

# Global commercialisation, under-reported trade, and the need for increased international regulation of a non-CITES listed songbird

CHRIS R. SHEPHERD, BOYD T.C. LEUPEN, S. SUNNY NELSON,  
LALITA GOMEZ, JOHN A. ALLCOCK, SIMON BRUSLUND,  
CAROLINE DINGLE & VINCENT NIJMAN

Global trade in songbirds affects a growing number of species and may be unsustainable, particularly in Asia. Few songbird species are protected by national laws or listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Lack of trade data for such species hampers mitigation efforts. We compiled trade data for one popular species, the Black-throated Laughingthrush *Pterorhinus chinensis* (formerly *Garrulax chinensis*), from two range countries (Thailand, Vietnam) and two non-range countries (Indonesia, USA). Across 762 visits to 51 markets between 1966 and 2019, we found 10,841 Black-throated Laughingthrushes in trade, three-fifths in locations outside their natural range. Prices were highest in the USA (mean USD 1,025±266) and lowest in Thailand (USD 45±29). In Indonesia, a three-fold increase in inflation-corrected asking prices between 2008 and 2020 (from USD 87±29 to USD 303±106) indicates high demand and increasing scarcity (either due to rarity in the field or fewer birds available in the market due to tighter import restrictions). Given the scale of international trade, evidence of illegal imports and the impact international trade has on wild populations, we recommend that the Black-throated Laughingthrush be included in Appendix II of CITES, in order to facilitate better documentation and regulation of trade.

## INTRODUCTION

Illegal and unsustainable trade are considered primary drivers behind population declines in an increasing number of Asian songbirds (Passeriformes) (Bush *et al.* 2014, Eaton *et al.* 2015, Nijman *et al.* 2018). The trade of many songbird species is poorly documented and/or regulated due to inadequate protection under national laws in many countries. There are also relatively few species of songbirds listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Juergens *et al.* 2021), which is currently the only mechanism in place to ensure that international trade in specimens of wild animals and plants is not a threat to the survival of species in the wild. While the scale of international trade in CITES-listed species is relatively well documented, trade in non-CITES species is usually only collected through physical or online market surveys which are often carried out in a sporadic or opportunistic manner (Chng *et al.* 2015, Nijman & Shepherd 2015, Suzuki *et al.* 2015, Sy 2015, Vaglica *et al.* 2017). There is otherwise very little documentation or monitoring of non-CITES species that can be found in international commercial trade (Jensen *et al.* 2019, Green *et al.* 2020, Janssen & Gomez 2021). This has proven to be a significant conservation risk as the negative impacts of wildlife trade are often only detected once a species is in serious decline (Janssen & Shepherd 2018, Jensen *et al.* 2019). A lack of data on species in trade hinders conservation efforts and makes it hard to justify or catalyse improved regulatory protection at national and international levels.

One species that would benefit from enhanced long-term protection and regulation of trade is the Black-throated Laughingthrush *Pterorhinus chinensis* (formerly *Garrulax chinensis*), one of the most popular songbirds among bird keepers (Round 1990, Craik 1998, Shepherd *et al.* 2016). It is protected in four of its six range states—Cambodia, Myanmar, Thailand and Vietnam—but not in China (excluding Hong Kong Special Administrative Region, where it is protected) and Laos (Figure 1). Overall, populations are reported to be in decline, predominantly attributed to habitat destruction and fragmentation (BirdLife International 2017). The threat and impact of trade on the species has not been assessed even though it is known to be commonly captured, traded and kept in captivity (Collar *et al.* 2020). Black-throated Laughingthrushes are frequently observed in trade across Asia (Nash 1993, Widodo 2005, Shepherd 2010, Shepherd *et al.*

2016, Chng *et al.* 2018a, Iskander *et al.* 2019), as well as outside their range, including Europe and North America (S. Nelson, S. Bruslund unpubl. data). Focused studies quantifying trade levels, be it domestically or internationally, have not been conducted. Observations in bird markets outside the species' range indicate the presence of a significant international demand (Chng & Eaton 2016, Shepherd *et al.* 2016, Eaton *et al.* 2017). As the Black-throated Laughingthrush is not listed in CITES, international trade in the species is not regulated or formally documented, impeding efforts to prevent illegal and/or unsustainable capture and trade. The IUCN Red List of Threatened Species (hereafter referred to as the Red List) notes that, despite declining populations, the species does not approach the thresholds for Vulnerable under the population size criterion (<10,000 mature individuals with a continuing decline estimated to be >10% in 10 years or three generations, or with a specified population structure). For this reason, Black-throated Laughingthrushes are evaluated as Least Concern (BirdLife International 2017). However, the Red List assessment does not include a detailed trade assessment and fails to mention international trade in the species.

