BioOne COMPLETE

A Silent Morning: The Songbird Trade in Kalimantan, Indonesia

Authors: Rentschlar, Katherine A., Miller, Adam E., Lauck, Katherine S., Rodiansyah, Muhammad, Bobby, ., et al.

Source: Tropical Conservation Science, 11(1)

Published By: SAGE Publishing

URL: https://doi.org/10.1177/1940082917753909

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Research Article

Tropical Conservation Science
Volume 11: 1–10
© The Author(s) 2018
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1940082917753909
journals.sagepub.com/home/trc
SAGE

A Silent Morning: The Songbird Trade in Kalimantan, Indonesia

Katherine A. Rentschlar[1], Adam E. Miller[1,2], Katherine S. Lauck[1,3], Muhammad Rodiansyah[2], Bobby[2], Muflihati[2,4], and Kartikawati[2,4]

Abstract

The wild bird trade is a major driver of species loss in Indonesia. However, studies of the Indonesian bird trade have focused on the island of Java, providing little information on the bird trade in other regions, such as Kalimantan. We conducted the first-ever market surveys in rural West Kalimantan from July 2015 to August 2016 and in the capital city of each of the five provinces of Kalimantan from August 2016 to February 2017. At each market, we recorded the number of individuals of each species, the price per individual for each species, and the source of each individual. In addition, we asked 32 bird traders and owners from Kalimantan to fill out a questionnaire addressing their perceptions of changes in price and availability of commercial species over time. Across our survey, we located 201 shops and 25,298 individuals for sale from 153 identified species. We conclude that our market surveys document only part of the trade and affirm that the bird trade is of considerable size in Kalimantan. We recommend that conservationists focus on conserving Kalimantan's remaining forest and reducing demand through education and behavior change programs. We echo the calls of other conservationists for Indonesia to update the Conservation Act (No. 5) of 1990 to include current species of concern and for law enforcement efforts to stop both local trade and cross-island trade between Kalimantan and Java. Our study underlines the threat to the persistence of many Indonesian avian species.

Keywords

birds, songbird trade, wildlife trafficking, Kalimantan, Borneo

Introduction

The wildlife trade is a billion-dollar industry (Wilson-Wilde, 2010) and a major conservation threat in Southeast Asia (Nijman, 2010). Among Southeast Asian nations, Indonesia stands out as a major leader in illegal trade and harvest across a wide range of species (Nijman, Shepherd, Mumpuni, & Sanders, 2012; Shepherd, 2006). Indonesia's wild bird trade dwarfs trade in other taxa, involving hundreds of species and millions of individuals (Jepson & Ladle, 2005). Trade and habitat loss are widely recognized as the largest threats to Indonesia's avian fauna (Collar, Crosby, & Statterfield, 1994; Collar & Juniper, 1992; Harris et al., 2017; Jepson & Ladle, 2005; Wright et al., 2001); yet, our understanding of the nature and severity of these impacts on most species is limited. Harris et al. (2017) found that almost half of Sumatra's remaining forests are within five kilometers of a road and that expensive species (e.g., Silver-eared Mesia *Leiothrix argentauris* and Sumatran Laughingthrush *Garrulax bicolor*) were already rare in or absent from such forests. As Sumatra's road network expands, so will the threat to its traded bird species. One hundred fifty-five of Indonesia's avian species, the most of any country in Asia and globally second only to Brazil, are listed as globally threatened (vulnerable, endangered, or critically endangered) by the International Union for Conservation of Nature (IUCN; 2017). Forty-four percent (718) of species in Indonesia are considered *decreasing* in population size (IUCN, 2013, 2014). Many more species may need national and international protection (Harris et al., 2015; Lee, Chng, & Eaton, 2016).

[1]Planet Indonesia, St. Louis, MO, USA
[2]Yayasan Planet Indonesia, Indonesia
[3]Fulbright U.S. Student Program, New York, NY, USA
[4]Fakultas Kehutanan, Universitas Tanjungpura, Indonesia

Received 25 September 2017; Accepted 21 December 2017

Corresponding Author:
Katherine A. Rentschlar, Fulbright U.S. Student Program, Institute of International Education, U.S. Student Programs Division, New York, NY 10017-3580, USA.
Email: k.rentschlar@gmail.com

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (http://www.creativecommons.org/licenses/by-nc/4.0/) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Bird-keeping is a popular past time and hobby for many Indonesians but is also a sign of wealth, sophistication, and stature (Jepson & Ladle, 2005; Jepson, Ladle, & Sujatnika, 2011). Jepson and Ladle (2005) surveyed Indonesia's five largest cities and found that nearly a quarter (about 22%) of all households owned at least one bird. In addition, they estimated that in an average year as many as 614,180 native songbirds were trapped and traded nationally throughout Java and Sumatra. In 2009, ProFauna (2009) Indonesia surveyed 70 markets in 58 cities on the island of Java. Each market consisted of dozens of stalls. Chng, Eaton, Krishnasamy, Shepherd, and Nijman (2015) found 19,000 birds for sale during a 3-day inventory of Jakarta's three largest markets. Chng and Eaton (2016) found 22,000 individuals in just five markets in Central and Eastern Java, underscoring the massive scale of the trade. Further highlighting the effects of the bird trade on wild populations, Harris et al. (2015) found that species increasing in price while decreasing in the number of individuals for sale (i.e., supply cannot meet demand) were significantly more likely to be described as *declining* by ornithologists specializing in Indonesia.

