

Trade in White-rumped Shammas *Kittacincla malabarica* demands strong national and international responses

BOYD T. C. LEUPEN, KANITHA KRISHNASAMY, CHRIS R. SHEPHERD, SERENE C. L. CHNG, DANIEL BERGIN, JAMES A. EATON, DAIRYSIA ANTHONY YUKIN, SHARON KOH PEI HUE, ADAM MILLER, K. ANNE-ISOLA NEKARIS, VINCENT NIJMAN, SALMAN SAABAN & MUHAMMED ALI IMRON

Owing to its remarkable singing ability, the White-rumped Shama *Kittacincla malabarica* is a particularly popular species in the South-East Asian cage-bird trade. Despite domestic trade being regulated in six out of nine South-East Asian range states, demand continues to put a heavy strain on the region's White-rumped Shama populations. The lack of international regulation further facilitates unsustainable trade in the species. We gathered data from seizure records, market surveys and online surveys to assess domestic and international trade dynamics and to suggest appropriate conservation responses to both. Combined data from surveys across Indonesia, Malaysia, Singapore, Thailand and Vietnam, carried out between 2007 and 2018, found a total of 8,271 White-rumped Shama for sale openly in local bird markets. Another 917 were found for sale online in six snapshot internet trade studies in Indonesia, Malaysia and Thailand between 2016 and 2018. In addition, 432 seizures were recorded between 2008 and 2018, involving 15,480 birds; significantly, 291 of these occurred between January 2014 and June 2018. Of all recorded seizure incidents, 12% involved international trade and accounted for 67% (10,376) of all White-rumped Shama seized. Because most seizure records are incomplete, the true figure is likely to be much higher. We strongly recommend that White-rumped Shama be listed in Appendix II of CITES and that, as a stopgap measure, the range states list the species in Appendix III of CITES. Such CITES listings would facilitate improved documentation and assessment of the White-rumped Shama trade and provide authorities with a much-needed tool to combat unsustainable international trade in the species.

INTRODUCTION

Illegal and unsustainable wildlife trade poses a serious threat to the conservation status of many species around the globe. Within this trade, birds are among the most heavily exploited taxonomic groups (Bush *et al.* 2014, Ripple *et al.* 2017). South-East Asia is a major bird trade hotspot, with songbirds, desired for their singing abilities, colourful plumage and increasing rarity, being among the most heavily traded species groups (Nijman 2010, Duckworth *et al.* 2012, Koh *et al.* 2013, Lee *et al.* 2016, Shepherd & Chng 2017, Nijman *et al.* 2017, 2018). Current levels of trapping of songbirds, many of which are already in decline (Capotosto & Shepherd 2015), are fuelled by demand in countries such as Indonesia, Malaysia, Singapore, Thailand and Vietnam (Nash 1993, Jepson & Ladle 2005, Shepherd 2006, Kirichot *et al.* 2014, Chng *et al.* 2015, Chng & Eaton 2016a, 2016b, Chng *et al.* 2016, Eaton *et al.* 2017a, 2017b, Bergin *et al.* 2018, Rentschlar *et al.* 2018) and threaten the survival of a growing list of species.

The White-rumped Shama *Kittacincla malabarica* is one of the most sought-after and valuable species in the South-East Asian cage-bird trade (Nash 1993, Burivalova *et al.* 2017) and among the most popular species used in singing competitions (Jepson & Ladle 2009, Eaton *et al.* 2015, Chng *et al.* 2015, Chng & Eaton 2016b, Chng *et al.* 2016, Lee *et al.* 2016, Burilova *et al.* 2017, Chng *et al.* 2018). It is a widespread species, native to 15 countries, from India, Nepal and southern China in the north to Indonesia (east to East Java and East Kalimantan) in the south, and this large range has led the species to be classified as Least Concern (BirdLife International 2018a). However, South-East Asian populations are in decline (Jepson & Ladle 2005, 2009)—local extinctions have already occurred in Java, Sumatra and West Kalimantan as a direct result of the cage-bird trade (Eaton *et al.* 2015, 2016, Ng *et al.* 2017). The fact that the species is composed of 14 largely island-endemic races (del Hoyo & Collar 2016) only exacerbates the conservation risks that are being imposed on it by unsustainable trade. These island races typically have small populations with limited distributions, making them particularly vulnerable to exploitation (Eaton *et al.* 2015). In 2015 the White-rumped Shama was listed as a priority species, requiring urgent action, under the 'Conservation Strategy for South-East Asian Songbirds in Trade' (Lee *et al.* 2016), at the first Asian Songbird Trade Crisis Summit in Singapore (Capotosto & Shepherd 2015).

The trade in White-rumped Shama occurs at both national and international levels. Domestically, it is regulated in six out of nine South-East Asian range states (Table 1), but the species is not protected in Brunei, Lao PDR and Myanmar. In Indonesia, although it is not on the list of protected species, its trade is regulated through annual harvest and export quotas. Historically such quotas have been small (Chng *et al.* 2015, 2018) and no harvest quota was allocated for 2018, meaning that any trade in wild-caught White-rumped Shammas is technically prohibited in the country.

International trade in the species is currently not regulated or consistently monitored as the species is not listed in any of the Appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Here we collate data from seizure records, market surveys and online surveys to illustrate domestic and international White-rumped Shama trade dynamics and suggest appropriate conservation responses at both national and international levels.

