CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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Sixty-fifth meeting of the Standing Committee
Geneva (Switzerland), 7-11 July 2014

Interpretation and implementation of the Convention

Exemptions and special trade provisions

IMPLEMENTATION OF THE CONVENTION RELATING TO CAPTIVE-BRED AND RANCHED SPECIMENS

This document has been submitted by the Secretariat, in relation to agenda item 34 on *Implementation of the Convention relation to captive-bred and ranched specimens.* It was prepared by TRAFFIC, under contract to the CITES Secretariat and made possible through funding from the European Union.

Inspection Manual for use in Commercial Reptile Breeding Facilities in Southeast Asia

EU-CITES Capacity-building project
No. S-408

2013

CITES Secretariat

About the EU-CITES Capacity-building project

The project *Strengthening CITES implementation capacity of developing countries to ensure sustainable wildlife management and non-detrimental trade* was approved for funding by the European Union in 2009.

A major challenge for many countries is the difficulty in meeting the requirements for trade in CITES-listed species, ranging from legal sourcing and sustainability requirements, to the effective control of legal trade and deterrence of illegal trade. Mechanisms exist in CITES and in both exporting and importing countries that promote and facilitate compliance – although Parties are often hampered by a lack of capacity or a lack of current biological or trade information with respect to certain species. This can result in levels of trade which are unsustainable, which in turn can impact on economic growth and local livelihoods, and reduce options and incentives for conserving and managing wild resources effectively.

The overall aim of EU's support is to strengthen capacities to implement the Convention and satisfy the CITES-related requirements of trading partners (such as the European Union), to prevent overexploitation and to ensure legal international trade in wild fauna and flora does not exceed sustainable levels.

This publication is one of the reports and tools developed under this project, which provide information and guidance to Parties in a particular area of concern based on needs identified by developing countries.

Published by the CITES Secretariat, Geneva, Switzerland.

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Front cover photograph:

Top left: *Indotestudo elongata* hatchlings.
Photograph credit: Claire Beastall/TRAFFIC
Top right: *Python* (*Broghammerus*) *reticulatus*.
Photograph credit: Mark Auliya/TRAFFIC
Centre: *Indotestudo elongata*.
Photograph credit: Jess Lyons/TRAFFIC
Bottom left: *Heosemys grandis* and *Indotestudo elongata* eggs.
Photograph credit: Jess Lyons/TRAFFIC
Bottom right: *Python brongersmai* (left).
Photograph credit: Jess Lyons/TRAFFIC

Inspection Manual for use in Commercial Reptile Breeding Facilities in Southeast Asia

for use in Cambodia, Indonesia, Lao PDR, Malaysia, Thailand and Viet Nam





TRAFFIC
the wildlife trade monitoring network

CITES

TABLE OF CONTENTS

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Executive Summary

The trade in reptiles involves millions of individuals of multiple species, and is extremely valuable. Reptiles are traded domestically and internationally for a variety of reasons including as skins, meat, ingredients in traditional medicine and live for the pet trade. Targeted collection is believed to be a major threat to the survival of a number of reptile species in Southeast Asia.

In order to meet the demand for these animals, and reduce pressure on wild populations, a number of countries have encouraged the establishment of captive breeding facilities. There are now many such facilities across Southeast Asia claiming to produce captive-bred reptiles for commercial trade. However, severe reservations have been expressed about the conservation impact these facilities are having due to reports that animals traded as captive-bred have in fact been sourced illegally from the wild.

This manual has been developed to assist enforcement agencies and others conducting inspections of breeding facilities to verify captive breeding claims.

The manual has been designed for use in six Southeast Asian countries (Cambodia, Indonesia, Lao PDR, Malaysia, Thailand and Viet Nam) and focuses on a selection of focal species. Each country version is different, containing information on native species of reptile or those that have been exported from countries using CITES captive-bred CITES source code "C".

The manual provides warning signs or indicators of situations where fraudulent activity may be occurring. These include (1) aspects of life-history, such as the absence of animals of varying ages (eggs, hatchlings, juveniles, etc.), particularly during times of the year when incubation and hatching should be taking place, and (2) instances where suspicious activity is occurring, such as the presence of animals that appear to be wild-caught (heavily parasitized, injured etc.) or where access to all areas within a facility is denied to inspectors. Species-specific sheets are provided that contain information on the identification of species, egg sizes for comparison, breeding and other parameters to be used when evaluating whether a facility is claiming to produce more captive-bred animals than is feasible. Data collection forms are also included; with a simple scoring system to indicate where breeding claims may be false and further action or inspections is necessary. Additional information is provided in each country version on applicable domestic legislation.

Users are provided with a set of suggested follow-up actions for situations where claims of captive breeding cannot be verified. These include seizure of illegally held animals, further investigation in to the facility and business, cancellation of existing permits, denial of new permits and prosecution.

It is hoped that this manual will increase both the confidence of inspectors tasked with verifying captive-breeding claims, and allow authorities to take action against facilities and individuals found to be fraudulently claiming to produce captive-bred reptiles. The concepts employed in this manual provide a baseline for other inspectors to monitor breeding activities for a far greater range of species and countries in future.

Glossary of terms:

Artificial incubation	Removal of eggs from where they were laid to be placed in a temperature and humidity controlled atmosphere.
ASEAN	Association of Southeast Asian Nations made up of ten Southeast Asian countries (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam).
Breeding stock	Animals in a breeding operation that are used for reproduction. CITES requires that breeding stock must be acquired in a manner that is not detrimental to the survival of the species in the wild and in accordance with the provisions of CITES and relevant national laws.
Captive breeding	The production of eggs and young animals that results from the breeding between captive adult stock in a controlled, manipulated environment, conducted in isolation of the wild population and wild-caught animals.
Carapace	The “top” shell of a turtle or tortoise.
CL	Carapace length; the length of a turtle or tortoise carapace.
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora.
Controlled environment	An environment that is manipulated for the purpose of producing animals of a particular species, that has boundaries designed to prevent animals, eggs or gametes of the species from entering or leaving it, and the general characteristics of which may include but are not limited to artificial housing, waste removal, health care, protection from predators, and artificially supplied food.
Facility	Buildings or portions of buildings, yards, pens and other areas at a single location in which any animals are kept, handled, or transported.
Farmed	Animals born in captivity (F1 or subsequent generations) that do not fulfill the definition of “bred in captivity” in CITES Resolution Con. 10.16 (Rev.), as well as parts and derivatives thereof).
First generation offspring (F1)	Specimens produced in a controlled environment with at least one parent taken from or conceived in the wild.
Hatchling	A newly or recently hatched animal.
Natural incubation	Eggs are left to incubate in the same place in which they are laid.
Plastron	The “bottom” shell of a turtle or tortoise.
Ranching	Rearing in a controlled environment of animals taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood.

Sex ratio	This gives an indication for each species of how many females each male may mate with and is usually given as a ratio. Eg. for a species where each male will only mate with one female this is shown as 1:1, where each male can mate with four females, this would appear as 1:4 etc.
Sexual maturity	The age at which an animal is able to breed.
Second or subsequent generation offspring (F2, F3, F4, etc.)	Offspring produced in a controlled environment from F1 parents that were also produced in a controlled environment.
SVL	Snout-vent length; a standard measurement of body length for snakes and monitor lizards. This measurement is taken from the tip of the nose (snout) to the opening above the tail (vent/cloaca), and excludes the tail.

Introduction:

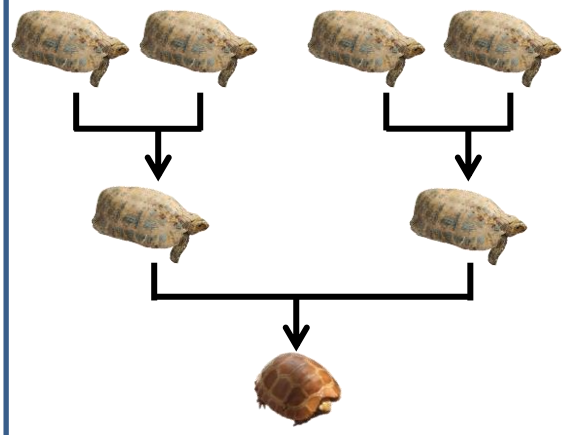
International trade is regarded as one of the greatest threats to the survival of many species. Reptiles are of particular concern because there is relatively little information available on the status of most wild populations harvested for commercial trade and human consumption. Many of these populations appear to be in decline.

The trade in reptiles involves multiple species, vast numbers and is extremely valuable. Reptiles are traded domestically and internationally for a variety of reasons including as skins, meat, ingredients in traditional medicine and live for the pet trade. A recent study[1] concluded that, worldwide, almost 20% of reptile species are threatened with extinction and that for a similar proportion there is just not enough information to make an assessment. Targeted collection was highlighted as a major threat to the survival of freshwater reptiles in Southeast Asia.

In an effort to meet demand and reduce pressure on wild populations, several countries have encouraged the establishment of captive breeding facilities. While this may appear to combat population declines, there is increasing concern that many operators are trading in animals claimed as captive bred; when in fact some or all of their stocks have been taken from the wild. There are currently large numbers of facilities in Southeast Asia claiming to produce captive-bred reptiles for commercial trade.

All countries have legislation governing the use of wild species and their trade, and some information on your national laws has been included in Annex A. In addition to national legislation, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), an international agreement between governments, may also apply. CITES aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. CITES currently regulates the international trade in more than 34,000 species and is enforced through national legislation. All ASEAN governments are signatory to this Convention. CITES applies strict conditions that must be met if specimens are to be declared as captive-bred (Box 1). Additional information about CITES can be found in Annex B or from www.cites.org.

Box 1: F1 and F2 generations



Indotestudo elongata images: Adult: J. Lyons/TRAFFIC. Hatchling: C. Beastall/TRAFFIC

Wild-caught: CITES source code W

F1 generation (CITES source code F):
Produced in a controlled environment: one or both parents conceived in or taken from the wild.
Does not meet CITES' definition of "bred in captivity".

F2 generation (CITES source code C):
Both parents produced in a controlled environment.
Meets CITES' definition of "bred in captivity".

[1] Böhm, M. *et al*. (2013). The conservation of the world's reptiles. *Biological Conservation*. Vol. 157, pp. 372 – 385.

Commercial captive breeding - basic facts:

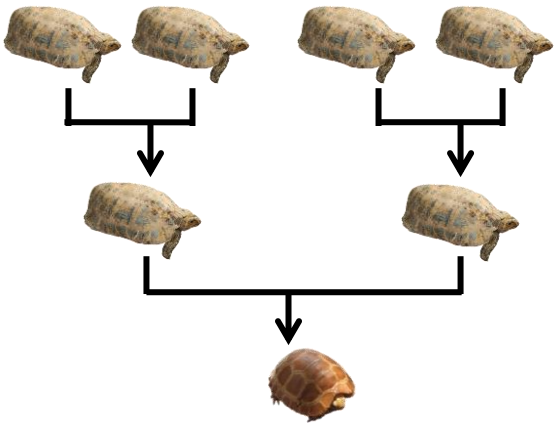
1. **Is not possible for all species:**
   The captive breeding of any species requires expertise and money. While some species, such as the Chinese Softshell Turtle *Pelodiscus sinensis,* can be bred in extremely large numbers, for others this is just not possible. The sustained and reliable captive breeding of reptiles on a commercial scale is extremely difficult to achieve for many species. Success is not guaranteed, even when animals are maintained in specialized facilities and provided with expert care. For some species, breeding, if it occurs at all, is likely to be infrequent and produce only small numbers of offspring.

2. **Requires expertise, money and high standards:**
   Success in any captive breeding effort benefits from excellent hygiene, good record keeping and high standards of veterinary care. These are all significant costs. If a facility is unhygienic and disorganized and the animals do not look healthy, it is unlikely that large numbers of captive-bred reptiles are being produced there on a regular basis.

3. **Takes time:**
   Establishing a captive breeding population capable of producing a second generation of captive bred animals (F2) takes time (see Box 2). A facility that is newly established, or has only recently obtained a new species, will have to wait a number of years before they can produce F2 animals (both parents captive bred) if they are starting with wild stock. A farm that establishes a breeding programme using wild-caught animals must first produce their F1 generation (animals produced from one or both wild parents) before they can then breed any F2 animals. For a species that takes five years to mature, this will take at least five years (and probably much longer as many new arrivals will not breed in their first year in captivity) assuming that their original animals were healthy adults capable of breeding. This represents a considerable investment of time and money and it is reasonable to assume that a facility will retain some of the youngsters they have bred to form a stable breeding population for the future. Captive breeding by any facility claiming to produce F2 (or later) generation animals, without sufficient numbers of animals at varying size and life stages, should be treated with suspicion and investigated further.

Box 2: How long does it take to produce F2 generation animals from wild-caught stock?

Example: *Indotestudo elongata* Yellow-headed Tortoise
Age at sexual maturity = 5 to 8 years (average 7 years)



Wild-caught
If animals arrive at the facility as healthy adults, breeding is feasible in year 1 (but will often not occur until the second year at the earliest)

F1 generation
It takes 5 to 8 years until these animals are old enough to breed

F2 generation
Production of F2 generation is impossible in less than 5 – 8 years (average 7 years) and may take longer

Indotestudo elongata images: Adult: J. Lyons/TRAFFIC. Hatchling: C. Beastall/TRAFFIC

CITES Requirements:

CITES permits are required to trade in any CITES-listed species internationally and these can only be issued by the CITES Management Authority (MA). Every CITES permit must contain a code to indicate the source of the animals being traded. The source code for captive-bred animals is **C**, for farmed animals it is **F** and for ranched animals it is **R**. See Box 1 below for explanation of F1 and F2 generations.

CITES applies strict conditions that must be met if specimens are to be declared as captive-bred, farmed or ranched. Exporting countries are responsible for ensuring that these have been met before they provide such a permit. CITES permits should not be issued with source codes of C (captive bred), F (farmed) or R (ranched) if the production systems used do not meet these requirements.

CITES' definitions for C, F and R:

Source code C: Captive-bred

- Applies to specimens bred in captivity of Appendix I, II or III listed species, whether or not they were bred for commercial purposes;
- The parents must have mated in a controlled environment, or have been in a controlled environment when development of the offspring began;
- Competent government authorities of the exporting country must be satisfied that the breeding stock:
    - Was established in accordance with the provisions of CITES and relevant national laws and in a manner not detrimental to the survival of the species in the wild;
    - Is maintained without the introduction of specimens from the wild, except for the occasional addition of animals, eggs or gametes, in accordance with the provision of CITES and relevant national laws and in a manner not detrimental to the survival of the species in the wild as advised by the Scientific Authority.
        - to prevent or alleviate deleterious inbreeding, with the magnitude of such addition determined by the need for new genetic material; or
        - to dispose of confiscated animals in accordance with Resolution Conf. 10.7 (Rev. CoP 15);
        - or exceptionally, for use as breeding stock; and
- Has produced offspring of second generation (F2) or subsequent generation (F3, F4, etc.) in a controlled environment; or
- Is managed in a manner that has been demonstrated to be capable of reliably producing second-generation offspring in a controlled environment.

CITES further recommends that trade in a specimen bred in captivity is permitted only if it is marked (in accordance with the provisions on marking in the Resolutions adopted by the Conference of the Parties) with the type and number of the mark indicated on the document authorising the trade.

For full text see http://www.cites.org/eng/res/all/10/E10-16R11C15.pdf

Source code F: Farmed

Animals born in captivity (F1 or subsequent generations) that do not fulfill the definition of "bred in captivity" in Resolution Conf. 10.16 (Rev,), as well as parts and derivatives thereof).

For full text see http://www.cites.org/eng/res/all/10/E10-16R11.pdf

Source code R: Ranched
Rearing in a controlled environment of animals taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood.

Note:

- The removal of animals from the wild for ranching should only be conducted under very specific circumstances.
- Anyone who claims that animals (eggs or juveniles only) have been taken from the wild for ranching must have the necessary permission and documentation to show that this has been done in accordance with the provisions of CITES and relevant national laws.
- The relevant permission and permits must have been obtained before the animals were removed from the wild.

For full text see http://www.cites.org/eng/res/11/11-16R15.php

An additional CITES source code D is defined below, which is only applicable to Appendix I species.

Source code D:
Appendix I animals bred in captivity for commercial purposes and Appendix I plants artificially propagated for commercial purposes as well as parts and derivatives thereof, exported under the provisions of Article VII, paragraph 4 of the Convention.

See http://www.cites.org/eng/com/ac/16/16-15.pdf

Why do we need this Inspection Manual?

Identifying cases where wild-caught animals are being illegally declared as captive-bred is difficult. While a farm might be producing some offspring, many have insufficient animals of breeding age and condition to produce the numbers that they claim.

The aim of this manual is to provide guidance for national CITES Management and Scientific Authorities and other relevant agencies who are responsible for the evaluation of facilities claiming to produce captive-bred reptiles for commercial trade in Southeast Asia.

The purpose of an inspection is to ensure that a facility:

1) Is producing captive-bred animals without supplementation from illegally acquired stock;
2) Complies with the requirements of relevant legislation;
3) Is capable of breeding animals in the quantities declared as captive-bred.

Regular and thorough inspections of captive-breeding facilities are recommended. This process should occur unannounced and at regular intervals (at least once each year, but preferably more often). Key periods during which inspections should be conducted include: (1) after egg-laying (during incubation period), and (2) after hatching or birth to facilitate assessment of breeding success and the number of animals produced. Ideally all facilities should be inspected before any permit to keep or breed is issued or renewed. It is strongly recommended that inspections are conducted more frequently where there is suspicion that a facility may be operating illegally in some way. Information on the reproduction of a number of species can be found in the Species Section, but the approach used in this manual can be applied to a much wider range of species. If officers are not familiar with the species that are claimed to be bred, it is suggested that local experts be enlisted to assist.