Here we examine Black-throated Laughingthrush trade records extracted from published and unpublished market studies undertaken in parts of Asia and the USA to determine levels of national and international trade. We use this information to determine whether listing the Black-throated Laughingthrush on one of the CITES appendices is warranted and to make recommendations for further actions to ensure commercial trade is not a threat to the conservation of this species.

## METHODS

We compiled published and unpublished market survey reports from range and non-range countries in the Asian region. Only those markets in which Black-throated Laughingthrushes were recorded at least once were included in our analysis. We only included studies that consisted of full inventories of the Black-throated Laughingthrushes observed openly for sale in physical markets. We did not include research/studies of online bird surveys in our analysis but acknowledge the need for such surveys in the future. Where multiple shops rather than markets were surveyed in a single location, these were counted as the equivalent of a single



**Figure 1.** Black-throated Laughingthrush distribution range (in blue) and survey locations for Black-throated Laughingthrush trade data extracted from 15 published and four unpublished studies (black dots). Map based on the IUCN Red List of Threatened Species.

market visit in our analysis. In some cases, the number of market visits and/or visited locations was not explicitly indicated. For instance, Nash (1993) only reports an aggregate number of Black-throated Laughingthrushes observed for sale during 93 visits across 12 different Indonesian markets in 1991 and 1992, without specifying locations or the trade numbers per market. In addition to the Asian region, we included data from the USA in our analysis to highlight the global demand for this species. We obtained USA trade records from two sources: we obtained import records from the Law Enforcement Management Information System (LEMIS) through a Freedom of Information Act Request (for imports between 2010–2019) and we monitored a single website where songbirds are traded and recorded any individuals sold between 2017–2019.

We obtained asking prices from four countries for 2019 and 2020, i.e. Thailand and Vietnam (range countries) and Indonesia and the USA (non-range countries), during surveys and from published literature. We then compared them using a one-way ANOVA followed by *post hoc* Tukey tests. Data for asking prices of birds sold in the USA, Thailand and Vietnam were obtained from online trade monitoring. For Indonesia we obtained asking prices from a longer period, i.e. 2008 to 2020, from our market surveys, online price lists for specific markets, and birds offered for sale online. All obtained prices (quoted in Thai Baht, Indonesian Rupiah, Vietnamese Đồng, or US Dollar) were corrected for inflation to December 2020 and, where appropriate, converted to US Dollars. To test if asking prices (corrected for inflation) changed over time in Indonesia (the only country with sufficient time series data), we calculated a Pearson's correlation coefficient. We present means  $\pm$  1 standard deviation and we accept statistical significance when  $P < 0.05$  in a two-tailed test.

## RESULTS

Relevant data were found across 17 published studies and four unpublished market survey reports. These data span a 53-year study period between 1966 and 2019 (Table 1). The data used included 762 visits to 51 different markets or shops in range (~222 visits) and non-range (~540 visits) countries and territories (Table 1, Figure 1).

We found a total of 10,841 Black-throated Laughingthrushes in trade in the market surveys (Table 2). The majority (63%) were recorded in locations outside the species' range, where 70% of the market visits took place. At least 4,071 individuals (38%) were observed for sale in locations where they are currently protected, i.e. Hong Kong (China), Thailand and Vietnam, with Hong Kong (China) being the only state where the species is non-native (although it has a breeding population established from introduced individuals). A total of 76 live individual laughingthrushes were imported into the USA in 2017–2018. These were recorded as captive bred and having been imported from Senegal for commercial purposes (the species is not native to Africa so it is unclear whether this is a transshipment, exports from a captive breeder, or a clerical mistake). A further 130 individuals/derivatives from the genus *Garrulax* (species not confirmed) were imported between 2010–2016, only 12 of which were live and eight of which were imported for zoos.

We obtained prices from a total of 35 Black-throated Laughingthrushes for sale across our target markets (Indonesia: 16, Thailand: 6, Vietnam: 9, USA: 8). Prices differed significantly between Indonesia, Thailand, USA and Vietnam (ANOVA:  $F_{3,35} = 88.39$ ,  $P < 0.0001$ ) (Figure 2). *Post hoc* Tukey tests show that

