WILDLIFE TRADE FROM ASEAN TO THE EU:

ISSUES WITH THE TRADE IN CAPTIVE-BRED REPTILES FROM INDONESIA

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Varanus prasinus

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Vincent Nijman and Chris R. Shepherd

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EXECUTIVE SUMMARY

Unsustainable trade is seen as a major threat to the conservation of many species of reptiles. In response to this threat, the Government of Indonesia has set in place adequate legislation to regulate the trade, including promoting captive breeding of species that may not normally be removed from the wild as a conservation tool and an economic solution. Many reptiles are exported from Indonesia to the European Union (EU) under the auspices of paperwork claiming them to be captive-bred specimens. However, there are serious discrepancies between the numbers of reptiles exported to the EU that are declared as captive-bred, and the numbers of reptiles that purported breeding facilities in Indonesia are actually producing, or have the capacity to produce. These discrepancies suggest that unscrupulous reptile traders may be exporting wild-caught reptiles, along with the required paper work for captive-bred specimens, to the EU, under the guise of "captive-bred".

Based on a review of the available evidence, including site visits to all registered captive breeding facilities in Indonesia, for the majority of species and for the majority of companies, it does not appear that captive breeding of these species in commercial quantities actually occurs at these facilities. It appears that wild-caught individuals are misdeclared to circumvent Indonesian wildlife trade regulation and exported as captive-bred.

To discourage captive-breeding facilities from laundering wild-caught specimens as captive-bred in order to circumvent Indonesian wildlife export regulations, the Government of Indonesia should:

1) Establish a system of compliance monitoring to reduce levels of laundering wild-caught reptiles through captive-breeding facilities. Such systems should take into account the breeding biology and life history characteristics of species that are exported as captive-bred;

2) Undertake regular monitoring, including site visits, of captive breeding facilities and checking all stock against records;

3) Employ the services of reptile experts to assist in monitoring and inspections;

4) Ensure that companies found to be fraudulently exporting wild-caught specimens under the guise of captive-bred specimens should be prosecuted to the full extent of the law, and have their business licences suspended or revoked.

To ensure that fraudulently exported wild-caught reptile specimens from Indonesia are not imported, and to ensure that the trade in live reptiles from Indonesia for the pet trade is not occurring to the detriment of wild populations, the European Commission and Member States should:

1) Refuse imports of "captive-bred" reptiles from countries that do not have effective monitoring systems in place to ensure legitimate captive-breeding;

2) Member States should act in a co-ordinated manner in response to fraudulent export and CITES enforcement issues;

3) Ensure regular dialogue occurs between the EC and the Scientific and Management Authorities in Indonesia to share knowledge and intelligence on reptile breeding and illegal trade.

INTRODUCTION

Trade in reptiles from Southeast Asia to the rest of the world is extensive and involves large volumes and numerous species, destined to meet the demand for skins, meat, medicines and pets (Samedi and Iskandar, 2000; Nijman and Shepherd, 2007). Large numbers of these species originate from Indonesia, the world's largest archipelago, and possibly the largest source of reptile species traded from Southeast Asia.

The most diverse group of terrestrial fauna exploited for international export from Indonesia are the reptiles, with large volumes being harvested and exported, both legally and illegally (Shepherd, 2000; Samedi and Iskandar, 2000; Soehartono and Mardiastuti, 2002; Nijman *et al*., in press). According to reptile traders in Indonesia, and as seen from the UNEP-WCMC CITES Trade Database, more species of reptiles are traded from Indonesia for the live pet trade than for any other purpose.

Illegal and unsustainable trade in wild-caught reptiles is a leading threat to the conservation of many species (Zhou and Jiang, 2004; Shepherd and Ibarrondo, 2005; Stuart *et al*., 2006). Indonesia has been identified as a country with high levels of illegal trade in reptile species that are in high demand, and would benefit greatly from further research into the impact that trade is having on wild populations (Hoover, 1998; Shepherd and Ibarrondo, 2005; Nijman and Shepherd, 2007). In response to the threat of illegal and unsustainable trade, in the early 1990s the Indonesian government began to encourage captive breeding operations for commercial purposes as both a conservation tool and an economic solution (Siswomartono, 1998).

Legislation

1. CITES

Indonesia acceded to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in December 1978, which entered into force in March 1979. Enforcement of and the implementation of CITES requirements is the responsibility of the CITES Management Authority, i.e. Directorate General of Forest Protection and Nature Conservation (PHKA), to enforce the established export quotas for species listed in CITES Appendix II. This is largely carried out via the provincial or district offices of the Natural Resources Conservation Agency (BKSDA).

2. National legislation

Select species are protected in Indonesia by national legislation, under *Undang-undang Republik Indonesia No.5 Tahun 1990 tentang Konservasi Sumber Daya Alam Hayati dan Ekosistemnya* (Act of the Republic of Indonesia No.5 of 1990 concerning Conservation of Living Resources and their Ecosystems) widely known as *UU No. 5* or Act No. 5. This is also the legislation through which CITES is implemented and enforced in Indonesia.

