Songbird SKI

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Annex 2: Essays on Live Songbird Trade and Ex-situ Conservation

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Essays on Live Songbird Trade and Ex-situ Conservation

Annex 2 Supplement to the Information Document: Species360 2021, *Species Knowledge Initiative to Support CITES Decisions and Recommendations for Songbirds*, Species360 Conservation Science Alliance, Minneapolis, MN & Interdisciplinary Centre on Population Dynamics, University of Southern Denmark, Denmark.

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Cover photo: © Sumatran Laughingthrush (Garrulax bicolor) by Nicole Bruslund

Recommended Citation: Bruslund S. eds. Essays on Live Songbird Trade and Ex-situ Conservation Annex 2 supplement to the "Species360 2021, Species Knowledge Initiative to Support CITES Decisions and Recommendations for Songbirds, Species360 Conservation Science Alliance, Minneapolis, MN & Interdisciplinary Centre on Population Dynamics, University of Southern Denmark, Denmark".

Or "Author" and "Title" of individual essays in Annex 2 supplement to the "Species360 2021, Species Knowledge Initiative to Support CITES Decisions and Recommendations for Songbirds, Species360 Conservation Science Alliance, Minneapolis, MN & Interdisciplinary Centre on Population Dynamics, University of Southern Denmark, Denmark".

Main sponsors:

Copenhagen Zoo, The World Association of Zoos and Aquariums (WAZA),
& Mandai Wildlife Group

We thank the following organizations for their financial or in-kind contributions: Bruslund BirdConsult, Marlow Birdpark, EAZA Silent Forest Campaign, TRAFFIC Southeast Asia, Monitor Conservation Research Society, and ERASMUS +.

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Introduction

By Simon Bruslund and Dalia Conde

To support the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Decision 18.256 on Songbird trade and conservation management, this document presents a collection of essays on songbird trade and conservation.

The importance of further assessing and understanding trade impacts on songbirds was stressed at the CITES Conference of the Parties (CoP 18) in Geneva in 2019. During CoP18, the United States and Sri Lanka submitted Document 79, which recognizes that despite significant unregulated, illegal, and unsustainable trade, the songbird trade remains insufficiently documented outside of CITES-listed species. Document 79 further recommended obtaining background information on the songbird trade and establishing a working group with the goal of presenting a new document to the CITES Standing Committee and Animals Committee during CoP19, to be held in Panama in 2022. The goal of the proposal was to gather information regarding different issues related to international songbird trade, including species biological information, trade volumes, and legislation implementation and enforcement.

In response, the University of Southern Denmark and Species360 led the Songbirds Species Knowledge Initiative (Songbirds SKI) to assess the scale and scope of the international songbird trade. Not all expert-derived case studies could be presented in the main Songbirds SKI report (Species360 2021), hence these essential contributions are presented here as Annex 2.

We believe these essays provide insight into the scope of the global songbird trade through a diversity of case studies spanning multiple regions, conservation organizations, and themes. The essays also showcase potential information gaps.

On behalf of all the contributors, we invite the reader to dive into the vast array of species and regions that characterize songbirds and the scope of their trade.

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Additional Threats to Songbirds

By Simon Bruslund (Conservation coordinator, Marlow Birdpark, Germany)

Human encroachment is frequently cited as an overarching threat to biodiversity. In addition to the unsustainable exploitation of songbirds for the cage bird trade, many other human-imposed threats exist. Species often face a combination of these threats, aggravating and accelerating negative effects on populations. Symes *et al*. (2018) described how the combined stressors of human-induced habitat loss and exploitation for wildlife trade result in much higher population decline rates than would be assumed if these stressors were assessed independently. To express it plastically from the perspective of captive husbandry, most songbirds will not suffer seriously from a single ailment, but in combination with other illnesses, the patient will quickly be at dire risk. Below are some examples of important threat factors.

Small ranges – Roughly a quarter of all bird species have "restricted ranges" (Statterfield *et al*. 1998). This includes islands, altitude restrictions, and specific habitat requirements. The definition of this and the implications for conservation are complex (Olalla-Tárraga *et al*. 2019). However, a restricted range will leave species more vulnerable to additional threats.

Environmental threats – Adverse environmental conditions and climate change can heavily impact species. For example, increasing drought causes many songbirds adapted to a desert climate to be at the very limit of what is considered a habitable environment. These species are susceptible to small climatic changes, and increasing mortality events are expected to occur in the future (e.g., Albright *et al*. 2017 and Conradie *et al*. 2020). In Montserrat, the Montserrat Oriole *Icterus oberi* (Oppel *et al*. 2014) was threatened by volcanic activity in 1999, and recent eruptions in Tinakula Island, Solomons, and the cascading effects on the ecosystem have caused concern for the endemic Santa Cruz White-eye *Zosterops santaecrucis* and other species (S. Bruslund personal obs.). Even more recently, the entire population of the cryptic taxa of the Bahama Nuthatch *Sitta insularis* has been feared lost, in the midst of scientific discussions about its taxonomic status, as hurricane Dorian swept over Grand Bahama Island in 2019 (Levy *et al*. 2020).