The majority of studies have focused on markets in urban centers on the islands of Sumatra and Java. Large seizures of birds brought from Balikpapan, Banjarmasin, and Pontianak (East, South, and West Kalimantan, respectively) to Java demonstrate that the Kalimantan bird trade is subordinate to the trade happening on Java (Chng & Eaton, 2016). However, conservationists need to understand the wild bird trade in other regions of Indonesia, particularly because Java's bird populations have been largely depleted, forcing trappers to move to forests on other islands in Indonesia, such as Borneo. Accordingly, this study assesses the scale and extent of the wild bird trade in Kalimantan, Indonesia, through surveys of birds sold in key markets in both urban and rural areas. To our knowledge, this is the first study conducted on Kalimantan bird markets, and therefore, we could not compare our data with previous studies to quantify trends in price and number of individuals of each species for sale. To address this weakness, our study also attempted to quantify temporal changes in availability and price using a questionnaire administered to a group of trappers and traders. We aim to inform proactive conservation actions by investigating an understudied portion of the wild bird trade in Indonesia and suggesting species of conservation concern, particularly in Kalimantan.

Methods

Market Surveys

We surveyed markets in West, Central, East, South, and North Kalimantan. Because we had better access to markets and shop owners in West Kalimantan, we conducted the most intensive surveys there. We surveyed three times in West Kalimantan (23 July–18 December of 2015, 24 February–7 April 2016, and 11 June–4 August 2016) and collected data at 86, 118, and 112 shops, respectively. Each survey consisted of four subsurvey locations:

1. Pontianak (capital of province),
2. The northwest coast (Pontianak to Sambas),
3. The interior of West Kalimantan (Pontianak to Kapuas Hulut), and
4. The Southwest coast (Pontianak to Ketapang).

Teams opportunistically followed major roads, visiting markets as they found them across each of the four subsurvey locations. Our personnel rotated throughout the project, and our training regimen was not standard.

In Central, South, East, and North Kalimantan, we surveyed markets in the capital city of each province from August 2016 to February 2017 (Figure 1). In addition, we surveyed markets in Samarinda, East Kalimantan based on local information that it was also a major center for the bird trade. Each month we surveyed a new area, and we surveyed each market outside of West Kalimantan only once. At all markets, teams identified each bird down to species if possible and recorded its price and place of origin according to the shopkeeper, then recorded the number of individuals of each species for sale (hereafter volume). We used a general question of the following form: "Pak, boleh tanya, burung ini berasal dari mana pak?" (translation: "Sir, if it's okay to ask, what is this bird's place of origin?"). We surveyed a total of 227 shops across the five Kalimantan provinces between July 2015 and March 2017 (Table 1).

For individuals identified as Asian Pied Starling *Graupica sp*., Blue Flycatcher sp., Bulbul sp., Tailorbird sp. *Orthotomus sp*., Collared Dove sp. *Streptopelia sp*., Dove sp., Drongo sp. *Dicrurus sp*., Finch sp., Flowerpecker sp., Green Pigeon sp. *Treron sp*., Hill Myna sp. *Gracula sp*., Fantail sp. *Rhipidura sp*., Lovebird *Agapornis sp*., Orange-headed Bulbul (no bulbul of this name exists), Oriental White-eye *Zosterops palpebrosus*, Prinia sp. *Prinia sp*., Quail sp., Rosella parrot sp. *Platycercus sp*., Rufous-headed Babbler (no babbler of this name exists), Sunbird sp., Turtle-dove sp., and Yuhina sp. *Yuhina sp*., we could not identify them to species. Teams were not specifically trained to identify White-eye *Zosterops* to species, and given how difficult White-eyes are to identify in groups in cages, we cannot address this species complex at this time. We included individuals that we could not identify to species in the total sum of birds seen, but not in the total of species observed.

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

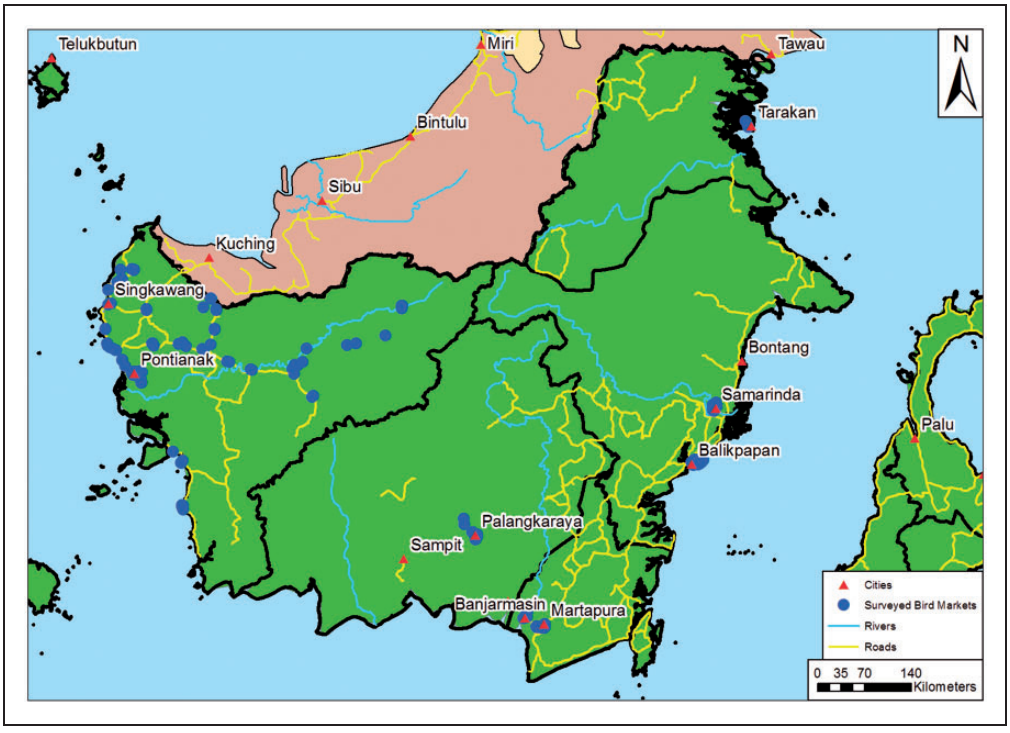


Figure 1. Bird shop locations surveyed across Kalimantan, Indonesia.