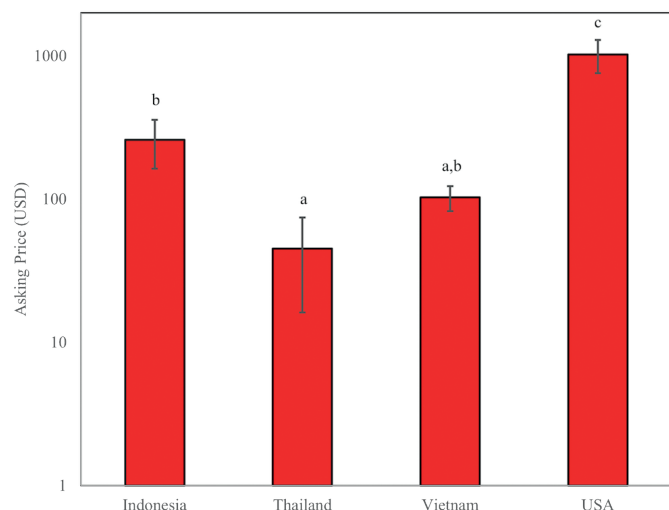
**Table 1.** Overview of published and unpublished studies included in our analysis, with information on research locations and number of market visits.

Country/territory	Year(s)	Location	Markets	Visits	Source
Hong Kong (China)	2004–2005	Hong Kong	1	24	Chan (2006)
	2018–2019		1	13	Hong Kong University/Monitor
Indonesia	1991–1993	Bandung	1	1	Nash (1993)
		Bogor	1	2	
		Denpasar	1	2	
		Jakarta	3	81	
		Makassar	1	1	
		Medan	1	2	
		Palembang	2	2	
		Surabaya	1	1	
		Yogyakarta	1	1	
	1997	Medan	3	36	Shepherd (2010)
	1998		3	36	
	1999		3	36	
	2000		3	36	
	2001		3	36	
	2005		3	6	
	2007		3	3	
	2008		3	6	
	2002	Denpasar	1	1	Widodo (2005)
	2014	Jakarta	3	3	Chng <i>et al.</i> (2015)
	2015	Bandung	1	1	Iskander <i>et al.</i> (2019)
	2015	Surabaya	3	3	Chng & Eaton (2016)
		Malang	1	1	
		Yogyakarta	1	1	
	2016	Bandung	1	1	Chng <i>et al.</i> (2016)
	2017	Medan	3	3	Chng <i>et al.</i> (2018a)
	2017	Denpasar	2	2	Chng <i>et al.</i> (2018b)
	2018		2	2	
	2016–2019	Bandung	1	17	Oxford Wildlife Trade Research Group
		Cirebon	1	15	
		Denpasar	1	5	
		Garut	3	61	
		Jakarta	4	32	
		Malang	1	2	
		Semarang	1	7	
		Surabaya	3	8	
		Surakarta	1	5	
		Tasikmalaya	1	17	
		Yogyakarta	1	5	
	2019	Mataram	1	1	Monitor
		Surabaya	6	24	
Singapore	2015	Singapore	1 <sup>2</sup>	1	Eaton <i>et al.</i> (2017)
Taiwan	2019	Taipei	1 <sup>2</sup>	1	Monitor
Thailand <sup>1</sup>	1966–1969	Bangkok	1	82	McClure & Chaiyaphun (1970)
	1987–1988		1	25	Round (1990)
	2000–2001		1	14	Round & Jukmongkol (2003)
			1	24	
			1	24	
Vietnam <sup>1</sup>	2015		1	1	Chng & Eaton (2016)
	1991	Ho Chi Minh City	1	3	Eames (1991)
	2000	Hanoi	6	12	Morris (2001)
	2001		6	6	
	2008	Da Nang	1 <sup>2</sup>	1	Edmunds <i>et al.</i> (2011)
	2008	Hanoi	7	14	
	2008–2009	Tinh Gia	1 <sup>2</sup>	1	
	2009	Hanoi	7	14	
	2009	Ho Chi Minh City	1 <sup>2</sup>	1	
	2009	Hue	1 <sup>2</sup>	1	
<b>TOTAL</b>			53	763	

<sup>1</sup> Black-throated Laughingthrush range countries/territories (first column).<sup>2</sup> Locations where a cluster of shops were surveyed and were counted as one market location (see Methods).

**Table 2.** Number of Black-throated Laughingthrushes recorded in trade in 17 published and four unpublished studies between 1966 and 2019.