Human-induced habitat loss – The adverse effects of large-scale habitat destruction and resulting habitat fragmentation are amply documented. A strong example is the unique East-Brazilian Atlantic Rainforest which has been decimated and heavily fragmented, with only 28% of, mostly altered forest cover left (Pizo *et al*. 2020). The Alagoas Foliage-gleaner *Philydor novaesi* was last recorded in 2012 and is now suspected to be extinct (Lees *et al*. 2014). The global population of the Critically Endangered Alagoas Antwren *Myrmotherula snowi*, for which a species action planning meeting was held in 2019 hosted by SAVE Brasil and Parque das Aves, is now down to nine known surviving individuals (S. Bruslund pers. obs.).

Chemical substances – In particular, neonicotinoids have been demonstrated to impact migratory songbird species when they accumulate resources for their arduous migrations (Eng *et al*. 2019). High and potentially toxic concentrations of mercury deposits in feathers of the globally threatened Aquatic Warbler *Acrocephalus paludicola* suggest an undetected mercury contamination in the continental European flood plains, which is the species only breeding grounds (Pacyna *et al*. 2017).

Loss of resources - Indirect effects of global agricultural practices are suggested to be among the many causes of a measurable decline in invertebrate diversity (Wagner 2020). Loss of particular prey insects is speculated to have been a contributing factor to the rapid decline of the heavily traded, and now near-extinct, Javan Pied Starling *Gracupica jalla* (Collar and van Balen in lit.). A loss of natural nesting cavities is another threat and some populations, such as the declining eastern population of Purple Martin *Progne subis subis*, for example, are almost entirely dependent on the supplementation of artificial nesting cavities (Raleigh *et al*. 2019).

Hunting, trapping, and prosecution as pests – Overexploitation of the abundant and widespread Yellow-breasted Bunting *Emberiza aureola* for seasonal consumption of its meat in China has led to a population decline of 84.3–94.7% from 1980-2013 (Kemp *et al*. 2015). The species which still occurs in the live bird trade today (S. Bruslund personal obs.) is now listed as Critically Endangered on the IUCN red list. In Africa, the use of toxic organophosphates and even explosives to control crop-raiding weavers *Ploceidae* is widespread (Cheke *et al*. 2019). Other methods include disturbing, shooting, stoning, burning nesting colonies, and trapping (Maurice *et al*. 2019). The environmental consequences of these activities and the removal of bird biomass are poorly studied.

Anthropogenic structures – The impact of glass windows, high structures, light, noise pollution, road traffic, and more is enormous on songbirds. In the USA, 365 to 998 million birds are killed annually by flying into buildings (Loss *et al*. 2014). The vast majority of these are songbirds (Hager et al. 2017). Extrapolated to a global scale, the potential number of mortalities is mind-boggling.

Invasive Alien Species (IAS) – Domestic cats are one of the most devastating feral species on the planet. In Australia, feral and pet cats kill an estimated average of just over 1 million birds daily (Woinarski *et al*. 2017). Inside sensitive ecosystems and protected areas, cats and other IAS can cause massive declines in local avifauna. Currently, the Fatu Hiva Monarch *Pomarea whitneyi* is down to 22 surviving individuals in French Polynesia, of which only four are females, with the primary threat being feral cats (C. Blanvillain pers. com.).

Diseases – Introduced and emerging diseases represent a considerable but poorly researched risk for songbirds. Between 2011 and 2013, multiple strains of mosquito-borne Usuto-virus Flaviviridae caused a massive die-off in resident Eurasian Blackbirds *Turdus merula* in south-western Germany (Ziegler *et al*. 2015). On the island of Hawaii, *Plasmodium* spp. parasites are known to cause Avian Malaria in native species of honeycreepers *Drepanidinae,* which has resulted in the recent extinction of the Po'ouli *Melamprosops phaeosoma* as well as ongoing declines in surviving relatives. Models predict that only intensive and long-term management strategies will have a chance of preventing further extinctions (Dahlin *et al*. 2019).

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Taxonomy Nomenclature Discrepancies and Species Identification Problems

By Simon Bruslund (Marlow Birdpark) and Jacqueline Juergens (University of Hamburg, University of Southern Denmark, and Species360 Conservation Science Alliance)

The scientific understanding of the relationship between species is in constant flux, which is also reflected in the nature of the dynamic and ever-changing taxonomic listings. In combination with a certain level of disagreement between different taxonomic authorities, this causes a series of problems in capturing taxonomic, threat, or protection status changes over time or when overlaying database entries using different taxonomy as in the present report.

In terms of nomenclature and generic naming, this will have the most substantial effect in databases that are partly or primarily compiled based on popular publications and press releases. In such non-scientific sources, species are often given local names, breeders' names, or other not systematically recorded synonyms may be used. These uncertainties are often reflected in the data quality.

Further, due to taxonomic changes over time, an unchanged generic name can become misleading. For example, the word "finch" can be attributed not only to many species of the finch family *Fringillidae* but also to several tanager *Thraupidae* species, several New World sparrow *Passerellidae* species, and a large number of waxbill *Estrildidae* species, previously considered to belong to different families but having maintained their vernacular name. There are similar issues for the names "sparrow", "bunting", "oriole", "flycatcher" and several others. As a result, it can be impossible to make safe assumptions on popular reports when only part of the English name is available.