METHODS

Seizure analysis

Analysis of seizure data is increasingly used to gain better insight into wildlife trade (Rosen & Smith 2010, Siriwat & Nijman 2018, Symes *et al.* 2018). We analysed seizures of White-rumped Shama in Indonesia, Malaysia, Singapore, Thailand and Vietnam between January 2008 and June 2018. A seizure was defined as the confiscation of at least one White-rumped Shama intended for either domestic or international trade. Seizure records were extracted from open source media, obtained from NGOs and requested from relevant governments. Data were received from two government departments: the Department of Wildlife and National Parks, Peninsular Malaysia, and the Department of National Parks, Wildlife and Plant Conservation, Thailand. Eight seizure records did not specify the number of birds involved and were treated as involving one bird, even though some were reported to have involved hundreds or even thousands of birds, including White-rumped Shama. Consequently, the numbers presented here should be considered conservative. It must also be noted that not all seizures are reported in open source media. Such under-reporting, compounded by the inherently secretive nature of most of the

Table 1. Regulation of the White-rumped Shama trade in South-East Asia.

*The legal definition of 'protected' differs between countries, with licensed trade in protected species being allowed in some but not in others.
 **Fines were converted at a rate of US Dollar (USD) 1 = Cambodian Riel (KHR) 4,026; USD1 = Indonesian Rupiah (IDR) 14,070; USD1 = Malaysian Ringgit (MYR) 4; USD1 = Singapore Dollar (SGD) 1.36; USD1 = Thai Baht (THB) 32.71; and USD1 = Vietnamese Dong (VND) 22,759. (<https://www.oanda.com/lang/fr/currency/converter/>, accessed on 20 June 2018.)

	Protection status*	Legislation	Penalty**
Brunei	Not protected	Wildlife Protection Act, Revised Edition 1984	-
Cambodia	Protected; hunting or trade not permitted	Forestry Law 2002	Minimum KHR10 million (USD2,425) and maximum KHR100 million (USD24,245) fine; minimum one year to maximum five years imprisonment, or both
Indonesia	Not protected; regulated by means of annual harvest and export quota	Government Act No. 5 of 1990 concerning Conservation of Living Resources and Their Ecosystems and Law No. 16 of 1992 concerning Animal, Fish, and Plant Quarantine	Maximum IDR100 million (USD8,584) fine or maximum five years imprisonment (Reg. No. 7) and maximum IDR150 million or maximum three years imprisonment (Law No. 16)
Lao PDR	Not protected	—	—
Malaysia Peninsular	Protected; capture and trade allowed through licensing	Wildlife Conservation Act 2010	Maximum MYR50,000 (USD12,486) fine or maximum two years imprisonment, or both. For cases involving 20 White-rumped Shama or more: minimum MYR20,000 (USD4,994) and maximum MYR50,000 (USD12,500) fine or maximum imprisonment of three years, or both
Malaysia Sabah	Protected; capture and trade allowed through licensing	Sabah's Wildlife Conservation Enactment 1997 (2016 Amendment); <i>Copsychus stricklandii</i> added in 2016	Minimum MYR50,000 (USD12,500) and maximum MYR 100,000 (USD25,000) fine, or a minimum of six months and maximum of five years imprisonment, or both
Malaysia Sarawak	Protected; capture and trade allowed through licensing	Sarawak's Wildlife Protection Ordinance 1998	Fine of MYR10,000 (USD2,497) and one year imprisonment
Myanmar	Not protected	—	—
Singapore	Protected; capture and trade allowed through licensing	Wild Animals and Birds Act 2000	Maximum fine SGD1,000 (USD737)
Thailand	Protected; trade only permitted from licensed captive-bred individuals	Wild Animal Reservation and Preservation Act (WARPA)	Maximum THB40,000 (USD1,226) fine or maximum four years imprisonment, or both
Vietnam	Protected; capture and trade allowed through licence	Decree 32/2006/ND-CP and Criminal Code No. 100 of 2015 QH13	Minimum VND50,000,000 (USD2,180) and maximum VND 300,000,000 (USD13,082) fine, or a community sentence of three years, or six to thirty-six months imprisonment

trade, results in many shipments going undetected and our overall reports are only a fraction of the true scale of the White-rumped Shama trade.

Market surveys

Market data analysis has been found to be an effective way of identifying overexploited species (Harris *et al.* 2015). We compiled survey data from published and unpublished market studies from Indonesia, Malaysia, Singapore, Thailand and Vietnam to determine White-rumped Shama availability in these countries' domestic markets. Some of these studies were structured and long-term, involving many cities, whilst others were one-off inventories of selected markets. For analytical purposes, a survey was defined as a single market assessment in a specific city. A survey might span several days and include different markets (all visited once) in one city. Data from 364 surveys between 2007 and 2018 from 51 cities were included in our study. Most of the surveys took place in Indonesia (318 surveys from 39 cities), followed by Vietnam (10 surveys from four cities), Thailand (30 surveys from two cities), Malaysia (five surveys from five cities), and Singapore (one survey). For 10 cities, eight of them in Indonesia, data were obtained from more than five surveys: Garut (164), Jakarta (28), Bandung (18), Tasikmalaya (15), Denpasar (13), Cirebon (10), Semarang (8) Yogyakarta (6); the other locations were Bangkok, Thailand (29), and Hanoi, Vietnam (6).

Online surveys

Data obtained from six online wildlife trade studies carried out between June 2016 and September 2018, from Indonesia (one study), Malaysia (two studies), Thailand (one study) and Vietnam (two studies), were used to give an indication of the scale of the online White-rumped Shama trade. Unfortunately, each used different research methods and periods. The Indonesian study consisted of a survey of some of the country's largest wildlife-selling Facebook groups over 20 days between 17 April and 19 July 2018. The first Malaysian study consisted of surveys of 21 Facebook groups for 313 days in Sabah, East Malaysia, between October 2016 and June 2018.