Country/territory	Period	Total market visits	Individuals	Mean number of birds per visit
Hong Kong (China)	2004–2019	37	51 <sup>2</sup>	1.4
Indonesia	1991–2019	502	6,764	13.5
Singapore	2015	1	3	3.0
Taiwan	2019	1	3	3.0
Thailand <sup>1</sup>	1966–2015	170	2,148 <sup>2</sup>	12.6
Vietnam <sup>1</sup>	1991–2009	53	1,880 <sup>2</sup>	35.5
<b>TOTAL</b>		<b>761</b>	<b>10,841</b>	

<sup>1</sup> Black-throated Laughingthrush native range.<sup>2</sup> Locations where the species is currently protected.**Figure 2.** Asking prices (mean  $\pm$  standard deviation) for Black-throated Laughingthrushes in two range countries (Thailand, Vietnam) and two non-range countries (Indonesia, USA) in 2019 and 2020, corrected for inflation to 2020 prices and expressed in USD. Note the logarithmic scale on the y-axis. Different letters above error bars indicate statistical differences ( $P < 0.001$ ) between countries.

asking prices in the USA (mean USD  $1,025 \pm 266$ ) were significantly higher than in the three Asian countries (USA *vs* Indonesia,  $Q = 16.53$ ,  $P < 0.0001$ ; USA *vs* Vietnam,  $Q = 19.93$ ,  $P < 0.0001$ ; USA *vs* Thailand,  $Q = 21.17$ ,  $P < 0.0001$ ). Asking prices in Indonesia (mean USD  $260 \pm 97$ ) differed from those in Thailand ( $Q = 4.64$ ,  $P < 0.01$ ) but not from those in Vietnam ( $Q = 3.40$ ,  $P = 0.094$ ). Asking prices in Thailand (mean USD  $45 \pm 29$ ) did not differ from those in Vietnam (mean USD  $103 \pm 20$ ) ( $Q = 1.24$ ,  $P = 0.816$ ).

Between 2008 and 2020, asking prices for Black-throated Laughingthrushes in Indonesia saw a significant three-fold increase (Pearson's  $R = 0.595$ ,  $R^2 = 0.354$ ,  $P < 0.001$ ) from USD  $87 \pm 29$  to USD  $303 \pm 106$  (Figure 3). The numbers encountered during Indonesian market surveys were found to fluctuate heavily (Figure 4).

## DISCUSSION

Wildlife trade, including the trade in songbirds, is situated at an intersection between economic development, natural resource use, subsistence and human wellbeing on the one hand and biodiversity conservation and nature protection on the other (Nijman 2010, Scheffers *et al.* 2019, Fukushima *et al.* 2021). While it is possible that well-managed wildlife trade may help protect biodiversity and garner support for its protection, at its worst, commercial trade can place once-common species at risk of extinction. This in turn can then also threaten the livelihoods that this trade supports (Thomas-Walters *et al.* 2020). Recognising this danger, most countries have created protected species lists for native species for

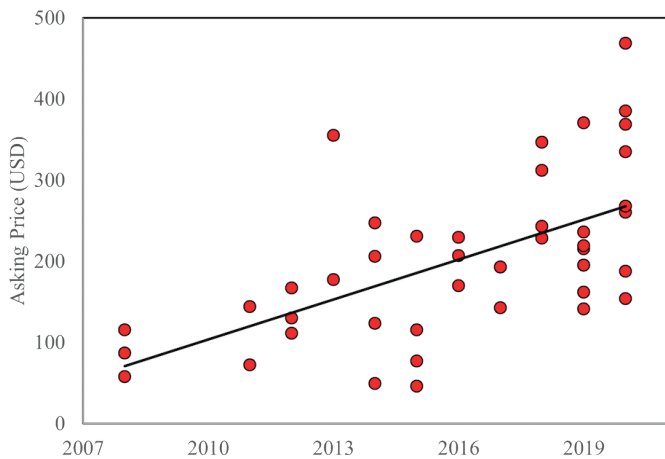
which commercial trade is incompatible with conservation. At the international level, CITES fulfils this function; however, relatively few songbird species are included in this convention.

Although the surveys used in this study are patchy and sporadic, and although trade levels were found to fluctuate heavily between surveys even in the same location, more than 10,000 individuals were recorded for sale in Asia throughout the years 1996–2019 (Table 2), confirming high trade levels for the species. The numbers we present are likely to account for only a fraction of the trade and actual trade numbers are probably far higher. Our study demonstrates that there is a large international component to the trade in Black-throated Laughingthrushes. One important domestic market was omitted from our dataset: the Chinese market outside of Hong Kong. Published Chinese market studies are scarce and no Black-throated Laughingthrushes were found during unpublished surveys carried out by our team in physical markets in Guangzhou, Shenzhen and Beijing in 2019. Therefore, no trade records for mainland China could be included in our analysis. More research into online markets in China as well as the countries included in this study is required to complement the presented physical market data.