We assumed that all individuals of Domestic Canary *Serinus canaria*, Lovebird *Agapornis sp*., Budgerigar *Melopsittacus undulatus*, Domestic Pigeon *Columba livia*, Spotted Dove *Streptopelia chinensis*, and Domestic Chicken *Gallus gallus* are exclusively captive-bred because they are not found in the wild in Indonesia but are commonly and easily bred in Kalimantan. We also assumed that all individuals of Zebra Dove *Geopelia striata* are captive-bred because they are widely bred across Indonesia and are probably introduced in Borneo. In the case of birds identified as Quail sp., we also assumed that they were captive-bred because Blue-breasted Quail *Synoicus chinensis* is bred widely across Indonesia for eggs and pet food.

For the remaining birds, we were unable to establish whether individuals were captive-bred because traders may report wild-caught birds as captive-bred. However, the vast majority may have been caught in the wild. Only five captive breeding permits have ever been issued in West Kalimantan (Balai Konservasi Sumber Daya Alam West Kalimantan, personal communication, 2017). Furthermore, breeding operations encountered by Yayasan Planet Indonesia (YPI) did not have active breeding programs and instead were trapping birds in the wild and selling them as captive-bred individuals.

We tested for a correlation between price and volume per species—H_0: slope (m) of linear model fit to data $= 0$; H_A: $m \neq 0$. To do so, we fit a first-order linear equation to the data. In addition, we used a Pearson's χ^2 test to test for a difference between the frequency of species in each IUCN threat category (Least Concern, Near Threatened, Threatened, Endangered, Critically Endangered, and Data Deficient) encountered in markets and the frequency of species in each IUCN threat category encountered in Kalimantan.

Workshop Questionnaire

To address the lack of historical information on songbirds sold in markets in Kalimantan, we used a qualitative survey given to trappers, traders, and sellers to assess temporal changes in price and volume of species, with the intention of using this information to infer wild population trends as demonstrated by Harris et al. (2015). Planet Indonesia hosted a workshop in Pontianak, West Kalimantan on 11 and 12 February 2017 for people who trap wild birds to sell in the bird trade, even if they trap only occasionally (trappers) and people who make money from buying and selling birds within the bird trade, usually without trapping directly from the wild (traders) from the region. Thirty-two of the attendees filled out a questionnaire, the full text of which may be found in Supplementary Material. Because most participants did not openly declare their role in the bird trade, we cannot report the frequency of trappers versus traders. Most respondents did not answer all questions. One explanation is that respondents only answered each question if they were confident about their answer.

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

For this report, we consider only species that were listed three or more times as answers to the following four questions:

1. Which species of bird do you trap or sell the most?
2. Which species are the hardest to find?
3. Which five species have increased in value?
4. Which five species have decreased in value?

Harris et al. (2015) showed that the relationship between changes in price and volume may distinguish stable and declining wild populations. In particular, species showing increasing volume and decreasing price are exceeding demand and thus are probably stable, species showing increasing volume and increasing price are also still able to meet demand but may be in decline, and species showing decreasing volume and increasing price may be experiencing a severe decline in the wild. We intended to assess historical increases and decreases in volume using Questions (1) and (2), with the caveat that intrinsic ubiquity or rarity could also cause a species to exceed or fall short of current demand.

We also tested for a correlation between the number of mentions a species received in answer to each of the Questions (1) and (3)—H_0: slope (m) of linear model fit to data $= 0$; $H_{A:}$ $m \neq 0$. The other questions did not receive enough answers to effectively analyze.

Results

Market Surveys

We recorded 25,298 individuals from 151 identified species across all surveys, including the three rounds in West Kalimantan (Table 1). Individuals of the five groups of birds assumed to be captive-bred comprise a significant portion of the total number of birds observed (25.9%; 6,554 individuals). We could not identify to species 6,058 individuals or 23.9%. However, the largest group of unidentified birds were White-eye *Zosterops sp*. (4,519 individuals).

The following were the five non–captive-bred groups with the most individuals in markets: White-eye (4,519 individuals), Oriental Magpie Robin *Copsychus saularis* (2,708 individuals), White-rumped Shama *Copsychus malabaricus* (1,665 individuals), Javan Myna *Acridotheres javanicus* (1,432 individuals), and Greater Green Leafbird *Chloropsis sonnerati* (1,184 individuals).

The following were the five non–captive-bred species with the most expensive average price in Kalimantan: Bali Starling *Leucopsar rothschildi* (US$888.56), Straw-headed Bulbul *Pycnonotus zeylanicus* (US$428.45), Helmeted Friarbird *Philemon buceroides* (US$296.19), Rufous-tailed Shama *Copsychus pyrropygus* (US$240.65), and Olive-winged Bulbul *Pycnonotus plumosus* (US$222.14).

For the eight groups assumed to be captive-bred, we detected 2,311 Domestic Canary (average price US$20.36), 937 Lovebird (US$44.03), 903 Budgerigar (US$12.04), 896 Domestic Pigeon (US$7.03), 172 Quail sp. (US$3.17), 844 Spotted Dove (US$4.10), 489 Zebra Dove (US$6.94), and 2 Domestic Chicken (US$3.70).

