh and kept in a refrigerator.

Hatchlings are usually fed ground, minced or chopped food. 'Chunks' of food seem to be preferred, but grinding/mincing allows the efficient mixing of supplements.

Intervals between feeding should changes as an animal grows. Hatchlings are best fed once each day, juveniles of 1.2m once every second day.

8. Inspections by farm personnel

8.1 The frequency and level of inspections should relate to the needs of the crocodiles, but inspections should occur at least once a day.

Comment:

Inspections are best made at feeding times. More frequent inspections may be required during hot weather, during outbreaks of disease, or when groups of crocodiles have been mixed. Checks must be made of the effectiveness of any automated feeding systems where these have been installed.

9. Crocodile health

9.1 All people responsible for the care of crocodiles must be made aware of the signs of ill-health.

Comment:

Signs of ill-health include separation from other crocodiles, lethargy, refusal to eat, changes in faeces or urine, vomiting, coughing, panting, lameness, and swellings on the body or legs. The manager should, if unable to identify the causes of ill-health and correct them, seek advice from a veterinary surgeon, preferably familiar with crocodile practice.

9.2 Crocodile farmers must operate an effective program to prevent infectious disease, and internal and external parasitism.

Comment:

Particular attention must be paid to the stocking densities used for yearling and adult groups, as aggressive behaviour and injuries may be seen during the breeding season when the stocking density is high.

9.3 Sick and injured crocodiles should be treated as soon as possible. They should be isolated if necessary. Records of sick animals, deaths, treatment given and response to treatment should be maintained to assist disease investigations.

9.4 Dead crocodiles must be removed from the enclosure promptly and, if not required for post-mortem examination or taxidermy purposes, disposed of in a hygienic manner, such as by deep burial.

9.5 Crocodiles with an incurable sickness, injury or painful deformity must be euthanased, where possible by a veterinary surgeon, in an appropriate and humane manner.

Comment:

Viruses, chlamydia (virus-like agents), bacteria, protozoa, fungi and helminth worms have all been isolated from crocodilians, and some of these infective agents are of great clinical significance in farming operations. Nutritional deficiencies, or occasionally excesses, may also cause disease.

Identifying the specific disease-causing agent will usually require professional assistance. Farmers should become familiar with appropriate veterinarians, pathologists or researchers, well before any crisis occurs.

Controlling the spread of infectious disease requires the identification, isolation and rapid treatment of all exposed animals. Rearing facilities with numerous small enclosures are therefore preferred over those with large pens. Disease is most prevalent among hatchlings and particular attention should be paid to all aspects of the management of this age group.

Some treatments may be administered in the water or in the feed. It is important to realise, however, that many other treatments must be administered to each animal individually, often for several days, and that the farm design must allow this to be accomplished efficiently.

10. Human safety

10.1 In accordance with Queensland legislation not administered by the EPA (such as *the Workplace Health and Safety Act 1995*, administered by the Department of Training and Industrial Relations), farm management practices must provide for the safety of farm personnel. Further, farms that are open to visitation by the public must provide for the safety of those visitors (for example, by preventing non-authorised personnel from entering crocodile enclosures). Please contact the Department of Training and Industrial Relations for further details. A Guide for the Crocodile Industry is available from that Department.

10.2 Guidance concerning safe crocodile handling and display practices may also be obtained by referring to the *Code of Practice of the Australasian Regional Association of Zoological Parks and Aquaria Queensland, Part E, 'Australian Crocodiles and American Alligators'*.

11. Conservation education and exhibition

11.1 A crocodile farm (i.e. premises operating under a Wildlife Farming Licence) that is open to visitation by the public must provide information on crocodile conservation and on crocodile biology in the wild in accordance with the requirements set down in the *Code of Practice of the Australasian Regional Association of Zoological Parks and Aquaria Queensland, Part E, 'Australian Crocodiles and American Alligators'*.

11.2 Injured crocodiles must not be displayed if unacceptably disfigured or in obvious discomfort. Where injured crocodiles are displayed, signage must be provided. Signage should outline the nature and cause of their injury and should be educational to enable the public to understand the reason the animals are on display.