It is reasonable to assume that a “bad” facility (that has poor standards of hygiene and veterinary care and a record system that is disorganized or absent) will experience higher mortality rates and breed fewer animals than a “good” facility.

How to use this inspection manual

The manual uses three main approaches to help you determine the veracity of claims of captive breeding that may be made by a facility (see flow chart below).

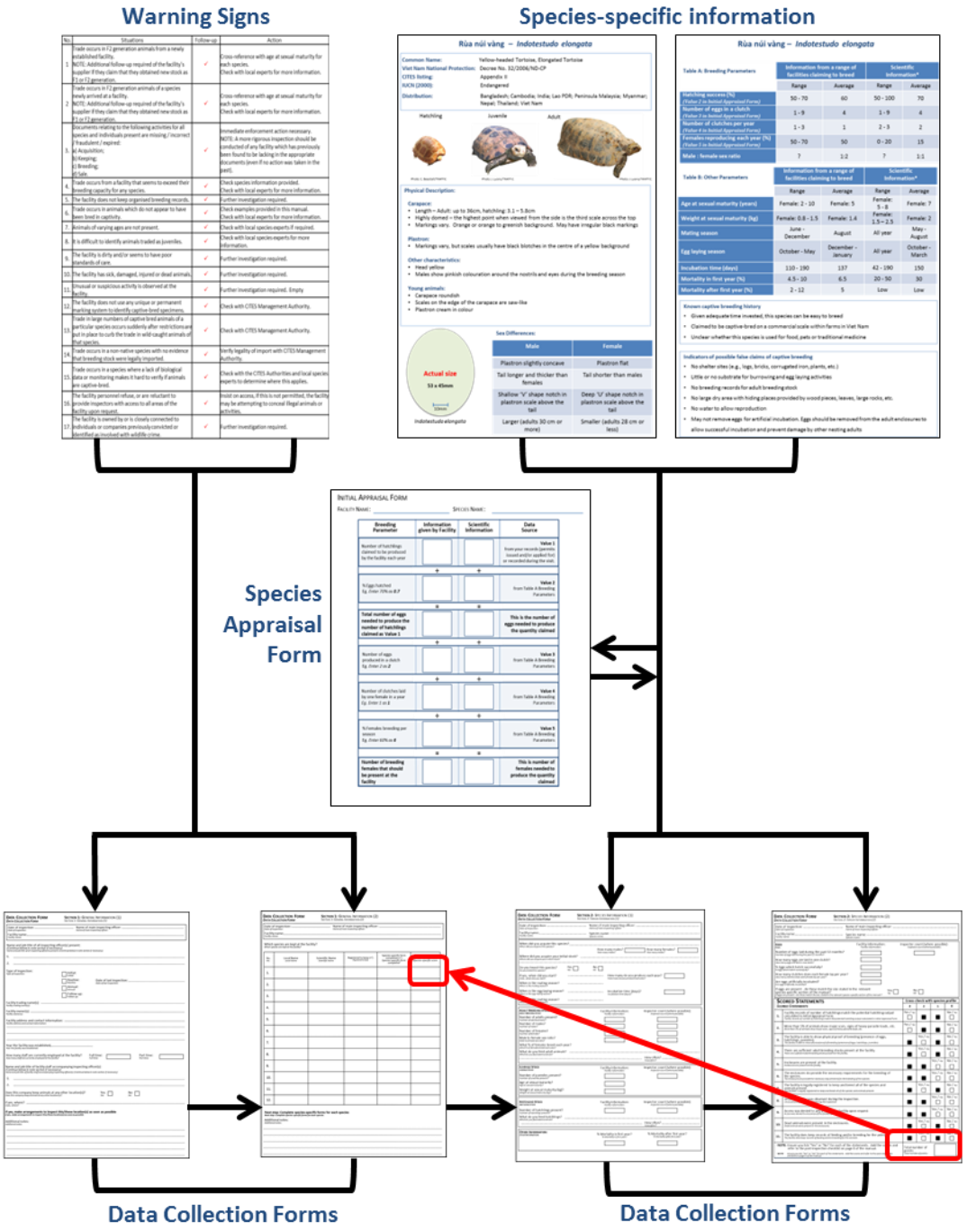
1. Warning signs or indicators that highlight where fraudulent activities may be occurring. Follow-up action is required when any of these situations are encountered. Information on these is provided in Table 1 and in extra detail below.

2. Species-specific sheets that include information on identification of the species, egg size for comparison during the visit, breeding and other parameters. The information on these sheets should be compared to that provided by the facility to help you determine if they are claiming to produce more captive-bred animals than is possible, and to ascertain if the facility is providing the correct environment for breeding of the species.
    a. Use this information to complete the Species Appraisal Form for each species. This will allow you to determine how many adult animals a facility should have if they are breeding the numbers claimed.
    b. Compare this information to what you see during the visit and the information provided by the facility.

3. Data collection forms to be completed during the inspection that include a simple scoring system to indicate where claims of captive breeding may be false and further action or investigation is required.

Flow Chart

This flow chart summarises the relationships between each of the sections within the manual and how they link together



Situations where the activity of the facility and declarations of captive breeding require further investigation

Table 1 below lists 17 situations that may be found in facilities that are operating illegally in some manner. Many of these situations are not specific to a single species, but apply to the overall operation of a facility. Further details on each are provided below.

Guidance is provided in Table 1 below on suggested follow-up. In many cases this requires that additional information be obtained from your CITES Management Authority or from local scientists who are familiar with the species concerned.

Further investigation should be carried out if any of these situations are suspected or recorded, and enforcement action taken against those found to be breaking the law. Enforcement action should be carried out when any facility is found to be operating without the necessary permission and documentation.

Inspectors should be aware of a facility's history and previous compliance before any inspection is carried out. Facilities that are known or believed to have broken the law in the past should be very carefully inspected to ascertain whether they continue to operate legally.

Captive breeding of reptiles is expensive and requires time and expertise. It is reasonable to assume that any facility that is genuinely producing captive-bred animals will ensure that they protect their investment by providing the best care possible.

Wild-caught animals are often seen as expendable because the investment (in money, time and effort) in these animals is much smaller than in captive-bred individuals. Wild-caught animals are cheaper to replace and so are more likely to be kept in poor conditions.

Table 1: Situations that suggest further investigation and follow-up action.

No.	Situations	Follow-up	Action
1	Trade occurs in F2 generation animals from a newly established facility. **NOTE:** Additional follow-up required of the facility's supplier if they claim that they obtained new stock as F1 or F2 generation.	✓	Cross-reference with age at sexual maturity for each species. Check with local experts for more information.
2	Trade occurs in F2 generation animals of a species newly arrived at a facility. **NOTE:** Additional follow-up required of the facility's supplier if they claim that they obtained new stock as F1 or F2 generation.	✓	Cross-reference with age at sexual maturity for each species. Check with local experts for more information.
3.	Documents relating to the following activities for all species and individuals present are missing / incorrect / fraudulent / expired: a) Acquisition; b) Keeping; c) Breeding; d) Sale.	✓	Immediate enforcement action necessary. NOTE: A more rigorous inspection should be conducted of any facility which has previously been found to be lacking in the appropriate documents (even if no action was taken in the past).
4.	Trade occurs from a facility that seems to exceed their breeding capacity for any species.	✓	Check species information provided. Check with local experts for more information.
5.	The facility does not keep organised breeding records.	✓	Further investigation required.
6.	Trade occurs in animals that do not appear to have been bred in captivity.	✓	Check examples provided in this manual. Check with local experts for more information.
7.	Animals of varying ages are not present.	✓	Check with local species experts if required.
8.	It is difficult to identify animals traded as juveniles.	✓	Check with local species experts for more information.
9.	The facility is dirty and/or seems to have poor standards of care.	✓	Further investigation required.
10.	The facility has sick, damaged, injured or dead animals.	✓	Further investigation required.
11.	Unusual or suspicious activity is observed at the facility.	✓	Further investigation required. Empty
12.	The facility does not use any unique or permanent marking system to identify captive-bred specimens.	✓	Check with CITES Management Authority.
13.	Trade in large numbers of captive-bred animals of a particular species occurs suddenly after restrictions are put in place to curb the trade in wild-caught animals of that species.	✓	Check with CITES Management Authority.
14.	Trade occurs in a non-native species with no evidence that breeding stock were legally imported.	✓	Verify legality of import with CITES Management Authority.
15.	Trade occurs in a species where a lack of biological data or monitoring makes it hard to verify if animals are captive-bred.	✓	Check with the CITES Authorities and local species experts to determine where this applies.
16.	The facility personnel refuse, or are reluctant to provide inspectors with access to all areas of the facility upon request.	✓	Insist on access, if this is not permitted, the facility may be attempting to conceal illegal animals or activities.
17.	The facility is owned by or is closely connected to individuals or companies previously convicted or identified as involved with wildlife crime.	✓	Further investigation required.

Situations where the activity of the facility and declarations of captive breeding require further investigation (also see Table 1):

1. **Trade occurs in F2 generation animals from a newly established facility.**
   a) Some species take many years to reach sexual maturity (see Box 2);
   b) Animals arriving from the wild may take some time to reach breeding condition;
   c) If any facility reports that they have received animals as F1 or F2 from another facility, the veracity of these claims should be confirmed through inspections of the facility that supplied these animals.

2. **Trade occurs in F2 generation animals of a newly acquired species from any facility.**
   a) Some species take many years to reach sexual maturity (see Box 2);
   b) Animals arriving from the wild may take some time to reach breeding condition;
   c) If any facility reports that they have received animals as F1 or F2 from another facility, the veracity of these claims should be confirmed through inspections of the facility that supplied these animals.

3. **Documents relating to all activities carried out at a facility, for all species and individual animals are found to be missing / incorrect / fraudulent / expired:**
   a) Any facility should be able to provide proof that all animals have been legally acquired. All animals produced from illegally sourced breeding stock are illegal. In order for a facility to legally breed animals, their breeding stock must have been legally obtained.
   b) The presence of <u>any</u> illegal animal at the facility should be investigated and followed up by enforcement action. If a facility is willing to break the law relating to one species, it is possible that other illegal activities are also taking place.
   c) If permits are required for permission to breed, these should be present and up-to-date for all applicable species.
   d) Where required, records of sale should be present, up-to-date and allow officers to track animals that have been sold.

4. **Trade occurs from a facility that appears to exceed its breeding capacity:**
   a) Eg. Keeps animals of only one sex;
   b) Eg. Has none or too few parent stock to produce the number of animals claimed;
   c) Eg. Does not maintain the animals in a way likely to allow sustained breeding success, etc.

5. **The facility does not keep organized breeding records (see Box 3):**
   a) Sustained captive breeding success requires good organization and record keeping;
   b) Records should include numbers of animals, sexes and records of mating;
   c) For pythons, this may also include feeding records.

Box 3: Breeding records

Records of the sex of the animals kept and reproduction of these will enhance production. (particularly for pythons). Facilities that are successful in captive breeding are more likely to have such records.

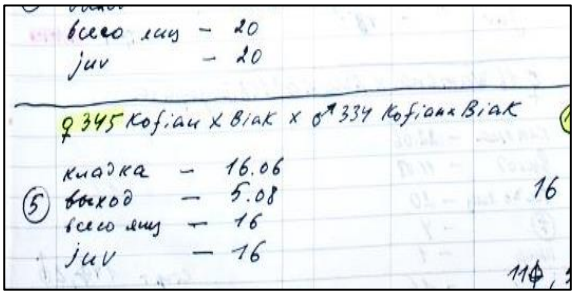


Photo: D.Natusch/J.Lyons

6. **Trade occurs in large numbers of animals that do not appear to have been bred in captivity (see Boxes 4, 5 and 6):**
   a) Eg. Specimens are traded only as adults;
   b) Eg. Animals with heavy scarring;
   c) Eg. Animals that have heavy parasite loads, etc.

Box 4: Shell damage in freshwater turtles and tortoises.

For example, tortoise poachers often drill a hole through the edge of the shell to secure animals while collecting. Captive-bred animals should not have open wounds or chipped and badly scarred shells. Some slight damage may occur to the shell during mating (even in captivity), but this should only result in minor scarring.

Cuora amboinensis

All images show *Indotestudo elongata,* unless stated.

Box 5: Presence of wounds and other injuries in pythons and monitor lizards

Captive-bred animals should not have open wounds. Wounds may have been sustained in the wild. Eg. by predation, fire, fighting etc., or by rough handling during capture or in transit.

Python reticulatus

Morelia spilota

Morelia viridis

Morelia viridis

Varanus salvadorii

Varanus doreanus

All photos: D. Natusch/J. Lyons

Box 6: Presence of external parasites

Well-kept captive-bred animals should not have external parasites. Unacceptable levels of parasites under the skin and ticks should not be present.

Leiopython albertisii

Morelia amethistina

Aspidites melanocephalus

All photos: D. Natusch/J. Lyons

7. The facility does not have animals of varying ages present (see Box 7):

a) Any facility that has invested the time and expense necessary to set up a genuine captive breeding population is likely to retain some animals from each year's breeding output to add to their breeding stock for the future.

b) During the egg-laying and hatching/birth seasons, eggs and hatchlings/newborns should be present in sufficient numbers to verify the quantities that the facility claims to breed.

c) Any facility claiming to produce individuals of egg laying species that does not have eggs or eggshells in numbers corresponding to the production levels they state may not be producing animals in the numbers claimed.

d) At any time of year, facilities should have juveniles and adults present in sufficient quantities to verify the quantities that the facility claims to breed.

Box 7: The absence of multiple life stages:

Animals of varying ages should be present at any facility which is captive breeding. You should expect to see eggs and hatchlings/newborns in the appropriate quantities if your visit coincides with the egg laying and hatching seasons. Check the species information sheet to determine when these are.

Since it can take so long to produce F2 animals; facilities are unlikely to sell all that they produce. Juveniles and adult animals should be present at any time of year.

All images show *Indotestudo elongata*

Reptile eggs

All species of turtles, tortoises, monitor lizards and pythons lay eggs which are unique in size and shape. It is possible to use these to determine which species has laid them. Information on the egg size and appearance for a range of species is provided in this manual.

Any facility which breeds these species should be able to substantiate their claims through the presence of eggs at the appropriate time of year and/or egg shells to correspond to the number of individual reptiles that they claim to breed to.

It is strongly suggested that CITES Management Authorities require that all captive breeding facilities retain eggshells from freshwater turtles, tortoises, monitor lizards and pythons. Eggshells must be destroyed after the inspection so that they cannot be used to verify multiple claims of breeding (eg. in future years, or even at a different facility).

Additional information on eggs and egg-shells is provided below.

8. **There is difficulty in identifying specimens traded as juveniles (see Box 8):**
   a) Facilities may claim that animals are older than they are, particularly if they are trying to pass off juvenile animals as adult breeding stock. If no adult breeding stock is present at the facility then breeding cannot be taking place.
   b) Facilities may also claim that animals are younger than they are to try and persuade officers that the animals they see are hatchlings produced at the facility.
   c) Weights and/or sizes are given for the focal species to allow you to check. If you are unsure, it is suggested that you seek additional assistance from species experts.

Box 8: Difficulty in identifying juvenile animals

Photos: J. Lyons/TRAFFIC

Facilities may claim that animals are older than they are to pass juveniles off as breeding adults.

Claims may also be made that juveniles are hatchlings/newborns in an attempt to provide proof of breeding.

All images show *Indotestudo elongata*

Hatchling

Hatchling, egg, adult

9. **The facility is dirty and/or seems to have poor standards of care:**
   a) Sustained captive breeding is more likely to occur in a facility that is clean and provides good care for their animals.
   b) It is likely that any facility with poor standards of care and hygiene will experience higher rates of animal mortality and disease in comparison to one that is clean and expert in caring for the species that they keep.

10. **The facility has sick, or dead animals (see Box 9):**
   a) The presence of sick or dead animals suggests that a facility is not operating in a manner likely to produce large quantities of captive-bred animals.
   b) Illegally sourced animals taken from the wild will suffer higher mortality rates than those bred in captivity and cared for appropriately.

Box 9: Presence of sick or dead animals

Dead or dying animals should not be present in enclosures (although it is accepted that animals do die in breeding facilities).

Significant numbers of these are a strong indication that animals are being wild sourced. The high investment and value of captive bred animals suggests that facilities will care for them in an appropriate manner.

Animals that enter a facility illegally from the wild are likely to be stressed and more prone to disease than those that have been captive bred. Mortality rates for wild-caught animals are generally much higher than for captive born stock.

Indotestudo elongata

Varanus doreanus

Cuora amboinensis

Emydura subglobosa

Photos: D. Natusch/J. Lyons

11. Unusual or suspicious activity is observed during the inspection suggesting the presence of animals that have been sourced illegally from the wild and not captive-bred as claimed (see Box 10):

a) Eg. The presence of empty bags or crates that have been used to transport animals to or from the facility.

b) Eg. The presence of bags or crates containing mud covered animals of varying sizes. These may contain species or animals that the facility is not registered to keep.

c) Eg. Organised facilities will generally keep animals in groups of similar size and age, etc.

Box 10: Unusual or suspicious activities

Bags or crates containing many mud-covered animals:

Illegal traders often transport animals in containers that can be hidden from the authorities. Captive breeding is costly in time and effort and it is extremely unlikely that the animals produced would be handled or kept in such a manner.

