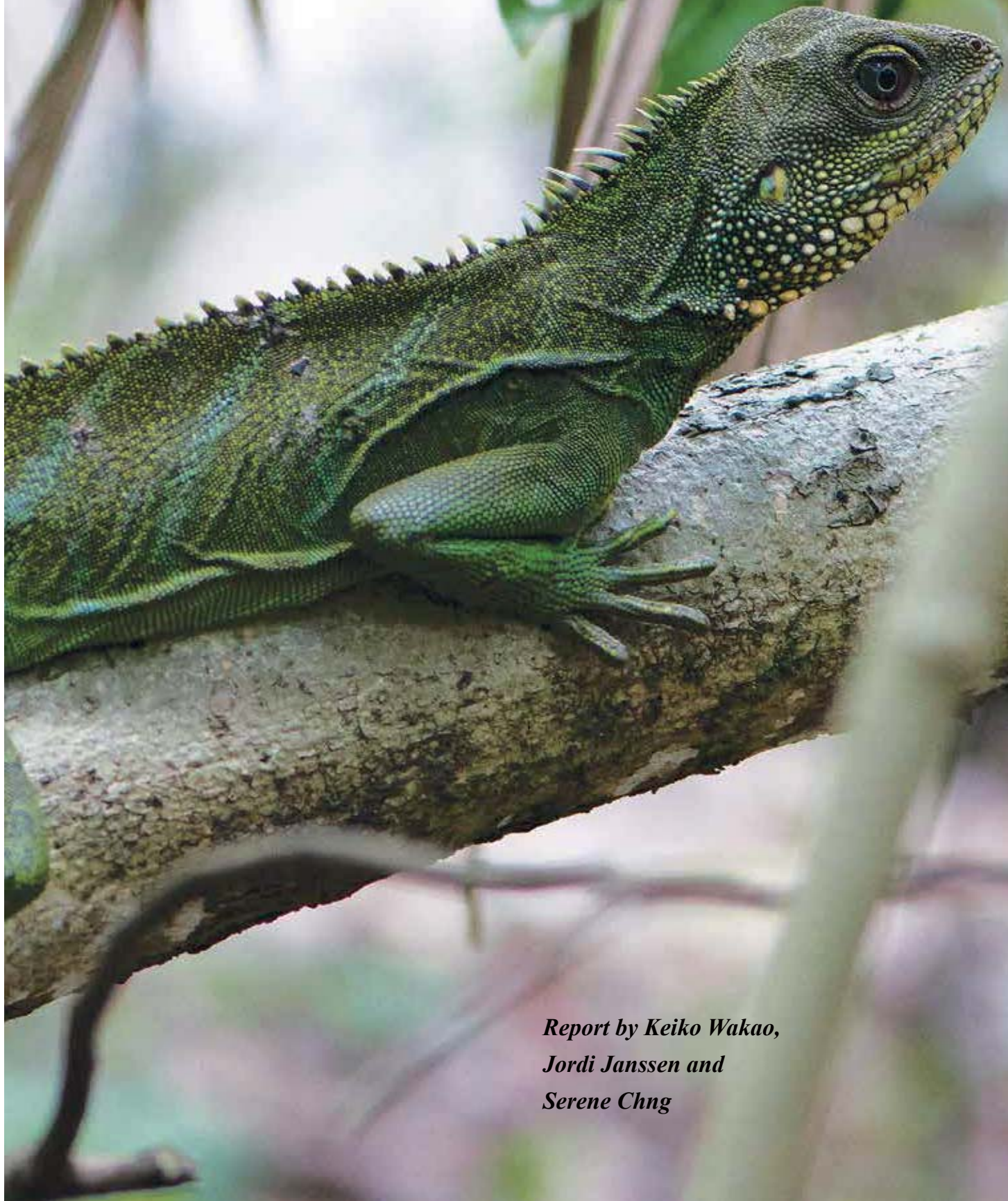


SCALING UP:

THE CONTEMPORARY REPTILE PET MARKET IN JAPAN



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INTRODUCTION

The reptile pet industry has been scrutinised by the international conservation community for its role in the trade of a wide range of species, many of which are threatened by collection for trade (Herrel and van der Meijden, 2014; Auliya *et al.*, 2016). In terms of monetary value, Japan was the fourth largest importer of live reptiles in 2016 (Comtrade, 2016). In that year, Japan imported 192,357 live reptiles and exported 8,702 live reptiles (Ministry of Finance, 2017). Visitors to reptile expos have increased over time, with over 20,000 people attending the Tokyo Reptiles World 2016 Show, up from 8,343 in 2011 (Secretariat of Tokyo Reptiles World, *in litt.*, December 2015; Tokyo Reptiles World, 2016). Besides keeping reptiles as pets, reptile cafes (where customers can watch and interact with reptiles in a café setting) have become popular in recent years (e.g. Hochiminh Keizai Shimbun, 2014; Asahi Shimbun Digital, 2018).

In 2007, TRAFFIC documented 410 reptile species in a market survey of 40 reptile pet shops in the east, west and central regions of Honshu Island (Kanari and Auliya, 2011). Approximately a quarter of the species recorded were native to South-east Asia. A new study was carried out in 2017 to provide an update and to identify conservation concerns regarding the Japanese reptile trade market, thereby guiding future interventions to ensure the legality and sustainability of the trade.

LEGISLATION

The reptile trade in Japan is covered by several national laws. Japan's principal law governing wildlife is the *Law for the Conservation of Endangered Species of Wild Fauna and Flora*, which regulates the trade in CITES Appendix I-listed species once they enter Japan, and the capture and trade of "the nationally endangered species of wild fauna and flora" in Japan. CITES Appendix II and III species that have entered Japan are not covered by this law. The *Foreign Exchange and Foreign Trade Law* and the *Customs Law* regulate the import/export of CITES species at the nation's ports of entry. Additionally, the *Invasive Alien Species Act* prohibits possession of specified non-native species.

Under the *Act on Welfare and Management of Animals* it is mandatory for a trader wishing to sell live reptiles to register as a Type I Animal Handling Business Operator. Since 2013, the direct sale of live reptiles online for pets is prohibited under the same Act (Article 21, paragraph 4). The number of registered live reptile retailers increased slightly from 699 in 2010 to 733 in 2016 (Yasei-sha, 2016). However, this is likely to be an underestimate: according to the Japan Reptiles and Amphibians Association, there are over 1,400 retailers who have declared that they sell reptiles (JPRAS, 2016).

METHODS

Market survey

In order to investigate the reptiles for sale in pet shops and expos in Japan, TRAFFIC investigators carried out surveys of eight outlets in Tokyo, six in Kanagawa Prefecture, and two in Osaka Prefecture in February 2017. The Reptiles Fever—an exotic pet trade expo and the largest in the Kansai area, with about 40 trading stalls, was also surveyed. All reptile species were recorded to species or subspecies level where possible, as well as information on the number of animals, price, origin, and source (captive-bred or wild-caught), where possible. No animals were purchased as part of the survey. Prices were converted to USD using the rate USD1=JPY113.35143.

Online advertisement survey

Fifteen websites advertising the sale of reptiles were selected from reptile magazines and leaflets from previous reptile expos. Information on species, number of animals, price, origin and source was recorded for all unique advertisements posted between February and May 2017, and in a follow-up survey in July 2017 to complete the survey. Posts stating that the animals were not available for sale (e.g. "sold out", "not for sale") were not included in the dataset.

RESULTS

Market survey

A total of 5,491 animals of 606 taxa, including 543 distinct species (63 subspecies), were observed during the survey period in the 16 shops and at the reptile expo. Of the 5,491 animals, 257 individuals could not be identified as they were not clearly visible and bore no labels, and 20 were hybrids. Reptile shops displayed an average of 187 animals (range: 6–728) and an average of 87 identified species (range: 6–264). At the reptile expo, each stall had on average 87 animals (range: 4–311) of 20 species (range: 4–58).