Under the CITES National Legislation Project, all Parties to CITES have been categorized, based on the ability of their national legislation to implement and enforce the requirements under CITES. The criteria for categorization are as follows:

Category 1 – legislation that is believed to generally meet the requirements for the implementation of CITES.
Category 2 – legislation that is believed to generally not meet all requirements for the implementation of CITES.
Category 3 – legislation that is believed to generally not meet the requirements for the implementation of CITES.

Indonesia is rated by the CITES National Legislation Project as a Category 1.

Indonesia appears to have sufficient national legislation in place to regulate the trade in wildlife and commercial captive breeding. Enforcement of this legislation is the responsibility of the PHKA. As with the implementation of CITES, this is largely carried out via the provincial or district offices of the BKSDA.

In the Indonesian Government's regulation No. 8, 1999, "*On the utilization of wild plants and animal species*" the following two paragraphs of article 10 define which generations of protected wild animals may or may not be traded:

1. *The result of captive breeding of protected wild animals, which can be traded, is the second generation and the subsequent generations of the captive breeding.*
2. *Second generation and following generations resulted from the captive breeding of protected wildlife animals, are declared as unprotected wild animal species.*

This regulation indicates that only the second generation (F2) of protected reptiles from captive-breeding operations can legally be traded, and not wild-caught broodstock (F0) or first-generation specimens (F1)[1].

As a proactive response to Southeast Asia's alarming levels of wildlife trafficking, the ASEAN Wildlife Enforcement Network (ASEAN-WEN) was formed in 2005, following the priorities for law enforcement co-operation identified in the ASEAN Regional Action Plan on Trade in Wild Fauna and

Flora, 2005-2010[2]. Indonesia has committed to combating illegal international wildlife trade through participation in ASEAN-WEN, and was pro-active in the actual development of the Regional Action Plan and ASEAN-WEN itself. Indonesia held the Chair position for ASEAN-WEN for 12 months in the period 2007-2008.

One of the key objectives of this regional inter-governmental law enforcement network is to promote direct co-operation amongst relevant law enforcement authorities in ASEAN countries to curb illegal trade in wild fauna and flora. In order to accomplish this, countries have agreed to increase the efficiency of information and intelligence sharing, and to catalyze efficient inter-agency enforcement action at both national and international levels. In support of these efforts, TRAFFIC is working with

[1] Decree of the Ministry of Forestry, No.P.19/Ministry of Forestry-II/2005 concerning captive managementof wild plant and animal species

the Wildlife Alliance and its affiliate PeunPa, via a co-operative partnership with USAID, to implement the ASEAN-WEN Support Program. The Support Program provides technical assistance to the government agencies that constitute ASEAN-WEN, as well as training and capacity building for key agencies, and via intelligence-led enforcement assistance to enhance the enforcement of national legislation and CITES protocols.

However, despite Indonesia's adequate legislation and status as a Party to CITES, it has been well documented that illegal wildlife trade in Indonesia is widespread and persistent, and current levels of enforcement are ineffective (Nijman, 2005a; Nijman, 2005b; Shepherd, 2006; Ng and Nemora, 2007; Shepherd and Nijman, 2007). Of the 179 countries ranked by Transparency International[3], Indonesia ranks 143rd on the Corruption Perceptions Index, and as noted by Newton and Soehartono (2001), implementation of CITES is hampered by a lack of enforcement and the development of arbitrary quotas. Lack of capacity, low levels of political will, inadequate allocation of resources and alleged corruption all impede effective implementation and enforcement of national legislation and CITES.

Indonesia has an extensive quota system for harvest and export of non-protected species to supply both domestic and international markets (Nijman *et al.*, in press). Prior to setting a quota for CITES-listed species, the provisions of CITES require that non-detriment findings (NDFs) are carried out to assess the levels of sustainable off-take for a species or population in any given area, but it appears that NDFs are rarely undertaken in Indonesia (Shepherd, 2006) or are derived from outdated and questionable information (Soehartono and Mardiastuti, 2002). Due to concerns that quotas set are too high, the European Union (EU) has suspended trade for some species (Engler and Parry-Jones, 2007). Furthermore, the EU has suspended trade from certain exporters of particular species of concern (Table 1).

For species listed as protected in Indonesia, there is no quota for capture and trade (domestic or international) of specimens from the wild. However, protected species may be bred in captivity and traded for commercial purposes, as was already proposed in the early 1990s by the Indonesian CITES Management Authority (PHKA), providing the company doing so is registered with the PHKA and adheres to Indonesian captive-breeding requirements. Based on surveys carried out by TRAFFIC in 2006 and information provided by the Indonesian Ministry of Forestry (MoF), 11 companies were registered to be actively breeding reptiles for commercial export for the pet trade (Auliya, in prep.). As of 2008, there were 19 companies registered.

All commercial breeders of reptiles for export in Indonesia are required to submit monthly breeding reports to the MoF, indicating for each species the volumes of parent stock, and the numbers of offspring produced that month.