Morelia viridis

Heosemys grandis

Large numbers of animals of differing sizes are kept together:

Indotestudo elongata

Indotestudo elongata

A well-organised breeding facility is likely to keep animals of similar age and size together. A mix of random animals kept together as shown would strongly suggest that these are newly arrived wild caught animals that are being temporarily stored prior to sale.

12. The facility does not use a unique and permanent marking system to identify captive-bred specimens:

a) CITES recommends that the trade of captive-bred specimens is only allowed if each specimen has been marked with a unique and permanent identifier.

b) Contact your CITES Management Authorities to determine what type of markings are required and/or appropriate.

13. Trade in large numbers occurs suddenly after restrictions (from importing or exporting countries) are put in place to curb the trade in wild-caught specimens:

a) When the trade in wild-caught specimens of a species is banned or subject to new controls, traders may try to shift their stock by suddenly claiming that they are captive bred.

b) Any facility that suddenly moves from trading in wild-caught to captive-bred stock should be investigated.

c) Check with your CITES Management Authority to determine where this applies.

14. Trade occurs from non-range states with no evidence of legal importation of breeding stock.

a) Any facility that claims to breed a non-native species should be able to provide supporting documentation (such as CITES permits etc.) to prove that their initial breeding stock was legally imported.

b) All animals produced from illegally imported breeding stock are illegal. In order for a facility to breed legal animals, the first animals they acquired of that species must have been legally imported.

15. Trade occurs in any species where a lack of biological data or monitoring makes it difficult to verify if animals have been captive-bred:

a) It is extremely unlikely that a facility will be able to produce significant quantities of any species about which little information is known or that has consistently proved to be difficult to breed in captivity;

b) It is easier for a facility to pass off wild animals as captive-bred for species where monitoring is poor or non-existent.
c) Check with CITES authorities and/or local species experts for information on where this might apply.

16. The facility personnel refuse, or are reluctant to provide inspectors with access to all areas of the facility upon request:

a) Inspectors should ensure that their inspection includes all areas of the facility, particularly those where the facility may be trying to conceal evidence of illegal activity;
b) Eg. Areas where illegal animals are being kept;
c) Eg. Areas where evidence of any illegal activities may be found, etc.

17. The facility is owned by or is closely connected to individuals or companies that have previously been convicted, identified as involved with, or investigated for wildlife related crime.

a) Those involved in wildlife related crime very rarely limit their activities to just one species or group of species. Even if such companies or individuals have been linked with illegal activity relating to a completely different type of wildlife, they may be more likely to be breaking wildlife laws in general.

How to use this manual

The aim of this Inspection Manual is to provide guidance for inspectors evaluating facilities that claim to commercially breed reptiles for trade in Southeast Asia. Several focal species have been selected and information on the breeding and life history (breeding parameters) of these has been included to assist you. This information has been gathered from two sources: (1) from a range of facilities claiming to breed these species in captivity, and (2) from scientists, experts and scientific publications.

The breeding parameters are generally provided as a range of values, rather than a single figure. Each individual animal is different and the conditions and manner in which they are kept will lead to individual variations (see Table A below). However, there is a biological limit to, for example, the number of eggs or newborn animals that one female of a species can produce. Any number that is significantly larger than that given in the species-specific breeding parameter table (for example where a facility claims that all females produce the maximum possible number of eggs in each clutch) should be cause for suspicion (see Table A). This information (where it is known) is provided for each species within two separate tables. The scientific data in Table A for each species can be directly used in the Species Appraisal Form to determine how many adult females are necessary to produce a specific number of offspring. The data in Table B for each species can be used to compare the information provided by the facility and collected during the inspection (see below for comments on this information).

NOTE: If you encounter species not included in this manual, it is possible to apply the same procedure if you are able to find the relevant information on the breeding parameters for those animals. Please contact local experts on the species to obtain this information.

Table A: Breeding Parameters – Comments

Value No.	Breeding parameters	Comments
1.	**% Hatching success**	May vary from year to year and according to the skill of the breeder and the method used for incubation (artificial or natural). Regular 100% success is uncommon for any species.
2.	**Number of eggs produced in one clutch**	Large healthy females are more likely to produce more eggs, more often in comparison to small unhealthy females. Not every female can produce the maximum amount possible for every species every year.
3.	**Number of clutches that can be laid by one female in one year**	
4.	**% Females that breed each year**	Large farms may find it difficult to provide proper care to all individual animals. Large facilities commonly have lower percentages of females that breed every year.
5.	**Male : Female sex ratio**	In some species, it is common for a single breeding male to mate with more than one female.

Table B: Other Parameters - Comments

Breeding parameters	Comments
Age at sexual maturity (years)	Varies greatly. Healthy animals that are kept and fed appropriately may mature before those that are not.
Weight at sexual maturity (kg)	
SVL at sexual maturity (cm) (snakes and monitor lizards only)	
Mating season	May vary depending on the location and local climate.
Egg-laying season	May vary from year to year and on the location and local climate.
Incubation time (days)	Varies depending on incubation method used (i.e. artificial or natural) and on temperature.
Egg-hatching season	May vary from year to year and on the location and local climate. Hatching times depend on the egg-laying season and the temperature.
Mortality of animals in the first year (%)	Large farms may find it difficult to provide proper care to all individual animals. Large facilities commonly have lower percentages of females that breed every year.
Mortality of animals after the first year (%)	

Before you conduct any inspection, there are a number of steps that you should take to ensure that you have all of the information that you need.

It is possible to determine how many adult females of a species that a facility must have if they are able to produce the number of hatchlings that they claim. If the facility cannot show that they have the appropriate number of breeding adult females at the facility; then production in the quantities claimed is not taking place there. This will require you to apply the scientific information provided for that species in the species specific section.

Step 1:
Collect pre-visit information from your records.

- Which species are registered?
- How many animals of each species do they have permits to keep and breed?
- How many animals of each species do they claim to produce each year (taken from issued permits and permit applications)? If you are able to determine this before your visit, the information can be used to complete the **Species Appraisal Form** to determine how many adult females the facility should have, based on information on the species (see below). The form can also be used during or after your visit, if new information has become available.

Step 2:
Use the **Species Appraisal Form** (Annex D) to assess how many adult females should be present at the facility based on information for each of the species identified in Step 1.

- Use the information in the Breeding Parameter Table A for each species to determine the number of breeding females that should be present at the facility based on breeding facility and scientific information.
- *It is also possible to use the Species Appraisal Form to determine the number of adult males which should be present.*
- The results from this simple calculation can also be used to help you determine if the facility has the capacity to house the numbers of animals they would need to have if they are breeding the numbers claimed.

For several of the species included in this manual there is little reliable information available on their reproductive biology. We would consider that the commercial production of these animals is unlikely – further investigation is strongly suggested.

Figure 1: Species Appraisal Form

SPECIES APPRAISAL FORM

FACILITY NAME: SPECIES NAME:

Breeding Parameter	Information given by Facility	Scientific Information	Data Source
Number of hatchlings claimed to be produced by the facility each year			Value 1 from your records (permits issued and/or applied for) or recorded during the visit.
	÷	÷	
% Eggs hatching *Eg. Enter 70% as 0.7*			Value 2 from Table A: Breeding Parameters
	=	=	
Total number of eggs needed to produce the number of hatchlings claimed as Value 1			This is the number of eggs needed to produce the quantity claimed
	÷	÷	
Number of eggs produced in a clutch Eg. Enter 2 as 2			Value 3 from Table A: Breeding Parameters
	÷	÷	
Number of clutches laid by one female in one year Eg. Enter 1 as 1			Value 4 from Table A: Breeding Parameters
	÷	÷	
% Females breeding per season *Eg. Enter 60% as 0.6*			Value 5 from Table A: Breeding Parameters
	=	=	
Number of breeding females that should be present at the facility			This is the number of females needed to produce the quantity daimed

Table A: Yellow-headed Tortoise *Indotestudo elongata*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	60 - 80	70	50 - 70	60
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	4 - 12	5 - 7	4 - 8	5
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1 - 2	1	?	?
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	50 - 70	60	0 - 40	15
Male : female sex ratio	1:2 - 3:11	1:2	?	1:1

Table B: Yellow-headed Tortoise *Indotestudo elongata*

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Age at sexual maturity (years)	Female: 3 - 5	Female: 4	?	?
Weight at sexual maturity (kg)	Female: 3 - 6	Female: 4	?	?
Mating season	October - March	August - October	All year	November - March
Egg laying season	October - March	December - February	November - January	December - January
Incubation time (days)	70 - 140	120	80 - 140	120
Mortality in first year (%)	5 - 11	9	?	?
Mortality after first year (%)	6 - 10	7	?	?

Example:
Species Appraisal Form completed for *Indotestudo elongata* where a facility claims to produce 1450 hatchlings per year.

SPECIES APPRAISAL FORM

FACILITY NAME: _____ SPECIES NAME: *Indotestudo elongata*

Breeding Parameter	Information given by Facility	Scientific Information	Data Source
Number of hatchlings claimed to be produced by the facility each year		1450	**Value 1** from your records (permits issued and/or applied for) or recorded during the visit.
	÷	÷	
% Eggs hatched Eg. *Enter 70% as **0.7***		0.7	**Value 2** from Table A Breeding Parameters
	=	=	
Total number of eggs needed to produce the number of hatchlings claimed as Value 1		**518**	**This is the number of eggs needed to produce the quantity claimed**
	÷	÷	
Number of eggs produced in a clutch Eg. *Enter 2 as **2***		4	**Value 3** from Table A Breeding Parameters
	÷	÷	
Number of clutches laid by one female in a year *Eg. Enter 1 as **1***		2	**Value 4** from Table A Breeding Parameters
	÷	÷	
% Females breeding per season Eg. *Enter 60% as **6***		15	**Value 5** from Table A Breeding Parameters
	=	=	
Number of breeding females that should be present at the facility		**1727**	**This is number of females needed to produce the quantity claimed**

In this example:

- Using the scientific information available on *Indotestudo elongata*; a facility that claims to have captive-bred 1450 hatchlings should have **1727 adult females** present.
- Using information collected directly from facilities claiming to produce *Indotestudo elongata*; a facility that claims to have captive-bred 1450 hatchlings would still require the presence of **1208 adult females**.

NOTE: *It is also possible to get an indication of the number of adult males that should be present. This can be done by multiplying the number of adult females that should be present by the sex ratio given for the species (divide number of males by number of females eg. enter 1:2 as 0.5, enter 1:1 as 1). In the example above, the sex ratio is 1:1, meaning that the calculation would be 1 x 1727 = 1727.*

Step 3: The Visit

Make sure that you have the results from the Species Appraisal Form with you during the visit. For each species that the facility has claimed to produce through captive breeding (taken from the facility's registration, permit applications, etc.), you should have the number of mature females the facility should have to be able to breed the quantity that they claim.

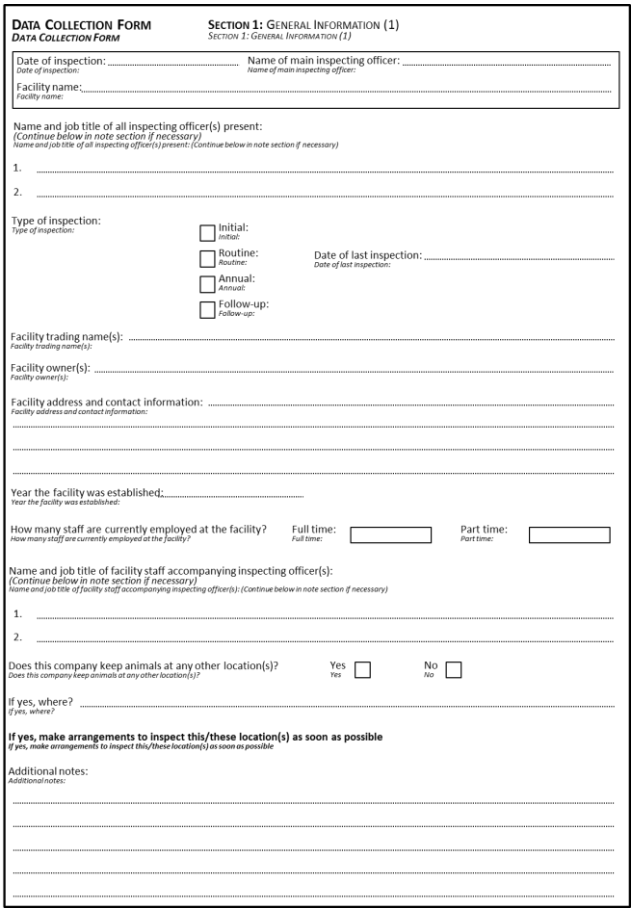
During the visit you should be aware of this information and consider if the facility does or was likely to have had these numbers of animals. Check the species-specific information sheets to establish if the egg-laying and hatching seasons coincide with your visit. Eggs and/or hatchlings should be present if your visit takes place during these times. Compare any eggs present to see if they match the size and shape given on the species information sheet. Extra information on eggs and egg shells can be found below in Box 11.

You should take the following items with you:

- Data collection forms Section 1: General information (1) and (2) – <u>one set required per facility</u>;
- Data collection forms Section 2: Species information (1) and (2) – <u>one set required per species</u>;
- Pen/pencil;
- Ruler or measuring tape;
- Camera.

During the visit, record the information collected on the Data Collection Forms (Annex D). You will use this when comparing (1) the information given by the facility and seen during the inspection, and (2) the data included in this Manual. Make sure that the first box (date, names of the main inspecting officer and the facility) is completed on each page of the form so that it is easier for you to assess the information that you have collected. You should record the names of all inspectors present at each inspection; this will make it easier to check on details later.

Section 1: General Information (1) and **(2)** should be completed for each facility inspected.



DATA COLLECTION FORM
DATA COLLECTION FORM

SECTION 1: GENERAL INFORMATION (1)
SECTION 1: GENERAL INFORMATION (1)

Date of inspection: ..... Name of main inspecting officer: .....
Date of inspection: Name of main inspecting officer:

Facility name: .....
Facility name:

Name and job title of all inspecting officer(s) present:
(Continue below in note section if necessary)
Name and job title of all inspecting officer(s) present: (Continue below in note section if necessary)

1. .....
2. .....

Type of inspection:
Type of inspection:

☐ Initial: *Initial:*
☐ Routine: *Routine:* Date of last inspection: ..... *Date of last inspection:*
☐ Annual: *Annual:*
☐ Follow-up: *Follow-up:*

Facility trading name(s): .....
Facility trading name(s):

Facility owner(s): .....
Facility owner(s):

Facility address and contact information: .....
Facility address and contact information:

.....
.....
.....

Year the facility was established: .....
Year the facility was established:

How many staff are currently employed at the facility? Full time: ☐ Part time: ☐
How many staff are currently employed at the facility? Full time: Part time:

Name and job title of facility staff accompanying inspecting officer(s):
(Continue below in note section if necessary)
Name and job title of facility staff accompanying inspecting officer(s): (Continue below in note section if necessary)

1. .....
2. .....

Does this company keep animals at any other location(s)? Yes ☐ No ☐
Does this company keep animals at any other location(s)? Yes No

If yes, where? .....
If yes, where?

If yes, make arrangements to inspect this/these location(s) as soon as possible
If yes, make arrangements to inspect this/these location(s) as soon as possible

Additional notes:
Additional notes:

.....
.....
.....
.....
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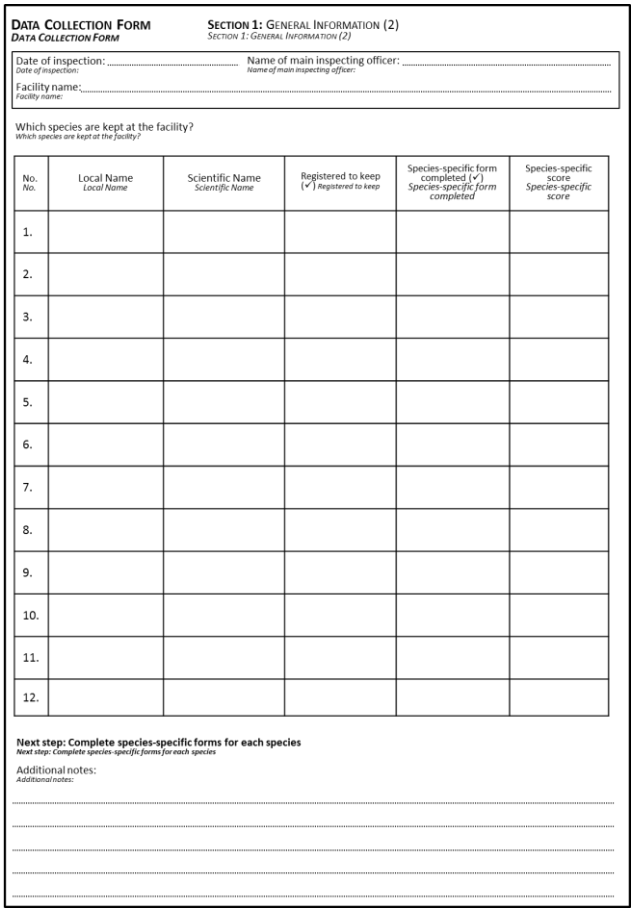


DATA COLLECTION FORM
DATA COLLECTION FORM

SECTION 1: GENERAL INFORMATION (2)
SECTION 1: GENERAL INFORMATION (2)

Date of inspection: ..... Name of main inspecting officer: .....
Date of inspection: Name of main inspecting officer:

Facility name: .....
Facility name:

Which species are kept at the facility?
Which species are kept at the facility?