Physically identifying some species of passerines can be challenging even in the best of conditions. However, when the birds are outside their natural setting, e.g., encountered in the international trade, it can be exceedingly difficult because of the missing references to their distribution, habitat, and behavior patterns. Damaged or juvenile plumage of birds in trade can further impede species identification.

We expect that these issues with taxonomy and identification lead to a significant proportion of songbirds reported in seizure databases not being identified correctly to species level.

Taxonomic authorities

Currently, there are multiple scientifically managed authority listings (Table 1) of the world's bird species with slightly deviating views. There are always different interpretations of new findings, and different taxonomic resources are often not updated in the same cycles. This leads to differences in accepting new discoveries. Particularly in accepting proposed splits of species where subspecies are awarded species-level status based on new knowledge about voice, behavior, or genetics, causing a great deal of debate (Raposo *et al*. 2020). Hence the current number of acknowledged recognized bird species varies even among some of the most frequently adopted taxonomic authorities from 10.033 (Howard and Moore) to 10.989 (HBW/BirdLife) (Trust for Avian Systematics, 2020; Handbook of the Birds of the World and BirdLife International, 2020).

Improved alignment and consolidation of these independent taxonomic listings are underway (International Ornithological Congress, 2020). Birdlife and Cornell have expressed intentions to align their two listings according to the HBW and BirdLife International Taxonomic website (Handbook of the Birds of the World and BirdLife International, 2020). The Howard and Moore listing sees part of its mandate to challenge the other listings and thereby improve the scientific basis (Trust for Avian Systematics, 2020). Currently, the best picture of the strength of knowledge and scientific agreement is achieved by looking at the different taxonomies in combination, as achieved in the recently published

book; All the Birds of the World (del Hoyo 2020). Cross references updated versions can also be found on the website Avibase and on the Website of the IOC World Bird List (Avibase 2020; International Ornithological Congress, 2020).

For the Species Knowledge Index for songbirds, we have chosen to use the HBW and BirdLife Checklist of the Birds of the World Version 4.0 current to December 2019 (Juergens *et al.* 2021; Handbook of the Birds of the World and BirdLife International, 2020).

Table 1 Overview of Taxonomy authorities used by selected Databases from Annex 1, Juergens *et al*. 2021. For abbreviations see main document.

Primary taxonomy authority	Used by selected Databases/Resources
HBW and BirdLife International Checklist of the Birds of the World (Handbook of the Birds of the World and BirdLife International, 2020)	CMS, IUCN, ZIMS, EDGE
The Howard and Moore Complete Checklist of the Birds of the World (Trust for Avian Systematics, 2020)	CITES
Clements Checklist of the Birds of the World (Cornell Lab of Ornithology, 2020)	BoW, eBird
Catalogue of Life (Catalogue of Life, *et al*., 2020)	GBIF, DSKI
Integrated Taxonomic Information System (Integrated Taxonomic Information System (ITIS), 2020)	GBIF
Sibley & Monroe world checklist of birds (Monroe *et al*., 1993)	GROMS
World Bird List, Peters' Check-list of the Birds of the World (International Ornithological Congress, 2020)	Not used by sources

Databases and references used for these documents have based their taxonomy on at least six different taxonomic authorities in different versions ranging from 1993 to 2020, leading to over 4000 synonyms for the 6659 songbird species described by the HBW/Birdlife taxonomy (Juergens *et al*. 2021). The exact numbers are reported in the main document (Species360 2021) and in Annex 1 Juergens *et al*. 2021.

Taxonomies can vary even within a single database, such as the Zoological Information Management System (ZIMS) maintained by Species360, which is based on data collected by ~1200 Species360 members globally. Even if such a collaborative database adopts one particular taxonomy, it is not guaranteed that this is used by all participants. Finding consensus is exceedingly difficult and demanding on resources.

When species in legal listings such as the CITES Appendices are split into two or more separate species in other taxonomies, it can frequently lead to confusion and misinterpretations. In this report, we have followed the assumption that the different entities of the split, previously classified as subspecies, were covered by the listing of the parent species in such cases. It is more problematic when, due to taxonomic changes, species are assigned to a different family. If, for example, CITES has blanket-listed an entire family and some or all species allocated to this family are assigned to another or a new family, these birds could potentially be perceived as no longer being covered by CITES. For instance, this is the case for several members of the Birds of Paradise (Paradisaeidae) family in the HBW/Birdlife taxonomy. In the report, we maintain the CITES listing even if a species is no longer in the listed family due to taxonomic changes.

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The Collared Laughingthrush *Trochalopteron yersini* is an endangered and restricted range species endemic to Vietnam and identified as climate change sensitive. Its appearance in the international songbird trade and the high prices paid by hobbyists are cause for concern amongst conservationists.
Image: Koji Tagi, Da Lat Plateau, South Annam, Vietnam.

White-eyes (*Zosterops spp.*) and Taxonomical Issues in Documenting the Trade

By Simon Bruslund (Marlow Birdpark)

White-eyes are a particular challenge both taxonomically as well as to identify to a species level. They are small birds, and most of the at least 108 species are similar in appearance. They have frequently been described as "great speciators" (Round *et al*. 2017, Ottenburghs 2019 and Lim *et al*. 2019), which rapidly develop new radiations even in seemingly allopatric and closely related populations (Cowles *et al*. 2019), leading to a complex and frequently unresolved taxonomy.