We did not find a significant correlation between the average price per species and the number of individuals detected per species (first-order linear model; estimate $\pm SE = -0.007989 \pm 0.013278$; $p = .548$).

Of the species identified, 11 (7.1%) are listed as threatened (Vulnerable, Endangered, or Critically Endangered), and 20 (12.9%) are listed as Near Threatened by the IUCN Red List (IUCN, 2017). Fourteen species (9.0%) are listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix II, and two are listed (1.3%) in CITES Appendix I. Both appendices restrict international trade only. Eleven species (7.1%) are protected from hunting and trade by Indonesian law under the Conservation Act (No.5), 1990 and Government Regulation No.7, 1999.

We did not find a significant difference between the proportion of species in each IUCN threat category in our market surveys and the proportion of species in each IUCN threat category across Kalimantan (Pearson's χ^2; $\chi^2 = 10.347$; $df = 5$; $p = .06598$; Table 3). We also did not find a significant difference between the proportion of species in each IUCN threat category in our market surveys and the proportion of species in each IUCN threat category across Indonesia (Pearson's χ^2; $\chi^2 = 4.3119$; $df = 5$; $p = .5043$; Table 3).

According to shopkeepers, approximately 87% of the birds in West Kalimantan markets originate in West Kalimantan, 12% on the island of Java, and the remaining 1% in a variety of locations such as Australia, Malaysia, Sumatra, and South and Central Kalimantan. Within West Kalimantan, the largest proportion of birds came from Pontianak (31%) and then Kubu Raya (16%). And 6% to 8% came from each of the regencies of Sanggau, Kapaus Hulu, Bengkayang, Singkawang, Sambas, and Ketapang. Finally, Sintang, Landak, North Kayong, Melawi, and Sekadau each accounted for 5% or less of bird origins. See Figure 2 for more detail.

When summarizing shopkeeper responses across Kalimantan, we categorized each response as one of the following eight categories: West, East, North, Central, or South Kalimantan, Java, other Indonesian islands, and other countries. A majority of recorded birds were captured in the same province as the bird market: 87% of birds in West Kalimantan, 78% in Central Kalimantan, 99% in South Kalimantan, 79% in East Kalimantan, and 53% in North Kalimantan. The remainder of birds primarily originated from Java: 12% in West Kalimantan, 20% in Central Kalimantan, 0% in South Kalimantan

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

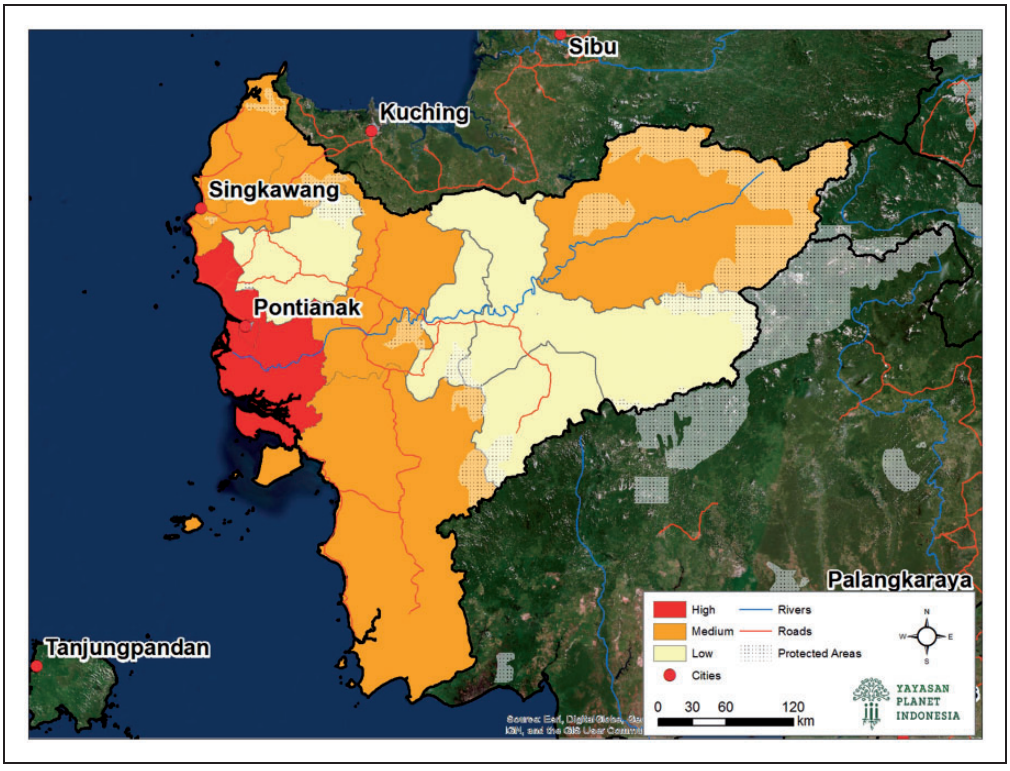


Figure 2. Regency origin of birds sold in West Kalimantan.

(but 99% of birds sold in South Kalimantan originated in South Kalimantan), 20% in East Kalimantan, and 41% in North Kalimantan. Of the birds reportedly originating in Java, the five most common (78.5% of the birds from Java) were Domestic Canary, Javan Myna, Lovebird, Budgerigar, and Zebra Dove. Four of these five species are exclusively bred in captivity, and Javan Myna is often bred in captivity as well, though we have no way to ascertain the source of these birds. Only North Kalimantan sourced at least 1% of its individuals from Indonesian islands other than Java, and no provinces sourced at least 1% of individuals from outside of Indonesia.

