



Research Paper

Cite this article: Chavez J et al. (2024) Tourism, international wildlife trade and the (in)effectiveness of CITES. *Environmental Conservation* 51: 64–70. doi: 10.1017/S0376892923000292

Received: 22 August 2023
Revised: 17 October 2023
Accepted: 19 October 2023
First published online: 13 November 2023






Keywords:

CITES; conservation; Indonesia; souvenir; wildlife trade; World Tourism Organization

Corresponding author:

Vincent Nijman; Email: vnijman@brookes.ac.uk

Tourism, international wildlife trade and the (in)effectiveness of CITES

Jessica Chavez^{1,2} , I Nyoman Aji Duranegara Payuse³ , Kuntayuni³ ,
Marco Campera^{1,2}  and Vincent Nijman² 

¹Department of Biological and Medical Sciences, Oxford Brookes University, Oxford, UK; ²Oxford Wildlife Trade Research Group, School of Law and Social Sciences, Oxford Brookes University, Oxford, UK and ³Universitas Warmadewa, Denpasar, Bali, Indonesia

Summary

There are clear links between tourism and the international wildlife trade, especially in countries with high levels of biodiversity and high numbers of international tourists. In the absence of clear regulations and implementation of existing policies, tourists can inadvertently have a negative impact on the environment, including through items bought as souvenirs. Bali is one of the world's premier tourist destinations. We investigated legally protected species that are offered for sale specifically targeting tourists in Bali. During December 2022–June 2023, we surveyed 66 shops offering curios (skulls, bones, carvings) of animals for which the international trade is regulated by the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). We found items from >500 individuals of 20 CITES-listed species, including primate skulls, ivory carvings and decorated shells. According to vendors, there would be no problem exporting these items despite the absence of CITES permits. Export records over the last two decades provided by the Indonesian authorities, mostly indicating no exports, contrast sharply with our observations in Bali. A short but effective campaign as a collaborative effort between industry, tourism operators, local and expatriate communities and government agencies could result in a drastic reduction of protected and/or CITES-listed species ending up in trade.

Introduction

The tourism industry can be a major player in the illegal wildlife trade considering that illegal souvenirs are often sold to tourists who are unaware of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) regulations and protection status of species. While many species are perceived as having a certain level of protection, tourists are often uninformed of the protection status of products derived from them (Rosen & Smith 2010).

The United Nations World Tourism Organization (UNWTO) was set up in 1975 for the promotion and development of tourism with a view to, amongst others, contributing to economic development and international understanding (UNWTO 2009). Guidance on how to achieve this is detailed in its Global Code of Ethics for Tourism (UNWTO 2001). With respect to preventing environmental damage and biodiversity conservation several articles have relevance, including Article 1.2 ('Tourism activities should be conducted in harmony with the attributes and traditions of the host regions and countries and in respect for their laws, practices and customs'), Article 1.5 ('... tourists and visitors should not commit any criminal act or any act considered criminal by the laws of the country visited and abstain from any conduct ... likely to damage the local environment; they should refrain from all trafficking in ... protected species'), Article 3.4 ('Tourism infrastructure should be designed ... in such a way as to protect the natural heritage composed of ecosystems and biodiversity and to preserve endangered species of wildlife ...') and Article 6.1 ('Tourism professionals have an obligation to provide tourists with objective and honest information ...').

CITES was established to regulate the international trade in wildlife to ensure that this trade would not be detrimental to the wild populations of plants and animals that were traded (Wijnstekers 2018). As of 2023, 184 countries and territories are Parties to CITES. Species, including parts or products, that are listed in CITES can be traded internationally between Parties provided they are accompanied by the appropriate permits from the CITES Management Authority. In terms of enforcement of CITES, there are various stages within the wildlife trade chain where this can be enacted, including at the level of collectors (in many countries the commercial harvest of wildlife is subject to a quota system), middlemen (who are typically allocated part of this quota), traders (who in addition should have licences for trading wildlife), exporters (who should be in possession of CITES export permits) and importers, who can include international tourists (Wijnstekers 2018). CITES enforcement suffers from an 'airport

© The Author(s), 2023. Published by Cambridge University Press on behalf of Foundation for Environmental Conservation. This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution and reproduction, provided the original article is properly cited.

bias' (Phelps et al. 2010), whereby a disproportionate number of CITES-listed species are seized from tourists or traders that use airports compared to, for instance, wildlife that enters a country via land borders or via seaports. This airport bias, with many individual tourists passing through a single site, however, also offers opportunities to correctly inform tourists about what is and what is not allowed to be brought home.