The second was an assessment of wildlife trade on Mudah.com, a popular Malaysian e-commerce website, focusing on live birds, mammals and reptiles sold throughout the country, carried out on 21 days between 28 June and 27 July 2018. The Thai study involved the monitoring of 12 Facebook wildlife trading groups during a 23-day period between June and July 2016. The Vietnamese studies consisted of the monitoring of eight e-commerce websites over 23 days in June 2016, and a survey of 36 open-access Vietnamese-language social media platforms, online forums, auction websites and secondary seller websites over 25 days between September and October 2017.

RESULTS

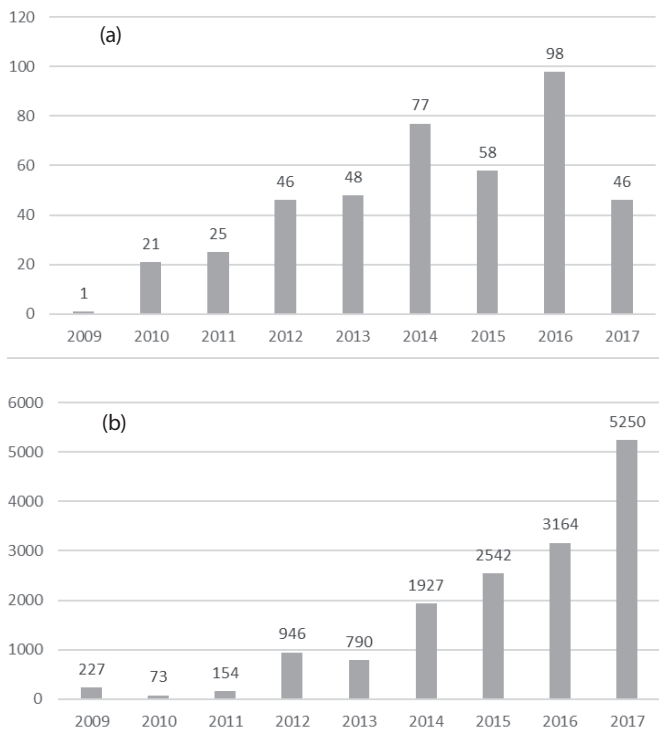
Seizures

A total of 432 White-rumped Shama seizures totalling 15,480 birds were recorded in five countries—Cambodia, Indonesia, Malaysia, Singapore and Thailand—between January 2008 and June 2018; 291 seizures (67%) involving 13,290 birds (86%) occurred in the final four-and-a-half years of the period (January 2014–June 2018). The number of individuals seized increased over the years, peaking at 5,250 birds in 2017 (Figure 1), although this peak was caused by the seizure of a single consignment of 4,280 birds smuggled into Batam, Riau archipelago, Indonesia, from Malaysia in July.

Indonesia accounted for the highest number of birds seized (7,373) and the highest average individuals-per-seizure ratio (Table 2). Malaysia had the highest number of seizures (218) and the second highest number of birds seized (6,838), followed by Thailand (187 seizures of 1,174 birds); these seizure numbers may at least partly be due to the fact that government data were only received from Malaysia and Thailand, resulting in more comprehensive datasets for these countries.

In most cases (371) it was impossible to establish whether the shipment was destined for domestic or international trade; 52 (12%) of all recorded seizures reportedly involved international

Figure 1. Total annual numbers of (a) White-rumped Shama seizures and (b) individuals seized between January 2008 and December 2017.



trade, accounting for 10,376 birds, 67% of the number seized. More than half (29) of all reported international shipments were bound for Indonesia, from Malaysia (Figure 2). About a quarter of the shipments (15) were from Malaysia to Thailand.

Nine seizures (1,653 birds) reportedly involved shipments between different provinces, states or cities within the same country. All but one of these seizures took place in Indonesia and involved shipments from Kalimantan to Sumatra and Java (Figure 3). The other one involved a shipment from Selalang, Sarawak, to Kuching, Sarawak, East Malaysia.

Market data

A total of 8,271 White-rumped Shama were recorded openly for sale during market surveys in Indonesia, Malaysia, Singapore, Thailand and Vietnam from 2007 to 2018 (Table 3, Appendix 1). Of these, 146 (1.8%) were White-crowned Shama of the distinctive race *stricklandii*. Most individuals (6,904) were found during surveys in Indonesia, and particularly Java (4,823). Of these, 1,344 (28%) were recorded during 29 visits to Barito, Jatinegara and Pramuka, Jakarta’s three main bird markets.

Online surveys

A total of 917 White-rumped Shama were openly available in the six online trade surveys (Table 4). During the most extensive study, involving monitoring 21 wildlife-trade Facebook groups based in Sabah, East Malaysia, between 2016 and 2018, White-rumped Shama was by far the most common species—741 individuals

Table 2. The number of seizures and individuals seized per country between January 2008 and June 2018. *Seizures for which it was not clear whether the shipments were meant for international or domestic trade.

Country	International seizures	Domestic seizures	Remaining seizures*	Total no. of seizures	Total no. of individuals seized	Average no. of individuals per seizure
Cambodia	2	0	0	2	84	42
Indonesia	7	8	7	22	7,373	335
Malaysia	40	1	177	218	6,838	31
Thailand	0	0	187	187	1,174	6
Singapore	3	0	0	3	11	3
TOTAL	52	9	371	432	15,480	



Figure 2. International trade routes indicated by White-rumped Shama seizure records for the period between January 2008 and June 2018.

The numbers in the circles indicate the number of times a trade route was mentioned in the seizure records. Country names in parenthesis are used when actual locations are not known; the location of the designation ‘Indonesia’ on Sumatra does not imply that all the shipments in question were sent there. No trade route is indicated for Pontianak because one outgoing international shipment was reportedly seized there without the intended destination being known.