Lizards were the most numerous reptiles with 2,335 individuals (45%) of 295 taxa (49%) (Fig. 1). The lizard family Eublepharidae was the most frequently observed with 699 individuals, followed by the snake families Colubridae (602 individuals) and Pythonidae



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The Reptiles Fever expo, Osaka, 2017 ►

	CITES Appendices			Not listed in CITES	Total
	I	II	III		
Critically Endangered	6	11	0	1	18
Endangered	1	23	3	9	36
Vulnerable	1	37	2	14	54
Near Threatened	0	16	1	29	46
Least Concern	1	55	8	141	205
Data Deficient	0	2	0	6	8
Not on IUCN					
Red List	0	71	0	168	239
Total	9	215	14	368	606

Table 1. Observed taxa listed in the IUCN Red list and CITES Appendices.

(523 individuals). Colubridae also comprised the most species with 51 species, followed by Geoemydidae with 45 species (377 individuals).

The species with the greatest number of individuals observed were the Leopard Gecko *Eublepharis macularius* with 614 individuals, followed by the Ball Python *Python regius* (374 individuals), Corn Snake *Pantherophis guttatus* (349), Bearded Dragon *Pogona vitticeps* (150) and the Japanese Pond Turtle *Mauremys japonica* (102). These species are likely to have been bred in captivity.

Of all species observed, 367 are listed on the IUCN Red List (2017), of which 18 are classified as Critically Endangered (CR), 36 as Endangered (EN), 54 as Vulnerable (VU) and 46 as Near Threatened (NT) (Table 1). The remaining species have either not been assessed or are classified as Least Concern or Data Deficient. Most were non-native species, with only 16 of 606 taxa native to Japan, of which 10 species are endemic.

Species protected by national legislation

Fifteen native taxa were recorded during the physical survey, of which three are protected under Japanese legislation. Of particular note is the Ryukyu Black-breasted Leaf Turtle *Geoemyda japonica* (four individuals). This endangered turtle is designated as a “National Monument” under the Law for Protection of Cultural Properties, and the capture and commercial trade is not allowed. The other two taxa (Yellow Pond Turtle *Mauremys mutica kami* and Sakishima Grass Lizard *Takydromus dorsalis*) are protected in parts of their range by the relevant municipal ordinances.

CITES-listed species

Of the 606 observed taxa, 41% (238 taxa) are listed in the CITES Appendices. Nine are listed in Appendix I: seven Testudines, one lizard (Chinese Crocodile Lizard *Shinisaurus crocodilurus*) and one alligator species (Chinese Alligator *Alligator sinensis*). Commercial trade of wild-caught individuals of CITES Appendix I species is prohibited. Six Appendix I species observed are also assessed as Critically Endangered on the IUCN Red List (Table 1).

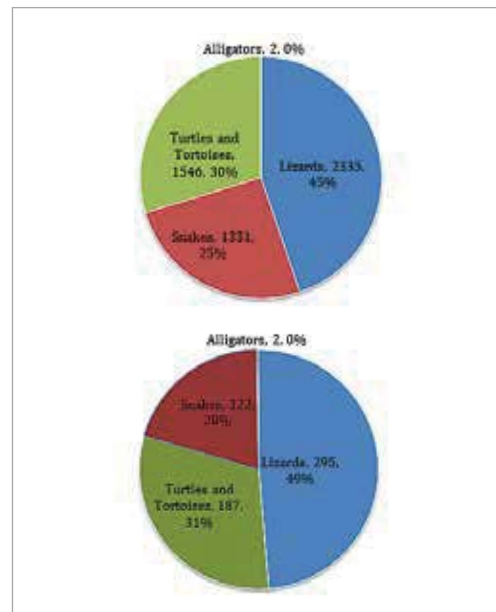


Fig. 1. No. of animals (top) and taxa (bottom) of each reptile taxa recorded during the survey (excluding unidentified and hybrid species).

The majority of CITES-listed taxa (90%, 215 species) are listed in CITES Appendix II, which requires a permit from exporting countries. A further 14 species are listed in Appendix III, trade in which requires a certificate of origin.

Origin of non-native species

Species from almost every continent were recorded from the surveys. North American species were the most commonly observed, comprising 19% of all species, followed by Africa and South-east Asia, with 16% of all species originating from both regions (Fig. 2). However, South Asia and East Asia combined and Oceania followed closely with 15% of all species from these regions. Species endemic to their range States include four Malagasy tortoise species, all of which are Critically Endangered and listed in CITES Appendix I.