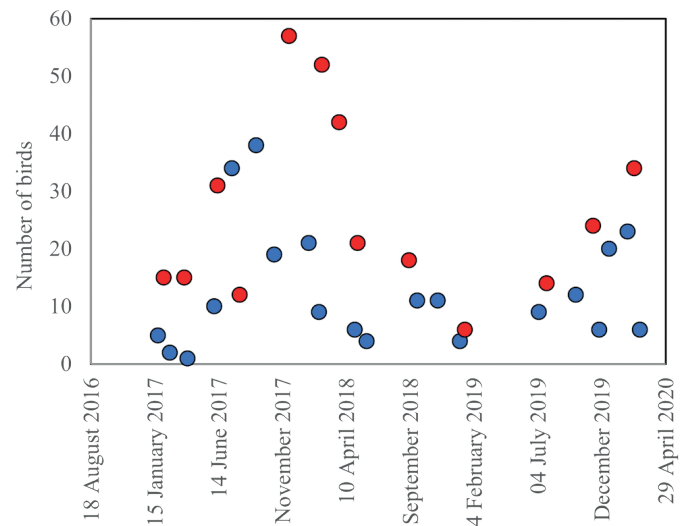
The international nature of trade in physical markets was particularly evident in Indonesia. The cage bird industry in Indonesia is widely accepted as being unmatched in scale and volume of species, with a huge abundance and diversity of songbirds openly for sale in markets across the country (Nash 1993, Shepherd 2006, Chng *et al.* 2015, Chng & Eaton 2016, Chng *et al.* 2018a) driving species declines (Shepherd *et al.* 2016, Eaton *et al.* 2015, Harris *et al.* 2015, Sykes 2017). Black-throated Laughingthrushes were found for sale throughout the island of Java, in Sumatra, Bali and Lombok, although there appears to be no documentation of the species' import into the country. Asking prices in Indonesia, where the species is non-native, were significantly higher than prices in range states. Okarda *et al.* (2022) found the species for sale at similar prices in a study of online sales in Indonesia, with average prices of USD  $249 \pm 92$  compared to USD  $260 \pm 97$  in our study. Our analysis of prices over time indicated that the price in Indonesia has increased over the last 12 years. Such a rise in prices is a signature of severely declining species (Harris *et al.* 2015) and may suggest that demand has increased relative to supply.

Outside of Asia, Black-throated Laughingthrushes have been observed for sale in both the USA and the EU. In our study, we observed seven individuals for sale on a single USA website between 2017–2019. These individuals commanded a price significantly higher than the prices in Asian markets, highlighting the value of these birds in trade. Of these seven individuals, three were listed as being wild caught and the rest were of unknown origin. According to data acquired from LEMIS, the 76 live individuals imported into the USA between 2017–2018 for commercial purposes were captive bred and imported from Senegal, which is not a range state for this species. While it is possible that these individuals were truly captive bred, this seems unlikely given the lack of known large-scale breeding facilities for songbirds in the





**Figure 3.** Asking prices for Black-throated Laughingthrushes in Indonesia between 2008 and 2020, corrected for inflation and expressed in USD.



**Figure 4.** Number of Black-throated Laughingthrushes observed in two markets in Indonesia, Pramuka in Jakarta (13 surveys, in red) and Sukahaji in Bandung (20 surveys, in blue), showing large variation between the number of birds that are offered for sale.

range states of this species (C. Shepherd, pers. obs.). It seems more likely that this represents a clerical error and that Senegal (SN) was listed as the exporting country rather than Singapore (SG). We were not able to verify this, but the possibility highlights the importance of keeping accurate data on imports/exports in order to be able to track trade of wild species. In the USA, Black-throated Laughingthrushes are not currently on the list of approved captive-bred species and any personal pets that have received an approved import permit under the Wild Bird Conservation Act are not allowed to be sold once they are in the country (Wild Bird Conservation Act of 1992, 2019). The USA is one of the few countries that records all regulated imports and exports of species regardless of their CITES listing.

In the EU, the Black-throated Laughingthrush was widely considered the most kept laughingthrush in the 1990s, with thousands of birds imported annually (S. Bruslund, pers. obs.). Commercial import has been restricted by the EU bird import ban since 2005 (Cardador *et al.* 2019) and imports of Black-throated Laughingthrushes as ‘personal pets’ are only permitted as defined in Art 4 (10) of the Regulation (EU) 2016/429 (Animal Health Law) if they come from approved establishments, which in this period have not included any range countries. However, these restrictions have not prevented presumably illegal imports of this or other laughingthrush species from similar range countries which are currently more desired by collectors, e.g. Hainan Laughingthrush *Pterorhinus monachus* appearing in 2009–2011 (at that time still considered a subspecies of the Black-throated Laughingthrush: Wu *et al.* 2012), Collared Laughingthrush *Trochalopteron yersini* from Vietnam appearing between 2015 and 2018 (Juergens *et al.* 2021) or Sumatran Laughingthrush *Garrulax bicolor* appearing in trade in the EU between 2014–2019 (Heinrich *et al.* 2021).