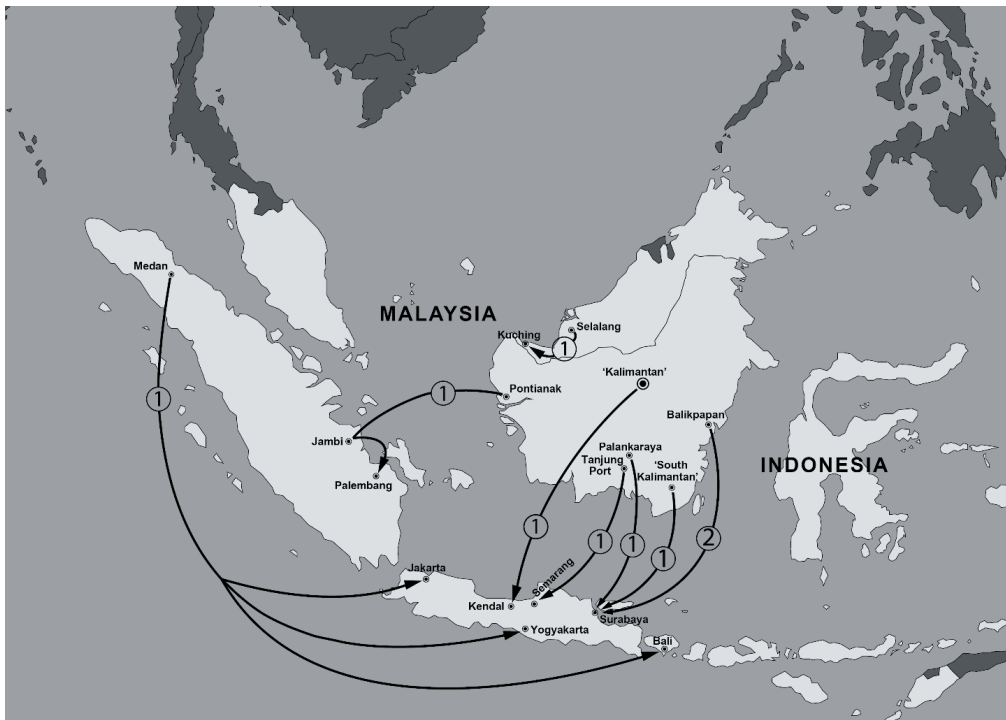


Figure 3. Domestic trade routes indicated by White-rumped Shama seizure records for the period between January 2008 and June 2018.

The numbers in the circles indicate the number of times a trade route was mentioned in the seizure records. The location names 'Kalimantan' and 'South Kalimantan' on the map indicate that the exact locations of the shipments in question are not known.

Table 3. Overview of White-rumped Shama found openly for sale during market surveys between 2007 and 2018.

Country	No. of studies	Year(s)	No. of surveys	Total no. of individuals
Indonesia	9	2012–2018	318	6,904
Malaysia	2	2012, 2014	5	288
Singapore	1	2015	1	162
Thailand	2	2007–2016	30	201
Vietnam	3	2016, 2017	10	716
TOTAL	17		364	8,271

Table 4. White-rumped Shama found openly for sale on online platforms during trade studies in Indonesia, Malaysia, Thailand and Vietnam between June 2016 and September 2018.

Country	Year of survey	Date of survey	No. of survey days	No. of posts	Total no. of individuals	Source
Indonesia	2018	April–July	20	96	108	TRAFFIC
Malaysia	2016–2018	October 2016–June 2018	313	505	741*	WWF Malaysia & TRAFFIC
Malaysia	2018	June–July	21	unknown	17	TRAFFIC
Thailand	2016	June–July	23	unknown	17	Phassauradomsak & Krishnasamy 2018
Vietnam	2016	June	23	7	28	Nguyen & Willemsen 2016
Vietnam	2017	September–October	25	5	6	TRAFFIC
TOTAL			425	unknown	917	

*696 of which were advertised as White-crowned Shama *stricklandii* subspecies.

were counted in 505 of the 551 monitored posts. The only other species encountered in that study, the Oriental Magpie Robin *Copsychus saularis*, accounted for a mere 62 individuals. At least 696 individuals (87%) were advertised as race *stricklandii*. The posts were placed by 210 different people, operating from at least 54 locations across the state. None of the posts mentioned trade licences.

DISCUSSION

The large numbers of White-rumped Shama recorded in seizures and during markets surveys highlight the species's longstanding status as one of South-East Asia's most popular songbirds and confirm the existence of both domestic and international trade. Domestic trade levels appear to be particularly high in Java, where bird-keeping is one of the most important and popular local traditions, although

trade records show that local demand for the species also exists in Sumatra, Bali, Lombok and Kalimantan, Indonesia. It is hard to ascertain the origin of the White-rumped Shama in Java's markets but, given that the species is nearing extinction in the wild on the island, it may be assumed that birds on offer were either captive-bred or sourced from outside the island. This is confirmed by both domestic and international seizure data: seven of the eight recorded Indonesian domestic shipments were destined for Java, originating from either Kalimantan (six) or Sumatra (one). Indonesia was also by far the most frequently recorded destination for international shipments, with trade predominantly from and through Malaysia, with several shipments found to have been transported to Batam, Riau archipelago. This island's strategic location and several ports make it a useful gateway to Indonesia.