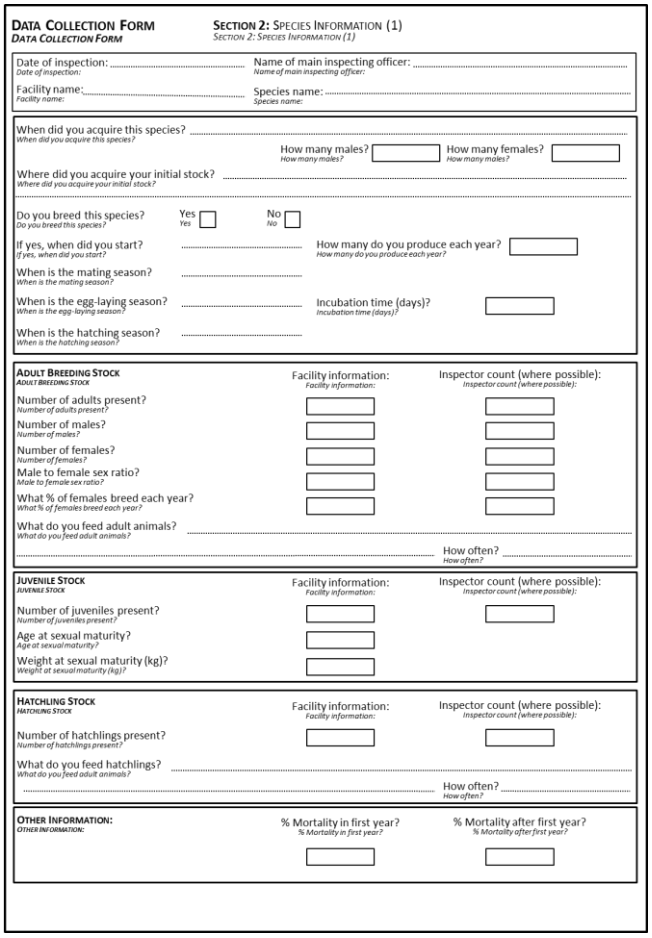
No. *No.*	Local Name *Local Name*	Scientific Name *Scientific Name*	Registered to keep (✓) *Registered to keep*	Species-specific form completed (✓) *Species-specific form completed*	Species-specific score *Species-specific score*
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

Next step: Complete species-specific forms for each species
Next step: Complete species-specific forms for each species

Additional notes:
Additional notes:

.....
.....
.....
.....
.....

Section 2: Species information (1) and **(2)** should be completed for **all species** listed in Section 1(2) for that facility (not just those for which they have applied for permits or registered).



DATA COLLECTION FORM
DATA COLLECTION FORM

SECTION 2: SPECIES INFORMATION (1)
SECTION 2: SPECIES INFORMATION (1)

Date of inspection: ..... Name of main inspecting officer: .....
Date of inspection: Name of main inspecting officer:

Facility name: ..... Species name: .....
Facility name: Species name:

When did you acquire this species? .....
When did you acquire this species?

How many males? ☐ How many females? ☐
How many males? How many females?

Where did you acquire your initial stock? .....
Where did you acquire your initial stock?

.....

Do you breed this species? Yes ☐ No ☐
Do you breed this species? Yes No

If yes, when did you start? ..... How many do you produce each year? ☐
If yes, when did you start? How many do you produce each year?

When is the mating season? .....
When is the mating season?

When is the egg-laying season? ..... Incubation time (days)? ☐
When is the egg-laying season? Incubation time (days)?

When is the hatching season? .....
When is the hatching season?

ADULT BREEDING STOCK
ADULT BREEDING STOCK

	Facility information:	Inspector count (where possible):
Number of adults present?	☐	☐
Number of males?	☐	☐
Number of females?	☐	☐
Male to female sex ratio?	☐	☐
What % of females breed each year?	☐	☐

What do you feed adult animals? .....
What do you feed adult animals?

..... How often? .....
How often?

JUVENILE STOCK
JUVENILE STOCK

	Facility information:	Inspector count (where possible):
Number of juveniles present?	☐	☐
Age at sexual maturity?	☐	
Weight at sexual maturity (kg)?	☐	

HATCHLING STOCK
HATCHLING STOCK

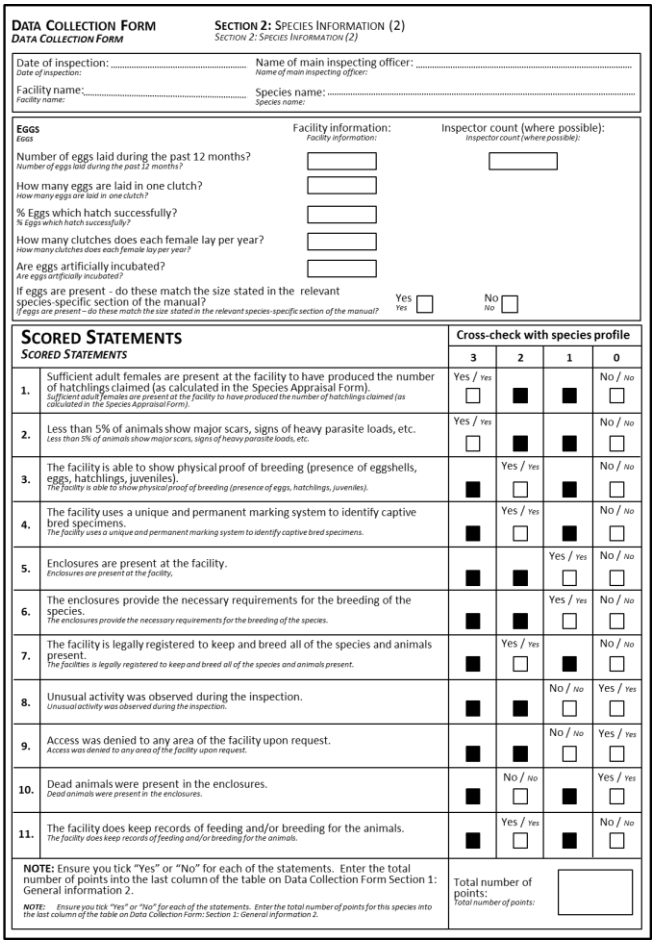
	Facility information:	Inspector count (where possible):
Number of hatchlings present?	☐	☐

What do you feed hatchlings? .....
What do you feed adult animals?

..... How often? .....
How often?

OTHER INFORMATION:
OTHER INFORMATION:

% Mortality in first year?	% Mortality after first year?
☐	☐



DATA COLLECTION FORM
DATA COLLECTION FORM

SECTION 2: SPECIES INFORMATION (2)
SECTION 2: SPECIES INFORMATION (2)

Date of inspection: ..... Name of main inspecting officer: .....
Date of inspection: Name of main inspecting officer:

Facility name: ..... Species name: .....
Facility name: Species name:

EGGS
EGGS

	Facility information:	Inspector count (where possible):
Number of eggs laid during the past 12 months?	☐	☐
How many eggs are laid in one clutch?	☐	
% Eggs which hatch successfully?	☐	
How many clutches does each female lay per year?	☐	
Are eggs artificially incubated?	☐	

If eggs are present - do these match the size stated in the relevant species-specific section of the manual? Yes ☐ No ☐

SCORED STATEMENTS		Cross-check with species profile			
		3	2	1	0
1.	Sufficient adult females are present at the facility to have produced the number of hatchlings claimed (as calculated in the Species Appraisal Form).	Yes ☐	■	■	No ☐
2.	Less than 5% of animals show major scars, signs of heavy parasite loads, etc.	Yes ☐	■	■	No ☐
3.	The facility is able to show physical proof of breeding (presence of eggshells, eggs, hatchlings, juveniles).	■	Yes ☐	■	No ☐
4.	The facility uses a unique and permanent marking system to identify captive bred specimens.	■	Yes ☐	■	No ☐
5.	Enclosures are present at the facility.	■	■	Yes ☐	No ☐
6.	The enclosures provide the necessary requirements for the breeding of the species.	■	■	Yes ☐	No ☐
7.	The facility is legally registered to keep and breed all of the species and animals present.	■	Yes ☐	■	No ☐
8.	Unusual activity was observed during the inspection.	■	■	No ☐	Yes ☐
9.	Access was denied to any area of the facility upon request.	■	■	No ☐	Yes ☐
10.	Dead animals were present in the enclosures.	■	No ☐	■	Yes ☐
11.	The facility does keep records of feeding and/or breeding for the animals.	■	Yes ☐	■	No ☐

NOTE: Ensure you tick "Yes" or "No" for each of the statements. Enter the total number of points into the last column of the table on Data Collection Form Section 1: General information 2.

Total number of points: ☐

Make sure that the first box (date, names of the main inspecting officer and the facility) is completed on each page of the form so that it is easier for you to assess the information that you have collected. You should also check that you have entered the species name at the top of both sheets.

This section of the form will provide the data that you need to help you assess if the facility is likely to be breeding all of the animals claimed.

The information collected in Section 2 should be compared to the species-specific information in the Manual, both the breeding and other parameters and the "Indicators of possible false claims of captive breeding" to assist you in marking the Scored Statements at the end of Section 2: Species information (2) form. Score "No" if information relating to a particular statement was not available. It can be difficult to confirm a facility's counts for many species (particularly freshwater turtles), but this should be possible for most terrestrial species.

We would suggest you take photos during your visit, particularly of animals that are claimed to be hatchlings or juveniles. If you are not able to verify the ages of individual specimens during the visit, these can be confirmed by experts at a later stage.

Scored Statements: assigning a score for a species.

The results of the Scored Statements will allow you to provide a score for each species. Enter this into the table on Data collection form Section 1 General information (2). This will help you to ensure that you have applied a score for each of the species present.

We strongly suggest follow-up is necessary and should be carried out where this assessment shows that:
Any illegal animals are present at the facility;

- The information provided by the facility and collected during the inspection is inconsistent with that contained in the manual;
- The number and condition of animals present is insufficient to produce the quantity claimed;
- The conditions and husbandry provided is not of a standard necessary to produce animals regularly and commercially on the scale claimed;
- Animals seen at the facility appear to show characteristics suggesting that they were wild-caught rather than captive bred;
- The facility is unwilling to allow the inspection team access to all areas of the facility when requested.

The general assessment of the facility may indicate that some species are being produced legally and as claimed; **however, you should follow-up on any species where this does not appear to be the case**.

Based on the information available, any facility that:

- Scores the maximum number of points for all relevant statements **is most likely to be** producing the species and quantities claimed.
- Scores less than the maximum number of points for any of the relevant statements **is not operating optimally** in some respects. Follow-up required in relevant areas.
- Scores of less than 14 suggest **potential failures** in legality, husbandry and/or knowledge. Follow-up action is required as soon as possible.
- **Scores of 0 for any relevant statement requires urgent follow-up action**.

Follow-up options include:

- Repeat inspection and reassessment;
- Impose a more frequent inspection schedule for that facility and/or business until all concerns have been fully addressed;
- Additional investigation into the business and facility;
- Cancellation of existing permits;
- Refusal of new permits;
- Seizure of illegally held animals;
- Prosecution.

CITES permits should not be issued with source codes of C (captive bred), D (captive bred – Appendix I), (F (Farmed) or R (ranched) if the production systems used do not meet these requirements.

Please note that situations do change. It is suggested that authorities introduce and follow an inspection schedule to help ensure that all facilities are assessed on a regular basis; even those which, from previous inspections, appear to be operating within the law. Inspections should also be conducted if a facility applies for permits for any new species that they have not previously traded in or claimed to breed.

Refer to local experts or the TRAFFIC-produced ASEAN-WEN Identification Sheets for Wildlife Species Traded in Southeast Asia or other guides for additional assistance with identification. The Checklist of CITES Species (www.checklist.cites/org/#) will help you to determine if a species is CITES-listed.

Box 11: Reptile eggs and egg shells

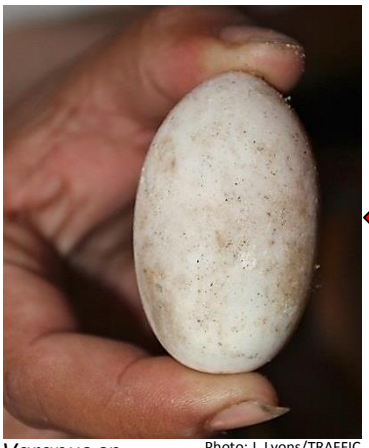
Eggs

Any facility visited during the egg-laying or incubation period should have enough eggs present to support their claims of captive breeding.

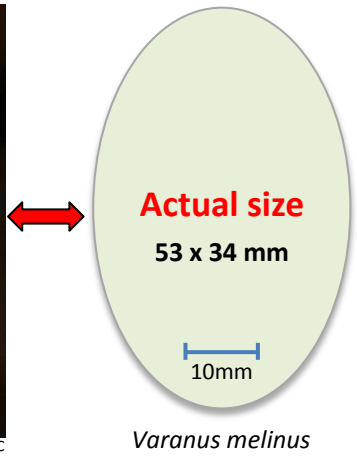
It is often possible to identify turtle, tortoise, monitor lizard and python eggs since sizes and shapes differ from species to species. Information on the egg size and appearance for a range of species is provided in this manual.

Although egg size and shape can vary, if the eggs present are very different to the shape and sizes of eggs given in this manual then it is possible that they belong to a different species.

Photo: J. Lyons/TRAFFIC



Varanus sp. Photo: J. Lyons/TRAFFIC



Varanus melinus

NOTE:
Snake and lizard eggs are leathery and fairly soft; unlike bird eggs. When comparing eggs to the images and sizes in the manual, handle these very carefully and take care not to turn them. Unlike birds' eggs, reptile eggs are not turned during incubation. Turning reptile eggs can kill the hatchling inside.

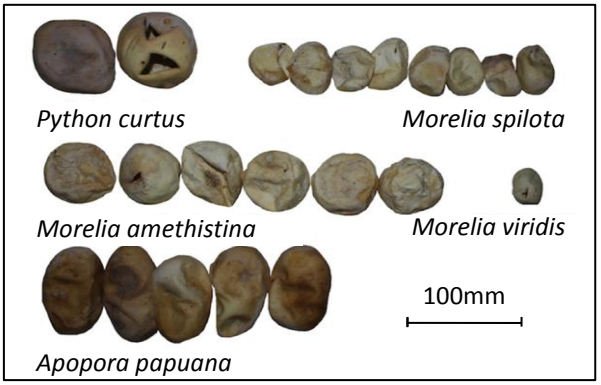
Eggshells

If the inspection takes place after the hatching season, the presence of eggshells can also be used to provide proof of captive breeding.

It is strongly suggested that CITES Management Authorities require all captive breeding facilities to retain eggshells from freshwater turtles, tortoises, monitor lizards and pythons.

Eggshells must be destroyed after the inspection so that they cannot be used to verify multiple claims of breeding (eg. in future years, or even at a different facility).

Photo: J. Lyons/TRAFFIC



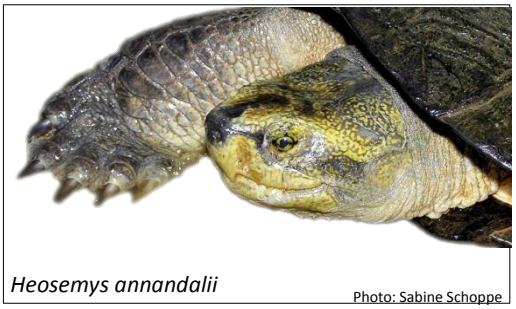
Photos: D. Natusch/J. Lyons

Freshwater turtles and tortoises

General information

Freshwater turtles:

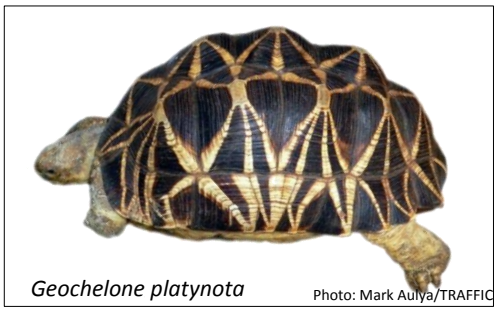
- All have webbed feet to aid their aquatic lifestyle.
- Spend most time in water.
- Need access to a pond or pool if they are to breed.
- Need dry land on which to lay their eggs.



Heosemys annandalii Photo: Sabine Schoppe

Tortoises:

- All have wide stump-like or "elephant-like" feet.
- Spend all their time on land.
- Will drown in deep water.
- Need dry land on which to lay their eggs.



Geochelone platynota Photo: Mark Auliya/TRAFFIC

Male or female?

For many species, the shape of the plastron and the size of the tail can be used to determine the gender of the animal.

Males:

Cuora amboinensis (male)

Photo: J. Lyons/TRAFFIC

Tail: Usually longer and thicker

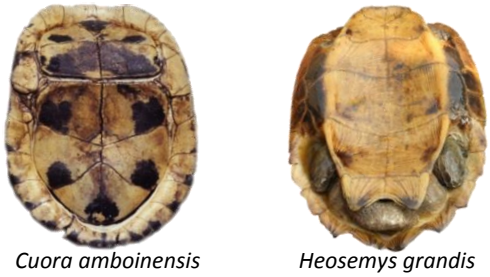


Photo: Dino Sharma

Cuora amboinensis (male)

Heosemys grandis (male)

Photo: J. Lyons/TRAFFIC

Plastron: Generally concave

Females:

Cuora amboinensis (female)

Photo: J. Lyons/TRAFFIC

Tail: Usually shorter and narrower

Photo: Dino Sharma

Cuora amboinensis (female)

Heosemys grandis (female)

Photo: J. Lyons/TRAFFIC

Plastron: Generally flat

Check the species-specific pages for precise information on each species.