While a number of companies have permits to breed protected reptile species, it is suspected that unscrupulous traders are laundering wild-caught specimens, of which many are captured as juveniles, and misdeclaring the specimens as captive-bred, exploiting the fact that it is extremely difficult for authorities in importing countries to differentiate between wild and captive-bred specimens. Certain

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2
3 http://www.aseansec.org/17753.pdf
http://www.transparency.org/

Table 1.
Reptiles included in Annex B to *Regulation (EC) No. 338/97* whose introduction into the Community from certain exporters is suspended, according to the *Commission Regulation (EC) No 605/2006* of 19 April 2006

Company	Taxon
Co. #1	*Varanus beccarii, V. salvadorii, Morelia boeleni*
Co. #2	*V. salvadorii, M. boeleni*
Co. #3	*V. beccarii, V. jobiensis , V. salvadorii, M. boeleni, Heosemys spinosa*
Co. #4	*V. beccarii, V. salvadorii, V. jobiensis, V. dumerilii, M. boeleni, Liasis fuscus*
Co. #5	*V. salvadorii, V. jobiensis, V. dumerilii, M. boeleni ,*

dealers have stated to TRAFFIC that they welcome the inclusion of rare and high-commercial value species to be listed as protected in Indonesia, as they are then no longer restricted to harvest and export quotas, but can export unlimited volumes when they are declared as captive-bred.

Exporting wild-caught specimens, although illegal, can be far more profitable than breeding specimens for export. TRAFFIC's research has found that wild specimens can easily be purchased in Indonesia and exported, declared as "bred in captivity" (often accompanied by the correct paperwork), and this process is far less expensive than the investment required to legitimately raise, breed, rear and house captive-bred specimens. Furthermore, legitimate dealers and animal breeders are concerned that bogus "breeding" operations will eventually lead to international bans on reptile (or parrot[4]) imports from Indonesia.

Until now, little research has been carried out as to the roles these breeding facilities play in legal and illegal international wildlife trade. In some cases, reported breeding successes are improbable. For example, breeders claim to have exported first generation offspring of species that take approximately 10 years to reach sexual maturity, such as the Spiny Turtle *Heosemys spinosa*. It seems unlikely to be economically viable in these situations to raise and breed generations of this species in captive-breeding facilities for such a long period of time, before being able to export an F1 or F2 specimen. Such issues need to be examined further in order to ensure that these breeding facilities are not having a negative impact on the conservation of wild populations of these species.

3. The European Union

The EU is one of the largest markets for live reptiles for the pet trade (Auliya, 2003). In fact, the EU was the top global importer by value of live reptiles in 2005 with an estimated import value of EUR 7 million, of the global estimated import value of EUR 30 million for live reptiles (Engler and Parry-Jones, 2007). While much of the trade is carried out in accordance with relevant laws and regulations, illegal trade continues to be a serious issue. Demand for rare species in the EU has been documented

[4] Research by TRAFFIC Southeast Asia has revealed that problems and challenges very similar to these described here for reptiles are prevalent in the trade of captive-bred birds, especially parrots, from Indonesia. However, since the ban on import of birds into the EU, imports of birds from ASEAN countries to the EU have declined considerably.

as contributing to the decline in some rare Indonesian reptiles, such as the Roti Island Snake-necked Turtle *Chelodina mccordi*, which is now near extinction in the wild (Shepherd and Ibarrondo, 2005).

To address this issue, the EU Enforcement Action Plan (*Commission Recommendation of 13 June 2007 identifying a set of actions for the enforcement of Council Regulation (EC) No. 338/97 on the protection of species of wild fauna and flora by regulating trade therein*, also refered to as *Commission Recommendation 2007/425/EC*) recommends that Member States develop inter-regional collaboration to combat illegal wildlife trade by building links with other regional and sub-regional initiatives, such as ASEAN-WEN, exchanging information and providing assistance to facilitate legal and sustainable trade through the correct application of procedures.

Questions have increasingly been raised over the legitimacy of the export of some captive-bred reptile species to the EU. In response, TRAFFIC here reviews the validity of commercial captive breeding in reptiles in Indonesia, especially pertaining to those species exported to EU markets. This report provides detailed information on the trade in species from Indonesia that are declared as captive-bred but which, in fact, involve specimens of wild origin.

METHODS

1. Data collection

This report focuses on five reptile taxa, i.e. three lizards, one snake and one freshwater turtle, (Frillneck Lizard *Chlamydosaurus kingii*, Emerald Monitor *Varanus prasinus*, Timor Monitor *Varanus timorensis*, Burmese Python *Python molurus bivittatus* and Spiny Turtle *Heosemys spinosa*) which were selected as case studies for the captive-bred reptile trade in Indonesia (Table 2, 3). Four of these taxa are listed in Appendix II of CITES and four are protected by Indonesian national law. The five species are largely bred for export to international markets, including the EU.

This report focuses on the export of captive-bred specimens of these five case study taxa (Table 2, 3) in 2006, as these are the most recent data for which export and import data are available. Facility visits were planned and carried out in consultation with the Indonesian MoF which also functions as the CITES Management Authority, who provided relevant documents (including monthly breeding status reports), permits, and staff to accompany a TRAFFIC researcher in the field. From 31 July – 18 August and from 13 November – 30 November 2006, each facility in Indonesia with valid captive-breeding permits was visited. One significant breeder/exporter could not be visited (Co. #6) because of a legal dispute between this company and the MoF concerning trade in protected species; this breeder's licence was revoked in 2006 and no export permits were granted[5]. A comprehensive report on all the facilities surveyed in Indonesia with regards to captive breeding of reptiles and birds for global export is currently under preparation (Auliya, in prep.).