It is of major concern that at least 12% of all recorded seizures—67% of all birds seized—involved international

shipments. Given that trade in the species is permitted through a licensing system in the countries where the seizures occurred, a significant proportion of the birds confiscated is thought to involve birds illegally taken from the wild. These seizures indicate an active unregulated international trade, which may lead to the decimation of local/native populations across the region, as has occurred in the case of other Asian songbirds, e.g. the Critically Endangered Straw-headed Bulbul *Pycnonotus zeylanicus* (Shepherd *et al.* 2013, Bergin *et al.* 2018, BirdLife International 2018b). Because most of this study's seizure records were incomplete, often lacking information concerning the destination of the shipments, the actual volume of international trade is suspected to be significantly higher. In addition to Indonesia, Thailand in particular, but also Vietnam and Singapore, were export destinations.

The growth of online trade in most South-East Asian countries further exacerbates trade pressure on White-rumped Shama populations. Although the available online survey data were not collected in a standardised manner, they highlight the dominance of White-rumped Shama trade on these platforms. It is probable that, if more coordinated surveys were undertaken in key countries, higher trade levels would be recorded.

Although it remains unclear what proportion of the White-rumped Shama in trade was wild-caught, there are strong indications that it is the majority. Wild birds are generally preferred by songbird hobbyists over captive-bred individuals for their supposed superior singing abilities. Previous research found that in Indonesia wild-caught birds were particularly popular in richer households (Jepson & Ladle 2005) and that most birds were sourced from the wild (Jepson & Ladle 2009). A survey of 762 households in Medan, Sumatra, reported 185 White-rumped Shama, with only 21 birds said to have been captive-bred. Interviewees stated that captive-bred birds were less desirable because of their inferior song and general 'lower quality' (Burivalova *et al.* 2017). During our own market surveys, sellers sometimes specifically mentioned that the birds on offer had been wild-caught; likewise, in the online surveys, several posts specified that the birds on offer were wild-caught.

However, during a recent market survey in Yogyakarta, some traders stated that captive-bred White-rumped Shama are more desirable because of their longer lifespan and greater acceptance of life in a cage—wild-caught birds were said to remain silent during their first few months in captivity. Indeed, lack of availability of captive-bred birds has been found to play an important role in consumers' decisions to opt for wild-caught birds (Burivalova *et al.* 2017). This suggests that well-regulated captive-breeding could potentially take some pressure off wild populations. Both small and large scale captive breeding of White-rumped Shama is ongoing in Indonesia (Jepson *et al.* 2011), but the lack of published records makes it impossible to determine its extent. However, captive breeding would only be successful if customer preference was for captive-bred birds and the business operated under a robust governance system, accompanied by strict and efficient enforcement to prevent the laundering of illegally captured wild birds.

The impact of domestic and international trade on South-East Asia's White-rumped Shama populations is significant and may be more devastating than currently assumed. This is particularly true for endemic island races. White-rumped Shama have been found to be easy to trap due to their combative response to playback (Eaton *et al.* 2015), with severe population declines as a result (e.g. in Sumatra, see Harris *et al.* 2017). Despite being regulated in six of its nine South-East Asian range countries, trade in the species is currently so great that it demands stronger national responses. The international trade in the species is currently unregulated, which is very worrying, particularly in view of the reported seizure volumes. Nash (1993) recommended the species for listing in Appendix II or at least Appendix III of CITES to assist in documenting trade and to ensure that trade was not illegal and unsustainable. Shepherd

et al. (2004) also recommended that White-rumped Shama be proposed for a CITES Appendix II or I listing. To date, no such listing has been secured, despite high levels of international trade and declining populations.

We recommend the following:

(1) the White-rumped Shama should be added to CITES Appendix II. Species listed in this appendix require an export permit which may only be issued if the animal was legally obtained and if the transaction in question is not detrimental to the species's survival. A CITES Appendix II listing obliges Parties to the Convention to maintain import and export data, making it easier to monitor international trade and determine the threat that it poses to a species. We urge the range countries to take the lead on this CITES Appendix II listing and subsequently liaise with other CITES member range states for co-sponsorship of the proposal;

(2) as a stopgap measure, a CITES Appendix III listing should be considered by countries in which the species is facing significant declines. Whenever a species is traded from a state in which it is listed in CITES Appendix III, an export permit is required. Certificates of origin are required when the species is exported or re-exported from any other CITES member state. As such, a CITES Appendix III listing for the White-rumped Shama, which would be effective immediately, could at once help regulate international trade-flows and prevent further or even increased unregulated trade during the period leading up to an Appendix II listing (Janssen & Krishnasamy 2018(3) adequate national protection of the White-rumped Shama should be established throughout its range. While it is encouraging to see law enforcement successes in the form of seizures of large numbers of birds, these seizures and arrests must lead to stronger penalties and convictions if they are to act as a deterrent. We urge the Indonesian Government to reconsider protection of the species under *Government Regulation No. 92 2018*, based on the worrying population declines and local extinctions that have already occurred in the country. Penalties should be increased in Singapore and Thailand for offences relating to the illegal capture or trade involving the species;

(4) a re-assessment of the White-rumped Shama's IUCN Red List classification should consider the current scale of the international and domestic trade, the hunting pressures associated with this trade, and the vulnerability of endemic island races;

(5) monitoring of the White-rumped Shama trade and research into its impact on wild populations should be continued. Additionally, a genetic study of the origins of White-rumped Shama in Indonesian markets would help greatly to map international trade flows and determine the impact of the trade on the species as a whole.

ACKNOWLEDGEMENTS

The authors thank Wildlife Reserves Singapore for their generous funding of this work. The Department of Wildlife, National Parks and Plant Conservation, Thailand, is thanked for sharing their seizure data. Additionally, thanks go to Cleveland Zoo and Zoo Society, Columbus Zoo, Disney Worldwide Conservation Fund and the Little Fireface Project for their support, Maethinee Phassaraudomsak for facilitating data collection and Faril Izzadi Mohd Noor for creating the maps used in this paper. Elizabeth John, Stuart Marsden and Richard Thomas are thanked for their very useful comments on an earlier draft of this paper.