Regencies that were the source of a higher percentage of West Kalimantan's birds for sale (Kubu Raya, Sanggau, Kapaus Hulu, Bengkayang, Singkawang, Sambas, and Ketapang; see Figure 2) also contain protected areas. For example, Singkawang and Sanggau border Gunung Nyiut Nature Preserve, Kapuas Hulu contains Danau Sentarum National Park and Betung Kerihun National Park, and Ketapang contains Gunung Palung National Park.

Only 0.4% of birds were reportedly from another Indonesian island or country. The islands mentioned were Sumatra, Sulawesi, Papua, Nusa Tenggara Timur, and Bali. The countries mentioned were Australia, Malaysia, China, East Timor, and the continents of Africa and Europe. We compared the reported origin of each species with its range map. Shopkeepers attributed birds to their native ranges except on two occasions: One claimed an Olive-winged Bulbul (native to Indonesia) originated from Africa, and another claimed a Blue-and-yellow Macaw *Ara ararauna* (native to South America) originated from Sulawesi. In the instance of the Olive-winged Bulbul, the shopkeeper priced the bird at US$222.14, making it the fifth most expensive bird in all the Kalimantan markets surveyed.

We found rare species and species not native to Kalimantan available in Kalimantan markets, and in particular, in East Kalimantan markets, where we spotted Bali Starling, Yellow-crested Cockatoo *Cacatua sulphurea*, Black-capped Lory *Lorius lory*, and Helmeted Friarbird. In addition, eight of the 10 most expensive birds in Kalimantan were offered for sale in East Kalimantan markets. Species imported into Kalimantan were among the most expensive, for example, Helmeted Friarbird (Lesser Sundas, Papua, and northeast Australia; third most expensive); Rosella (Australia; seventh most expensive); Yellow-crested Cockatoo (Lombok, Nusa Tenggara Timur; ninth most expensive); Black-capped Lory (Papua; 11th most expensive); and Yellow-rumped Seedeater *Crithagra xanthopygia* (Ethiopia and Eritrea; 13th most expensive).

Across Kalimantan, shopkeepers allowed our team to conduct interviews, take pictures, videos, and data from their shops without fear.

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Table 1. The number of shops, number of individual birds seen, and the number of species detected across Kalimantan and per province across all market surveys conducted by Yayasan Planet Indonesia from July 2015 to February 2017.

Province	Shops	Individuals	Species
All Kalimantan	227	25,298	151
West Kalimantan	118	14,408	90
Central Kalimantan	16	820	41
South Kalimantan	32	4,296	55
East Kalimantan	58	5,605	81
North Kalimantan	3	188	26

Workshop Questionnaire

Seventeen distinct groups of birds (species and larger taxa) were mentioned as most sold or trapped, 13 as hardest to find, 20 as increased in value, and 19 as decreased in value; 70.6%, 76.9%, 60.0%, and 63.2% of the respective groups were mentioned less than three times and therefore are not included in the following summary and analysis.

Four species (Oriental Magpie-robin, White-rumped Shama, Greater Green Leafbird, and Oriental White-eye) were listed more than three times as both increasing in price and most sold or trapped (Table 2). Hornbills, Straw-headed Bulbul, and Eagle sp. were reported nine, six, and three times, respectively, as the most difficult to find. Canary, Lovebird, White-rumped Shama, Shrike *Lanius sp*., Grey-cheeked Bulbul, Spotted Dove, and Blue-crowned Hanging parrot were mentioned seven, seven, four, four, four, three, and three times, respectively, as decreasing in price. Oddly, White-rumped Shama was mentioned 12 times as increasing in price and four times as decreasing in price.

We did not find a significant correlation between the number of times a species was mentioned as most increased in price and the number of times a species was mentioned as most sold or trapped (first–order linear model; estimate $\pm SE = 0.4932 \pm 0.2088$; $p = .0502$).

Although we did not specifically collect data about whether the workshop participants were aware of the illegality of much of the pet bird trade, we would like to note that nearly all individuals involved in our workshop stated local government or enforcement agencies had never approached or contacted them about their businesses. They repeatedly exclaimed they were not aware of any legislation or laws related to the bird trade. In addition, they stated that many customers now buy high-value birds from Malaysia. Anonymous traders and our survey team report that this cross-border trade is increasing. In the Entikong area of West Kalimantan, Planet Indonesia's team spoke with traders who claimed to bring as many as 6,000 individuals of Greater Green Leafbird, Oriental Magpie Robin, and White-rumped Shama every month from Malaysia to Indonesia (unpublished data).

Table 2. Species mentioned as most expensive ($) or sold or trapped (#) or both by at least three respondents to the workshop survey administered by Yayasan Planet Indonesia in Pontianak, West Kalimantan on 11 and 12 February 2017.

Species	$	#
Oriental Magpie-Robin	15	9
White-rumped Shama	12	9
Straw-headed Bulbul	11	
Greater Green Leafbird	10	3
Oriental White-eye	8	6
Grey-cheeked Bulbul		3
Grey-capped Woodpecker	3	
Sunbird spp.	3	
Crested Jay	3	

Table 3. Proportion (%) of species encountered in the market, across Kalimantan, and across Indonesia that are listed as Least Concern (LC), Near Threatened (NT), Vulnerable (VU), Endangered (EN), Critically Endangered (CR), and Data Deficient (DD).