The dynamic variation in trade volumes within a few decades underscores the need to better understand and document this trade. Listing the species in one of the appendices of CITES would be one way to achieve this. While the Black-throated Laughingthrush may currently be found across a broad area in Asia, and is assessed as only Least Concern, significant commercial international trade is taking place, which may be a potential threat to the species.

CITES is currently the only mechanism in place regulating the international trade of wild plants and animals. Since it entered

into force in 1975, CITES has been adopted by 183 member states, regulating the international trade in over 38,000 species. These species are listed in three appendices according to their apparent need of protection and regulation of international trade. Appendix I includes species threatened with extinction for which international trade is only permitted in exceptional circumstances. Appendix II includes species that may become threatened in the future if international trade is not regulated and requires export permits for international trade. Appendix III contains species that may be unilaterally listed by a party to CITES and require an export permit if the species is exported from such a country, and otherwise a certificate of origin.

There are obvious benefits to listing the Black-throated Laughingthrush in CITES—for one, international trade data will be recorded, which is crucial to understanding and monitoring trade dynamics and determining the sustainability of trade. Such documentation and scrutiny are often lacking for non-CITES species (Andersson *et al.* 2021, Janssen & Gomez 2021). In particular, listing the species in Appendix II would provide a mechanism through which range countries could, with the cooperation of all CITES parties, control, regulate and monitor the Black-throated Laughingthrush trade through a permit system, providing opportunities to reduce illegal trade. As such, we strongly recommend that range states propose the listing of the Black-throated Laughingthrush in Appendix II of CITES or for responsible consumer countries or regions to initiate unilateral listings, such as, e.g., annexes B or C in the EU.

## ACKNOWLEDGEMENTS

The authors thank Loretta Shepherd for helpful comments on an earlier draft of this paper. Pavel Toropov is thanked for his contributions to the manuscript. CRS, BL and LG thank Fondation Segré and VN thanks Cleveland Zoological Society and Cleveland Metroparks Zoo for their support of this work.

## Data availability

This study’s full dataset is available online in the RADAR (Research and Digital Assets Repository) of Oxford Brookes University at <https://radar.brookes.ac.uk/radar/items/01090f86-695b-434d-83a9-cd87fd7b80a4/1/>.