Indonesia joined the UNWTO at its inception in 1975, and it became signatory to CITES in 1978. Bali is Indonesia's smallest province and one of its premier tourist destinations (Wisnumurti et al. 2021). Bali is renowned for its beaches, its surf and coral reefs, its many Hindu temples and cultural art forms and excellent climate. In 2022, the most recent year for which data are available, over 10 million tourists visited Bali, including 2.1 million international tourists and 8.0 million domestic tourists. Of the international tourists, the top five countries were Australia (c. 30% of international tourists), India (9%), Singapore (7%), the UK (6%) and the USA (5%). Approximately a third of Bali's gross domestic product (GDP) comes directly from tourism, and this figure increases to two-thirds of GDP if indirect services are included (Antara & Sumarniasih 2017).

Bali is also a known centre for domestic and international wildlife trade (Nijman & Nekaris 2014). This includes trade in corals (Reksodihardjo-Lilley & Lilley 2007), aquarium fish (Lunn & Moreau 2004), marine turtles (Pertiwi et al. 2020), dugongs (*Dugong dugon*; Lee & Nijman 2015), birds (Chng et al. 2018) and mammals (Malone et al. 2002). An unknown part of this trade is to meet demand from international markets and tourists that visit Bali, and this in turn has an unquantified impact on the environment and biodiversity.

Here we focus on the trade in CITES-listed animal curios, namely body parts such as bones, skulls, antlers and teeth, which are offered for sale primarily to international tourists in either their raw form or as decorated and worked forms. We conducted our research in the most visited parts of Bali and aimed to document whether any CITES-listed species were offered for sale, and if so, what species and what parts of them were traded, whence they originated and, crucially, whether they were offered for sale with CITES permits.

Methods

Data collection

Over two periods, between 25 December 2022 and 6 January 2023 (VN) and between 31 May and 19 June 2023 (JC and VN), we surveyed the south-eastern part of Bali, specifically the towns of Sanur (both periods), Ubud (both periods), Legian (second period) and Tampaksiring (first period), as well as Satria, a bird market in Denpasar (both periods). Sanur and Legian are known for their beaches and coastal tourism, Ubud is famous for its monkey forest and arts and Tampaksiring is a centre for traditional Balinese culture and handicrafts. All are within a car drive of 1 h from each other. The locations were selected based on previous surveys as sites that were known to offer wildlife for sale (e.g., Malone et al. 2002, Nijman & Nekaris 2014, Lee & Nijman 2015, Nijman & Lee 2016, Chng et al. 2018, Chavez et al. 2023). In general, the shops selling wildlife are situated along main streets and prominently display their wares; there is no challenge locating them (Fig. 1). At least four-fifths of the shops were visited two or three times, and we compared the items for sale and report only a minimum number of items, avoiding double counting (thus if at three visits to a

particular shop we observed 10, 12 and 8 macaque skulls the minimum count is 12, but the actual could have been anything between 12 and 30). Depending on the size of the shop, and provided wildlife was offered for sale, a visit would typically last between <5 and 30 min.

In shops where CITES-listed curios were observed, we informed the vendor that we were from the Netherlands (VN) or the USA (JC) and that we were both currently living in the UK. We asked whether there was anything we needed to do if we wanted to bring a specific item home with us (the specific item depended largely on what was on display in the shop, and over the duration of the study we ensured that this covered a wide range of species). We did not mention CITES as we wanted to assess whether any of the vendors would bring this up. Discussions with vendors normally took place in English (in line with most tourists), but often at the end of the conversation key points were repeated in Indonesian to ensure we did not misrepresent the vendors' views. We did not purchase any wildlife products.

Identification and analysis

Both JC and VN are experienced in conducting wildlife trade surveys and species identification, and VN is an experienced ivory (elephant, mammoth, dugong, etc.) surveyor (e.g., Vigne & Nijman 2022, Chavez et al. 2023, Lee & Nijman 2023). Body parts were identified to the species level where possible; in some cases, the vendor provided additional information on their origin, allowing for refinement of the identification. For instance, an orangutan skull could have been from one of three species of orangutan, but the vendor indicating that it came from a trader in Banjarmasin in South Kalimantan suggests that it was a Bornean orangutan (*Pongo pygmaeus*) rather than either of the Sumatran orangutan species (*Pongo abelii* and *Pongo tapanuliensis*). Many of the macaque skulls were said to originate from traders from Java and some from Bali, but these could have been sourced elsewhere. Based on their size and shape, we suspect most of them were long-tailed macaques (*Macaca fascicularis*) native to Bali and Java, but they could have included similar-sized Sulawesi or even Mentawai Island macaques. The langur skulls were identified as coming mostly from *Trachypithecus* langurs (most likely ebony langurs (*Trachypithecus auratus*) endemic to Java, Bali and Lombok or silvered langurs (*Trachypithecus cristatus*) from Sumatra and Borneo), but some of them could have been *Presbytis* langurs from Sumatra, Java and/or Borneo.