All facilities that indicated captive breeding of one or more of the focal taxa were members of the Indonesian Reptile and Amphibian Trade Association (IRATA). Data were requested on the total numbers of specimens exported, as reported to IRATA.

At each facility, the assessment team (TRAFFIC researcher and MoF staff) was guided around the facilities, making sure that all relevant taxa were checked. For each taxon, information on quantities,

breeding status and details, etc. were requested from the trader; specimens were counted as accurately as possible, details on breeding facilities were taken, and, where permitted, photographs were taken. Information on breeding requirements, successes and obstacles was obtained through discussions with the breeding facility owners and staff. All interviews were conducted in Indonesian, except where owners and staff were foreign nationals, in which case English was used.

Data on the reproductive parameters, minimum export sizes, prices to purchase a wild-caught individual[6], and export prices for each species were collected from experts and existing literature.

It must be noted that if a wild-caught female is gravid at the time of purchase, the resulting offspring are not considered to be captive-bred, but are considered to be wild-caught as well. Consequently, observing eggs at a captive-breeding facility in the absence of adequate breeding conditions for the species is considered here as an indication that gravid females were acquired in that condition from the wild. In order for the specimens to be considered captive-bred, the breeding itself must take place in captivity.

Data were retrieved from the UNEP-WCMC CITES database on the export and import of four of the five focal taxa, i.e. those that are listed in CITES Appendix II. Data were extracted for live specimens, with individuals traded for commercial purposes (purpose code T), that are reported as captive-bred (source codes either captive-born 'F' or captive-bred 'C'). Where there was a discrepancy between export and import quantities recorded, the larger of these two values was selected.

2. Evaluation of evidence of commercial captive breeding

To determine the practical status of commercial captive breeding of focal taxa facilities that were investigated, the following criteria were assessed:

a) The focal taxon was observed in the facility by the assessment team;

b) Owner/staff confirmed that they are indeed breeding the focal taxa;

c) Animals (if present) were in reasonable health, to allow for potential breeding;

d) Adequate facilities for breeding were present (e.g., separate enclosures for each female, sufficient breeding conditions including a suitable substrate to lay eggs in were present);

e) Quantity data from MoF monthly breeding reports corresponded to an acceptable degree with what was observed during the site visits by the assessment team, and

f) Staff had basic knowledge on breeding requirements.

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[5] Note: this company has since regained permission to breed (2007) and export, having won a court case against the authorities

[6] Price information was found to be available despite four out of five of the case study species considered being classified as protected.

If all of the criteria listed in a-d were met at a particular facility, it was assumed that captive-breeding indeed did take place. When any of the conditions listed under a-d were not met, it was assumed that captive-breeding did not take place, with e and f providing additional background information for this assumption. Criteria from d and e, with additional support from f, allowed for assessing the volumes that each facility was able to produce.

3. Analysis

The numbers of specimens per focal taxon reported in the most recent MoF monthly breeding report were compared with the numbers that were actually observed during the site visit (the time lag due to reporting for most companies was one to two months, occasionally up to five months). The data were available for an average of six taxa per company (range 1-16).

Time (in years) needed for production of F2 offspring was estimated for each of the five focal taxa individually by calculating two times the gestation time plus two times the incubation time plus age at sexual maturity for a female. Maximum reproductive output per year was estimated by multiplying the maximum possible clutch size with the maximum possible number of multiple clutches per year.

For those companies that appeared capable of commercial captive-breeding based on the assessment criteria, using the numbers of female specimens observed at facilities in August 2006, and the reproductive output per female per year, it was assessed whether or not it was physically possible to produce the number of offspring as reported in CITES database exports.

RESULTS

1. General Observations

This section provides an overview of the observations made during the survey and the practical potential of the breeding facilitites to produce captive-bred reptiles. Insight into the methods used to deceive authorities and launder wild-caught reptiles as captive-bred is provided in detail and illustrated through five case studies.

Of the 10 operations surveyed by the team in 2006, only two to three facilities were run at a professional level, with knowledgeable staff and adequate facilities to breed reptiles in captivity. All other facilities did not appear to be suitable for captive breeding or appeared to be rarely used for captive breeding.

The majority of locations surveyed did not have facilities suitable for breeding reptiles, especially on a commercial scale. Staff capacity and knowledge did not appear sufficient, and indeed some admitted that laundering was occurring. The quantities of breeding stock required to produce the number of offspring that were exported as captive-bred were not present. In six companies (i.e. Co. #1, Co. #2, Co. #3, Co. #5, Co. #7, Co. #8) between one and five taxa of reptile were reported to be part of their captive-breeding programmes (with monthly breeding reports indicating 25 to 201 specimens present for the most recent month), but not a single specimen was observed to be present at the facility, therefore it would not be possible to breed these taxa at these facilities.

Many of the monthly breeding reports were identical over consecutive months, indicating either careless reporting, or little active breeding. There were large discrepancies between numbers observed and numbers reported as stock and offspring. Typically, the observed numbers were about one fifth of what was reported. In two-thirds of the cases the observed numbers were less than half of what was reported. Additionally, the taxa documented in the breeding reports were not always observed during the site visits.