## REFERENCES

- Andersson, A.A., Tilley, H.B., Lau, W., Dudgeon, D., Bonebrake, T.C. & Dingle, C. (2021) CITES and beyond: illuminating 20 years of global, legal wildlife trade. *Global Ecol. Conserv.* 26: e01455.
- BirdLife International (2017) *Garrulax chinensis* (amended version of 2016 assessment). In *The IUCN Red List of Threatened Species* 2017. dx.doi.org/10.2305/IUCN.UK.2017-1.RLTS.T103872142A113226699.en.
- Bush, E.R., Baker, S.E. & Macdonald, D.W. (2014) Global trade in exotic pets 2006–2012. *Conserv. Biol.* 28: 663–676.
- Cardador, L., Tella, J.L., Anadón, J.D., Abellán, P. & Carrete, M. (2019) The European trade ban on wild birds reduced invasion risks. *Conserv. Lett.* 12(3): e12631.
- Chan, S.W. (2006) *Religious release of birds in Hong Kong*. PhD thesis. The University of Hong Kong, Hong Kong SAR.
- Chng, S.C.L. & Eaton, J.A. (2016) *In the market for extinction: Eastern and Central Java*. Petaling Jaya, Malaysia: TRAFFIC Southeast 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 Southeast 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., Krishnasamy, K. & Eaton, J.A. (2018a) In the market for extinction: the cage bird trade in Bali. *Forktail* 34: 35–41.
- Chng, S.C.L., Shepherd, C.R. & Eaton, J.A. (2018b) In the market for extinction: birds for sale at selected outlets in Sumatra. *TRAFFIC Bulletin* 30(1): 15–22.
- Collar, N., del Hoyo, J., Robson, C. & Christie D.A. (2020) Black-throated Laughingthrush (*Ianthocincla chinensis*), version 1.0. In S.M. Billerman, B.K. Keeney, P.G. Rodewald & T.S. Schulenberg (eds.) *Birds of the World*. Ithaca, New York: Cornell Lab of Ornithology.
- Craik, R. (1998) Bird trade in Vietnam. *OBC Bull.* 28: 22–23.
- Eames, J.C. (1991) Bird trade in Saigon's Cau Mong market. *OBC Bull.* 14: 21–24.
- 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., Leupen, B.T.C. & Krishnasamy, K. (2017) *Songsters of Singapore: an overview of the bird species in Singapore pet shops*. Petaling Jaya, Malaysia: TRAFFIC Southeast 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.
- Fukushima, C.S., Tricorache, P., Toomes, A., Stringham, O.C., Rivera-Téllez, E., Ripple, W.J., Peters, G., Orenstein, R.I., Morcatty, T.Q., Longhorn, S.J., Lee, C., Kumschick, S., de Freitas, M.A., Duffy, R.V., Davies, A., Cheung, H., Cheyne, S.M., Bouhuys, J., Barreiros, J.P., Amponsah-Mensah, K. & Cardoso, P. (2021) Challenges and perspectives on tackling illegal or unsustainable wildlife trade. *Biol. Conserv.* 263: 109342.
- Green, J., Coulthard, E., Norrey, J., Megson, D. & D'Cruze, N. (2020) Risky business: live non-CITES wildlife UK imports and the potential for infectious diseases. *Animals* 10(9): 1632.
- Harris, J.B.C., Green, J.M., Prawiradilaga, D.M., Giam, X., 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.
- Heinrich, S., Leupen, B.T.C., Bruslund, S., Owen, A. & Shepherd, C.R. (2021) A case for better international protection of the Sumatran Laughingthrush (*Garrulax bicolor*). *Global Ecol. Conserv.* 25: e01414.
- Iskandar, B.S., Iskandar, J. & Partasasmita, R. (2019) Hobby and business on trading birds: case study in bird market of Sukahaji, Bandung, West Java and Splendid, Malang, East Java (Indonesia). *Biodiversitas* 20(5): 1316–1332.
- Janssen, J. & Gomez, L. (2021) An examination of the import of live reptiles from Indonesia by the United States from 2000 to 2015. *J. Nat. Conserv.* 59: 125949.
- Janssen, J. & Shepherd, C.R. (2018) Challenges in documenting trade in non-CITES listed species: a case study on crocodile skins (*Tribolonotus* spp.). *J. Asia Pac. Biodivers.* 11(4): 476–481.
- Jensen, T.J., Auliya, M., Burgess, N.D., Aust, P.W., Pertoldi, C. & Strand, J. (2019) Exploring the international trade in African snakes not listed on CITES: highlighting the role of the internet and social media. *Biodivers. Conserv.* 28(1): 1–19.
- Juergens, J., Bruslund, S., Staerk, J., Oegelund Nielson, R., Shepherd, C.R., Leupen, B., Krishnasamy, K., Chng, S.C.L., Jackson, J., da Silva, R., Bagott, A., Alves, R.R.N. & Conde, D.A. (2021) A standardized dataset for conservation prioritization of songbirds to support CITES. *Data in Brief* 36: 107093.
- McClure, H.E. & Chaiyaphun, S. (1970) The sale of birds at the Bangkok Sunday Market, Thailand. *Nat. Hist. Bull. Siam Soc.* 24: 41–78.
- Morris, S. (2001) Bird trade in Hanoi. *OBC Bull.* 3: 34–36.
- Nash, S.V. (1993) *Sold for a song: the trade in Southeast Asian non-CITES birds*. Cambridge, UK: TRAFFIC International.
- Nijman, V. (2010) An overview of international wildlife trade from Southeast Asia. *Biodivers. Conserv.* 19: 1101–1114.
- Nijman, V. & Shepherd, C.R. (2015) Analysis of a decade of trade of tortoises and freshwater turtles in Bangkok, Thailand. *Biodivers. Conserv.* 24(2): 309–318.
- 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. *Global Ecol. Conserv.* 15: e00425.
- Okarda, B., Muchlish, U., Kusumadewi, S.D. & Purnomo, H. (2022) Categorizing the songbird market through big data and machine learning in the context of Indonesia's online market. *Global Ecol. Conserv.* 39: e02280.
- Round, P.D. (1990) Bangkok Bird Club survey of the bird and mammal trade in the Bangkok weekend market. *Nat. Hist. Bull. Siam Soc.* 38: 1–43.
- Round, P.D. & Jukmongkol, R. (2003) *A survey of the bird trade in and around the Bangkok Weekend Market*. Bangkok, Thailand: Bird Conservation Society of Thailand and WWF International Programme Thailand.
- Scheffers, B., Oliviera, B., Lamb, I. & Edwards, D. (2019) Global wildlife trade across the tree of life. *Science* 366: 71–76.
- Shepherd, C.R. (2006) The bird trade in Medan, North Sumatra: an overview. *BirdingASIA* 5: 16–24.
- Shepherd, C.R. (2010) Observations on trade in laughingthrushes (*Garrulax* spp.) in North Sumatra, Indonesia. *Bird Conserv. Int.* 21: 86–91.
- Shepherd, C.R., Eaton, J.A. & Chng, S.C.L. (2016) Nothing to laugh about – the ongoing illegal trade in laughingthrushes (*Garrulax* species) in the bird markets of Java, Indonesia. *Bird Conserv. Int.* 26(4): 524–530.
- Suzuki, D., Fuse, K., Aizu, M., Yoshizawa, S., Tanaka, W., Araya, K. & Praxaysombath, B. (2015) Reptile diversity in food markets in Laos. *Curr. Herpetol.* 34(2): 112–119.
- Sy, E.Y. (2015) Checklist of exotic species in the Philippine pet trade, II. Reptiles. *J. Nat. Stud.* 14(1): 66–93.
- Sykes, B. (2017) The elephant in the room: addressing the Asian songbird crisis. *BirdingASIA* 27: 35–41.
- Thomas-Walters, L., Veríssimo, D., Gadsby, E., Roberts, D. & Smith, R.J. (2020) Taking a more nuanced look at behavior change for demand reduction in the illegal wildlife trade. *Conserv. Sci. and Pract.* 2(9): e248.
- Vaglica, V., Sajeva, M., McGough, H.N., Hutchison, D., Russo, C., Gordon, A.D., Ramarosandratana, A.V., Stuppy, W. & Smith, M.J. (2017) Monitoring internet trade to inform species conservation actions. *Endanger. Species Res.* 32: 223–235.
- Widodo, W. (2005) Perdagangan burung-burung paruh bengkok di Bali. *Berkala Penelitian Hayati*, 11(1): 31–37.
- Wu, Y., Huang, J., Zhang, M., Luo, S., Zhang, Y., Lei, F., Sheldon, F.H. & Zpi, F. (2012) Genetic divergence and population demography of the Hainan endemic Black-throated Laughingthrush (Aves: Timalidae, *Garrulax chinensis monachus*) and adjacent mainland subspecies. *Mol. Phylo. Evol.* 65(2): 482–489.