For black coral (*akar bahar* in Indonesian), we restricted the count to wrist bracelets as these can be unambiguously identified as black corals, whereas smaller items, including rings and beads, could not. Numerous shops sell large quantities of wood carvings and wooden utensils, and while, according to the vendors, some of these were made from Indian rosewood (*Dalbergia latifolia*), it was not possible to properly quantify this; here their presence is merely noted.

In July 2023, we consulted the CITES trade database (www.trade.cites.org) for records of the export of skulls or other body parts of animals observed in trade to assess whether what was observed in Bali could be aligned with official records; data for 2022 or 2023 are not yet available, but we used records from the period 2012–2021 to assess what Indonesia has permitted to be exported in the past. For a similar time period (2012–2023), we consulted the TRAFFIC Wildlife Trade Portal (www.wildlifetradeportal.org) for open-source wildlife seizure and incident data in Bali, as well as country-level seizure reports submitted by the Indonesian CITES



Figure 1. Curio trade in Bali: (a) macaque and langur skulls (Tampaksiring); (b) chambered nautilus shell (Sanur); (c) babirusa skull (Tampaksiring); (d) macaque and water monitor lizard skulls (Ubud); (e) dugong fins and skull (Tampaksiring); (f) dugong ribs (Satria); (g) chambered nautilus shell (Sanur); (h) typical curio shop (Ubud); (i) sperm whale bone carving (Ubud); (j) necklace with crocodile skull, sperm whale teeth and porcupine quills (Ubud); and (k) sperm whale tooth vessel (Ubud). All photographs by Jessica Chavez and Vincent Nijman.

Management Authority to the CITES Secretariat. This was augmented by Internet searches for seizures made in Bali using the following keywords: *bksda* or *gakkum* (*bksda* stands for *balai konservasi sumber daya alam*, the nature conservation agency, and *gakkum* stands for *penegakan hukum* (i.e., the law enforcement branch of the Ministry of Environment and Forestry), these being the two government agencies involved in wildlife seizures), *sita* (root for 'to seize'), Bali and a string of the Indonesian names of wildlife species we observed or that we expected we could have observed. We restricted ourselves to curios and animal parts (thus excluding seizures of live birds or wild meat).

Protected species status within Indonesia was taken from the Indonesian Ministry of Environment 2018 list of protected species (Anonymous 2018). We consulted the International Union for Conservation of Nature (IUCN) Red List, and, for species observed in trade, we noted their global Red List status – for those species that were only identified to the genus level we report the lowest threat level (e.g., all macaque species that occur in Indonesia are listed as either Vulnerable, Endangered or Critically Endangered, and hence we report these genus-level reports as Vulnerable).

Results

Observations in curio shops

We found 66 shops selling curios of CITES-listed species (5 in Satria, 4 in Legian, 8 in Sanur, 15 in Ubud and 34 in Tampaksiring). The number of species and items varied from a single item to maxima of 15 items of three species (Satria), 20 items of two species (Sanur), 75 items of three species (Ubud) and 60 items of three species (Tampaksiring). All items were displayed openly, often in glass display cases, including those in the shop windows or at

prominent positions within the shop, thus making them clear for all to see. We were not shown any items that were kept in the back or under the counter, and there was no indication whatsoever that this trade was anything but completely in the open. Only one shop (in Ubud) selling curios containing sperm whale parts as well as items containing other CITES-listed species displayed a 'no photo, no video' sign.

We recorded at least 20 CITES-listed species offered for sale, 15 of which are on Indonesia's protected species list (Table 1). Most species were listed on CITES Appendix II, regulating all international trade, but some, including dugong and sun bear (*Helarctos malayanus*), are listed on Appendix I, precluding all international trade. Most CITES-listed species were recorded as globally threatened, including those that are categorized as Endangered (e.g., gibbons, anoas) or Critically Endangered (Bornean orangutan and hawksbill turtle (*Eretmochelys imbricata*)).

Vendors in three shops acknowledged that they had wooden carvings made out of rosewood on display, which they showed to us, but other than for some well-known species such as teak (*Tectona grandis*) or mahogany (*Swietenia macrophylla*) often it was unclear to them what type of wood was used for the various carvings.