Figure 1 shows the relationship between the numbers of reptile taxa (n=27) present at the nine captive-breeding facilities visited, as reported in the most recent monthly breeding reports submitted by the facilities to the CITES Management Authority (at the time of the survey), versus the numbers recorded during site visits by the TRAFFIC-MoF team in 2006. The diagonal line represents the line of unity, where reported and recorded numbers are equal.

Examinations of specimens, when possible, revealed external parasites on various taxa (especially at Co. #3 and Co. #9) indicating that these were likely to be wild caught specimens. Specimens reared for a long period of time in captivity, or bred in captivity are not likely to have any external or internal parasites, as these are normally treated by the breeder since they are detrimental to the success of the business and make reptiles unsuitable for export, due largely to the risk of spreading disease and potential introduction of exotic parasites (Burridge, 2001; Pietzsch, *et al*., 2006).
Due to conservation concerns, the EU banned import of particular species of reptiles from certain exporters in Indonesia (Table 1). According to some reptile dealers in Jakarta, in order to elude this ban, it is common practice for exporters to send their animals from other companies that do not have such restrictions (often via Co. #9). According to dealers, some export species that they themselves do not have breeding permits for, using permits obtained by other dealers.

2. Case study taxa

Overview

Of the 10 facilities surveyed, eight claimed to be breeding one or more of the five case study taxa. Upon analysis of breeding records, breeding facilities, and capacity to breed among other criteria, it was determined whether the facility could actually breed these taxa in the quantities that were declared (Table 2). According to this analysis, only three facilities could potentially have been legitimately breeding some of the taxa examined here. Table 3 illustrates the number of breeding stock present for each of the case study taxa, the number of offspring these taxa produce and based on their life history characteristics, the number of potential offspring that could be produced.

This is then compared with the number of taxa exported in 2006, according to the UNEP-WCMC CITES Trade Database (*C. kingii* is not included in this section as it is not listed in the Appendices of CITES) and then the total number of each taxon reported as captive-bred (realised) in 2007 to the MoF. In all five examples, based on these criteria it appears that maximum breeding potential for these taxa are being greatly exceeded (Table 3).

Figure 1.
Relationship between numbers of reptile taxa and numbers recorded during site visits, showing that for most taxa recorded numbers were significantly lower than reported numbers

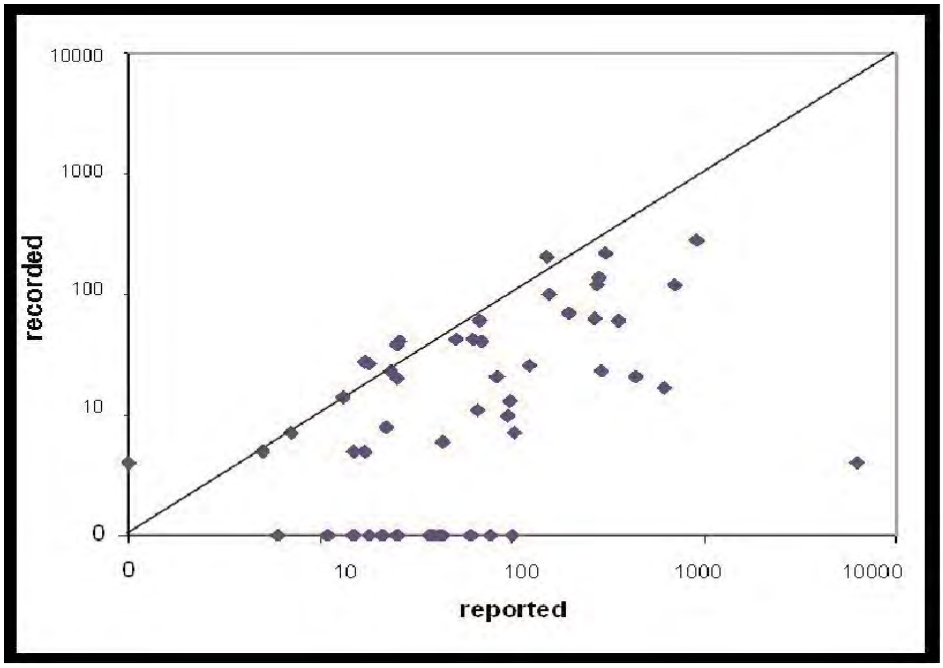

Table 2.

Likelihood of breeding case study species among surveyed breeding facilities, 2006.