The Oriental White-eye *Zosterops palpebrosus* complex was split by the HBW/BirdLife taxonomy Version 4.0 in 2019 (http://datazone.birdlife.org/species/taxonomy). Although there is also trade in the parent species, the trade in the two split-off subspecies-groups Hume's White-eye *Z. auriventer* and Sangkar White-eye *Z. melanurus* is even greater, leading to the IUCN red listing of the latter as Vulnerable (BirdLife International 2019). Also, the Warbling White-eye *Zosterops japonicus* complex has been re-arranged with the predominantly mainland form Swinhoe's White-eye *Z. simplex* having been awarded species status, and the island form from Japan now merged with the Indonesian and Philippine form *Z. montanus* under Mountain White-eye *Zosterops japonicus*.

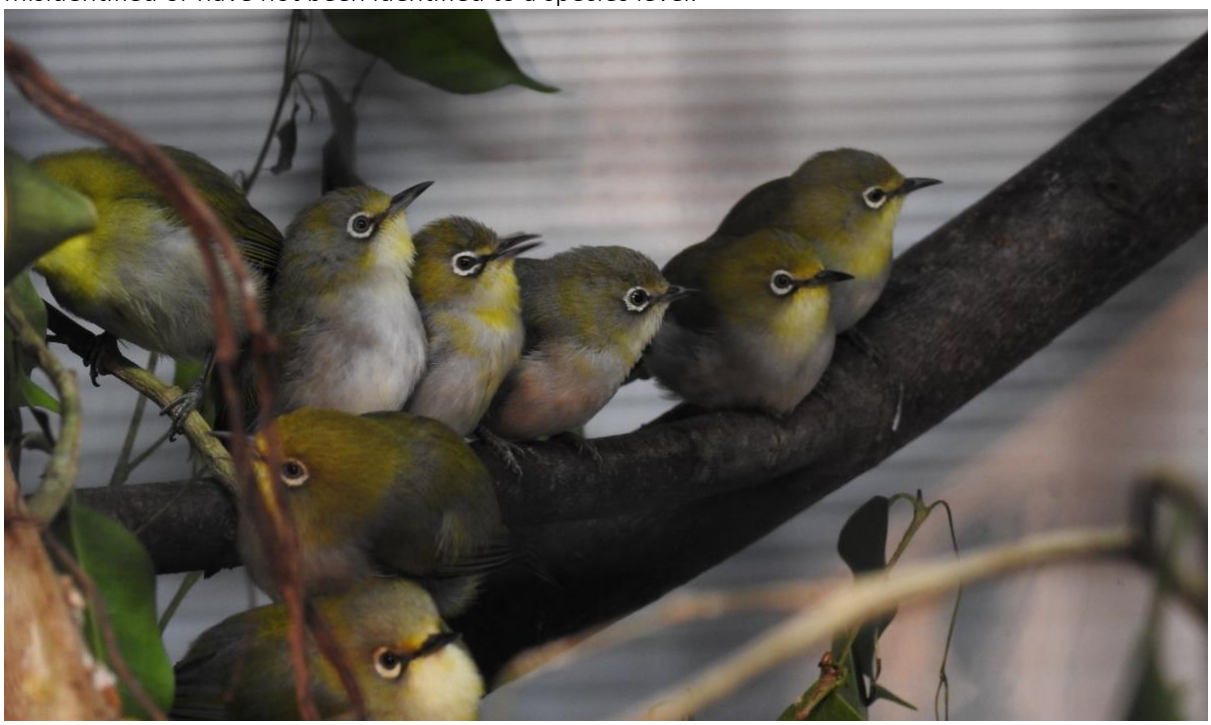
Similarly, the Broad-ringed White-eye *Zosterops poliogastrus* complex of East Africa was split into eight separate species (BirdLife taxonomy version 9) in 2016 based on preliminary research by Habel *et al*. (2013). It is suspected that the African Yellow White-eye *Zosterops senegalensis* will undergo a similar taxonomic revision with multiple splits in the future (Martins *et al*. 2020). In Indonesia, the yet undescribed Wangi-wangi White-eye is the subject of a political dispute, preventing the formal species description of this likely threatened taxa (O'Connell *et al*. 2019).

In addition to the confusing taxonomy, white-eyes can be challenging to separate visually. This is particularly true when they are removed from their range and natural habitat, without the link to distribution and habitat choice or the species-specific song used for identification in the field.

Adding further to this, white-eyes without access to quality food rapidly lose feather pigments with particularly yellow feathers fading to a pale grey, which is frequently the case in the trade or in transit (Bruslund, personal obs.), which further hinders accurate identification of the species.