Threat	Market	Kalimantan	Indonesia
LC	79.3	75.7	76.0
NT	13.3	17.3	14.2
VU	2.7	4.1	5.0
EN	2.0	1.3	2.3
CR	2.7	0.8	1.6
DD	0.0	0.8	0.9

Discussion

Our study reveals that the Indonesian caged bird trade exists and is of considerable size across five provinces in Indonesian-Borneo. Furthermore, the vast majority of birds may be wild-caught (74.1%). The Asian Songbird Crisis Summit (ASCS; Lee et al., 2016) brought together conservations, government officials, zoo members, and private-sector stakeholders who identified 28 priority species threatened by the songbird trade in the Greater Sunda Region. Fifteen (Black-winged Myna, Asian Pied Starling, White-rumped Shama, Javan White-eye, Oriental White-eye, Straw-headed Bulbul, Bali Myna, Oriental Magpie-robin, Sunda Laughingthrush, Greater Green Leafbird, Javan Myna, Pintailed Parrotfinch, Grey-cheeked Bulbul, Asian Fairy-bluebird,

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

and Long-tailed Shrike) of these 28 priority species (Lee et al., 2016) were included in one or more of the highest volume or highest price lists generated for each province in Kalimantan. Eaton et al. (2015) identified 13 species at global risk and 5 further species whose Indonesian subspecies are at risk or already extinct. From that group, six species—Jay Shrike, White-rumped Shama, Asian Pied Starling, Bali Myna, Hill Myna, and Straw-headed Bulbul—were included in one or more the same group of lists we generated. Finally, Harris et al. (2015) identified 14 species thought to be declining in Sumatra, which included the following seven species from our lists: Straw-headed Bulbul, Hill Myna, Oriental Magpie-robin, White-rumped Shama, Greater Green Leafbird, Sunda Laughingthrush, and Chestnut-capped Laughingthrush.

The White-rumped Shama was one of the top 10 most numerous and expensive species in every province. Oriental Magpie Robin, Greater Green Leafbird, and White-eye sp. were three of the most numerous taxa in every province, and Javan Myna joined them on the most numerous list in four. In addition, Asian Pied Starling was one of the most expensive species in four provinces, and Sunda Laughingthrush *Garrulax palliatus* accompanied it in three. The species we assumed to be wild-caught that were sold in the greatest numbers and at the highest prices mirror demand for these species in Java as reported by Chng and Eaton (2016). The bird fashions that have driven Javan races to the brink of extinction are shared with Kalimantan as well.

The pet bird trade on Java is enormous, involves hundreds of thousands of birds and hundreds of species from all over Indonesia every year, and along with habitat loss, is one of the two greatest threats to Indonesia's avifauna (Chng & Eaton, 2016; Chng et al., 2015; Collar et al., 1994; Collar & Juniper, 1992; Harris et al., 2017; Jepson & Ladle, 2005; ProFauna, 2009; Wright et al., 2001). Seizures of birds illegally shipped from across the Indonesian archipelago and from around the world to Java and documented by TRAFFIC (Chng & Eaton, 2016) illustrate the magnitude and reach of Java's demand for pet birds. Popular birds on Java are sold for 50% more than their cost in Kalimantan (Chng et al., 2015). For example, Chng and Eaton (2016) found that Straw-headed Bulbul was sold in East and Central Java for an average of US$633, while in Kalimantan, it sold for US$482.50. This large price differential suggests that demand is much greater in Java and raises that suspicion that our survey poorly represents the volume of birds trapped in the wild because a large proportion of birds caught in Kalimantan may be exported to Java. Perhaps the rare birds that we found during our survey were simply for sale briefly on their way to Java or to other parts of Indonesia. Because we did not conduct household surveys, we cannot draw any strong conclusions about whether local people buy very rare and expensive birds.

Our results regarding bird origin are difficult to tease apart. Across Kalimantan, shopkeepers appeared to report the place where they bought the birds, not their ultimate origin, and were not always accurate, as was apparent in the case of an Olive-winged Bulbul (native to Kalimantan) that was reported to be from Africa and priced at US$222.14. Therefore, we can only speculate. However, shopkeepers reported a significant portion of birds as Javan imports in every province surveyed except for South Kalimantan (12%–41%). While the majority (78.5%) of these Javan imports were captive-bred or likely captive-bred (e.g., Javan Myna; Chng et al., 2015), their very existence implies that wild-caught birds are also moved among islands. Kalimantan has been reported to be a source for pet birds including White-rumped Shama, Greater Green Leafbird, and Straw-headed Bulbul (Bergin, Chng, Eaton, & Shepherd, 2017; Chng & Eaton, 2016), but never before has the opposite been demonstrated. In fact, demand from Kalimantan may increase pressure on already persecuted species such as the *Graupica* starlings (imported from Java, but probably originating in mainland Asia) and White-eyes (if Oriental, almost certainly imported from Java). Unfortunately, our data, especially regarding these difficult-to-identify species complexes, are incomplete. We plan to repeat this survey with a dedicated, experienced, and intensively trained team.

Within West Kalimantan, we also found evidence of movement. Questionnaire respondents reported that the majority of wild-caught birds from West Kalimantan originate in Pontianak, which has little to no tree cover, and therefore cannot be the ultimate source of these birds. Birds moving through Pontianak could be from four sources: Wild-caught in Malaysian Borneo, imported from other islands, brought from rural regencies in West Kalimantan, or imported from other provinces in Kalimantan. Our workshop participants did suggest that popular and expensive species are imported from Malaysia, but these data are purely anecdotal and were not supplied in response to our questions. The data were supported by Shepherd, Shepherd, and Foley (2013) and Bergin et al. (2017) regarding the Straw-headed Bulbul, but other species have not yet been studied as closely. Finally, we found that districts containing protected areas were reported to be the source of most birds outside of Pontianak, indicating that protected areas may be the primary source of birds trapped in West Kalimantan.