Company**	Species present at facility	Number of specimens reported in breeding report				Number of specimens observed at facility	Indicated as captive-bred by company	Breeding facilities present	Staff knowledgeable about captive-breeding reptiles	Commercial captive breeding likely to be occurring at facility
		F0	F1	F2	F3					
	C. kingii	0	24	16		0				**No**
	V. prasinus	16	8	0		37	yes	yes	yes	**Yes**
Co. #2	*V. timorensis*	5	19	0		19	no			**No**
	C. kingii	16	126	75		0				**No**
	V. prasinus	11	84	35		70	yes	yes	yes	**Yes**
	V. timorensis	0	24	15		<5	yes	yes	yes	**Yes**
Co. #4	*P. molurus bivittatus*	6	20	7		<5	yes	yes	yes	**Yes**
	C. kingii					20	no	no	no	**No**
Co. #9	*V. prasinus*					2	no	no	no	**No**
	C. kingii	0	60	639		120	yes	no	no	**No**
	V. prasinus	0	30	338		100	yes	no	no	**No**
	V. timorensis	0	60	385		20	yes	no	no	**No**
	P. molurus bivittatus	60				0	no	no	no	**No**
Co. #3	*H. spinosa*	24	485	24		0	no	no	no	**No**
Co, #7	*C. kingii*	82	317	0		10-30	no	no	no	**No**
	C. kingii	12	12	19		0				**No**
Co. #5	*V. prasinus*	6	10	0		28	no	yes	no	**No**
	C. kingii	0	0	0	20	0				**No**
	*V. prasinus**	0	5	5	4	4	yes	yes	yes	**Yes**
Co. #1^	*V. timorensis*	0	0	5	0	0				**No**
	V. prasinus	0	0	0		30	no			**No**
Co. #8	*V. timorensis*	0	0	5	0	0				**No**

^ according to directors, no export of captive bred specimens

**Two other companies inspected, Co. #8 and Co. #10, did not indicate breeding any of the five focal taxa, nor were these taxa observed on their premises, and a third company, Co. #6, was suspended from trading in 2006.

Table 3.
Case study taxa in facilities claiming captive breeding, showing that numbers in breeding reports are exaggerated, and that for all taxa but the Burmese Python, captive breeding is unlikely to be occurring as indicated

Species	Total number in most recent monthly breeding reports	Total number of specimens observed in facilities in 2006	Approximate maximum biological production per female per year[1]	Maximum possible production in facilities[2]	Reported as exported by Indonesia 2006[3]	Reported as exported by IRATA 2007[4]
Frillneck Lizard *C. kingii*	1418	0	30	**0**	no data	3758
Emerald Monitor *V. prasinus*	552	97	5	**315**	661	428
Timor Monitor *V. timorensis*	518	39	7	**175**	580	615
Burmese Python *P. molurus bivittatus*	93	27	20	**340**	257	185
Spiny Turtle *H. spinosa*	533	0	5	**0**	192	147

1 Sources: *C. kingii*: Shine and Lambeck, 1989; Griffiths, 1999; *V. prasinus*: Eidenmuller, 1998; Jacobs, 2002; *V. timorensis*: Walls 2006; *P. molurus bivittatus*: Van Mierop and Barnard, 1976; *H. spinosa*: Herman, 1993; all species: M. Auliya pers. comm., 2008.
2 Based on a male : female ratio of 1 : 1.5 for breeding stock, with all females delivering the maximum biological production per year.
3 Retrieved from UNEP-WCMC CITES Trade Database; note that *C.kingii* is not listed on any of the CITES Appendices and hence no information on exports of this species are listed.
4 Indonesian Reptile and Amphibian Trade Association.

Frillneck Lizard *Chlamydosaurus kingii*

Distribution: New Guinea and offshore islands, Australia
IUCN status: Not listed as threatened by the IUCN Red List of Threatened Species.
Protection status in Indonesia: Protected

The Frillneck Lizard is a highly seasonal breeder (Shine and Lamback, 1989), females become sexually mature at 1.5 years (Griffiths, 1999), and after a long gestation/incubation period, first production of F2 offspring is possible after >2 years. For oviposition, females dig holes in the ground (Reisinger, 1992); maximum annual production is about 20-30 eggs (Table 3).

Of all the facilities in Indonesia having permits to breed this species in captivity, six facilities hold the species and five claim production of F2 offspring for export. The breeding reports of these five companies which claim production of F2 offspring for export list 457 F1, and 1459 F2-F3 specimens in their facilities. At three of these facilities, no specimens were present, and at two no breeding facilities were present.

This indicates that despite almost 2000 captive-bred specimens reported from these five facilities, there is no physical evidence of captive-breeding of Frillneck Lizard. According to some individuals involved in the trade, specimens of this species are captured as juveniles from the wild, mostly in southern Papua. **It therefore appears that all specimens of this species exported as captive-bred are in fact wild-caught.**

Emerald Monitor *Varanus prasinus*

Distribution: New Guinea and offshore islands, Australia
IUCN status: Not listed as threatened by the IUCN Red List of Threatened Species, however considered by Ziegler, *et al*. (2007) to be threatened in the wild by capture for the pet trade and habitat loss.
Protection status in Indonesia: Protected

Females become sexually mature after approximately 2 years, and with a long gestation period (approx. 60 days) and incubation period (166-206 days) first production of F2 is possible after >2.5 years. This species breeds year-round but produces small clutches, with a maximum of 2-5 eggs a year (Eidenmueller 1998; Jacobs 2002).

In 2006, according to the UNEP-WCMC CITES Trade Database, Indonesia exported 661 specimens labelled as captive-bred (403 C; 258 F), with 250 reported as imported by EU importing countries.