Growth Rates:

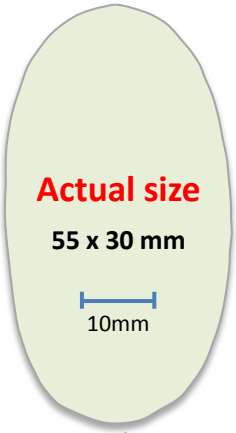
Freshwater turtles and tortoises grow quite slowly and it may take many years before they are able to breed. Rates of growth may be a little faster in well cared for captive animals, but will not vary drastically.

You should check the hatchling size given in each species sheet.

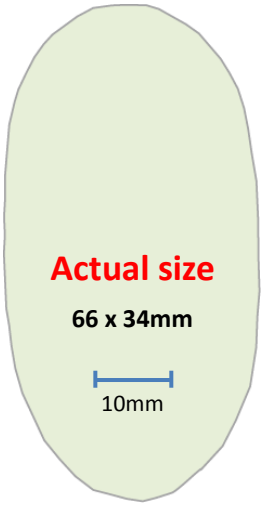
Freshwater turtle and tortoise eggs

Place freshwater turtle and tortoise eggs next to these outlines for comparison

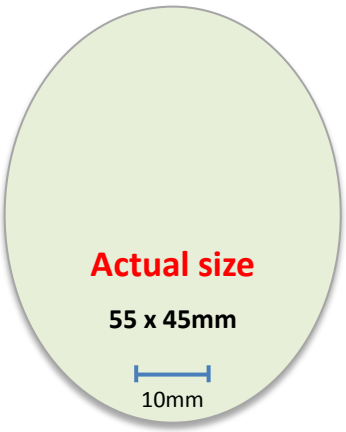
Cuora amboinensis



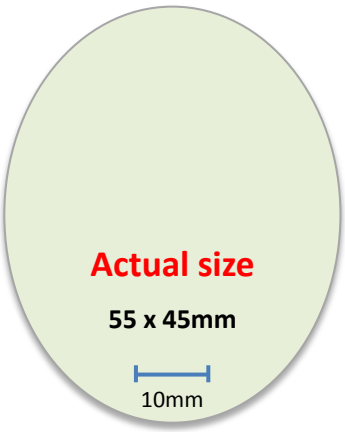
Cuora galbinifrons bouretti



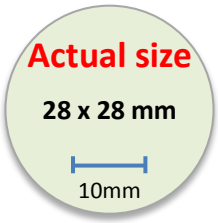
Heosemys spinosa



Heosemys annandalii



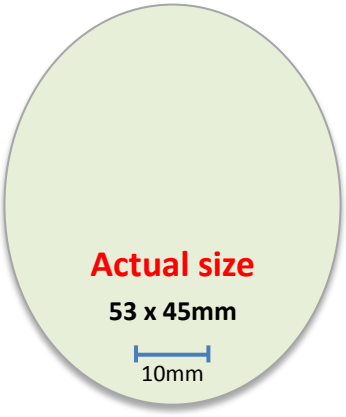
Heosemys grandis



Amyda cartilaginea

Platysternon megacephalum

Geochelone platynota



Indotestudo elongata

Southeast Asian Box Turtle – *Cuora amboinensis*

Common Name: Southeast Asian Box Turtle
National Protection:
CITES listing: Appendix II
IUCN (2000): Vulnerable
Distribution: Bangladesh; Cambodia; India; Indonesia; Lao PDR; Malaysia; Myanmar; Singapore; Thailand; Viet Nam

Hatchling

Adult

Photos: Sabine Schoppe

Physical Description:

Photos: Chris R. Shepherd/TRAFFIC

Carapace:

- Length – Adult: 22 – 25cm, hatchling: 3.8 – 4.8cm
- Highly domed
- Dark olive brown to black in colour

Plastron:

- Hinged, allowing shell to close completely
- Yellow cream or pale brown, markings vary
- Edge of shell smooth

Other characteristics:

- Three bright yellow stripes on black head

Sex Differences:

Male	Female
Plastron slightly concave below the hinge	Plastron flat below the hinge
Tail longer and thicker than in female	Tail short and narrow

Cuora amboinensis

Plastron (male)
Photo: Dino Shama

Plastron (female)
Photo: Dino Shama

Southeast Asian Box Turtle – *Cuora amboinensis*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	40 - 69	50	0 - 60	50
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	1 - 6	3	1 - 6	3
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1 - 4	1	1 - 4	3
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	20 - 80	65	20 - 60	50
Male : female sex ratio	1:1 - 1:10	1:2	1:1 – 1:2	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Age at sexual maturity (years)	2 - 4	2.5	?	4.5
Weight at sexual maturity (kg)	0.8 - 1.8	1	?	?
Mating season	All year	All year	All year	All year
Egg laying season	All year	See range	All year	November - August
Incubation time (days)	60 - 120	88	47 - 100	80
Mortality in first year (%)	30 - 70	50	?	?
Mortality after first year (%)	5 - 10	6	?	?

Known captive breeding history

- Breeding claimed since at least 2004, however there is little evidence that the species can be successfully bred in captivity in commercial quantities
- Claimed to be captive-bred on a commercial scale by some facilities in Viet Nam
- Females able to store sperm for one year and can produce viable eggs in the second year after being separated from the males

Indicators of possible false claims of captive breeding

- Little or no substrate to allow animals to burrow and lay eggs
- No breeding records for adult breeding stock
- No water-filled pond to allow reproduction (these animals mate in water)
- Eggs are left in the adult enclosure for incubation. Eggs and hatchlings may be damaged by other nesting adults resulting in reduced breeding success.

Yellow-headed Temple Turtle – *Heosemys annandalii*

Common Name: Yellow-headed Temple Turtle
National Protection:
CITES listing: Appendix II
IUCN (2000): Endangered
Distribution: Cambodia; Lao PDR; Malaysia; Myanmar; Thailand; Viet Nam

Hatchling

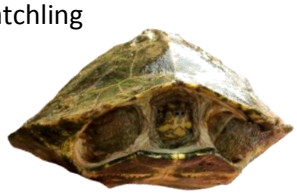


Photo: J. Lyons/TRAFFIC

Adult

Photo: D. Natusch/TRAFFIC

Photo: Sabine Schoppe

Physical Description:

Photo: Sabine Schoppe

Carapace:

- Length – Adult: up to 50cm, hatchling: 7cm
- Oval in shape with no ridge across the top
- Generally blackish in colour

Plastron:

- Irregular black markings on dark orange/yellow scales (no radiating lines)
- Black markings increase with age, old animals may have black plastron

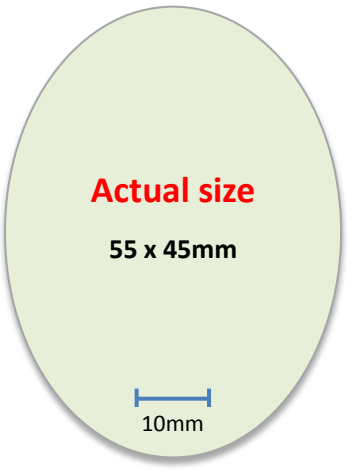
Other characteristics:

- Head blackish-olive with very distinctive yellow lines
- Tip of upper jaw has two sharp projections

Young animals:

- Carapace more rounded, domed with a ridge across the top
- Head black with yellow lines
- Orange scales on legs

Small individuals may be confused with *Cyclemys* species, please check with a species expert.



Heosemys annandalii

Sex Differences:

Male	Female
Plastron slightly concave	Plastron flat
Tail longer and thicker than females	

Yellow-headed Temple Turtle – *Heosemys annandalii*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	60 - 80	70	50 - 70	60
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	4 - 12	5 - 7	4 - 8	5
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1 - 2	1	?	?
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	50 - 70	60	0 - 40	15
Male : female sex ratio	1:2 - 3:11	1:2	?	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Age at sexual maturity (years)	Female: 3 - 5	Female: 4	?	?
Weight at sexual maturity (kg)	Female: 3 - 6	Female: 4	?	?
Mating season	October - March	August - October	All year	November - March
Egg laying season	October - March	December - February	November - January	December - January
Incubation time (days)	70 - 140	120	80 - 140	120
Mortality in first year (%)	5 - 11	9	?	?
Mortality after first year (%)	6 - 10	7	?	?

Known captive breeding history

- Can be difficult to breed without correct conditions
- Unknown if captive breeding is viable on a commercial scale
- Claimed to be captive-bred on a commercial scale by some facilities in Viet Nam
- Unclear whether this species is being produced for consumption or the pet trade

Indicators of possible false claims of captive breeding

- Little or no substrate for burrowing and egg laying activities
- No breeding records for adult breeding stock
- No large dry area with hiding places provided by wood pieces, leaves, large rocks, etc.
- No water to allow reproduction
- Eggs left in the adult enclosure for incubation.

Giant Asian Pond Turtle – *Heosemys grandis*

Common Name: Giant Asian Pond Turtle
National Protection:
CITES listing: Appendix II
IUCN (2000): Vulnerable
Distribution: Cambodia; Lao PDR; Peninsula Malaysia; Myanmar; Thailand; Viet Nam

Hatchling

Photo: Kalyar Platt

Photo: Sabine Schoppe

Juvenile

Photo Sabine Schoppe

Adult

Photo: J. Lyons/TRAFFIC

Physical Description:

Carapace:

- Length – Adult: up to 48cm, hatchling: 4.2 – 6.3cm
- Usually has five scales across top shell
- Dark olive, brown to black in colour
- Distinctive yellow, orange or brown ridge across the top of the shell (very prominent in young animals)

Plastron:

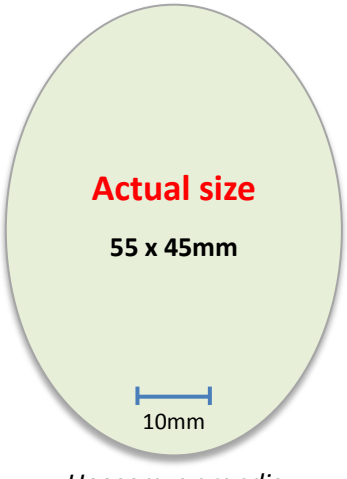
- Yellow with dark radiating lines on each scale (very prominent in young animals)
- No hinge

Other characteristics:

- Head greyish green to brown with yellow, orange or pink spots (often fade with age)

Sex Differences:

Male	Female
Plastron slightly concave	Plastron flat
Tail longer and thicker than in females	Tail shorter than in males



Heosemys grandis

Plastron (male)

Photo: J. Lyons/TRAFFIC

Plastron (female)

Photo: J. Lyons/TRAFFIC

Giant Asian Pond Turtle – *Heosemys grandis*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	40 - 80	50	50 - 70	60
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	2 - 12	5	1 - 8	4
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1 - 2	1	1 - 2	1
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	40 - 90	60	0 - 20	10
Male : female sex ratio	1:1 - 1:5	1:2	?	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Age at sexual maturity (years)	Female: 2 - 5	Female: 3.5	Female: 6 - 10	Female: 6
Weight at sexual maturity (kg)	Female: 2 - 3.5	Female: 2.3	Female: 2.5 – 3.5	Female: 3
Mating season	June - December	August	All year	All year
Egg laying season	October - March	January	October - December	November - December
Incubation time (days)	120 - 140	120	80 - 140	110
Mortality in first year (%)	2 - 10	50	?	?
Mortality after first year (%)	2 - 5	2.5	?	?

Known captive breeding history

- Can be difficult to breed without correct conditions
- Unknown if captive breeding is viable on a commercial scale
- Claimed to be captive-bred on a commercial scale within farms in Viet Nam
- Unclear whether this species is being produced for consumption or the pet trade

Indicators of possible false claims of captive breeding

- Little or no substrate for burrowing and egg laying activities
- No breeding records for adult breeding stock
- No large dry area with hiding places provided by wood pieces, leaves, large rocks, etc.
- No water to allow reproduction
- May not remove eggs for artificial incubation. Eggs should be removed from the adult enclosures to allow successful incubation and prevent damage by other nesting adults

Southeast Asian Softshell Turtle – *Amyda cartilaginea*

Common Name: Southeast Asian Softshell Turtle
National Protection:
CITES listing: Appendix II
IUCN (2000): Vulnerable
Distribution: Brunei; Cambodia; Indonesia (Sumatra, Java, Kalimantan); India; Lao PDR; Malaysia; Myanmar; Singapore; Thailand; Viet Nam

Hatchling

Photo: D. Natusch

Young animal

Photo: Mark Auliya

Adult

Photo: M. Cota

Physical Description:

Carapace:

- Length – Adult: up to 83cm, hatchling: 8cm
- Rounded in shape
- Front edge has a rough texture with small bumps

Photo: Mark Auliya

Plastron:

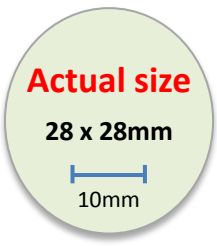
- White to grey in colour

Other characteristics:

- Yellowish dots on head and neck
- Nose is trunk-like and very straight

Young animals:

- Carapace shows yellow patches. In some populations the carapace of young animals have a black pattern in a wing-like shape on a brown to green background, in others (see hatchling image above) dark eye-shaped spots framed by a dotted line are visible
- Several ridges run across the carapace



Amyda cartilaginea

Sex Differences:

Male	Female
White plastron	Grey plastron
Tail longer and thicker than females	Tail shorter than males
Body opening is near the tip of the tail	

Southeast Asian Softshell Turtle – *Amyda cartilaginea*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	50 - 80	65	Unknown	Unknown
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	4 - 16	4	4 - 30	14
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1 - 5	2	1 - 4	2
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	80 - 100	90	0 - 25	15
Male : female sex ratio	1:2	1:1 - 1:4	1:1	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Age at sexual maturity (years)	Female: 2 – 2.5	Female: 2	Female: 1 - 2	Female: 1.6
Weight at sexual maturity (kg)	Female: 1.7 - 4	Female: 2.5	?	?
Mating season	January - June	February - April	?	?
Egg laying season	April - July	May - June	December - February	December - February
Incubation time (days)	70 - 130	90	60 - 145	110
Mortality in first year (%)	10 - 90	20	High	10 - 70
Mortality after first year (%)	1.5 - 2	< 1.5	?	?

Known captive breeding history

- Successfully bred in captivity since at least the early 2000s
- Claimed to be captive-bred on a commercial scale within farms in Viet Nam, but the production capacity and the veracity of these claims is unknown.
- Other range states (eg. Indonesia) have stated that the commercial captive breeding of this species is not possible.

Indicators of possible false claims of captive breeding

- No shelter sites (e.g., logs, bricks, corrugated iron, plants, etc.)
- Little or no substrate for burrowing and egg laying activities
- No breeding records for adult breeding stock
- No water to allow reproduction
- May not remove eggs for artificial incubation. Eggs should be removed from the adult enclosures to allow successful incubation and prevent damage by other nesting adults

Yellow-headed Tortoise – *Indotestudo elongata*

Common Name: Yellow-headed Tortoise, Elongated Tortoise
National Protection:
CITES listing: Appendix II
IUCN (2000): Endangered
Distribution: Bangladesh; Cambodia; India; Lao PDR; Peninsula Malaysia; Myanmar; Nepal; Thailand; Viet Nam

Hatchling

Photo: C. Beastall/TRAFFIC

Juvenile

Photo: J. Lyons/TRAFFIC

Adult

Photo: J. Lyons/TRAFFIC

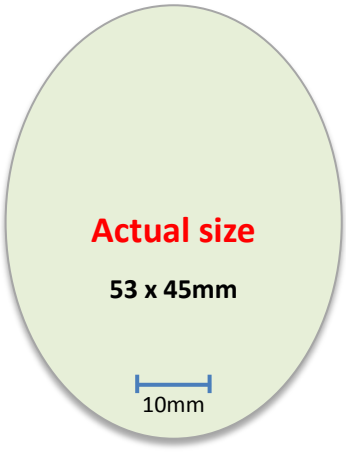
Physical Description:

Carapace:
- Length – Adult: up to 36cm, hatchling: 3.1 – 5.8cm
- Highly domed – the highest point when viewed from the side is the third scale across the top
- Markings vary. Orange or orange to greenish background. May have irregular black markings

Plastron:
- Markings vary, but scales usually have black blotches in the centre of a yellow background

Other characteristics:
- Head yellow
- Males show pinkish colouration around the nostrils and eyes during the breeding season

Young animals:
- Carapace roundish
- Scales on the edge of the carapace are saw-like
- Plastron cream in colour



Indotestudo elongata

Sex Differences:

Male	Female
Plastron slightly concave	Plastron flat
Tail longer and thicker than females	Tail shorter than males
Shallow 'V' shape notch in plastron scale above the tail	Deep 'U' shape notch in plastron scale above the tail
Larger (adults 30 cm or more)	Smaller (adults 28 cm or less)

Yellow-headed Tortoise – *Indotestudo elongata*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	50 - 70	60	50 - 100	70
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	1 - 9	4	1 - 9	4
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1 - 3	1	2 - 3	2
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	50 - 70	50	0 - 20	15
Male : female sex ratio	?	1:2	?	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Age at sexual maturity (years)	Female: 2 - 10	Female: 5	Female: 5 - 8	Female: 7
Weight at sexual maturity (kg)	Female: 0.8 - 1.5	Female: 1.4	Female: 1.5 – 2.5	Female: 2
Mating season	June - December	August	All year	May - August
Egg laying season	October - May	December - January	All year	October - March
Incubation time (days)	110 - 190	137	42 - 190	150
Mortality in first year (%)	4.5 - 10	6.5	20 - 50	30
Mortality after first year (%)	2 - 12	5	Low	Low

Known captive breeding history

- Given adequate time invested, this species can be easy to breed
- Claimed to be captive-bred on a commercial scale within farms in Viet Nam
- Unclear whether this species is used for food, pets or traditional medicine

Indicators of possible false claims of captive breeding

- No shelter sites (e.g., logs, bricks, corrugated iron, plants, etc.)
- Little or no substrate for burrowing and egg laying activities
- No breeding records for adult breeding stock
- No large dry area with hiding places provided by wood pieces, leaves, large rocks, etc.
- No water to allow reproduction
- May not remove eggs for artificial incubation. Eggs should be removed from the adult enclosures to allow successful incubation and prevent damage by other nesting adults

Indochinese Box Turtle – *Cuora galbinifrons*

Common name:	Indochinese Box Turtle
National Protection:	
CITES listing:	Appendix I
IUCN (2000):	Critically Endangered
Distribution:	Cambodia; China; Lao PDR; Viet Nam

Hatchling - carapace

Hatchling - plastron

Carapace length: Adult: up to 19.8cm

Table A: Breeding Parameters	Scientific Information*	
	Range	**Average**
Hatching success (%)	Unknown	Unknown
Number of eggs in a clutch	1 - 3	1 - 2
Number of clutches per year	1 - 2	1
Females reproducing each year (%)	Unknown	Unknown
Male : female sex ratio	Unknown	Unknown

Table B: Other Parameters		
Age at sexual maturity (years)	10 - 15	Unknown
Weight at sexual maturity (kg)	Unknown	0.8
Mating season	All year	All year
Egg laying season	All year	April - June
Incubation time (days)	65 - 100	75 - 90
Mortality in first year (%)	Unknown	-
Mortality after first year (%)	Low	-

Juvenile

Adult

Photos: R. Struijk

Cuora galbinifrons bouretti

The Indochinese Box Turtle *Cuora galbinifrons* has been bred in captivity, but is regarded as a difficult, sensitive species that is challenging (but not impossible) to establish and reproduce consistently in captivity (Buskirk, 1989; de Bruin, 1994; Fiebig & Lehr, 2000; Struijk, 2010).