Therefore, the combination of uncertainties in taxonomy and problems in species identification leads to a range of problems in monitoring the trade and in ex-situ management. Within market surveys in Asia, any cage full of unidentified white-eyes is often recorded as "*Z. palpebrosus*" for simplicity reasons, and at least five different species have been sold under this name (e.g., Su *et al*. 2014, and Bruslund, personal obs.). Also, in zoos, white-eyes that cannot readily be identified are frequently recorded as the, before the split, very widespread "Oriental white-eye" *Zosterops palpebrosus*. This likely leads to a bias in market and online trade survey results. Moreover, in one case of zoo management in a European zoo, two distantly related species were unintentionally mixed, leading to infertile hybrid offspring causing a population crash (Bruslund, personal obs.). In zoos, as well as in general aviculture, the East-African broad-ringed white-eyes of the aforementioned *Zosterops poliogastrus* complex were given multiple names over time, still evident today with four different names reported in the international zoo recordkeeping software ZIMS maintained by Species360. However, according to the SiTDB analysis, commercial imports of only a single taxon of this complex have been documented, namely the Kilimanjaro White-eye *Zosterops eurycricotus*. As of November 2020, ZIMS records 12 species of white-eyes with a total of 345 individuals worldwide, of which 14% have not been identified to a species level.

Based on these observations, around 22% of the total number of species have probably been misidentified or have not been identified to a species level.



Zosterops simplex in various stages of fading colors. Image: Nicole Bruslund

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Southeast Asian Zoos and Aquariums Association

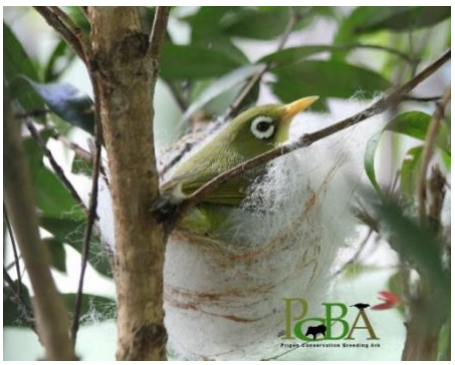
By Jess Lee (Wildlife Reserves Singapore)

The Southeast Asian Zoos and Aquariums Association (SEAZA) is a non-profit, non-governmental union of zoological institutions and affiliates largely from Southeast Asia (SEA). Apart from advocating and promoting good zoo and aquarium management practices, it also aims to contribute to advancing wildlife science and education and Southeast Asian biodiversity and habitat conservation.

For songbirds, this includes cooperation between zoos and other conservation stakeholders in establishing and propagating ex situ populations of conservation-significant species, following ex situ best practices backed up by IUCN guidelines. SEAZA contributes to songbird conservation in multiple ways. SEAZA-member organizations such as Taman Safari Indonesia (TSI) and Wildlife Reserves Singapore (WRS) are members of the IUCN-SSC Asian Songbird Trade Specialist Group and played a role in driving the conservation strategy, particularly the ex-situ component, for songbirds in SEA.

Prominent species that are part of this collaborative partnership with other government-, non-government and academic institutions include the Bali Myna *Leucopsar rothschildi* and the Black-winged Myna *Acridotheres melanopterus*. TSI, via its Prigen Conservation Breeding Ark (PCBA), currently holds and is developing breeding programmes for heavily threatened populations that are at risk of imminent extinction, such as the Wangi-Wangi white-eye *Zosterops sp. novum*, Maratua shama *Kittacincla malabarica barbouri* and Javan pied starling *Gracupica jalla*, while WRS is working with the straw-headed bulbul *Pycnonotus zeylanicus*, of which WRS coordinates the official ex situ breeding programme and Greater green leafbird *Chloropsis sonnerati*; WRS also holds the International Studbook for Black-winged Myna. These populations managed under human care have immense potential for cooperative breeding programmes between SEA zoos, aiming to retain maximum gene diversity and eventually reinforce wild populations across their native ranges in SEA when the conditions are right.

Locally and regionally, SEAZA-member organizations also assist and fund songbird-related research and trade investigation work, as well as support, in-kind and financial, community and stakeholder engagement initiatives and the management of key songbird populations currently held by non-government rescue centers. Finally, range country SEAZA member organizations like TSI and WRS are well placed to coordinate and collaborate with wider international and global partners such as the European Association of Zoos and Aquaria (EAZA), the World Association of Zoos and Aquariums (WAZA), and Species360 in songbird conservation efforts.



Wangi-Wangi white-eye incubating its eggs at the PCBA. Image: Jochen Menner.**Further Information**
Southeast Asian Zoos and Aquariums Association website
http://www.seaza.asia/

National protection of Songbirds in Indonesia

By Simon Bruslund (Marlow Birdpark) and Dr. Anuj Jain (BirdLife International - Asia)

In June 2018, the Government of Indonesia took a hugely positive step toward safeguarding their native songbirds, several of which are threatened by songbird trade on top of other threats such as habitat loss and climate change. In a new ministerial decree amending the list of nationally protected species under GOVERNMENT REGULATION OF THE REPUBLIC OF INDONESIA NO.7/1999 ON PRESERVING FLORA AND FAUNA SPECIES, hundreds of new species were added to the list. According to Indonesian legislation, species on the protected list cannot be trapped or traded. Unlisted native species may be subject to trapping quotas which need permits. Therefore, most domestic trade in wild-caught songbirds in Indonesia is effectively illegal.

The revised list of nationally protected species laid the framework for further activities and enforcement to protect songbird populations providing the opportunity to transform the culture of enjoying songbirds into a more sustainable activity, which is also available for future generations.