Wild caught vs captive bred

For the majority of all animals observed (91%, 5,017 animals), no source information was displayed or disclosed in the shops. Only 389 animals (7%) were specifically labelled as bred in captivity, while the source of 75 animals was claimed to be from the wild. For some of the most commonly observed species (e.g. Bearded Dragon, Ball Python, Corn Snake, Green Iguana *Iguana iguana* and Leopard Gecko) a captive-bred origin is very likely. Most of these species are available in colour morphs, an indication of captive breeding. On the other hand, for some species claimed as captive-bred, there is little evidence of the species reproducing in captivity (e.g. Boelen’s Python *Simalia boeleni*) or for which laundering of wild-caught individuals as captive-bred has been documented (e.g. Green Tree Python *Morelia viridis*) (see Discussion).



◀ Fig. 2. Region of origin of surveyed reptiles. Some species occur in multiple regions; these were counted in each region (e.g. a species occurring in Asia and Oceania was counted in both).

Prices

Price data were gathered for 442 taxa and ranged from USD9 for a Chinese Pond Turtle *Mauremys reevesii* to USD52,932 for a Perentie *Varanus giganteus*. Prices varied greatly according to certain factors, such as rarity of the species, condition, size and colour morph of the individual. The total documented value of the animals recorded with price data in the survey is JPY121,366,670 (~USD1,070,711), with the average price of JPY146,870 (~USD1,304) per animal.

Critically Endangered species appeared to be more expensive than others, with the average observed prices of such species ranging from JPY148,000 (~USD1,306) to JPY430,000 (~USD3,793). However, the most expensive species (Perentie) is not assessed on the IUCN Red List. While it seems likely that an IUCN status may increase the value of species, other factors like abundance in trade and protection status (e.g. CITES listing) may also influence prices.

Online advertisement survey

A total of 753 unique advertisements were recorded from 15 websites during the survey period, of which many were websites for physical reptile shops. The advertisements in total offered a minimum of 1,343

animals for sale, comprising 357 taxa, excluding hybrids. The most numerous advertisements were for snakes (279 advertisements), followed by lizards with 263 advertisements and freshwater turtles and tortoises (205 advertisements). No advertisements for crocodylians were observed. For the number of animals advertised, lizards were the most common with 146 taxa (550 individuals), followed by 113 snake taxa (434 individuals) and 98 taxa of freshwater turtles and tortoises (359 individuals). The Ball Python was the most common species, with 39 individuals advertised.

A total of 220 of the taxa recorded in the physical survey were also observed during the online survey, which means 137 taxa are unique to the online survey. Some genera, such as whip snakes *Ahaetulla*, wolf snakes *Lycodon* and red-bellied turtles or cooters *Pseudemys*, were only observed online. Many of the websites surveyed are online portals for the physical shops (i.e. the same business), but offered different taxa to those sold in the physical outlets.

Three taxa are classified as Critically Endangered on the IUCN Red List—all freshwater turtles and tortoises. Fourteen individuals of five species recorded are assessed as Endangered, and seven species and fourteen individuals as Vulnerable. Twenty taxa are native to Japan. In 150 out of 220 advertisements, species were

Species	Range country	No. of individuals	IUCN Red List 2017	CITES listing
Philippine Pond Turtle <i>Siebenrockiella leytensis</i>	Philippines	2	Critically Endangered	II
Oaxaca Spiny-tailed Iguana <i>Ctenosaura oaxacana</i>	Mexico	1	Critically Endangered	-
Roti Island Snake-necked Turtle <i>Chelodina mccordi</i>	Indonesia	1	Critically Endangered	II
Spider Tortoise <i>Pyxis a. arachnoides</i>	Madagascar	2	Critically Endangered	I
Ryukyu Black-breasted Leaf Turtle <i>Geoemyda japonica</i>	Japan	4	Endangered	II
Giant Sungazer <i>Smaug giganteus</i>	South Africa	9	Vulnerable	II
Shingleback Lizard <i>Tiliqua rugosa</i>	Australia	14	-	-
Borneo Earless Monitor <i>Lanthanotus borneensis</i>	Indonesia, Malaysia	12	-	II
Perentie <i>Varanus giganteus</i>	Australia	1	-	II

Table 2. Examples of reptiles protected from trapping, trade and/or export in range countries observed for sale in physical and online markets in Japan.

claimed to be captive-bred and 59 as wild-caught. Most advertisements (90%) included price information. The Common House Gecko *Hemidactylus frenatus* was the cheapest (JPY380 or USD3.35), and at the opposite end of the spectrum a Lace Monitor *Varanus varius* was offered for JPY880,000 (USD7,763).