Any facilities claiming to breed this species should be inspected immediately and production capacity verified

Spiny Turtle – *Heosemys spinosa*

Common name:	Spiny Turtle, Sunburst Turtle
National Protection:	
CITES listing:	Appendix II
IUCN (2000):	Endangered
Distribution:	Brunei; Indonesia; Malaysia; Philippines; Singapore; southern Myanmar; Thailand

Carapace length: Adult: 22cm

Table A: Breeding Parameters

	Scientific Information*	
	Range	**Average**
Hatching success (%)	0 - 60	44
Number of eggs in a clutch	1 - 3	1
Number of clutches per year	1 - 6	1
Females reproducing each year (%)	Unknown	100
Male : female sex ratio	1:1 – 1:5	1:2

Table B: Other Parameters

Age at sexual maturity (years)	Unknown	> 6
Weight at sexual maturity (kg)	Unknown	>1
Mating season	All year	All year
Egg laying season	All year	All year
Incubation time (days)	94 - 160	117
Mortality in first year (%)	Unknown	5
Mortality after first year (%)	Low	0

Hatchling - carapace

Hatchling - plastron

Adult and juvenile

Photos: B. Hughes

Heosemys spinosa

The Spiny Turtle *Heosemys spinosa* has been successfully bred in captivity, but only on a few occasions by Atlanta Zoo, Knoxville Zoo, Tulsa Zoo, Durrell Conservation Trust and Tennessee Aquarium. It is difficult to successfully hatch eggs with any regularity. Indonesia allows a wild harvest quota for this species. The low price paid for animals, in combination with the time needed to produce captive young means that nearly all individuals exported are wild-caught.

Any facilities claiming to breed this species should be inspected immediately and production capacity verified

Big-headed Turtle – *Platysternon megacephalum*

Common name:	Big-headed Turtle
National Protection:	
CITES listing:	Appendix I
IUCN (2000):	Endangered
Distribution:	Cambodia; China; Lao PDR; Myanmar; Thailand; Viet Nam

Juvenile

Adult

Photos Peter Paul van Dijk

Carapace length: Adult: 18.5cm

Table A: Breeding Parameters	Scientific Information*	
	Range	**Average**
Hatching success (%)	-	-
Number of eggs in a clutch	1 - 4	1
Number of clutches per year	-	-
Females reproducing each year (%)	-	-
Male : female sex ratio	-	-

Table B: Other Parameters

Age at sexual maturity (years)	5-9	-
Weight at sexual maturity (kg)	-	-
Mating season	-	-
Egg laying season	-	-
Incubation time (days)	-	-
Mortality in first year (%)	Unknown	-
Mortality after first year (%)	Low	-

The Big-headed Turtle *Platysternon megacephalum* does not breed readily in captivity. Zoos and other institutions have failed to achieve successive years of captive breeding. The most successful attempts at captive breeding suggest the species has a low annual reproductive potential (clutch size of up to four eggs, sexual maturity reached at five to nine years old) with specific captive habitat requirements.

Platysternon megacephalum

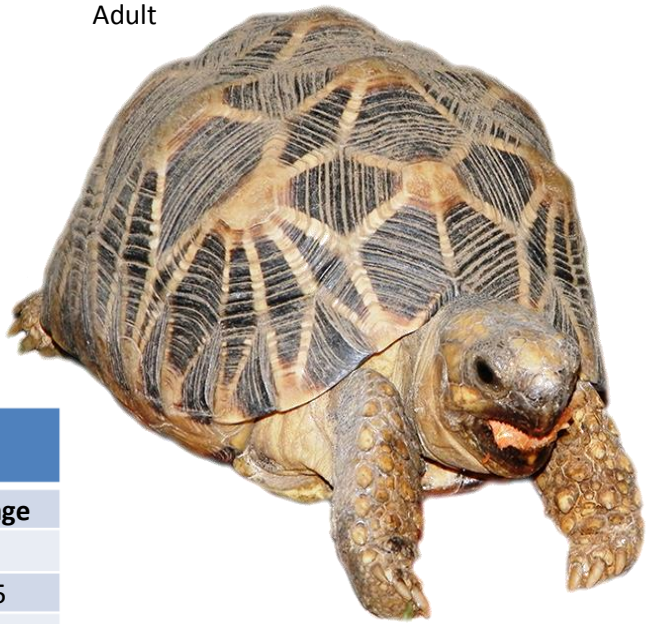
Note: the egg of this species is similar in shape to a bird egg.

Any facilities claiming to breed this species should be inspected immediately and production capacity verified

Burmese Star Tortoise – *Geochelone platynota*

Common name:	Burmese Star Turtle
National Protection:	
CITES listing:	Appendix I
IUCN (2000):	Critically Endangered
Distribution:	Myanmar

Adult



Carapace length: Adult: up to 26cm

Table A: Breeding Parameters	Scientific Information*	
	Range	**Average**
Hatching success (%)	-	-
Number of eggs in a clutch	1 - 10	4 - 5
Number of clutches per year	1 - 4	-
Females reproducing each year (%)	-	-
Male : female sex ratio	1:1 - 1:4	1:2

Hatchling

Table B: Other Parameters

Age at sexual maturity (years)	7 – 15	>7
Weight at sexual maturity (kg)	0.9 – 2.0	1.0
Mating season	June - September	-
Egg laying season	October - February	90 - 120 days after mating
Incubation time (days)	172 - 251	197
Mortality in first year (%)	Unknown	-
Mortality after first year (%)	Low	-

Photos: Kalyar Platt

Geochelone platynota

The Burmese Starred Turtle *Geochelone platynota* breeds readily if properly maintained in captivity. In Myanmar, there are several captive breeding operations (not for commercial purposes) maintained by the Forest Department at the Yadanabon Zoological Gardens, Minzontaung, Shwe Settaw, and Lawkanandar Wildlife Sanctuaries. The wild population and subpopulations of this species are extremely small and highly vulnerable to overharvesting.

Any facilities claiming to breed this species should be inspected immediately and production capacity verified

Phytons

Python eggs

Place python eggs next to these outlines for

Short tailed Pythons – *Python brongersmai, P. breitensteini, P. curtus*

These three species were, until quite recently considered as one species; *Python curtus*, the Short-tailed or Blood Python. They are similar and expert assistance should be sought for accurate identification.

Scientific name	*Python brongersmai*	*Python breitensteini*	*Python curtus*
English name	Blood Python Brongersma's Short-tailed Python	Bornean Short-tailed Python	Sumatran Short-tailed Python
Local name			
National Protection			
CITES listing	Appendix II	Appendix II	Appendix II
IUCN	Least Concern (2012)	Least Concern (2012)	Not evaluated
Distribution	Indonesia (eastern Sumatra); Peninsular Malaysia; southern Thailand	Brunei; Indonesia (Kalimantan); Malaysia (Sabah, Sarawak)	Indonesia (western Sumatra)

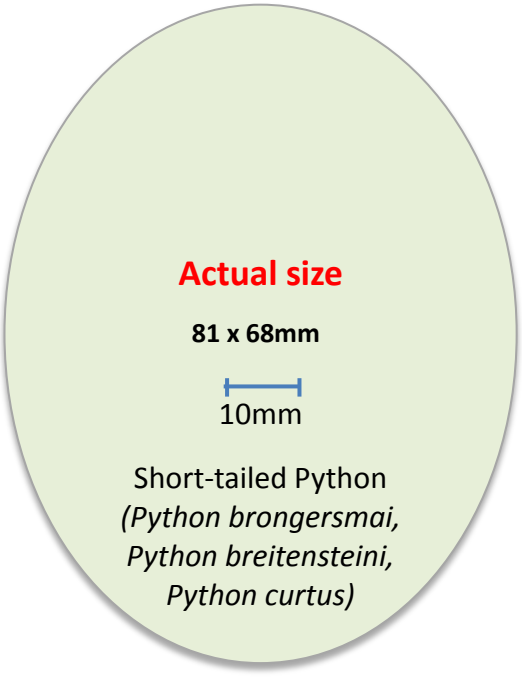
Physical Description:

Adult:

- Maximum size – *P. brongersmai:* 260cm, *P. breitensteini* and *P. curtus:* around 200cm SVL
  Colour and pattern – dark tan with brown blotches that become dull with age

Hatchling:

- Size - average 30cm SVL, weight – 25 – 40g
- Colour and pattern – light tan to yellow with dark brown blotches



Photos: D. Natusch

Short tailed Pythons – *Python brongersmai, P. breitensteini, P. curtus*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	0 - 100	90	0 - 100	95
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	10 - 33	12	8 - 30	15
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1	1	1	1
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	70 - 90	80	50 - 90	70
Male : female sex ratio	1:2 - 1:11	1:2	1:1 - 1:2	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
SVL at sexual maturity (cm)	Not measured	Female: 130 Male: 100	Unknown	Female: 100 - 150 Male: 95 - 120
Mating season	All year	June - September	November-March	November - March
Egg laying season	All year	October - January	December-May	December - May
Incubation time (days)	59 - 70	60	55 - 65	62
Mortality in first year (%)	0 - 5	1	0 - 5	1
Mortality after first year (%)	Low	0	Low	Low

Known captive breeding history

- Successfully bred in captivity since at least the early 1980s
- Routinely bred under the correct conditions
- There is little evidence of captive breeding these species due to the relatively low price paid for skins compared to the larger python species
- Although extremely difficult to tell apart, *P. breitensteini, P. brongersmai* and *P. curtus* have the same husbandry requirements

Indicators of possible false claims of captive breeding

- Dirty enclosures
- No ventilation holes for enclosures
- Large scars and parasites present on animals
- No breeding records
- Farm owner unable to produce eggshells/verification of clutches during breeding season

Burmese Python – *Python molurus bivittatus*

Common Name:	Burmese Python
Viet Nam National Protection:	Decree No. 82/2006/ND-CP
CITES listing:	Appendix II
IUCN (2012):	Vulnerable
Distribution:	Bangladesh; Cambodia; China; India; Lao PDR; Malaysia; Myanmar; Nepal; Indonesia (except New Guinea); Thailand; Timor Leste; Viet Nam

Juvenile

Adult

Photos: D. Natusch

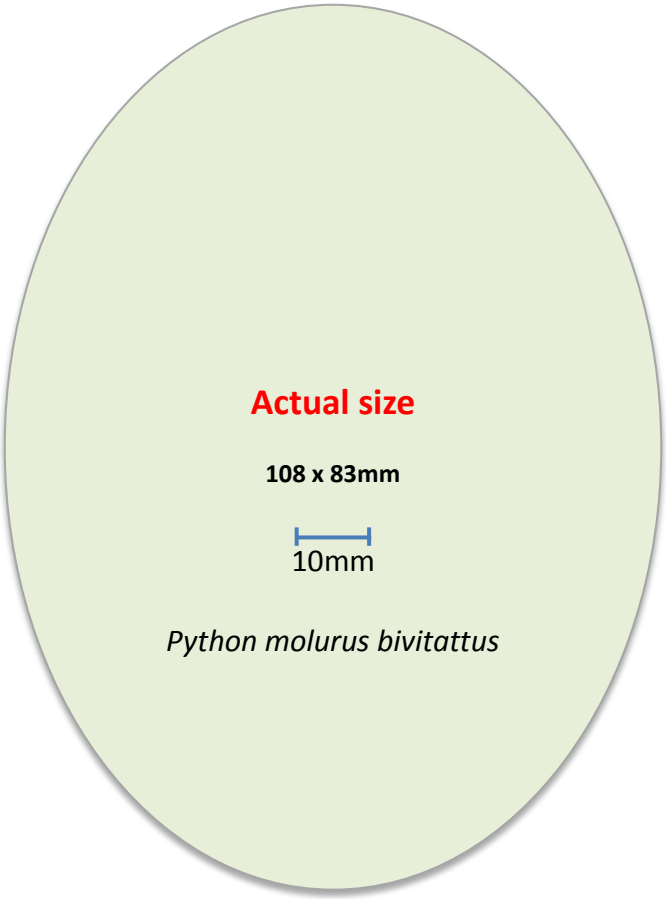
Physical Description:

Adult:

- Size - average 307cm SVL (maximum 574cm SVL)
- Colour and pattern – grey and white surface colour with yellow and dark tan to brown blotches

Hatchling:

- Size - average 50 – 60cm SVL, weight – 92 - 140g
- Colour and pattern – same as adults, but colour more vibrant when young



Burmese Python – *Python molurus bivittatus*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	0 - 100	80	0 - 100	80
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	12 - 70	33	10 - 70	30
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1	1	1	1
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	70 - 90	80	50 - 90	80
Male : female sex ratio	1:2 - 1:11	1:2	1:1 – 1:10	1:2

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
SVL at sexual maturity (cm)	?	> 200	?	Female: 150 Male: 230
Mating season	October - January	See range	?	October to January
Egg laying season	February - April	See range	November - April	See range
Incubation time (days)	55 - 64	58	60 - 80	80
Mortality in first year (%)	5 - 30	10	0 - 50	10
Mortality after first year (%)	0 - 5	1	Very low	Very low

Known captive breeding history

- Successfully bred in captivity since at least the early 1980s
- Routinely bred under the correct conditions
- Has been successfully captive-bred commercially for skins within facilities in China, Thailand and Viet Nam

Indicators of possible false claims of captive breeding

- Dirty enclosures
- No ventilation holes for enclosures
- Large scars and parasites present on animals
- No breeding records
- Farm owner unable to produce eggshells/verification of clutches during breeding season

Reticulated Python – *Python (Broghammerus) reticulatus*

Common Name:	Reticulated Python
National Protection:	
CITES listing:	Appendix II
IUCN:	Not evaluated
Distribution:	Bangladesh; Cambodia; India; Lao PDR; Malaysia; Myanmar; northern India; Indonesia (except New Guinea); Philippines; Thailand; Timor Leste; Viet Nam

Juvenile

Adult

Photos: D. Natusch

Physical Description:

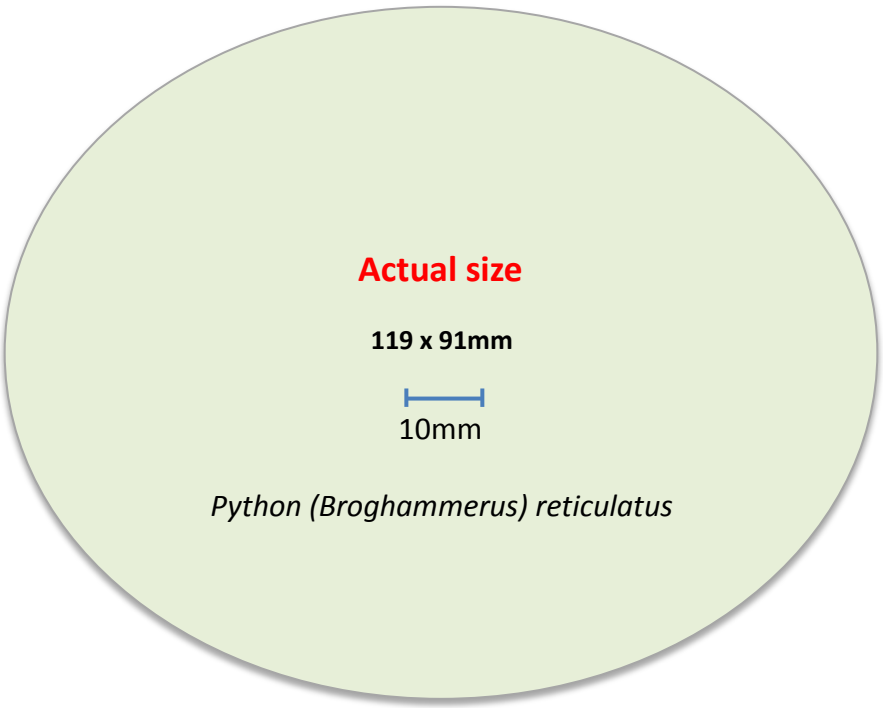
Adult:

- Size - average 400cm SVL (maximum 750cm SVL)
- Colour and pattern – grey to brown background colour with diamond pattern of yellow, white and black

Hatchling:

- Size - average 60 – 80cm SVL, weight – 100 - 140g
- Colour and pattern – same as adults, but colour more vibrant when young

Reticulated pythons have the largest eggs of any snake species



Reticulated Python – *Python (Broghammerus) reticulatus*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	0 - 100	75	0 - 100	80
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	10 - 100	30	10 - 100	30
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1	1	1	1
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	70 - 90	80	50 - 90	80
Male : female sex ratio	1:2 – 1:10	1:2	1:2 – 1:5	1:2

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
SVL at sexual maturity (cm)	See range	> 200	?	Female: 170 Male: 240
Mating season	October - January	See range	May - January	See range
Egg laying season	February - April	See range	November - April	See range
Incubation time (days)	55 - 65	60	55 - 100	80
Mortality in first year (%)	5 - 30	20	0 - 20	10
Mortality after first year (%)	0 - 2	< 1.5	Very low	Very low

Known captive breeding history

- Successfully bred in captivity since at least the early 1990s
- Routinely bred under the correct conditions
- Has been successfully captive-bred commercially for skins within facilities in Thailand and Viet Nam

Indicators of possible false claims of captive breeding

- Dirty enclosures
- No ventilation holes for enclosures
- Large scars and parasites present on animals
- No breeding records
- Farm owner unable to produce eggshells/verification of clutches during breeding season

Amethystine Python – *Morelia amethistina*

Common Name:	Amethystine Python
National Protection:	
CITES listing:	Appendix II
IUCN (2010):	Least Concern
Distribution:	Indonesia (West Papua, Papua and Maluku provinces only); Papua New Guinea; Australia

Sub-adult

Adult

Photos: D. Natusch

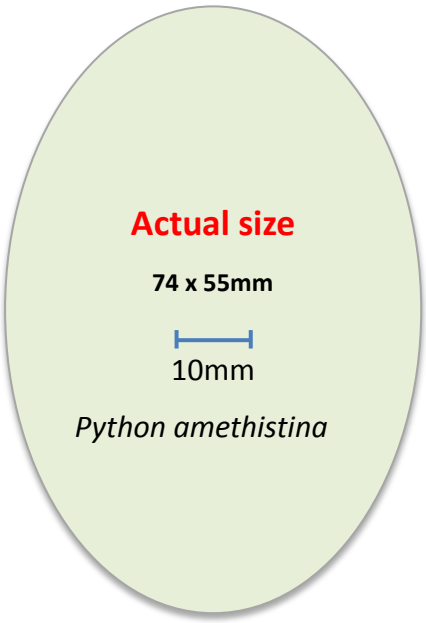
Physical Description:

Adult:

- Size - average 350cm SVL (maximum 500cm SVL)
- Colour and pattern – light to dark brown or olive with dark brown to black zigzag pattern. Underside is white or cream in colour

Hatchling:

- Size - average 60 – 70cm SVL, weight – 25 - 70g
- Colour and pattern – dark red to orange



Amethystine Python – *Morelia amethistina*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	0 - 100	90	0 - 100	80
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	5 - 19	16	5 - 20	12
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1	1	1	1
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	Unknown	Unknown	50 - 90	50
Male : female sex ratio	1:1	1:1	1:1	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
SVL at sexual maturity (cm)	Not measured	Unknown	Unknown	Female: 180+ Male: 128+
Mating season	All year	June - August	May - September	June - September
Egg laying season	All year	October - January	October - December	October - December
Incubation time (days)	65 - 100	70	50 - 100	65
Mortality in first year (%)	0 - 10	5	0 - 10	10
Mortality after first year (%)	Very low	Low	Very low	Very Low

Known captive breeding history

- Successfully bred in captivity since at least the early 1980s
- Routinely bred under the correct conditions
- Bred for commercial purposes in Indonesia farms. Nevertheless, Indonesia continues to allow a wild harvest of this species under a quota system. The ease and cost-effectiveness of collecting wild Amethystine Pythons means that most of the individuals exported from Indonesia are wild-caught

Indicators of possible false claims of captive breeding

- Dirty enclosures
- No branches and/or perches available
- No ventilation holes for enclosures
- Large scars and parasites present on animals
- No breeding records
- Farm owner unable to produce eggshells/verification of clutches during breeding season

Carpet Python – *Morelia spilota*

Common Name:	Carpet Python
National Protection:	
CITES listing:	Appendix II
IUCN (2010):	Least Concern
Distribution:	Indonesia (West Papua, Papua and Maluku provinces only); Papua New Guinea; Australia

Hatchling

Sub-adult

Adult

Photos: N. Mutton

Physical Description:

Adult:

- Size - average 250cm SVL
- Colour and pattern – variable dark banding on light tan to red/orange background colour

Hatchling:

- Size - average 40cm SVL, weight – 24 - 35g
- Colour and pattern – brick red to yellow colour with faint red to black banding

Carpet Python eggshells

Photo: J. Lyons

Morelia spilota

Hatching Carpet Python

Photo: D. Natusch

Carpet Python – *Morelia spilota*

Table A: Breeding Parameters

	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	0 - 100	95	0 - 100	95
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	10 - 30	17	5 - 33	18
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1	1	1	1
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	Unknown	Unknown	50 - 90	70
Male : female sex ratio	1:1	1:1	1:1 - 1:5	1:1

Table B: Other Parameters

	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
SVL at sexual maturity (cm)	Not measured	Unknown	Unknown	Female: 121+ Male: 91 - 121
Mating season	All year	June - July	May - September	July - August
Egg laying season	November - January	October - January	November - January	November - January
Incubation time (days)	50 - 67	55	52 - 55	55
Mortality in first year (%)	0 - 10	5	0 - 10	3
Mortality after first year (%)	Very low	Low	Very low	Very low

Known captive breeding history

- Commonly bred in captivity with minimal effort
- Has been bred for commercial purposes in Indonesia farms. Because harvest from the wild is permitted in Indonesia under a quota system and is cheaper than breeding, most carpet pythons exported from Indonesia are wild-caught

Indicators of possible false claims of captive breeding

- Dirty enclosures
- No branches and/or perches available
- No ventilation holes for enclosures
- Large scars and parasites present on animals
- No breeding records
- Farm owner unable to produce eggshells/verification of clutches laid during breeding season

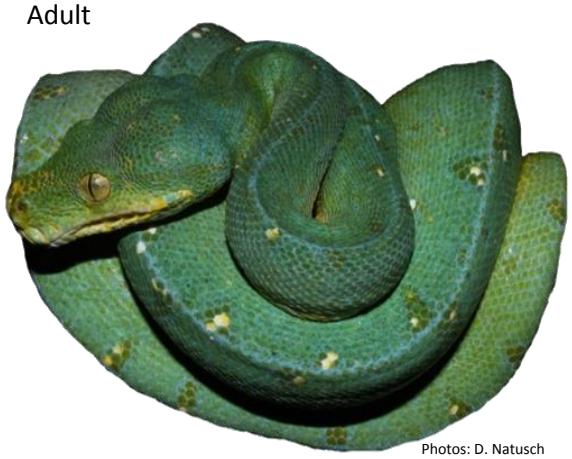
Green Python – *Morelia viridis*

Common Name:	Green Python
National Protection:	
CITES listing:	Appendix II
IUCN (2010):	Least Concern
Distribution:	Indonesia (West Papua, Papua and Maluku provinces only); Papua New Guinea; Australia

Hatchling

Hatchling

Adult



Photos: D. Natusch

Physical Description:

Adult:

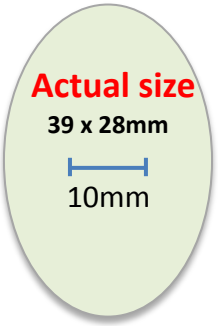
- Size - average 140cm SVL (maximum <200cm SVL)
- Colour and pattern – generally bright green, but does vary widely in facilities that breed for specific colour mutations and may include blue, yellow, black or white

Hatchling:

- Size - average 30cm SVL, weight – 8 - 15g
- Colour and pattern – banana yellow, brick red, brown. Changes to adult colouring at around 70cm SVL

Photo: J. Lyons

Green Python eggshells



Morelia viridis

Green Python – *Morelia viridis*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	0 - 100	78	0 - 100	80
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	7 - 31	16	12 - 39	16
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1	1	1	1
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	50 - 90	70	50 - 90	80
Male : female sex ratio	1:1	1:1 - 1:3	1:1	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	Average	Range	Average
SVL at sexual maturity (cm)	Not measured	Unknown	Unknown	Female: 91 Male: 112
Mating season	All year	August - November	All year	June - September
Egg laying season	All year	October - January	All year	October - January
Incubation time (days)	45 - 61	52	45 - 50	52
Mortality in first year (%)	5 - 20	10	5 - 20	10
Mortality after first year (%)	0 - 2	1	0 - 2	1

Known captive breeding history

- Successfully bred in captivity since at least the early 1980s
- Routinely bred under the correct conditions
- Have been successfully bred within farms in Indonesia; however, the ease of collecting wild-caught individuals means very few green pythons exported are truly captive-bred

Indicators of possible false claims of captive breeding

- Dirty enclosures
- No branches and/or perches available
- No ventilation holes for enclosures
- Large scars and parasites present on animals
- No breeding records
- Farm owner unable to produce eggshells/verification of clutches during breeding season

Boelen's Python – *Morelia boeleni*

Common name:	Boelen's Python
National Protection:	
CITES listing:	Appendix II
IUCN:	Not Evaluated
Distribution:	Indonesia (only on the Island of New Guinea); Papua New Guinea

SVL: Adult: up to 250cm, Hatchings: 55cm

Juvenile

Table A: Breeding Parameters

	Scientific Information*	
	Range	**Average**
Hatching success (%)	0 - 100	90
Number of eggs in a clutch	8 - 29	14
Number of clutches per year	1	1
Females reproducing each year (%)	Very low	Very low
Male : female sex ratio	1:1	1:1

Boelens Python *Morelia boeleni* has proven to be extremely difficult to breed in captivity. The species is regularly exported from Indonesia as captive-bred. However, fewer than 10 successful captive breeding events have been recorded for this species worldwide.

Table B: Other Parameters

SVL at sexual maturity (cm)	Unknown	Unknown
Mating season	All year	All year
Egg laying season	December - January	
Incubation time (days)	55 - 87	70
Mortality in first year (%)	Unknown	Low
Mortality after first year (%)	Very low	Very Low

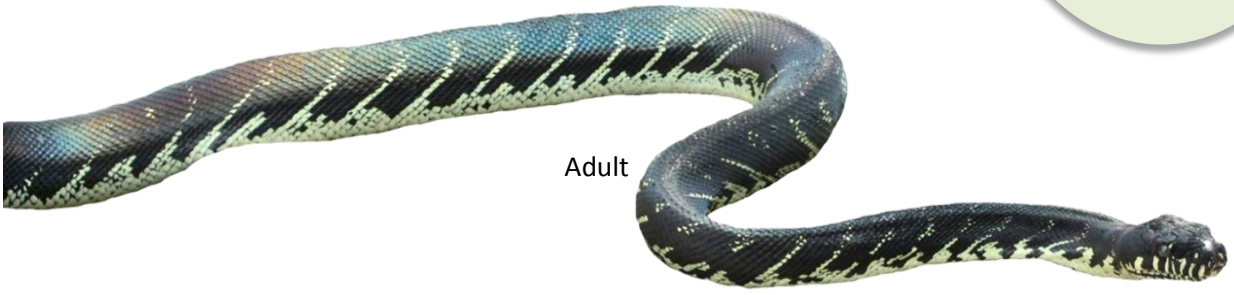
Any facilities claiming to breed this species should be inspected immediately and production capacity verified

Actual size

66 x 51mm

10mm

Python boeleni



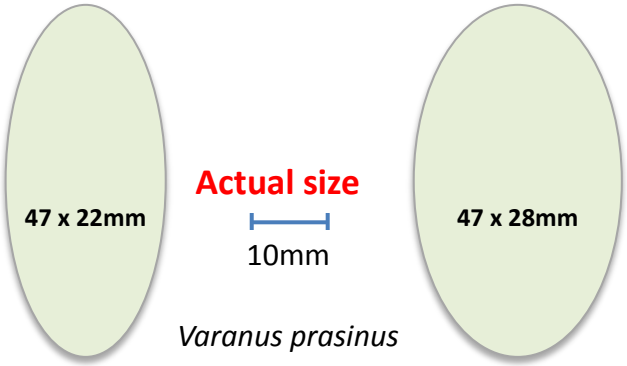
Adult

Photos: J. Lyons

Monitor lizard eggs

Place monitor lizard eggs next to these outlines for comparison

Varanus melinus



Varanus prasinus

Egg shape directly after laying

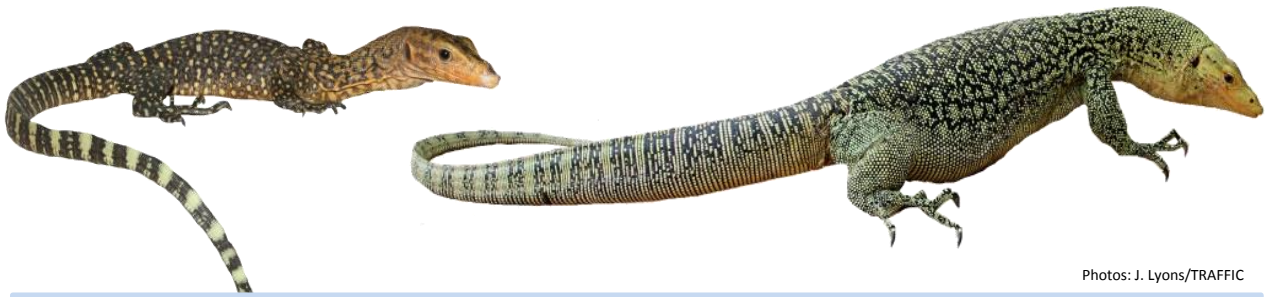
Egg shape shortly before hatching

Quince Monitor – *Varanus melinus*

Common Name:	Quince Monitor
Indonesia National Protection:	Not protected
CITES listing:	Appendix II
IUCN:	Not evaluated
Distribution:	Indonesia (Mangole, Taliabu, Sanana, Bowokan and Banggai islands)

Hatchling

Adult



Photos: J. Lyons/TRAFFIC

Physical Description:

Adult:

- Size - average 50cm SVL
- Colour and pattern – yellow background colour with a dark reticulated pattern on the body, neck, limbs and base of the tail

Hatchling:

- Size - average 11cm SVL, weight – 41 - 55g
- Colour and pattern – dark colour of the head is gradually replaced by a yellow background colouration

Sex Differences:

Male	Female
Bulge at base of tail	No bulge at base of tail
Larger body size (50 cm SVL)	Smaller body size (40 cm SVL)

Varanus melinus

Quince Monitor – *Varanus melinus*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	70 - 100	85	0 - 50	20
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	5 - 12	8	2 - 12	8
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1 - 2	1	1 - 2	1
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	Unknown	Unknown	Unknown	Unknown
Male : female sex ratio	1:1	1:1	1:1	1:1

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
SVL at sexual maturity (cm)	Unknown	Unknown	Unknown	Unknown
Mating season	All year	All year	All year	All year
Egg laying season	All year	August - April	June - September	Unknown
Incubation time (days)	150 - 192	100	164 - 192	Unknown
Mortality in first year (%)	0 - 10	5	Unknown	Moderate
Mortality after first year (%)	< 1	1	Unknown	Low

Known captive breeding history

- First F2 successfully bred in 2009 at the Cologne Zoo Aquarium.
- Difficult to breed even under seemingly suitable conditions.
- Although copulation and egg laying are common, it is often difficult to obtain fertile eggs.
- Have been bred successfully within farms in Indonesia. However, the difficulty of breeding this species combined with the ease of wild collection means most of the individuals exported from Indonesia as captive-bred are wild-caught.