There was significant disapproval from bird keepers and bird traders regarding the new protected species list, with opposition to the inclusion of some commonly traded songbirds such as the Straw-headed Bulbul *Pycnonotus zeylanicus*, Javan Pied Starling *Gracupica jalla,* and White-rumped Shama *Kittacincla malabarica*. In total, five bird species were removed from the final version of the decree as a political compromise in response to the opposition (Gokkon 2018). In addition to the three mentioned above, the Least Concern Little Shrikethrush *Colluricincla megarhyncha* and the Critically Endangered Sangihe Whistler *Coracornis sanghirensis* were removed from the list. This seems short-sighted as the current trade levels are depleting their own foundations (Eaton *et al*. 2015). It is feared that about one-third of Java's 36 million households own cagebirds and more birds survive in cages than in the forests of Java (Marshall *et al*. 2019).

With some of the highest levels of trade volumes in wild-caught songbirds (Eaton *et al*. 2015), millions of consumers, and trade occurring across the archipelago, enforcement of this legislation is challenging. The collective task to protect these species once they enter illegally into the international trade is an even bigger challenge, demanding political will and species identification knowledge by enforcement agencies on the ground. However, not all is doom and gloom for songbirds. The Indonesian Government is discussing a new regulation of songbird competitions, and the interest among stakeholders to start a dialogue on sustainability in the songbird trade is finally increasing.

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Prigen Conservation Breeding Ark

By Jochen Menner (Curator, Prigen Conservation Breeding Ark, Indonesia)

Prigen Conservation Breeding Ark (PCBA) is a species conservation project located in Prigen, Indonesia, which was established in close cooperation between Taman Safari Indonesia, KASI Foundation, ZGAP, and other international institutions. In developing species priorities, we work closely with the IUCN SSC ASTSG (Asian Songbird Trade Specialist Group) and the EAZA Silent Forest Group.

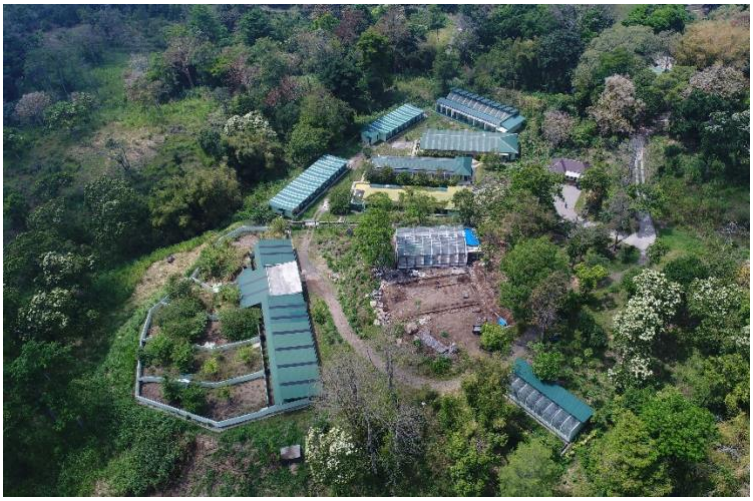
Our initial project was to build six enclosures for songbirds following international calls to initiate more in-region breeding programmes for the most threatened songbirds. The first unit was erected in August 2017. Here we have held several endangered songbird species, including assurance populations of Javan Green Magpie *Cissa thalassina*, Greater Green Leafbird *Chloropsis sonnerati*, and Javan Pied Starling *Gracupica jalla*.

Soon after that, following the project plan, Unit 2 and 3 were built in 2018. Then, at the end of 2019, the construction of Unit 4 was started. It is designed carefully to ensure successful conservation breeding goals. With that in mind, the enclosures on one side of the unit are designed to accommodate the needs of the more sensitive species where we do research to optimize husbandry methods.

In the first quarter of 2020, the constructions of Unit 5 and 6 had finished, making the total number of songbird aviaries 183. Currently, we have started building more enclosures for different threatened hill myna taxa.

The animals of the PCBA are managed in ZIMS of the Species360, ensuring transparency with our international partners.

The infrastructure and staff are funded primarily through the KASI foundation, which is the conservation arm of the Taman Safari Group. Construction has been enabled mainly through international conservation partners and, in particular European zoos as well as the Taman Safari Indonesia.



Drone image of the PCBA facilities in February 2020. Image PCBA

Further Information

Prigen Conservation Breeding Ark website https://www.prigenark.com/

Taman Safari Indonesia website https://tamansafari.com/

International Trade in Live Bird-of-paradise

By Simon Bruslund (Marlow Birdpark) and Martin Rose (Republic of Austria, Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation, and Technology)