DISCUSSION

In 2007, TRAFFIC conducted a survey of the reptile pet market in Japan (Kanari and Auliya, 2011), recording 410 species for sale, of which 18% were assessed as threatened (Critically Endangered, Endangered or Vulnerable) on the IUCN Red List, and 39% were CITES-listed species. While the present survey was more extensive than the 2007 study, and involved different shops, it appears likely that the reptile market in Japan has grown since the previous study, based on the sheer range of species recorded in this survey. A combined 743 taxa were recorded from both the physical market and online surveys.

There appears to be a particular demand in Japan for unique and rare species, as Critically Endangered species appeared to have above average prices. A good number of species recorded in this survey are rarely recorded in trade (e.g. Rusty Monitor *Varanus semiremex*). Taxonomically distinct species such as the Borneo Earless Monitor *Lanthanotus borneensis* (Nijman and Stoner, 2014) and newly discovered species like the Yingde Leopard Gecko *Goniurosaurus yingdeensis* have been recorded as being popular in Japan (pers. obs.). While it is important to assess accurately the level of conservation threat that a species is facing, this needs to be balanced against unwittingly promoting the rarity value of a species (Nijman *et al.*, 2009).

In addition to the demand within the country, Japan's geographic location between Asia and the Americas, as well as the professional links Japanese traders have to European dealers, makes it an important location for the reptile trade. Both the 2007 and 2017 surveys included a large diversity of Asian and American species, and Japanese traders are active in the Hamm reptile fair in Germany and have openly stated their connections to dealers in Germany and the Czech Republic during both surveys (Auliya, *in litt.*, 24 July 2018; authors' observations).

The study results indicate the occurrence of illegal trade. This illegality is suspected to take place along the trade chain, from the point of collection to the point of sale. Of the species recorded in 2017, several are suspected to have an illegal origin, as no import records could be found for several CITES-listed species (e.g. Perentie, Marbled Water Monitor *V. marmoratus*, Sago Monitor *V. obor*). However, current legislation in Japan does not adequately cover the possession and trade of non-native, CITES-listed species. Furthermore, a notable number of species recorded are protected from trade in range countries (Table 2). While range countries prohibit the export of these species, for many international trade is not regulated under CITES. This means that enforcement authorities in importing countries have little legal ground

Examples of species (top and bottom) recorded at the Reptiles Fever expo, Osaka, 2017.



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BROMELIAD ARBOREAL ALLIGATOR LIZARD

▲ The **Bromeliad Arboreal Alligator Lizard**

Abronia taeniata, endemic to eastern Mexico, occurs in primary humid montane forest, cloud forest and humid pine-oak and fir forest. In addition to being collected for the illegal pet trade, this lizard is threatened by deforestation of its habitat through conversion of land for agricultural use. While it is a common species in suitable habitat, there is a decreasing population trend. It is classified in the *IUCN Red List of Threatened Species* as Vulnerable because its extent of occurrence is less than 20,000 km², its distribution is severely fragmented, and there is continuing decline in the extent and quality of its primary forest habitat (Canseco-Márquez and Mendoza-Quijano, 2007). At CITES CoP17, *Abronia* species were listed in the CITES Appendices (A. *taeniata* in CITES Appendix II).

▼ The **Monkey-tailed Skink** *Corucia zebrata*,

native to the Solomon Islands, can only be legally exported as captive-bred. A seller offering a specimen during the survey disclosed that the specimen was ranced, which would still have meant sourcing from the wild.



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MONKEY-TAILED SKINK



The Carrot-tail Viper Gecko *Hemidactylus imbricatus* occurs in Pakistan and southern India.

to stop these animals from entering the country once they have been smuggled out of range countries. As further evidence, several Japanese nationals have been arrested for attempting to smuggle reptiles from range countries into Japan, some of them repeat offenders (AFPBB News, 2013; The Times of India, 2015; Bangkok Post, 2016; The Hindu, 2017; Mainich Shimbun, 2018).