11.3 All displays must be educational in content and purpose.

Comment:

Farms generate interest in crocodilians and their conservation and, in the right location, tourism can make a substantial contribution to farm income. However, developing a farm to accommodate visitors will incur significant additional expenses and will also have a cost in terms of animal stress and production. Therefore, it is recommended to open only part of a farm to visitors.

12. Slaughter and processing

12.1 Crocodiles must be killed in an approved, humane manner.

Comment:

There is an international expectation that humane methods will always be used to slaughter crocodiles. These methods should give instant brain death, or, at the very least, immediate and complete unconsciousness with the minimum of agitation and discomfort. The use of lethal drugs is uncommon because they are expensive and may render the meat unfit for human consumption.

Mechanical stunning instruments, traditionally used in livestock slaughter, are not recommended for use with crocodiles.

Shooting is capable of causing the minimum of disturbance and stress both to the individual and its colleagues. Usually a .22 short calibre, silenced rifle is used pointblank to destroy the brain from behind while the animal is still in its rearing enclosure. In some circumstances, other crocodiles do not appear to notice that any management activity is taking place. In all cases, the spinal cord should be severed once an animal is removed from the enclosure.

The other mechanical method commonly used, the 'nape-stab', involves the physical restraint of the crocodile and, usually, its removal from the rearing enclosure. Wet, heavy material is placed over the animal's eyes and its head is lowered in a downward position to extend the neck vertebrae. A sharp chisel-like implement is then quickly forced between the base of the skull and the first spinal vertebrae, severing the spinal cord, in order to ensure that the animal is unconscious. It is then essential that a rod of about 3mm diameter (ideally stainless steel) be used to probe and totally destroy the brain (pithing). It is an advantage to skinning if the spinal column is destroyed similarly, preventing local reflex actions.

13. Tagging requirements for crocodiles and products

13.1 Stock and skin identification procedures

The EPA has implemented a tagging and marking system for identifying skins, skin products and other parts, products and derivatives of crocodiles, any of which may potentially be destined for overseas export (either as commercial shipments or as personal effects carried by tourists).

The principal objective of the marking system is to distinguish the following categories of crocodiles.

13.1.1 Wild-caught captive farm and zoo stock

'Problem crocodiles' taken into farms do not have to be tagged. They are only eligible for slaughter after being scientifically examined by Agency staff and should be held alive until then. Progeny of 'problem crocodiles' are not subject to this requirement. Disposal of 'problem crocodiles' may also be through sales of live animals to other farms or to zoos, subject to authorisation under the *Nature Conservation Act 1992*.

13.1.2 Captive-bred stock

The tagging or other marking of live farm-bred crocodiles is not required.

13.2 Marking of crocodile products

Products derived from crocodiles include:

- whole skins;
- other skin products, including taxidermied 'stuffers' (preserved whole animals — normally hatchlings), wallets, handbags and belts;
- meat (including offal); and
- various low unit-value parts and derivatives, including teeth, claws, skin remnants and skulls.

13.2.1 Whole skins

An approved CITES skin tag is to be attached to each skin as soon as is practicable after its removal from the crocodile carcass, and must remain attached whether the skin is in an unprocessed or tanned state (that is, the tag must remain attached to a whole skin both during and after the tanning process).

Each tag must be locked to the final 5–10 cm (approximately) of the tail. In order to minimise the potential for tag 'loops' becoming caught and tearing free of the skin during tanning, a hole must be punched in the skin (not cut with a knife) and the tag attached and locked in a manner that reduces the size of the resulting 'loop'.

A skin tag must be attached and locked to each skin prior to consignment from the place at which the skin has been removed from the crocodile carcass. Skinning may take place at a licensed crocodile farm or at a premises accredited for meat processing by the Queensland Livestock and Meat Authority.

Each skin must bear a skin tag upon export from Australia. Skin tags are produced by the Australian Department of Environment and Heritage and are distributed by the EPA to crocodile farms, or to meat processing premises accredited by the Safe Food Queensland. These tags bear Commonwealth export marks in compliance with the requirements of CITES.

A skin tag may be removed when the skin is cut into two or more major segments. A 'nick' cut in the side of a whole skin would not warrant tag removal — a skin cut into two equal halves or into multiple watch-strap strips would.