The CITES-listed species for almost all shops comprised just a small proportion of what they had on offer, with the majority comprising curios made out of domestic sheep (*Ovis aries*), goats (*Capra hircus*), cattle (*Bos domesticus*), water buffalo (*Bubalus bubalis*) and dogs (*Canis familiaris*). For the indigenous art shops, items made out of animal parts likewise comprised a minority of the items for sale (most of which were made out of wood, stone or fabric). Substantial numbers of curios of non-CITES-listed but domestically protected horned helmet shell (*Cassis cornuta*),

Table 1. Trade in Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)-listed animals in Bali (Indonesia) between December 2022 and June 2023. ‘Origin’ refers to the most frequently mentioned location from which traders sourced the raw materials (carving was often done in Bali) and may not be the same as the area where the animals were found. ‘Carvings’ refers to teeth and/or bones.

Species (IUCN Red List status)	Part	Number (shops)	Stated origin (inferred origin)	CITES appendix/protected in Indonesia	Notes on export/import (2012–2021)
Macaque <i>Macaca</i> spp. (VU)	Skull	117 (11)	Java, Bali	II/no	No export reported by Indonesia; importers report 64 macaque skulls
Langur <i>Trachypithecus</i> spp. (VU)	Skull	94 (10)	Java, Bali	II/yes	No export reported by Indonesia
Langur <i>Presbytis</i> spp. (VU)	Skull	3 (1)	(Java, Sumatra, Borneo)	II/yes	No export reported by Indonesia
Gibbon <i>Hylobates</i> spp. (EN)	Skull	2 (1)	Java	I/yes	Indonesia reports the export of one skull
Bornean orangutan <i>Pongo pygmaeus</i> (CR)	Skull	1 (1)	Borneo	I/yes	No export reported by Indonesia
Dugong <i>Dugong dugon</i> (VU)	Skull	1 (1)		I/yes	No export reported by Indonesia
	Rib	11 (4)	Bali, Lombok		
	Carvings	28 (6)			
	Fins	2 (1)			
Sun bear <i>Helarctos malayanus</i> (VU)	Teeth	12 (2)	(Sumatra, Borneo)	I/yes	Indonesia reported the export of 5 teeth
Asian elephant <i>Elephas maximus</i> (EN)	Carvings	21 (4)	Thailand, Sumatra	I/yes	No export reported by Indonesia
Sperm whale <i>Physeter macrocephalus</i> (VU)	Teeth	35 (4)	Lembata	II/yes	
	Carvings	8 (3)	Lembata		
Anoa <i>Bubalus</i> spp. (EN)	Skull	1 (1)	Sulawesi	I/yes	No export reported by Indonesia
Babirusa <i>Babirusa</i> spp. (VU)	Skull	8 (6)	Sulawesi	I/yes	No export reported by Indonesia
Water monitor lizard <i>Varanus salvator</i>	Skull	49 (6)		II/no	
Saltwater crocodile <i>Crocodylus porosus</i>	Skull	2 (2)	Papua	II/yes	
Reticulated python <i>Malayopython reticulatus</i>	Bags	25 (3)		II/no	
Cobra <i>Naja</i> spp.	Belts	17 (2)		II/no	
	Bags	3 (1)			
Hawksbill turtle <i>Eretmochelys imbricata</i> (CR)	Bekko ^a	2 (2)		I/yes	No export reported by Indonesia
Chambered nautilus <i>Nautilus pompilius</i>	Shell	124 (19)	Lombok, eastern Indonesia	II/yes	No export reported by Indonesia; others report the import of 489 jewellery pieces/shells
Giant clam <i>Tridacna gigas</i> (VU)	Shell	15 (6)	Eastern Indonesia	II/yes	Indonesia report export of 270 shells; China reports import of 59 930 shells
Black coral <i>Antipatharia</i> spp.	Bracelets	30 (12)	Bali	II/yes	No export reported by Indonesia
Indian rosewood <i>Dalbergia latifolia</i> (VU)	Carvings	5 (3)		II/no	

^aBekko are ornamental products made of the keratinous scutes of the carapace of hawksbill turtles. CR = Critically Endangered; EN = Endangered; IUCN = International Union for Conservation of Nature; VU = Vulnerable.

Sunda porcupine (*Hystrix javanica*), Javan deer (*Cervus javanicus*) and sambar deer (*Cervus rusa*) were observed. Approximately a dozen specialist ivory-carving shops had various types of carvings on display, including items from mammoth (ivory, imported from Russia), walrus (*Odobenus rosmarus*; ivory and bone, imported from the USA and Russia), moose (*Alces alces*) and elk (*Cervus canadensis*; antlers, imported from the USA) and Asian elephant (*Elephas maximus*; ivory, imported from Thailand).