**Caroline Dingle** (corresponding author, [orcid.org/0000-0001-9176-9787](https://orcid.org/0000-0001-9176-9787)), School of Biological Sciences, Kadoorie Biological Sciences Building, The University of Hong Kong, Hong Kong SAR, China; IUCN Species Survival Commission, Asian Songbird Trade Specialist Group. Email: [cdingle@hku.hk](mailto:cdingle@hku.hk)

**Chris R. Shepherd** ([orcid.org/0000-0001-7681-9221](https://orcid.org/0000-0001-7681-9221)), Monitor Conservation Research Society (Monitor), Big Lake Ranch, BC, Canada; IUCN Species Survival Commission, Asian Songbird Trade Specialist Group.

**Boyd T.C. Leupen** ([orcid.org/0000-0002-5273-8352](https://orcid.org/0000-0002-5273-8352)), Monitor Conservation Research Society (Monitor), Big Lake Ranch, BC, Canada; IUCN Species Survival Commission, Asian Songbird Trade Specialist Group.

**S. Sunny Nelson** ([orcid.org/0000-0001-8462-4790](https://orcid.org/0000-0001-8462-4790)), IUCN Species Survival Commission, Asian Songbird Trade Specialist Group; Lincoln Park Zoo, Chicago, USA; Oxford Wildlife Trade Research Group, Oxford Brookes University, Oxford, UK.

**Lalita Gomez** ([orcid.org/0000-0001-7877-6624](https://orcid.org/0000-0001-7877-6624)), Monitor Conservation Research Society (Monitor), Big Lake Ranch, BC, Canada; Oxford Wildlife Trade Research Group, Oxford Brookes University, Oxford, UK.

**John A. Allcock** ([orcid.org/0000-0003-4913-6788](https://orcid.org/0000-0003-4913-6788)), School of Biological Sciences, Kadoorie Biological Sciences Building, The University of Hong Kong, Hong Kong SAR, China.

**Simon Bruslund** ([orcid.org/0000-0003-4701-1754](https://orcid.org/0000-0003-4701-1754)), IUCN Species Survival Commission, Asian Songbird Trade Specialist Group; Copenhagen Zoo, Copenhagen, Denmark; EAZA Silent Forest Group, Amsterdam, The Netherlands.

**Vincent Nijman** ([orcid.org/0000-0002-5600-4276](https://orcid.org/0000-0002-5600-4276)), Oxford Wildlife Trade Research Group, Oxford Brookes University, Oxford, UK; Asian Songbird Trade Specialist Group.