Despite its limitations, our workshop questionnaire emphasized the threat to Oriental Magpie Robin, White-rumped Shama, Oriental White-eye, and Greater Green Leafbird as these birds were reported as both most traded and increasing in price, which according to Harris et al. (2015), could indicate future declines.

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Furthermore, Straw-headed Bulbul was reported both as most difficult to find and increasing in price, which echoes the findings of Bergin et al. (2017). They found that Straw-headed Bulbul market volume had decreased, while price in markets had increased nearly 20 times since 1987 and that there was a strong indication this species in the wild was diminishing. The other four species have not been treated as carefully, and we suggest they deserve the same scrutiny.

This survey is a first step toward understanding the bird trade in Kalimantan but is incomplete. We were unable to examine at least two crucial species complexes (*Zosterops* and *Graupica*) and have only a weak historical perspective with which to compare our data. Hopefully, future studies will be able to use this survey as a baseline.

Implications for Conservation

Species of Concern

Our market data further verify the ASCS's recommendation for immediate action to conserve species threatened by the Indonesian caged bird trade. Straw-headed Bulbul in particular appears to be diminishing quickly in the wild. We echo other calls, specifically Bergin et al. (2017), for IUCN to up–list Straw-headed Bulbul to Critically Endangered, CITES to up–list it to Appendix I, and for Indonesia to update the Conservation Act (No. 5) of 1990 to include it and other species of concern. Our market surveys and workshop questionnaire also emphasize the threat to Oriental Magpie Robin, White-rumped Shama, Oriental White-eye, and Greater Green Leafbird. These species were reported to be increasing in value and are sold in extremely high numbers across all provinces. We suspect they may be declining in the wild. However, wild population surveys are needed to verify these suspicions.

Recommendations

This survey represents just a snapshot of the Indonesian caged bird trade in Kalimantan, and therefore, conclusions and recommendations from our data are limited. Kalimantan markets must be examined more closely, and with more attention to the source of birds, to determine Kalimantan's role: Is it mainly for transit (Malaysia to Java), or does it also harbor significant demand? Studies tracking temporal fluctuations in the price and number of birds of each species for sale should also be shared with law enforcement, especially in the case of cross-border trade, because confiscations are much more likely than in the case of wholly domestic trade.

We agree with Eaton et al. (2015) that in situ management is key. Although Borneo has undergone massive deforestation over the past 20 years, Gaveau (2017) estimated that roughly 50% of the island still remains forested. To protect the remaining forests on Kalimantan, conservationists must work with trappers and communities living in protected areas and remaining nonprotected forests in Kalimantan.

We also echo the calls of other conservationists for Indonesia to update the Conservation Act (No. 5) of 1990 (Chng & Eaton, 2016; Chng et al., 2015; Jepson & Ladle, 2005), and in doing so, include the species of concern identified by the ASCS (Lee et al., 2016). Kalimantan and Indonesia must act quickly to strengthen legislation and enforcement or risk the extinction of many iconic species. As implied by our workshop participants who stated that they had never been made aware of legislation affecting the legality of the bird trade, enforcement in Kalimantan is almost nonexistent.

The social and cultural dimensions of the trade probably contribute to its popularity in Kalimantan (Burivalova et al., 2017; Jepson & Ladle, 2005). For example, the *transmigrasi* program was an initiative started by the Dutch government and later continued under President Sukarno to move landless people from Java to more rural areas in places such as Kalimantan, Sumatra, and Papua. YPI (unpublished data) found that areas that supported Javanese villages tended to have disproportionally high numbers of trappers. One explanation is that non-Javanese ethnic groups in Kalimantan (e.g., Melayu, Madurese, Dayak) now have adopted the Javanese practice of owning birds as a status symbol, which is driving the trade at a national scale within Indonesia. To date, the authors are not aware of any research addressing the social-cultural drivers of demand in Kalimantan, but the system certainly requires study. Furthermore, we call for education and behavior change to combat these cultural drivers of demand. Nongovernmental organizations and law enforcement agencies must work together, ideally under the umbrella of the South East Asian Songbird Trade Working Group, to create regional-scale solutions that address the demand for pet birds.

We cannot recommend captive breeding as a solution for demand in Kalimantan. Balai Konservasi Sumber Daya Alam Kalimantan reports that they have issued less than five captive breeding permits in Kalimantan, and all captive breeding operations encountered by YPI had no active breeding operations. They appeared to be simply a front, similar to the breeding operations covered by Nijman and Shepherd (2015). Burivalova et al. (2017) do not address this possibility in their overview of the bird trade in Medan and simply assume that all birds sold as captive-bred are indeed captive-bred. We echo the recommendations of Eaton et al. (2015) that any captive breeding programs should be accompanied by strengthened regulations and oversight, as well as

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

incentives for consumers to purchase captive-bred birds and for sellers to stock them.

Although the wild bird trade within Kalimantan is small compared with the trade on Java and Sumatra, this project confirms that the wild bird trade is of significant size in Kalimantan, and by extrapolation, perhaps other areas of Indonesia. We argue that markets in Kalimantan and other rural provinces could contribute to wild population declines and that market studies must expand their focus beyond Java and Sumatra. Furthermore, we reaffirm that demand in Kalimantan for rare and heavily trapped species, as documented here, combined with demand from Javan markets and total lack of enforcement, raises extreme concern for the persistence of many avian species within Indonesia (Chng & Eaton, 2016; Chng et al., 2015; Jepson & Ladle, 2005).