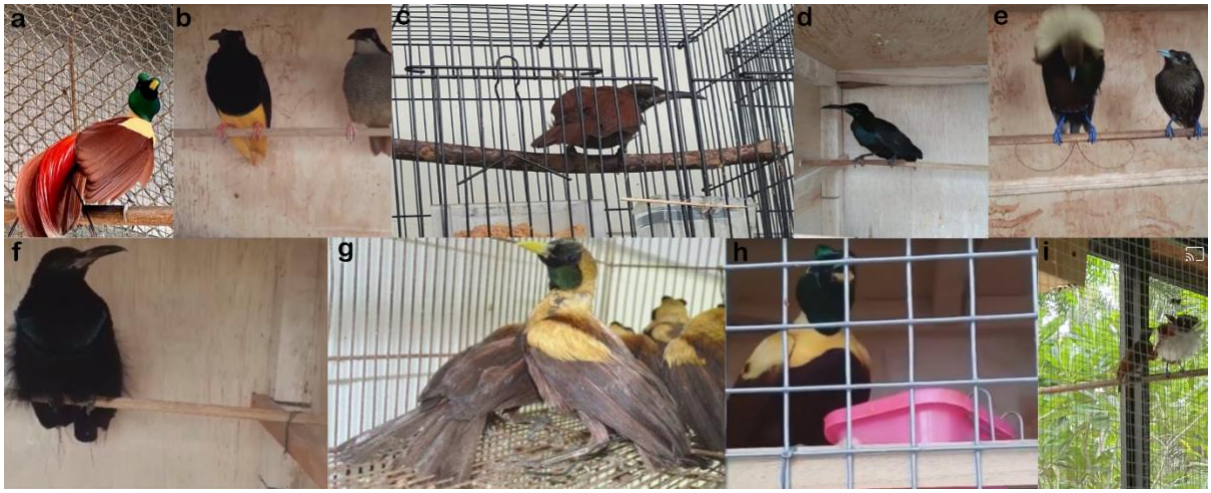
All 41 species of bird-of-paradise (*Paradisaeidae* spp.) are listed in CITES Appendix II as a precautionary measure to prevent an international derivatives trade in their elaborate plumes and to support the legislation in range states that totally protects these species. The prevention of international trade seems to be effective with only rare seizures of illegally traded plumes.

In all countries of occurrence, the bird-of-paradise species are listed as protected species, effectively keeping all known species under national protection in the countries of origin, Australia, Papua New Guinea and Indonesia.

In low to moderate numbers, regular and recurring international illegal trade has been reported in at least 10 species. Occasionally, such birds enter other countries with dubious documentation of captive breeding and missing sanitary import permits. As the age of most bird-of-paradise can be assessed based on plumage developments, discrepancies in the captive breeding documentation can often be documented.

Because bird-of-paradise occasionally fail to be intercepted at the borders and a very small number of birds have been traded legally, it is becoming increasingly complicated to verify captive breeding claims. In Austria, between 2006 and 2020, 23 bird-of-paradise of six different species were seized after entering the country illegally.

The species traded in moderate numbers and regularly entering the international trade are: Twelve-wired Bird-of-paradise *Seleucidis melanoleucus*, King Bird-of-paradise *Cicinnurus regius*, Magnificent Bird-of-paradise *Cicinnurus magnificus*, Magnificent Riflebird *Lophorina magnifica*, Red Bird-of-paradise *Paradisaea rubra*, Lesser Bird-of-paradise Paradisaea minor and Greater Bird-of-paradise *Paradisaea apoda*. The highest numbers are seen in Lesser Bird-of-paradise and King Bird-of-paradise, followed by the Twelve-wire Bird-of-paradise. The species of greatest conservation concern is currently the restricted range Red Bird-of-paradise.



A selection of images of bird-of-paradise of suspected wild-caught origin published on social media during 2020; Red Bird-of-paradise (a, g, h), Magnificent Riflebird (c, d, f), Magnificent Bird-of-paradise (e), King Bird-of-paradise (i).

Examples of species impacted by the Asian songbird trade

Chris R. Shepherd and Boyd T. C. Leupen (Monitor Conservation Research Society)

Orange-spotted Bulbul *Pycnonotus bimaculatus*

The Orange-spotted Bulbul is endemic to Indonesia. It is a relatively widespread species, consisting of two subspecies; *P. b. bimaculatus* of central/south Sumatra and west/central Java and *P. b. tenggerensis* of east Java and Bali (Fishpool *et al*. 2019). The species' current population status has not been quantified (BirdLife International, 2019), but populations are thought to be in decline, particularly on Sumatra. The species is therefore listed as Near Threatened on the IUCN Red List (BirdLife International 2019). The Orange-spotted Bulbul has historically been among Indonesia's bird markets' most popular and heavily traded songbirds. Recent surveys show this continues to be the case (Leupen and Gomez 2019). However, trade comparisons show that trade levels on Sumatra have severely decreased, which is likely to confirm the heavily declining populations there (Leupen and Gomez 2019). Another noteworthy finding during recent research was the large numbers (n=1,254) of Orange-spotted Bulbuls observed in a single market visit in Makassar, Sulawesi, in 2019, indicating the presence of substantial intra-national trade flows (Leupen and Gomez 2019). Although Orange-spotted Bulbuls are not listed as protected in Indonesia, no harvest quotas have been set in the past years, rendering recently observed trade illegal (Leupen and Gomez 2019). If such illegal trade continues to be allowed, populations are likely to decrease further. More research into the species' population status is warranted.