Information relayed to potential customers about CITES permits

None of the shops that offered CITES-listed animal curios for sale had any information displayed informing potential customers of the need for CITES permits if any of these items were to be brought home to a foreign country. None of the vendors that were asked whether CITES-listed curios could be brought home to the Netherlands, the USA or the UK indicated that this would require permits; in fact, all, without hesitation, stated that it was absolutely no problem taking the items abroad. One vendor indicated that a crocodile skull could not be brought into Australia; others offered ways to pack their wares on offer in such a manner that they would evade detection. Not a single vendor mentioned CITES. The only time the legality of the trade was brought up by vendors was when

discussing mammoth ivory, as here three times a trader made it explicit that this trade was legal, with one vendor stating that trade in elephant ivory was illegal. A trader selling sperm whale parts stated that in Indonesia there are no regulations concerning the sale or protection of whales. While a large number of the items were derived from legally protected species, and hence should not have been offered for sale, this was never brought up.

Approximately a quarter of the shops presented themselves as *toko barang antik* (antique shops). Only twice, in reference to sperm whale items offered for sale, was it made explicit by the vendor that the items were indeed very old (‘over 100 years’). It appears, however, that most, if not all, of the antique animal curios were in fact of recent origin: in Tampaksiring, where some of the traders supply shops in other parts of Bali, we observed new primate and reptile skulls being stained brown to make them appear older than they were, and on the island of Lembata there are craftsmen making ‘traditional’ and ancient-looking artefacts out of newly killed sperm whales, which are subsequently offered for sale in Bali (Chavez et al. 2023).

CITES trade records of curios

For certain species, especially those listed on CITES Appendix II, Indonesia reports the export of large numbers or large volumes –

Table 2. Seizures of Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)-listed animal curios made in Bali, Indonesia, over the period 1 January 2012–1 October 2023. For International Union for Conservation of Nature (IUCN) Red List status and CITES listing, see Table 1: sawfish are Critically Endangered and listed on Appendix I; helmeted hornbills are Critically Endangered and listed on Appendix I; bear paw clams are Lower Risk and listed on Appendix II.

Date	Location	Seizure	Arrests
14 October 2012	Mengwi	1 saltwater crocodile <i>Crocodylus porosus</i> skull	1 Indonesian male
1 September 2014	Tanjung Benoa	53 rostrums of sawfish <i>Pristis</i> spp.	1 Indonesian male
4 September 2015	Tanjung Benoa (harbour)	1515 chambered nautilus <i>Nautilus pompilius</i> shells	None
5 April 2016	Samarinda (airport) ^a	50 helmeted hornbill <i>Rhinoplax vigil</i> heads; 1 Bornean orangutan <i>Pongo pygmaeus</i> skull; 1 giant clam <i>Tridacna</i> spp. shell	None
12 February 2016	Kuta	22 chambered nautilus shells, 50 fluted giant clam <i>Tridacna squamosa</i> shells, 19 bear paw clam <i>Hippopus hippopus</i> shells	None
30 June 2018	Denpasar (airport)	19 chambered nautilus shells	NA

^aIntercepted from a flight to Bali.

NA = not available.

this includes four of the reptile species (water monitor lizard (*Varanus salvator*), saltwater crocodile (*Crocodylus porosus*), reticulated python (*Malayopython reticulatus*) and cobra (*Naja* spp.)) and Indian rosewood. While most of this is for commercial trade and is unlikely to include curios bought in Bali and exported from there, it is not possible to confirm this.

For other species, including all of the CITES Appendix I species, over the last 20 years Indonesia has never reported their export to the CITES Secretariat (Table 1). For instance, we observed 217 primate skulls offered for sale during our two survey periods, many of which will be bought by international tourists and taken out of the country, but over the last 20 years Indonesia only ever reported the export of a single gibbon skull. Similar discrepancies are evident for chambered nautilus (*Nautilus pompilius*) and black coral.

Seizures of curios over the 2012–2023 period were largely limited to confiscations of chambered nautilus and giant clam shells and a single seizure of 53 rostrums of sawfish (*Pristis* spp.; Table 2). For several taxa that we encountered in large numbers in the curio trade, such as primates (skulls) or black coral (bracelets), we were not able to find any information on seizures, suggesting limited enforcement.

Discussion

We observed the body parts of at least 500 individual animals of 20 CITES-listed species openly for sale in some of the major international tourism hotspots in Bali. The main clientele of these shops is indeed international tourists, and it is therefore reasonable to assume that at least part or even the majority of these curios at one point will be exported to wherever the tourist who bought it originates from. Our observations in Bali do not align with official export figures from Indonesia as reported to the CITES Secretariat (i.e., there is no reason to believe that, given that Indonesia has reported very little in the past two decades, this will suddenly change and that our observations will align with CITES trade data).