At the time of the survey, six companies held the species and four claimed production of F2, with one indicating that no captive-bred specimens had been exported thus far. One of the companies lacks breeding facilities, and the remaining two companies hold a total of 97 F1-F2 specimens. When the species' breeding characteristics are considered, the total possible number of captive-bred offspring does not exceed half of the quantity actually exported and claimed as captive-bred (Table 3). However, according to dealers involved in the trade of this species, in reality, none are bred in captivity (Anon., pers comm., 2008). **It therefore appears that all specimens of this species exported as captive-bred are in fact wild-caught.**

Timor Monitor *Varanus timorensis*

Distribution: Indonesia; Timor Leste
IUCN status: Not listed as threatened by the IUCN Red List of Threatened Species.
Protection status in Indonesia: Protected

In 2006, Indonesia exported 580 specimens of Timor Monitors labelled as captive-bred (C), of which 182 specimens were reported as imported by EU Member States (UNEP-WCMC CITES Trade Database).

Females become sexually mature after three years, and have a long gestation period (35-49 days) and incubation period (93-186 days) (Pianka *et al.*, 2004). Consequently the first production of F2 offspring can be expected after ?3.5 years. The species is a highly seasonal breeder, producing one clutch of 4-10 eggs a year (Walls, 2006).

Four facilities in Indonesia hold the species; one facility breeds small quantities in captivity but does not export specimens, one facility does not breed this species in captivity, and two facilities claim production of F2 in monthly reports. One of these facilities (Co. #3) reports 445 specimens (F1-F2), but only 20 were observed (14 of which were adult females), all F1, according to the owner. The other company (Co. #4) erroneously or falsely documented this species as a non-protected species in the breeding reports, indicating 39 F1-F2, although according to the company they were not breeding the species at the time of the survey. The maximum possible number of offspring is about a third of the actual number of exported specimens (Table 3). However, according to dealers involved in the trade of this species, in reality, none are bred in captivity (Anon., pers comm., 2008). **It therefore appears that all specimens of this species exported as captive-bred are in fact wild-caught**

Burmese Python *Python molurus bivittatus*

Distribution: South and continental SE Asia, patchy distribution in Indonesia (Sulawesi, Java, Bali, Sumbawa)
IUCN status: Not listed as threatened by the IUCN Red List of Threatened Species.
Protection status in Indonesia: Protected

Indonesia exported 257 captive-bred specimens (243 C, 14 F), of which 130 specimens were imported into the EU (UNEP-WCMC CITES Trade Database).

Females become sexually mature after the fourth year of age (however sexual maturity strongly depends on the feeding condition and can also occur between 1.5 and three years). After a gestation period of approximately 2-3 months and almost two months of incubation; the first F2 offspring can be produced after ±2.5 years. While clutch sizes can be large (30-58 eggs) on average 18-20 hatchlings survive (Van Mierop and Barnard, 1976; Manthey and Grossmann 1997; Krysko *et al*., 2008).

Of all the companies in Indonesia that have permits to breed reptiles in captivity, two companies report breeding this python species. One includes 60 individuals of F0 generation in the monthly breeding reports, but none were observed to be present during the survey. Another facility specialises in breeding rare colour morphs of this species, and reports 6 F0, 20 F1 and 7 F2 in monthly reports. These 27 F1-F2 specimens could in principle supply all reported captive-bred specimens when breeding characteristics are considered (Table 3). However, in seven of the monthly breeding reports the number of F2 is consistently kept at seven individuals, which may indicate inaccurate reporting. **It therefore appears that the number of actual breeding records of this subspecies are reported inaccurately and therefore do not realistically reflect the current breeding status.**

Spiny Turtle *Heosemys spinosa*

Distribution: Continental and insular Southeast Asia
IUCN status: Listed as Endangered in the IUCN Red List of Threatened Species.
Protection status in Indonesia: Not Protected

Export of wild-caught specimens of this species to the EU was suspended as of 16 April 2006 (*Commission Regulation (EC) No 605/2006* of 19 April 2006). CITES data indicates that Indonesia exported 192 specimens in 2006, 40 of which went to France, labelled as captive-bred (C).

However, the Spiny Turtle is not a suitable species for commercial captive breeding due to its life history characteristics, and so it is questionable whether any of these specimens met the legal definition of captive-bred specimens in Indonesia. Both sexes may attain maturity at the age of 10 years (Herman, 1993). With a clutch size of 1-3 eggs and up to 3 clutches a year, the maximum annual production can be 9 eggs/year. However, it has been recorded that a female in captivity laid only 10 eggs in a five year period (Herman, 1993). Growth is also extremely slow: a plastron (lower shell) of one specimen measured 7.5cm, which only increased by 1 cm in six years (Mertens, 1971). Of all companies holding captive breeding licences, one (Co. #3) holds the species and claims to produce F1; however no Spiny Turtles were observed during visits, and no breeding facilities were present. Consequently it appears that exported specimens were all wild-caught and that no captive breeding of this species occurs. **It therefore appears that all specimens of this species exported as captive-bred are in fact wild-caught.**

DISCUSSION AND CONCLUSIONS

While some taxa may in fact be reproducing in Indonesian captive-breeding facilities, due to the observations on numbers present in these facilities, the life history characteristics of the taxa involved, the conditions at the captive-breeding facilities and the statements of owners and staff, it appears that the majority of taxa are most likely captured from the wild and are purposefully misdeclared as captive-bred for export.