REFERENCES

- Bergin, D., Chng, S. C., Eaton, J. A. & Shepherd, C. R. (2018) The final straw? An overview of Straw-headed Bulbul *Pycnonotus zeylanicus* trade in Indonesia. *Bird Conserv. Internatn.* 28: 126–132.

- BirdLife International (2018a) Species factsheet: *Kittacincla malabarica*. Accessed at <http://www.birdlife.org> on 19/06/2018.
- BirdLife International (2018b) Species factsheet: *Pycnonotus zeylanicus*. Accessed at <http://www.birdlife.org> on 29/10/2018.
- Burivalova, Z., Lee T. M., Hua F., Lee, J. S. H., Prawiradilaga, D. M. & Wilcove, D. S. (2017) Understanding consumer preferences and demography in order to reduce the domestic trade in wild-caught birds. *Biol. Conserv.* 209: 423–431.
- Bush, E. R., Baker, S. E. & Macdonald, D.W. (2014) Global trade in exotic pets 2006–2012. *Conserv. Biol.* 28: 663–676.
- Capotosto, J. & Shepherd, C. R. (2015) First Asian Songbird Trade Crisis Summit. *TRAFFIC Bull.* 27(2): 47.
- Chng, S. C. L. & Eaton, J. A. (2016a) Snapshot of an on-going trade: an inventory of birds for sale in Chatuchak weekend market, Bangkok, Thailand. *BirdingASIA* 24: 24–29.
- Chng, S. C. L. & Eaton, J. A. (2016b) *In the market for extinction: Eastern and Central Java*. Petaling Jaya, Malaysia: TRAFFIC South-East Asia.
- Chng, S. C. L., Eaton, J. A., Krishnasamy, K., Shepherd, C. R. & Nijman, V. (2015) *In the market for extinction: an inventory of Jakarta's bird markets*. Petaling Jaya, Malaysia: TRAFFIC South-East Asia.
- Chng, S. C. L., Guciano, M. & Eaton, J. A. (2016) In the market for extinction: Sukahaji, Bandung, Java, Indonesia. *BirdingAsia* 26: 22–28.
- Chng, S. C. L., Shepherd, C. R. & Eaton, J. A. (2018) In the market for extinction: birds for sale in selected outlets in Sumatra. *TRAFFIC Bull.* 30: 15–22.
- Duckworth, J. W., Batters, G., Belant, J. L., Bennett, E. L., Brunner, J., Burton, J., Challender, D. W. S., Cowling, V., Duplaix, N., Harris, J. D., Hedges, S., Long, B., Mahood, S. P., McGowan, P. J. K., McShea, W. J., Oliver, W. L. R., Perkin, S., Rawson, B. M., Shepherd, C. R., Stuart, S. N., Talukdar, B. K., van Dijk, P. P., Vié, J.-C., Walston, J. L., Whitten, T. & Wirth, R. (2012) Why South-East Asia should be the world's priority for averting imminent species extinctions, and a call to join a developing cross-institutional programme to tackle this urgent issue. *Sapiens* 5(2): 77–95.
- Eaton, J. A., Shepherd, C. R., Rheindt, F. E., Harris, J. B. C., van Balen, S. (B.), Wilcove, D. S. & Collar, N. J. (2015) Trade-driven extinctions and near-extinctions of avian taxa in Sundaic Indonesia. *Forktail* 31: 1–12.
- Eaton, J. A., van Balen, B., Brickle, N. W. & Rheindt, F. E. (2016) *Birds of the Indonesian Archipelago. Greater Sundas and Wallacea*. Barcelona: Lynx Edicions.
- Eaton, J. A., Leupen, B. T. C. & Krishnasamy, K. (2017a) *Songsters of Singapore: an overview of the bird species in Singapore pet shops*. Petaling Jaya, Malaysia: TRAFFIC South-East Asia.
- Eaton, J. A., Nguyen, M. D. T., Willemsen, M., Lee, J. & Chng, S. C. L. (2017b) *Caged in the city: an inventory of birds for sale in Ha Noi and Ho Chi Minh City, Vietnam*. Petaling Jaya, Malaysia: TRAFFIC South-East Asia.
- Edmunds, K., Robertson, S. I., Few, R., Mahood, S., Bui, P. L., Hunter, P. R. & Bell, D. J. (2011) Investigating Vietnam's ornamental bird trade: implications for transmission of zoonoses. *EcoHealth* 8: 63–75.
- Harris, J. B. C., Green, J. M. H., Prawiradilaga, D. M., Giam, X., Giyanto, Hikmatullah, D., Putra, C. A. & Wilcove, D. S. (2015) Using market data and expert opinion to identify overexploited species in the wild bird trade. *Biol. Conserv.* 187: 51–60.
- Harris, J. B. C., Tingley, M. W., Hua, F., Yong, D. L., Adeney, J. M., Lee, T. M., Marthy, W., Prawiradilaga, D. M., Sekercioglu, C. H., Suyadi, Winarni, N. & Wilcove, D. S. (2017) Measuring the impact of the pet trade on Indonesian birds. *Conserv. Biol.* 31: 394–405.
- del Hoyo, J. & Collar, N. J. (2016) *HBW and BirdLife International illustrated checklist of the birds of the world, 2: passerines*. Barcelona: Lynx Edicions.