Laundering of illegally-sourced wild animals as captive-bred is a regulatory and conservation issue for live reptiles (Nijman and Shepherd, 2009, 2015; Auliya *et al.*, 2016; Tensen, 2016; Janssen and Chng, 2018). CITES Appendix I species can be internationally traded for commercial purposes only if they are “pre-Convention” (i.e. acquired before they were listed in Appendix I), commercially bred in captivity from a CITES-registered breeding facility or bred for non-commercial purposes with a certificate for captive-breeding (CITES, 2009); this presents a loophole that collectors exploit to trade in and keep CITES Appendix I species. One such species is the Radiated Tortoise *Astrochelys radiata*, a Madagascar endemic that is heavily exploited by illegal trade (Leuteritz and Paquette, 2008). The species has been introduced to Mauritius from where it can be legally exported by registered and legitimate breeding facilities for the global pet trade. There is concern that this legal trade could provide opportunities for unscrupulous traders to mix illegally acquired animals with the legal trade. Nevertheless, thousands continue to be poached and smuggled out of Madagascar, where no CITES-registered captive breeding facilities exist for this species. In April 2018, almost 11,000 Radiated Tortoises were confiscated from a property in Madagascar, a record-breaking number of animals collected for the illegal pet trade (Actman, 2018) which indicates that large numbers continue to be poached from the wild to supply international demand.

For CITES Appendix II species, many of them are protected from capture and export under national legislation, and traders sometimes circumvent such

restrictions by exporting illegally wild-sourced animals as captive-bred (Janssen and Chng, 2018). There is prior evidence that several species recorded in this survey are laundered. The Giant Sungazer *Smaug giganteus* is exported as captive-bred despite the difficulty of breeding this species in captivity in commercially-viable numbers and evidence of animals being illegally captured from the wild in South Africa (Loehr *et al.*, 2016). There is little evidence of Boelen’s Python reproducing in captivity (Lettoof, 2015), and laundering has been documented for Green Tree Python (Lyons and Natusch, 2011). Another species—the Monkey-tailed Skink *Corucia zebrata*—is native to the Solomon Islands and can only be legally exported as captive-bred. A seller offering this species disclosed that the animal was ranched (which would still have meant sourcing from the wild). Several shops from the 2007 study offered adult specimens, another indication of the wild provenance of these animals (Auliya, *in litt.*, 24 July 2018).

CONCLUSIONS AND RECOMMENDATIONS

Japan’s reptile market is extensive and includes rare and endangered species. Many are non-native and protected in their range States, from which export is prohibited. Some CITES-listed non-native species are brought into and traded in Japan without legal export records from their range States or import records into Japan, in violation of CITES. Yet these animals are documented for sale in Japan. The Japanese government needs to recognise the scale of the Japanese reptile market and its demand for exclusive and often protected species, and that it is an important driver in the global pet reptile trade. While a proportion of the reptile pet trade is legal and consists of domesticated species, illegal and unsustainable trade is clearly taking place. It is recommended that the following action is taken:

- As there are indications from this study of unregistered retailers under the *Act on Welfare and Management of Animals* and of the illegal collection of the species protected by Japan’s domestic legislation, the Japanese government is urged to improve the implementation of existing laws. Ensuring that all pet shops selling reptiles are operating legitimately will improve regulation of the reptile pet trade within the country.
- Japanese enforcement authorities should refuse imports of species protected in their range States unless a captive-bred origin can be proven. Likewise, they should ensure at border points of entry that captive-bred specimens have a legal origin and such information should be traceable.
- Japan’s legislation needs to be reviewed and updated to cover the trade of non-native, CITES-Appendix II- and III-listed species and/or species protected in their range States.

- In conjunction with government authorities, reptile traders and keepers in Japan play an important role in self-regulating the pet market, ensuring that the keeping of reptiles in Japan is legal, and that the country's demand for reptiles as pets does not have a negative impact on wild populations.
- Consumer research should be conducted to understand the preferences and motivations of Japanese reptile keepers and hobbyists, and how to encourage them to purchase legally and sustainably sourced animals.

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