The conditions observed in most captive-breeding facilities visited were not sufficient or conducive for reptile breeding, and in some facilities no arrangements for breeding were present at all. Few facilities employed staff with technical skills or expertise in reptile breeding, and indeed staff at many of the facilities visited indicated to the team that breeding does not take place. Furthermore, given the difficulties in housing and breeding these animals, keeping offspring alive and rearing them to breeding size themselves (in order to produce F1 and following generations), and the cost of feeding and maintenance for so many animals over a longer period of time required to do so by their life history characteristics, it is not economically feasible to breed many of the species claimed as captive-bred for commercial purposes. Dealers have stated to TRAFFIC that it is easier and much less expensive to purchase wild-caught taxa and export them under the guise of captive-bred to circumvent regulations restricting trade in wild-caught protected taxa. The chances of this sort of fraud being detected and intercepted by officials that are able to distinguish captive-bred from wild-caught specimens are extremely low.

A lack of monitoring and expertise among the enforcement agencies charged with regulating these operations provides an opportunity for unscrupulous dealers to carry out this illegal trade with little fear of detection and prosecution. Some dealers themselves stated to TRAFFIC that this was the technique most commonly used to smuggle high-value protected reptiles to the EU.

Currently there is no established system in Indonesia to ensure that laundering of wild-caught reptile taxa through captive breeding operations does not take place on a large scale. Likewise, there is currently no system or methodology in importing countries to prevent imports of falsely declared captive-bred taxa. Consequently, shipments arrive from Indonesia to importing countries with official permits stating the specimens are captive-bred, and the specimens are therefore accepted as such by officials in the importing country. Laundering of this type undermines the Indonesian government's efforts to conserve wildlife and provide sustainable incomes for legal traders.

At most, three of the 10 companies that have permits to export captive-bred reptiles in Indonesia are run professionally and may be breeding reptiles in captivity, whereas the other facilities are very unlikely to be breeding offspring of reptile species. This second and larger group of facilities may be exporters of wild-caught reptiles which are purposely misdeclared as captive-bred to circumvent Indonesian regulations on trade in wild-caught protected species.

Six out of 10 companies claim to produce often substantial numbers of F2 specimens from between one and five species per company, however often the numbers required to produce this number of specimens, or the species themselves, are not present in the breeding facilities of these six companies.

There are significant discrepancies between the number of reptile specimens that companies report to the MA, and the number of reptile specimens present at breeding facilities, with on average only about

one fifth of the reported numbers actually present. This is an indication that the levels of breeding stock are not present in sufficient quantities to be producing the number of F2 offspring which are exported, suggesting that these may have actually been wild-caught misdeclared specimens. Additionally, most monthly breeding reports submitted to the Indonesian CITES Management Authority are identical each month, and do not reflect the reality of the breeding output of these companies.

Of the five focal taxa investigated by TRAFFIC in Indonesian captive-breeding facilities, only one, the Burmese Python was kept in large enough numbers and, at least in some facilities, such that viable numbers of captive-bred offspring could be produced for export as live specimens. For the other four focal taxa, the majority of individuals exported were very likely to have been wild-caught and laundered as captive-bred.

Based on a review of the available evidence, including site visits to each registered captive breeding facility, it is concluded that for the majority of species and for the majority of companies, it does not appear that commercial captive breeding of these species occurs, and wild-caught individuals are misdeclared to circumvent Indonesian wildlife trade regulation and are exported as captive-bred.

RECOMMENDATIONS

To minimize the opportunity for reptile traders with captive-breeding facilities from laundering wild-caught taxa as captive-bred in order to circumvent Indonesian wildlife export regulations, the Government of Indonesia should:

1). Establish a system of compliance monitoring to reduce levels of laundering wild-caught reptiles through captive-breeding facilities. Such systems should take into account the breeding biology and life history characteristics of taxa that are exported as captive-bred;

2) Undertake regular monitoring, including site visits, of captive breeding facilities and checking all stock against records;

3) Employ the services of reptile experts to assist in monitoring and inspections;

4) Ensure that companies found to be fraudulently exporting wild-caught taxa under the guise of captive-bred specimens should be prosecuted to the full extent of the law, and have their business licences suspended or revoked.

To ensure that fraudulently exported wild-caught reptile taxa from Indonesia are not imported, and to ensure that the trade in live reptiles from Indonesia for the pet trade is not occurring to the detriment of wild populations, the European Commission and Member States should:

1). Refuse imports of “captive-bred” reptiles from countries that do not have effective monitoring systems in place to ensure legitimate captive-breeding;

2). Member States should act in a co-ordinated manner in response to fraudulent export and CITES enforcement issues;

3). Ensure regular dialogue occurs between the EC andthe Scientific and Management Authorities in Indonesia to share knowledge and intelligence on reptile breeding and illegal trade.

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TRAFFIC, the wildlife trade monitoring network, works to ensure that trade in wild plants and animals is not a threat to the conservation of nature. It has offices covering most parts of the world and works in close co-operation with the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

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