- Janssen, J. & Krishnasamy, K. (2018) Left hung out to dry: how inadequate international protection can fuel trade in endemic species—the case of the earless monitor. *Global Ecol. Conserv.* 16, e00464.
- Jepson, P. & Ladle, R. J. (2005) Bird-keeping in Indonesia: conservation impacts and the potential substitution-based conservation responses. *Oryx* 39: 1–6.
- Jepson, P. & Ladle, R. J. (2009) Governing bird-keeping in Java and Bali: evidence from a household survey. *Oryx* 43: 364–374.
- Jepson, P., Ladle, R. J. & Sujatnika (2011) Assessing market-based conservation governance approaches: a socio-economic profile of Indonesian markets for wild birds. *Oryx* 45: 482–491.
- Kirichot, A., Untaya, S. & Singyabuth, S. (2014) The culture of sound: a case study of birdsong competition in Chana district, Thailand. *Asian Culture and History* 7: 5.
- Koh L. P., Kettle, C. J., Sheil, D., Lee T. M., Giam X., Gibson, L. & Clements, G. R. (2013) Biodiversity state and trends in South-East Asia. Pp.509–527 in S. Levin, ed. *Encyclopedia of Biodiversity*. Second edition. Amsterdam: Academic Press.
- Lee, J. G. H., Chng, S. C. L. & Eaton, J. A. (2016) *Conservation strategy for South-East Asian songbirds in trade: recommendations from the first Asian Songbird Trade Crisis Summit 2015 held in Jurong Bird Park, Singapore, 27–29 September 2015*. Singapore: Wildlife Reserves Singapore and Selangor, Malaysia: TRAFFIC South-East Asia.
- Nash, S. V. (1993) *Sold for a song: the trade in South-East Asian non-CITES birds*. Cambridge UK: TRAFFIC International.
- Ng E. Y. X., Garg, K. M., Low, G. W., Chattopadhyay, B., Oh, R. R. Y., Lee, J. G. H. & Rheindt, F. E. (2017) Conservation genomics identifies impact of trade in a threatened songbird. *Biol. Conserv.* 214: 101–108.
- Nguyen, M. & Willemsen, M. (2016) A rapid assessment of e-commerce wildlife trade in Vietnam. *TRAFFIC Bull.* 28: 53–55.
- Nijman, V. (2010) An overview of international wildlife trade from South-East Asia. *Biodiversity Conserv.* 19: 1101–1114.
- Nijman, V., Sari, S. L., Siriwat, P., Sigaud, M. & Nekaris, A.-I. (2017) Records of four Critically Endangered songbirds in the markets of Java suggest domestic trade is a major impediment to their conservation. *BirdingASIA* 27: 20–25.
- Nijman, V., Langgeng, A., Birot, H., Imron, M. A. & Nekaris, K. A. I. (2018) Wildlife trade, captive breeding and the imminent extinction of a songbird. *Glob. Ecol. Conserv.* 15: e00425.
- Phassaraudomsak, M. & Krishnasamy, K. (2018) *Trading faces: a rapid assessment on the use of Facebook to trade in wildlife in Thailand*. Petaling Jaya, Malaysia: TRAFFIC.
- Rentschlar, K. A., Miller, A. E., Lauck, S. L., Rodiansyah, Bobby, M., Muflihati & Kartikawati (2018) A silent mourning: the songbird trade in Kalimantan, Indonesia. *Trop. Conserv. Sci.* 11: 1–10.
- Ripple, W. J., Wolf, C., Newsome, T. M., Hoffmann, M., Wirsing, A. J. & McCauley, D. J. (2017) Extinction risk is most acute for the world's largest and smallest vertebrates. *Proc. Natn. Acad. Sci.* 114: 10678–10683.
- Rosen, G. E. & Smith, K. F. (2010) Summarizing the evidence on the international trade in illegal wildlife. *EcoHealth* 7: 24–32.
- Shepherd, C. R. (2006) The bird trade in Medan, North Sumatra: an overview. *BirdingASIA* 5: 16–24.
- Shepherd, C. R. & Chng, S. C. L. (2017) Second South-East Asian Songbird Trade Crisis Summit. *TRAFFIC Bull.* 29: 3–4.
- Shepherd, C. R., Sukumaran, J. & Wich, S. A. (2004) *Open season: an analysis of the pet trade in Medan, Sumatra 1997–2001*. Petaling Jaya, Malaysia: TRAFFIC South-East Asia.
- Shepherd, C. R., Shepherd, L. A. & Foley, K.-E. (2013) Straw-headed Bulbul *Pycnonotus zeylanicus*: legal protection and enforcement action in Malaysia. *BirdingASIA* 19: 92–94.
- Siriwat, P. & Nijman, V. (2018) Online media seizure reports: a tool to monitor CITES implementation in regulating the international rosewood trade. *Forest Policy & Economics* 97: 67–72.
- Symes, W. S., McGrath, F. L., Rao, M. & Carrasco, L. R. (2018) The gravity of wildlife trade. *Biol. Conserv.* 218: 268–276.