In none of the shops was information displayed on the CITES listings of the animal curios that were offered for sale, and it is doubtful that all tourists are aware of what species can and cannot be legally imported into their country. The rights and obligations of the contractual parties are also regulated by the Law of the Republic of Indonesia Number 8 of 1999 concerning Consumer Protection, and specifically by Article 7, where it states that the seller's obligation includes the principle of good faith. In the context of trade transactions where the seller has specific information

regarding the regulation over the goods, such as its protected status, this needs to be disclosed to any buyer. With foreign tourists, where there is a high probability that they intend to bring the goods back to their home country, the vendor needs to disclose information regarding its listing in one of the appendices of CITES.

Furthermore, it is the responsibility of the CITES Management Authority of the country of export, here Indonesia, to ensure that no exports of CITES-listed species take place without an appropriate non-detriment finding and without the correct CITES permits (Wijnstekers 2018). For CITES Appendix I species, such as the Bornean orangutan or the dugong, approval prior to export is required from the Scientific Authority of the importing country. The latter is also a requirement for import into the European Union (EU) of those Appendix II species that are included in Annex A of Council Regulation [EC] No 338/97 on the protection of species of wild fauna and flora, as is the case for macaques and langurs. It is clear that this information, if known to the vendors, is not relayed to potential customers.

We argue that a significant part of the CITES-listed animal curios observed in Bali will be bought by international tourists and hence that these curios will be exported. Even if the Balinese authorities cannot act upon the intent of tourists taking these animal parts abroad, they can act upon the fact that under Indonesia's own domestic legislation this trade is illegal. Most of the species that are included on one of the appendices of CITES are also included in Indonesia's list of protected species (Table 1); trade in these species, or their parts, as well as keeping or transporting them, is not allowed. Furthermore, those CITES-listed species that are not protected, such as certain macaques and water monitor lizards, can only be traded as part of approved harvest and export quotas. For neither macaques nor water monitor lizards is there a legal harvest permitted for the trade in skulls. In addition, many of the shops also offer legally protected species that are not included in CITES (e.g., Sunda porcupine: J Chavez et al. unpublished data 2023), and as such there is plenty of opportunity for enforcement.

It has long been known that there is a substantial, largely illegal trade in wildlife in various parts of Indonesia. This includes, for instance, a substantial and persistent trade in wild meat of legally protected species on the island of Sulawesi (Lee et al. 2005, Latinne et al. 2020), export of wild-caught reptiles from Javan facilities that are labelled as captive-bred (Lyons & Natusch 2011, Janssen & Chng 2018), trade of legally protected primates or wild-caught primates in Sumatra for pets for which there is no harvest quota (Shepherd 2010), trade in illegally imported reptiles for the Indonesian high-end exotic pet market (Morgan & Chng 2018) and especially in recent years trade in wild-caught songbirds

throughout western Indonesia (Kristianto & Jepson 2011, Rentschlar et al. 2018, Indraswari et al. 2020, Nijman et al. 2021).

Thus far, limited attention has been paid to the intricacies of the trade in wildlife in Bali other than marine species (molluscs: Nijman & Lee 2016; marine turtles: Pertiwi et al. 2020; reef fish and corals: Reksodihardjo-Lilley & Lilley 2007; sharks: Winter et al. 2020, Sitorus et al. 2022; dugongs: Lee & Nijman 2015). The openness of the trade in animal curios makes it unlikely that the authorities are unaware of this trade and suggests that there is either corruption and collusion between sellers and enforcement agencies or a disinterest in environmental issues and a laissez-faire attitude towards the current situation. Given the large number of species involved, and for some the large volumes of this trade, this urgently needs to be addressed. For this it is imperative that the root causes of this inactivity are identified. The underlying reasons as to why the Balinese authorities are failing to effectively deal with the issue of open illegal wildlife trade are complex. They include institutional deficiencies, lack of knowledge, misconceptions of ecological issues and a lack of coordination between responsible agencies, but, above all, there is a lack of serious and effective commitment and political support, both nationally and internationally, for solving conservation problems (cf. Meijaard & Nijman 2000). The ultimate outcome is that Indonesia does not meet its obligations under several international agreements, including those included in CITES and the UNWTO (UNWTO 2009, Wijnstekers 2018).