Under the provisions of the *Nature Conservation Act 1992*, the movement of a whole tagged skin into, within and out of Queensland requires the issuing of either a Wildlife Movement Permit or a Movement Advice. However, a whole tagged skin that is also labelled with an 'Export Permit (manufactured crocodile products)' issued by the Australian Department of Environment and Heritage for that skin does not require keeping or movement authorisation under the Act.

13.2.2 Other skin products

Each processed skin product, such as a 'stuffer', handbag, wallet or hat band, must be labelled at the point of manufacture with an 'Export Permit (manufactured crocodile products)' issued for that product. These labels are issued to manufacturers by Department of Environment and Heritage under the provisions of CITES. These labelled products do not require keeping or movement authorisation under the *Nature Conservation Act 1992.*

13.2.3 Meat

Meat (including offal) and carcasses consigned from a Safe Food Queensland accredited premises are to be packed in accordance with the requirements of the *Meat Industry Act 1993* 'Standards and Conditions for Accreditation'. Each Commercial Wildlife Licensee who first obtains carcasses or meat from a crocodile

farm in Queensland and each Wildlife Farming Licensee (crocodiles) is required to maintain records concerning acquisition (Commercial Wildlife Licensee) or disposal (Wildlife Farming Licensee) of those products and to submit returns to the EPA.

The above movements of carcasses and meat within Queensland (and the importation of carcasses and meat into Queensland) must be undertaken in accordance with either a Wildlife Movement Permit or a Movement Advice under the provisions of the *Nature Conservation Act 1992*.

13.2.4 Low unit-value items

Low unit-value items comprise other crocodile parts, products and derivatives and include crocodile teeth and claws, processed and unprocessed skin remnants (including 'hornback') and skulls.

Each item to be used for trade and commerce must be labelled at the point of manufacture/processing with an 'Export Permit (manufactured crocodile products)' issued for that product. However, many items of the same type (for example, teeth) may be packaged together where necessary for reasons of size and practicality. In such circumstances, each package must be transparent and must be labelled at the point of manufacture/processing with a single 'Export Permit (manufactured crocodile products)' issued for those products.

These labelled products do not require movement authorisation under the *Nature Conservation Act 1992*.

14. Further reading

The following literature on crocodiles covers aspects of their biology, conservation, management and farming.

Bolton, M. 1989. *The Management of Crocodiles in Captivity.* FAO Conservation Guide 22, Food and Agriculture Organisation of the United Nations, Rome.

Chaisson, R.B. 1962. *Laboratory Anatomy of the Alligator.* W.C. Brown, Dubuque, Iowa, USA.

Grenard, S. 1991. *Handbook of Alligators and Crocodiles.* Kreiger Publishing Co., Florida, USA.

Hutton, J.M. and Webb, G.J.W. (eds). 1992. An introduction to the farming of crocodilians, in *Directory of Crocodilian Farming Operations* (2nd edition), R.A. Luxmoore (ed.). IUCN. Gland, Switzerland, pp.1-39.

IUCN 1971–1990. *Proceedings of the Working Meeting of the Crocodile Specialist Group*. 1971, 1976, 1978, 1980, 1982, 1984, 1986, 1988 and 1990. IUCN Publications Services Unit, Cambridge, UK.

King, F.W. and Wilson, J. 1989. Standards for flaying, curing, measuring and grading alligator and crocodile hides, *American Alligator Farmers Association.* Extension Publ. No. 1.

Ross, C.A. (ed.) 1989. *Crocodiles and Alligators.* Golden Press Pty. Ltd., Silverwater, NSW, Australia.

Webb, G.J.W., Manolis, S.C. and Whitehead, P.J. (eds) 1987. *Wildlife Management: crocodiles and alligators.* Surrey Beatty and Sons, Chipping Norton, NSW, Australia.

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Disclaimer

This publication contains only advisory information. While considerable care has been taken in researching and compiling the information, neither the Environmental Protection Agency nor the Queensland Government accepts responsibility for errors or omissions or for any decisions or any actions taken on the basis of this document.

Readers are referred to the *Nature Conservation Act 1992*, the *Nature Conservation (Wildlife) Regulation 1994* and current amendments.