Boyd T. C. LEUPEN and Chris R. SHEPHERD, Monitor Conservation Research Society (Monitor), Box 200, Big Lake Ranch, B.C., VOL 1G0, Canada. Email: boyd.leupen@mcrsociety.org

Kanitha KRISHNASAMY and Serene C. L. CHNG, TRAFFIC South-East Asia, Suite 12A-01, Level 12A, Tower 1 Wisma AmFirst, Jalan Stadium SS è/15, 47301 Kelana Jaya, Selangor, Malaysia.

Daniel BERGIN, K. Anne-Isola NEKARIS and Vincent NIJMAN, Oxford Wildlife Trade Research Group, Oxford Brookes University, Department of Social Sciences, Faculty of Humanities and Social Sciences, Gibbs Building, Headington Campus, Oxford OX3 0BP, UK.

James A. EATON, Birdtour Asia, Derbyshire, UK.

Dairysia Anthony YUKIN and KOH Pei Hue, WWF Malaysia (Sabah Office), 6th Floor, CPS Tower, Centre Point Complex, No. 1, Jalan Centre Point, 88000 Kota Kinabalu, Sabah, Malaysia.

Adam MILLER, Planet Indonesia, Jalan Sungai Raya Dalam, Komplek Bumi Batara I Blok B. 37, Kubu Raya, Kalimantan Barat, 78391, Indonesia.

Salman SAABAN, Department of Wildlife and National Parks Peninsular Malaysia, Km 10, Jalan Cheras, 56100, Kuala Lumpur, Malaysia.

Muhammed Ali IMRON, Universitas Gadjah Mada, Faculty of Forestry, Jalan Agro No. 1, Bulaksumur, Yogyakarta, 55281, Indonesia.

Appendix 1.

Numbers of White-rumped Shama found openly for sale during market surveys in Indonesia, Malaysia, Singapore, Thailand and Vietnam between 2007 and 2018.

Year of survey	Month(s) of survey	Country	Province/state	City	No. of surveys	Total no. of birds	Source	
2007–2016	Year-round	Thailand	Central Thailand	Bangkok	28	188	TRAFFIC	
2008–2009	November–February	Vietnam	Hanoi Capital Region	Hanoi	4	325	Edmunds <i>et al.</i> 2011	
			Thừa Thiên-Huế	Hue	1	27		
2012	March–May	Malaysia	Perak	Gerik-Penkalan Hulu	1	75	TRAFFIC	
			Kelantan	Jeli	1			
		Thailand	Yala	Betong	1			
2012–2018	Year-round	Indonesia	Special Capital Region of Jakarta	Jakarta	27	957	Oxford Wildlife Trade Research Group / Gadjah Mada University	
			Special Region of Yogyakarta	Yogyakarta	5	304		
			West Java	Bandung	16	484		
				Bogor	1	4		
				Ciamis	1	1		
			East Java	Cirebon	10	787		
				Garut	164	312		
				Tasikmalaya	15	385		
				Bondowoso	1	8		
				Jember	3	6		
			Central Java	Probolinggo	1	3		
				Malang	1	44		
				Surabaya	3	55		
				Semarang	7	376		
			Bali	Surakarta	4	184		
				Temanggung	1	6		
				Denpasar	13	66		
West Nusa Tenggara	Mataram	3	11					
	2014	April–July	Malaysia	Sabah	Kota Kinabalu	1	213*	TRAFFIC
				Sandakan		1		
Keningau					1			
2014	July	Indonesia	Special Capital Region of Jakarta	Jakarta	1	256	Chng <i>et al.</i> 2015	
2015	March	Thailand	Bangkok MR	Bangkok	1	13	Chng & Eaton 2016a	
2015	April–June	Indonesia	North Kalimantan	Nunukan	1	1	TRAFFIC	
				Tideng Pale	1	2		
				Malinau	1	21		
			West Kalimantan	Pontianak	1	2		
				Segedong	1	15		
				Entikong	1	6		
				Sintang	1	5		
				Putussibau	1	1		
2015	June	Indonesia	Special Region of Yogyakarta	Yogyakarta	1	59	Chng <i>et al.</i> 2016	
			East Java	Surabaya	1	173		
				Malang	1	24		
2015	November–December	Singapore	Singapore	Singapore	1	162**	Eaton <i>et al.</i> 2017a	

Year of survey	Month(s) of survey	Country	Province/state	City	No. of surveys	Total no. of birds	Source
2015–2016	July–December 2015, February–March 2016, June–August 2016	Indonesia	West Kalimantan	Pontianak	3	1,665	Rentschlar <i>et al.</i> 2018
				'northwest coast' (several unspecified cities between Pontianak and Sambas)	3		
				'interior' (several unspecified cities between Pontianak and Kapuas Hulu)	3		
				'southwest coast' (several unspecified cities between Pontianak and Ketapang)	3		
2016–2017	August 2016–February 2017	Indonesia	Central Kalimantan	Palangka Raya	1		
			South Kalimantan	Banjarmasin	1		
			East Kalimantan	Samarinda	1		
			North Kalimantan	Tanjung Selor	1		
2016	September	Indonesia	West Java	Bandung	1	61	Chng & Eaton 2016b
2016	April	Vietnam	Hanoi Capital Region	Hanoi	1	104	Eaton <i>et al.</i> 2017b
			Ho Chi Minh Metropolitan Area	Ho Chi Minh City	1	125	
2017	unspecified	Indonesia	West Kalimantan	unspecified	1	270	Planet Indonesia
2017	February	Indonesia	North Sumatra	Medan	1	3	Chng <i>et al.</i> 2018
			Riau	Pekanbaru	1	6	
			Jambi	Jambi	1	7	
			South Sumatra	Palembang	1	0	
2018	October	Indonesia	Special Capital Region of Jakarta	Jakarta	1	131	Monitor
			Special Region of Yogyakarta	Yogyakarta	1	36	
			West Java	Bogor	1	0	
				Bandung	1	40	
			Central Java	Semarang	1	37	
			East Java	Malang	1	34	
				Surabaya	1	43	
				Ngawi	1	13	
2018	unspecified	Vietnam	Hanoi Capital Region	Hanoi	1	27	TRAFFIC
			Khanh Hoa	Nha Trang	1	54	
			Ho Chi Minh Metropolitan Area	Ho Chi Minh City	1	54	
TOTAL					364	8,271	

*139 were White-crowned Shama, subspecies *stricklandii*. **seven were subspecies *stricklandii*.