One of the reasons for us focusing on natural resource management in Bali is that it is clear that here it is not just the responsibility of the Indonesian conservation authorities to address these pressing challenges. As mentioned above, Bali's economy depends largely on tourism, and for many it is Bali's green credentials that draw them to the island, often repeatedly (Wisnumurti et al. 2021). The presence of a relatively small number of shops that continue to offer legally protected and CITES-listed species for sale puts a stain on this image. For most shops, the number of CITES-listed animal curios is small relative to the other curios (including those crafted from domestic animals) that are offered for sale. Cessation of the sale of CITES-listed animal curios may lead to a dip in the total revenue earned, but it is unlikely for the majority of shop owners to lead to a total breakdown of sales. While some have argued that the illegal trade in wildlife is more than a lack-of-enforcement problem (Challender & MacMillan 2014), in the case of the curio trade in Bali over the last two decades there has been a clear lack of enforcement (see Table 2). While in general there has been a preponderance of wildlife seized at the airport compared to, for instance, shops, warehouses or harbours (Phelps et al. 2010), this bias does not seem to be the case in Bali, largely because of an overall lack of action. While enforcement and regulation-based approaches are not simple, guaranteed or well understood, and there is a need to consider diverse strategies for addressing illegal trade (Phelps et al. 2014), it is too easy to conclude that enforcement does not work if it has clearly not been tried. We advocate for a short but effective campaign, ideally as a collaborative effort between the Balinese business and tourism community, Bali's I Gusti Ngurah Rai International Airport, expats living in Bali, overseas tourism boards and international tourists, to actively enforce existing legislation through confiscation and education. Informing the public regarding what is and what is not allowed to be bought as souvenirs (e.g., through campaigns at the airport and at travel agencies within Bali) could then be followed by a short period of

increased inspections of luggage of departing tourists, again coinciding with awareness campaigns in the local English-language media. Ramping up seizures of protected wildlife could result in a drastic reduction of protected and/or CITES-listed species ending up in trade. Finally, better liaison between the Indonesian CITES Management Authority and their counterparts in the countries whence most tourists originate (e.g., Australia, Singapore, the EU, the UK and the USA), specifically focusing on tourist curios, could likewise reduce the illicit export of CITES-listed species. The latter could also be extended to include various partnerships within the aviation industry.

Acknowledgements. We thank Prof Ir. Putu Djapa Winaya for their support and members of the Oxford Wildlife Trade Research Group for their helpful discussions. We thank two reviewers and the editor for their constructive comments and suggestions for improvement.

Financial support. This research was supported by an Oxford Brookes University Research Excellence Award (VN), the Royal Geographical Society (JC) and an Oxford Brookes University Building Potential Research Excellence Award (MC).

Competing interests. The authors declare none.

Ethical standards. The research took place as part of a Memorandum of Understanding between Universitas Warmadewa and Oxford Brookes University, with support from Indonesia's National Research and Innovation Agency. The interview protocols followed the ethical guidelines proposed by the Association of Social Anthropologists of the UK and Commonwealth and were approved by Oxford Brookes University. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

References

- Anonymous (2018) *Peraturan Menteri Lingkungan Hidup Nomor P. 106/Menlhk/Setjen/Kum. 1/12/2018 tentang Jenis Tumbuhan dan Jenis Satwa yang Dilindungi*. Jakarta, Indonesia: Ministry of Environment.
- Antara M, Sumarniasih MS (2017) Role of tourism in economy of Bali and Indonesia. *Journal of Tourism and Hospitality Management* 5: 34–44.
- Challender DW, MacMillan DC (2014) Poaching is more than an enforcement problem. *Conservation Letters* 7: 484–494.
- Chavez J, Nijman V, Payuse INAD (2023) Trade in sperm whale curios in Bali. *Oryx* (in press).
- Chng SC, Krishnasamy K, Eaton JA (2018) In the market for extinction: the cage bird trade in Bali. *Forktail* 34: 35–41.
- Indraswari K, Friedman RS, Noske R, Shepherd CR, Biggs D, Susilawati C, Wilson C (2020) It's in the news: characterising Indonesia's wild bird trade network from media-reported seizure incidents. *Biological Conservation* 243: 108431.
- Janssen J, Chng SC (2018) Biological parameters used in setting captive-breeding quotas for Indonesia's breeding facilities. *Conservation Biology* 32: 18–25.
- Kristianto I, Jepson P (2011) Harvesting orange-headed thrush *Zoothera citrina* chicks in Bali, Indonesia: magnitude, practices and sustainability. *Oryx* 45: 492–499.
- Latinne A, Saputro S, Kalengkongan J, Kowel CL, Gaghiwu I, Ransalehe TA, et al. (2020) Characterizing and quantifying the wildlife trade network in Sulawesi, Indonesia. *Global Ecology and Conservation* 21: 00887.
- Lee PB, Nijman V (2015) Trade in dugong parts in southern Bali. *Journal of the Marine Biological Association of the United Kingdom* 95: 1717–1721.
- Lee RJ, Gorog AJ, Dwiyahreni A, Siwu S, Riley J, Alexander H, et al. (2005) Wildlife trade and implications for law enforcement in Indonesia: a case study from north Sulawesi. *Biological Conservation* 123: 477–488.