Indicators of possible false claims of captive breeding

- Dirty enclosures
- No branches and/or perches available
- No ventilation holes for enclosures
- Large scars and parasites present on animals
- No breeding records
- Farm owner unable to produce eggshells/verification of clutches during breeding season

Emerald Monitor – *Varanus prasinus*

Common Name:	Emerald Monitor, Emerald Green Monitor
National Protection:	
CITES listing:	Appendix II
IUCN:	Not evaluated
Distribution:	Indonesia (West Papua, Papua and Maluku provinces only); Papua New Guinea; Australia

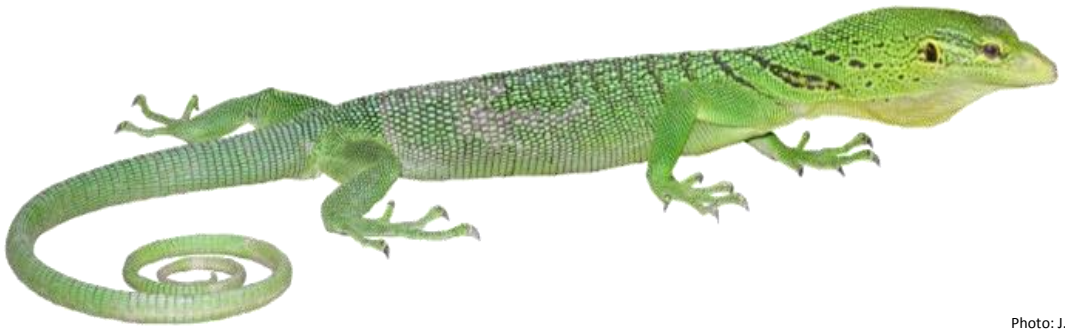


Photo: J. Lyons

Physical Description:

Adult:

- Size - average 80cm SVL (maximum 100cm SVL)
- Colour and pattern – light to emerald green with some black lines across the back from the back of the neck to the tail

Hatchling:

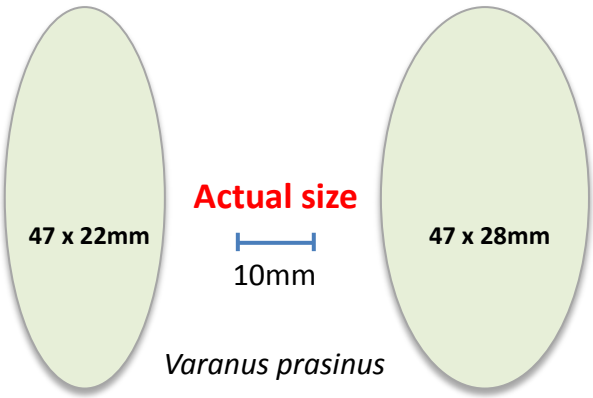
- Size - average 8 - 10cm SVL, weight – 8 – 12g
- Colour and pattern – same as adults

Sex Differences:

Male	Female
Bulge at base of tail	No bulge at base of tail
Larger body size	Smaller body size

V. prasinus eggs

Photo: J. Lyons



Egg shape directly after laying

Egg shape shortly before hatching

Emerald Monitor – *Varanus prasinus*

Table A: Breeding Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
Hatching success (%) *(Value 2 in Initial Appraisal Form)*	70 - 100	85	0 - 50	25
Number of eggs in a clutch *(Value 3 in Initial Appraisal Form)*	2 - 10	7	3 - 7	5
Number of clutches per year *(Value 4 in Initial Appraisal Form)*	1 - 3	2	1 - 3	2
Females reproducing each year (%) *(Value 5 in Initial Appraisal Form)*	Unknown	Unknown	40 - 80	60
Male : female sex ratio	1:1	1:1 – 1:2	1:1 - 1:5	1:2.5

Table B: Other Parameters	Information from a range of facilities claiming to breed		Scientific Information*	
	Range	**Average**	**Range**	**Average**
SVL at sexual maturity (cm)	Unknown	Unknown	Unknown	Unknown
Mating season	All year	All year	Unknown	Unknown
Egg laying season	All year	August - May	All year	All year
Incubation time (days)	144 - 160	150	150 - 206	164
Mortality in first year (%)	0 - 10	5	10 - 30	30
Mortality after first year (%)	< 1	1	0 - 10	10

Known captive breeding history

- Can be bred relatively easily; however, breeding is irregular
- Has been bred successfully within farms in Indonesia. However, the work required to breed this species, combined with the ease of wild collection means most individuals exported from Indonesia as captive-bred are wild-caught.
- Can often be difficult to obtain fertile eggs
- Husbandry requirements are very similar to those of tree monitors found in trade: *V. beccarii*, *V. boehmei*, *V. kordensis*, *V. macraei* and *V. reisingeri*

Indicators of possible false claims of captive breeding

- Excessively dirty enclosures
- No branches and/or perches available
- No ventilation holes for enclosures
- Large scars and parasites present on animals
- No breeding records
- Farm owner unable to produce eggshells/verification of clutches during breeding season

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Varanus prasinus

Baldwin, B. (2006). Successful care and reproduction of green tree monitors (*Varanus prasinu*s) at the San Diego Zoo. *Iguana* 13(4):283-287.
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ANNEX A
National Legislation

ANNEX B
CITES

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. Annually, international wildlife trade is estimated to be worth billions of USD dollars and to include hundreds of thousands of plant and animal specimens. The trade is diverse, ranging from live animals and plants to a vast array of wildlife products derived from them, including food products, exotic leather goods, musical instruments, timber, tourist curios and medicines. Levels of exploitation of some species are high and the trade in them, together with other factors, such as habitat loss, is capable of heavily depleting their populations and even bringing some species close to extinction. Many wildlife species in trade are not endangered, but the existence of an agreement to ensure the sustainability of the trade is important to safeguard these resources for the future. Because the trade in wild animals and plants crosses borders between countries, the effort to regulate it requires international cooperation to safeguard certain species from over-exploitation. CITES was conceived in the spirit of such cooperation. Today, it accords varying degrees of protection to more than 30,000 species of animals and plants, whether they are traded as live specimens, fur coats or dried herbs. CITES is an international agreement to which States (countries) adhere voluntarily. States that have agreed to be bound by the Convention ('joined' CITES) are known as Parties. Although CITES is legally binding on the Parties – in other words they have to implement the Convention – it does not take the place of national laws. Rather it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES can be implemented at the national level. For many years CITES has been among the conservation agreements with the largest membership, with now 177 Parties.

How does CITES work?

CITES works by subjecting international trade in specimens of selected species to certain controls. All import, export, re-export and introduction from the sea of species covered by the Convention has to be authorized through a system of permits and certificates. Each Party to the Convention must designate one or more Management Authorities in charge of administering that licensing system and one or more Scientific Authorities to advise them on the effects of trade on the status of the species. The species covered by CITES are listed in three Appendices according to the degree of protection they need:

Appendices I and II

Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival. The Conference of the Parties (CoP), which is the decision-making body of the Convention and comprises all its Member States (Parties), has agreed in Resolution Conf. 9.24 (Rev. CoP15) on a set of biological and trade criteria to help determine whether a species should be included in Appendices I or II. At each regular meeting of the CoP, Parties submit proposals based on those criteria to amend these two Appendices. Those amendment proposals are discussed and then submitted to a vote.

Appendix III

This Appendix contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade. Changes to Appendix III follow a distinct procedure from changes to Appendices I and II, as each Party's is entitled to make unilateral amendments to it. A specimen of a CITES-listed species may be imported into or exported (or re-exported) from a State party to the Convention only if the appropriate document has been obtained and presented for clearance at the port of entry or exit. There is some variation of the requirements from one country to another and it is always necessary to check on the national laws that may be stricter.

ANNEX C
IUCN Red List of Threatened Species

The IUCN Species Programme; working with the IUCN Species Survival Commission (SSC) has for more than four decades been assessing the conservation status of species, subspecies, varieties, and even selected subpopulations on a global scale in order to highlight taxa threatened with extinction, and therefore promote their conservation. The IUCN Red List of Threatened Species™ provides taxonomic, conservation status and distribution information on plants and animals that have been globally evaluated using the IUCN Red List Categories and Criteria. This system is designed to determine the relative risk of extinction. The main purpose of the IUCN Red List is to catalogue and highlight those taxa that are facing a higher risk of global extinction (i.e., Critically Endangered, Endangered and Vulnerable); those that are Extinct or Extinct in the Wild; those that cannot be evaluated because of insufficient information (i.e., Data Deficient); those that are either close to meeting the threatened thresholds or that would be threatened were it not for an ongoing taxon-specific conservation programme (i.e., Near Threatened); and those that have been evaluated to have a low risk of extinction (i.e., Least Concern). These categories are explained in more detail below:

Extinct (EX)
A taxon is "Extinct" when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be conducted over a time frame appropriate to the taxon's life cycles and life form.

Extinct in the wild (EW)
A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over conducted over a time frame appropriate to the taxon's life cycle and life form.

Critically endangered (CR)
A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered (EN)
A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable (VU)
A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

Near threatened (NT)
A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

Least concern (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

Data deficient (DD)

A taxon is "Data Deficient" when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, if a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

ANNEX D
FORMS

SPECIES APPRAISAL FORM

FACILITY NAME: _____ SPECIES NAME: _____

Breeding Parameter	Information given by Facility	Scientific Information	Data Source
Number of hatchlings claimed to be produced by the facility each year			**Value 1** from your records (permits issued and/or applied for) or recorded during the visit.
	÷	÷	
% Eggs hatching *Eg. Enter 70% as **0.7***			**Value 2** from Table A: Breeding Parameters
	=	=	
Total number of eggs needed to produce the number of hatchlings claimed as Value 1			**This is the number of eggs needed to produce the quantity claimed**
	÷	÷	
Number of eggs produced in a clutch Eg. Enter 2 as **2**			**Value 3** from Table A: Breeding Parameters
	÷	÷	
Number of clutches laid by one female in one year Eg. Enter 1 as **1**			**Value 4** from Table A: Breeding Parameters
	÷	÷	
% Females breeding per season *Eg. Enter 60% as **0.6***			**Value 5** from Table A: Breeding Parameters
	=	=	
Number of breeding females that should be present at the facility			**This is the number of females needed to produce the quantity claimed**

DATA COLLECTION FORM
DATA COLLECTION FORM

SECTION 1: GENERAL INFORMATION (1)
SECTION 1: GENERAL INFORMATION (1)

Date of inspection: .....
Date of inspection:

Name of main inspecting officer: .....
Name of main inspecting officer:

Facility name: .....
Facility name:

Name and job title of all inspecting officer(s) present:
(Continue below in note section if necessary)
Name and job title of all inspecting officer(s) present: (Continue below in note section if necessary)

1. .....

2. .....

Type of inspection:
Type of inspection:

☐ Initial:
Initial:

☐ Routine:
Routine:

☐ Annual:
Annual:

☐ Follow-up:
Follow-up:

Date of last inspection: .....
Date of last inspection:

Facility trading name(s): .....
Facility trading name(s):

Facility owner(s): .....
Facility owner(s):

Facility address and contact information: .....
Facility address and contact information:

.....

.....

.....

Year the facility was established: .....
Year the facility was established:

How many staff are currently employed at the facility?
How many staff are currently employed at the facility?

Full time: ☐
Full time:

Part time: ☐
Part time:

Name and job title of facility staff accompanying inspecting officer(s):
(Continue below in note section if necessary)
Name and job title of facility staff accompanying inspecting officer(s): (Continue below in note section if necessary)

1. .....

2. .....

Does this company keep animals at any other location(s)?
Does this company keep animals at any other location(s)?

Yes ☐
Yes

No ☐
No

If yes, where? .....
If yes, where?

If yes, make arrangements to inspect this/these location(s) as soon as possible
If yes, make arrangements to inspect this/these location(s) as soon as possible

Additional notes:
Additional notes:

.....

.....

.....

.....

.....

DATA COLLECTION FORM
DATA COLLECTION FORM

SECTION 1: GENERAL INFORMATION (2)
SECTION 1: GENERAL INFORMATION (2)

Date of inspection: .....
Date of inspection:

Name of main inspecting officer: .....
Name of main inspecting officer:

Facility name: .....
Facility name:

Which species are kept at the facility?
Which species are kept at the facility?

No. *No.*	Local Name *Local Name*	Scientific Name *Scientific Name*	Registered to keep (✓) *Registered to keep*	Species-specific form completed (✓) *Species-specific form completed*	Species-specific score *Species-specific score*
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

Next step: Complete species-specific forms for each species
Next step: Complete species-specific forms for each species

Additional notes:
Additional notes:

.....

.....

.....

.....

.....

DATA COLLECTION FORM
DATA COLLECTION FORM

SECTION 2: SPECIES INFORMATION (1)
SECTION 2: SPECIES INFORMATION (1)

Date of inspection: .....
Date of inspection:

Name of main inspecting officer: .....
Name of main inspecting officer:

Facility name: .....
Facility name:

Species name: .....
Species name:

When did you acquire this species? .....
When did you acquire this species?

How many males? ☐
How many males?

How many females? ☐
How many males?

Where did you acquire your initial stock? .....
Where did you acquire your initial stock?

.....

Do you breed this species? Yes ☐ No ☐
Do you breed this species? *Yes* *No*

If yes, when did you start? .....
If yes, when did you start?

How many do you produce each year? ☐
How many do you produce each year?

When is the mating season? .....
When is the mating season?

When is the egg-laying season? .....
When is the egg-laying season?

Incubation time (days)? ☐
Incubation time (days)?

When is the hatching season? .....
When is the hatching season?

ADULT BREEDING STOCK
ADULT BREEDING STOCK

	Facility information: *Facility information:*	Inspector count (where possible): *Inspector count (where possible):*
Number of adults present? *Number of adults present?*	☐	☐
Number of males? *Number of males?*	☐	☐
Number of females? *Number of females?*	☐	☐
Male to female sex ratio? *Male to female sex ratio?*	☐	☐
What % of females breed each year? *What % of females breed each year?*	☐	☐

What do you feed adult animals? .....
What do you feed adult animals?

.....

How often? .....
How often?

JUVENILE STOCK
JUVENILE STOCK

	Facility information: *Facility information:*	Inspector count (where possible): *Inspector count (where possible):*
Number of juveniles present? *Number of juveniles present?*	☐	☐
Age at sexual maturity? *Age at sexual maturity?*	☐	
Weight at sexual maturity (kg)? *Weight at sexual maturity (kg)?*	☐	

HATCHLING STOCK
HATCHLING STOCK

	Facility information: *Facility information:*	Inspector count (where possible): *Inspector count (where possible):*
Number of hatchlings present? *Number of hatchlings present?*	☐	☐

What do you feed hatchlings? .....
What do you feed adult animals?

.....

How often? .....
How often?

OTHER INFORMATION:
OTHER INFORMATION:

% Mortality in first year? *% Mortality in first year?*	% Mortality after first year? *% Mortality after first year?*
☐	☐

DATA COLLECTION FORM
DATA COLLECTION FORM

SECTION 2: SPECIES INFORMATION (2)
SECTION 2: SPECIES INFORMATION (2)

Date of inspection: ..... Name of main inspecting officer: .....
Date of inspection: *Name of main inspecting officer:*

Facility name:.....
Facility name:

Species name: .....
Species name:

EGGS
EGGS

	Facility information: *Facility information:*	Inspector count (where possible): *Inspector count (where possible):*
Number of eggs laid during the past 12 months? *Number of eggs laid during the past 12 months?*	☐	☐
How many eggs are laid in one clutch? *How many eggs are laid in one clutch?*	☐	
% Eggs which hatch successfully? *% Eggs which hatch successfully?*	☐	
How many clutches does each female lay per year? *How many clutches does each female lay per year?*	☐	
Are eggs artificially incubated? *Are eggs artificially incubated?*	☐	

If eggs are present - do these match the size stated in the relevant species-specific section of the manual? *If eggs are present – do these match the size stated in the relevant species-specific section of the manual?* Yes *Yes* ☐ No *No* ☐

SCORED STATEMENTS
SCORED STATEMENTS

		Cross-check with species profile			
		3	**2**	**1**	**0**
1.	Sufficient adult females are present at the facility to have produced the number of hatchlings claimed (as calculated in the Species Appraisal Form). *Sufficient adult females are present at the facility to have produced the number of hatchlings claimed (as calculated in the Species Appraisal Form).*	Yes / *Yes* ☐	■	■	No / *No* ☐
2.	Less than 5% of animals show major scars, signs of heavy parasite loads, etc. *Less than 5% of animals show major scars, signs of heavy parasite loads, etc.*	Yes / *Yes* ☐	■	■	No / *No* ☐
3.	The facility is able to show physical proof of breeding (presence of eggshells, eggs, hatchlings, juveniles). *The facility is able to show physical proof of breeding (presence of eggs, hatchlings, juveniles).*	■	Yes / *Yes* ☐	■	No / *No* ☐
4.	The facility uses a unique and permanent marking system to identify captive bred specimens. *The facility uses a unique and permanent marking system to identify captive bred specimens.*	■	Yes / *Yes* ☐	■	No / *No* ☐
5.	Enclosures are present at the facility. *Enclosures are present at the facility,*	■	■	Yes / *Yes* ☐	No / *No* ☐
6.	The enclosures provide the necessary requirements for the breeding of the species. *The enclosures provide the necessary requirements for the breeding of the species.*	■	■	Yes / *Yes* ☐	No / *No* ☐
7.	The facility is legally registered to keep and breed all of the species and animals present. *The facilities is legally registered to keep and breed all of the species and animals present.*	■	Yes / *Yes* ☐	■	No / *No* ☐
8.	Unusual activity was observed during the inspection. *Unusual activity was observed during the inspection.*	■	■	No / *No* ☐	Yes / *Yes* ☐
9.	Access was denied to any area of the facility upon request. *Access was denied to any area of the facility upon request.*	■	■	No / *No* ☐	Yes / *Yes* ☐
10.	Dead animals were present in the enclosures. *Dead animals were present in the enclosures.*	■	No / *No* ☐	■	Yes / *Yes* ☐
11.	The facility does keep records of feeding and/or breeding for the animals. *The facility does keep records of feeding and/or breeding for the animals.*	■	Yes / *Yes* ☐	■	No / *No* ☐

NOTE: Ensure you tick "Yes" or "No" for each of the statements. Enter the total number of points into the last column of the table on Data Collection Form Section 1: General information 2.
NOTE: *Ensure you tick "Yes" or "No" for each of the statements. Enter the total number of points for this species into the last column of the table on Data Collection Form: Section 1: General information 2.*

Total number of points: *Total number of points:* ☐