Acknowledgments

We are grateful for project support of one anonymous donor and from the Conservation, Food, and Health Foundation. We also thank the many interns, volunteers, and staff of YPI who helped to collect data in markets, as well as the trappers, hobbyists, and traders who participated in our workshops and social surveys. Finally, we thank Serene Chng, James Eaton, Berton Harris, and two anonymous reviewers for comments on this article and advice on market survey methods.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: We are grateful for project support from one anonymous donor and from the Conservation, Food, and Health Foundation.

Supplemental Material

Raw data and the text of the article will be accessible by contacting Adam Miller at adam.miller@planetindonesia.org.

References

Bergin, D., Chng, S. C., Eaton, J. A., & Shepherd, C. R. (2017). The final straw? An overview of Straw-headed Bulbul Pycnonotus zeylanicus trade in Indonesia. *Bird Conservation International,* (November), 1–7. Retrieved from https://www.cambridge.org/core/product/identifier/S0959270917000302/type/journal_article doi:10.1017/S0959270917000302.

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. *Biological Conservation*, *209*, 423–431. doi:10.1016/j.biocon.2017.03.005.

Chng, S. C., & Eaton, J. A. (2016). *In the market for extinction: Eastern and Central Java* (Tech. Rep. No. August). Petaling Jaya, Malaysia: TRAFFIC.

Chng, S. C., Eaton, J. A., Krishnasamy, K., Shepherd, C. R., & Nijman, V. (2015). *In the market for extinction: An inventory of Jakarta's bird markets* (Tech. Rep.). Petaling Jaya, Malaysia: TRAFFIC.

Collar, N. J., Crosby, M., & Statterfield, A. (1994). *Birds to watch 2: The world list of threatened birds*. Cambridge, England: BirdLife International.

Collar, N. J., & Juniper, A. (1992). Dimensions and causes of the parrot conservation crisis. In: S. R. Beissinger, & N. Snyder (Eds.). *New world parrots in crisis: Solutions from conservation biology* (pp. 1–24). Washington, DC: Smithsonian Institute Press.

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*(May): 1–12.

Gaveau, D. L. A. (2017). What a difference 4 decades make: Deforestation in Borneo since 1973. *CIFOR*, 1–4.

Harris, J. B. C., Green, J. M. H., Prawiradilaga, D. M., Giam, X., Giyanto, Hikmatullah, D., . . . Wilcove, D. S. (2015). Using market data and expert opinion to identify overexploited species in the wild bird trade. *Biological Conservation*, *187*, 51–60. doi:10.1016/j.biocon.2015.04.009.

Harris, J. B. C., Tingley, M. W., Hua, F., Yong, D. L., Adeney, J. M., Lee, T. M., Wilcove, D. S. (2017). Measuring the impact of the pet trade on Indonesian birds. *Conservation Biology*, *31*(2), 394–405. Retrieved from http://doi.wiley.com/10.1111/cobi.12729 doi:10.1111/cobi.12729.

International Union for Conservation of Nature. (2013). *The IUCN Red List of Threatened Species. Version 2013.1.* Retrieved from http://www.iucnredlist.org.

International Union for Conservation of Nature. (2014). *The IUCN Red List of Threatened Species. Version 2014.1.* Retrieved from http://www.iucnredlist.org.

International Union for Conservation of Nature. (2017). *The IUCN Red List of Threatened Species. Version 2017.1.* Retrieved from http://www.iucnredlist.org.

Jepson, P., & Ladle, R. J. (2005). Bird-keeping in Indonesia: Conservation impacts and the potential for substitution-based conservation responses. *Oryx*, *39*(04): 442–448. Retrieved from http://www.journals.cambridge.org/abstract_S0030605305001110.

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*(04): 482–491. doi:10.1017/S003060531100038X.

Lee, J. G., Chng, S. C., & Eaton, J. A. (Eds.). (2016). *Conservation strategy for Southeast 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 Petaling Jaya, Malaysia: TRAFFIC.

Nijman, V. (2010). An overview of international wildlife trade from Southeast Asia. *Biodiversity and Conservation*, *19*(4): 1101–1114. doi:10.1007/s10531-009-9758-4.

Nijman, V., & Shepherd, C. R. (2015). Trade of 'captive-bred' birds from the Solomon Islands: A closer look at the global trade in hornbills. *Malayan Nature Journal*, *67*(2): 254–260.

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

Nijman, V., Shepherd, C. R., Mumpuni, & Sanders, K. L. (2012). Over-exploitation and illegal trade of reptiles in Indonesia. *Herpetological Journal*, *22*(2): 83–89.

ProFauna. (2009). *Wildlife trade survey on the bird markets in Java* (Tech. Rep.). Malang, Indonesia: ProFauna Indonesia. Retrieved from http://worldanimal.net/documents/final-report-bird-market-survey-2009.pdf.

Shepherd, C. R. (2006). The bird trade in Medan, north Sumatra: An overview. *BirdingASIA, 5*(February), 16–24.

Shepherd, C. R., Shepherd, L. A., & Foley, K.-E. (2013). Straw-headed Bulbul Pycnonotus zeylanicus: Legal protection and enforcement action in Malaysia. *BirdingASIA, 19*(January), 92–94.

Wilson-Wilde, L. (2010). Wildlife crime: A global problem. *Forensic Science, Medicine, and Pathology*, *6*(3): 221–222. doi:10.1007/s12024-010-9167-8.

Wright, T. F., Toft, C. A., Enkerlin-Hoeflich, E., Gonzalez-Elizondo, J., Albornoz, M., Rodríguez-Ferraro, A., . . . Wiley, J. W. (2001). Nest poaching in neotropical parrots. *Conservation Biology*, *15*(3): 710–720. doi:10.1046/j.1523-1739.2001.015003710.x.

Downloaded From: https://complete.bioone.org/journals/Tropical-Conservation-Science on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use