- Lunn KE, Moreau MA (2004) Unmonitored trade in marine ornamental fishes: the case of Indonesia's Banggai cardinalfish (*Pterapogon kauderni*). *Coral Reefs* 23: 344–351.
- Lyons JA, Natusch DJ (2011) Wildlife laundering through breeding farms: illegal harvest, population declines and a means of regulating the trade of green pythons (*Morelia viridis*) from Indonesia. *Biological Conservation* 144: 3073–3081.
- Malone NM, Fuentes A, Purnama AR, Wedana IMWA (2002) Displaced hylobatids: biological, cultural, and economic aspects of the primate trade in Jawa and Bali, Indonesia. *Tropical Biodiversity* 8: 41–50.
- Meijaard E, Nijman V (2000) The local extinction of the proboscis monkey *Nasalis larvatus* in Pulau Kaget Nature Reserve, Indonesia. *Oryx* 34: 66–70.
- Morgan J, Chng S (2018) Rising internet-based trade in the Critically Endangered ploughshare tortoise *Astrochelys yniphora* in Indonesia highlights need for improved enforcement of CITES. *Oryx* 52: 744–750.
- Nijman V, Lee PB (2016) Trade in nautilus and other large marine molluscs as ornaments and decorations in Bali, Indonesia. *Raffles Bulletin of Zoology* 64: 368–373.
- Nijman V, Nekaris KAI (2014) Trade in wildlife in Bali, Indonesia, for medicinal and decorative purposes. *Traffic Bulletin* 26: 31–36.
- Nijman V, Campera M, Ardiansyah A, Balestri M, Bizri HRE, Budiadi B, et al. (2021) Large-scale trade in a songbird that is extinct in the wild. *Diversity* 13: 238.
- Pertiwi NPD, Suhendro MD, Yusmalinda NLA, Putra ING, Putri IGRM, Artiningsih EY, et al. (2020) Forensic genetic case study: species identification and traceability of sea turtle caught in illegal trade in Bali, Indonesia. *Biodiversitas* 21: 4276–4283.
- Phelps J, Shepherd CR, Reeve R, Niissalo MA, Webb EL (2014) No easy alternatives to conservation enforcement: response to Challenger and Macmillan. *Conservation Letters* 7: 495–496.
- Phelps J, Webb EL, Bickford D, Nijman V, Sodhi NS (2010) Boosting CITES. *Science* 330: 1752–1753.
- Reksodihardjo-Lilley G, Lilley R (2007) Towards a sustainable marine aquarium trade: an Indonesian perspective. *SPC Live Reef Fish Information Bulletin* 17: 11–19.
- Rentschlar KA, Miller AE, Lauck KS, Rodiansyah M, Bobby, Muflihati, Kartikawati (2018) A silent morning: the songbird trade in Kalimantan, Indonesia. *Tropical Conservation Science* 11, 1940082917753909.
- Rosen GE, Smith KF (2010) Summarizing the evidence on the international trade in illegal wildlife. *EcoHealth* 7: 24–32.
- Shepherd CR (2010) Illegal primate trade in Indonesia exemplified by surveys carried out over a decade in north Sumatra. *Endangered Species Research* 11: 201–205.
- Sitorus YDP, Julyantoro PGS, Wiweka AP, Dewi K (2022). Identification of dominant shark fins landed at the port of Benoa, Bali based on COI gene. *Journal of Marine and Aquatic Sciences* 8: 221–229.
- UNWTO (2001) *Global Code of Ethics for Tourism*. Madrid, Spain: United Nations World Tourism Organisation.
- UNWTO (2009) *Statues of the World Tourism Organisation*. Madrid, Spain: United Nations World Tourism Organisation.
- Vigne I, Nijman V (2022) Elephant ivory, rhino horn, pangolin and helmeted hornbill products for sale at the Myanmar–Thailand–China border. *Environmental Conservation* 49: 187–194.
- Wijnstekers W (2018) *The Evolution of CITES*, 11th edition). Geneva, Switzerland: CITES Secretariat.
- Winter ST, Rudianto D, Laglbauer BJ, Ender I, Simpfendorfer CA (2020) Immature individuals dominate elasmobranch fisheries of the Bali Strait. *Marine and Freshwater Research* 71: 1488–1500.
- Wisnumurti AAGO, Darma K, Putra INGM (2021) Tourism policy and the impact of tourism on Bali Island. *Journal of Hunan University Natural Sciences* 47: 95–104.