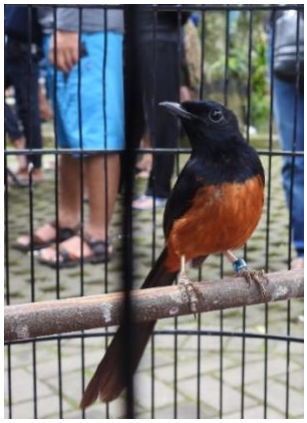
Black-throated Laughingthrush *Garrulax chinensis*

The Black-throated Laughingthrush is commonly observed in trade across Asia (Shepherd 2010; Shepherd et al. 2016; Shepherd et al., in prep.). Native to Cambodia, China, Lao PDR, Myanmar, Thailand, and Vietnam, its status in these countries is poorly known. It is thought to be fairly widespread, although it is reported that overall populations are in decline. It is currently assessed by the IUCN Red List as Least Concern (BirdLife International 2017), though international trade is not mentioned as a threat. It is protected in all range states except for China and Lao PDR. In 2020, a team led by the Monitor Conservation Research Society looked at surveys of bird markets carried out across Asia and found a total of 10,832 Black-throated Laughingthrushes in published and unpublished trade records (Shepherd et al., in prep.). Most Black-throated Laughingthrushes observed in trade were recorded in locations outside its range states. Clearly, international trade is a potential threat to this species. Yet, it is not listed in the Appendices of CITES, meaning there is no mechanism in place to assist range countries where it is protected to prevent international trade in illegally sourced birds, nor is there a mechanism in place to monitor and regulate the international trade.

White-rumped Shama *Kittacincla malabarica*

The White-rumped Shama is a widespread species, occurring across 15 countries ranging from India in the east to Indonesia in the south (BirdLife International 2017). White-rumped Shamas are among the most sought-after species in the Southeast Asian cagebird trade, owing to their unique singing qualities (Jepson and Ladle 2009, Eaton *et al*. 2015, Chng and Eaton 2016, Chng *et al*. 2015, 2016, 2018, Lee *et al*. 2016, Burilova *et al.* 2017). Exploitation for trade and habitat destruction have resulted in declining populations and, in Indonesia, have even caused local extinctions (Eaton *et al.* 2015). However, due to its large range, the species is currently classified as Least Concern on the IUCN Red List (BirdLife International 2017). Trade in White-rumped Shamas occurs domestically and internationally (Leupen *et al*. 2018). Whereas the species is protected in six out of nine of its

Southeast Asian range states, international trade is not regulated. The presence of a large active international trade is indicated by high seizure numbers and trade levels across the Asian region, particularly in Java (Leupen *et al*. 2018). Here, the species has nearly been extirpated in the wild, meaning that seized and traded birds must necessarily have been captive-bred or sourced from other parts of the region. The species is also frequently observed on European online trade forums and European bird fairs. Although commercial captive breeding of White-rumped Shamas occurs, laundering practices in which wild-caught birds are sold as captive-bred continue to threaten wild populations (Leupen et al. 2018). White-rumped Shamas should be considered for listing in Appendix II of CITES to better understand, regulate and monitor international trade and assess the threat this trade poses to the species more effectively.



Images: Simon Bruslund

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Further Information

Monitor Conservation Research Society webpage on songbird trade https://mcrsociety.org/programmes/songbirds/

Grey-backed Myna in Baluran National Park

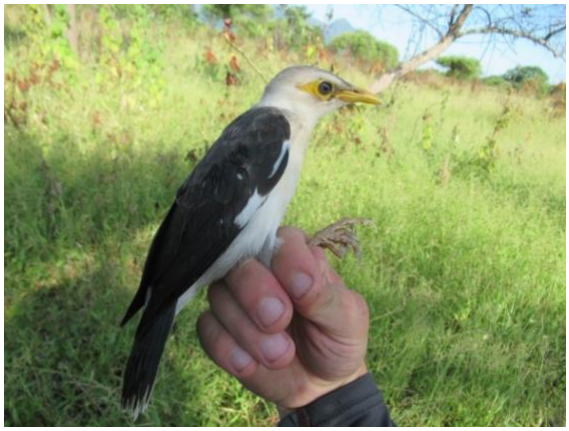
By Carl Trætholt and Hariyawan A. Wahyudi (Copenhagen Zoo Southeast Asia Biodiversity Programme)

The east Javan form of the Black-winged Myna (known as the Grey-backed Myna, *Acridotheres [melanopterus] tricolor*) is endemic to eastern Java, with the largest surviving wild population found in Baluran National Park (Baluran NP). This Critically Endangered species numbers approximately 30-40 breeding pairs. Unfortunately, birds are still being harvested illegally from the park and offered for sale online.

Baluran NP offers an ideal habitat where the species is inherently linked to the many ungulates in the park. During the breeding season, it is often seen feeding on ticks and flies in and around the parks many ungulates. Unfortunately, the large ungulate populations (e.g., Banteng, Timor Deer, and Water Buffalo) decreased drastically from the late 1970s until 2015. Illegal poaching combined with the loss of grazing grounds being overgrown with invasive African acacia were the main reasons for the decline. The combination of fewer ungulates and constant illegal trapping caused the population of Grey-backed Myna to collapse and has brought it close to extinction.

Since 2014, Baluran NP and Copenhagen Zoo, Denmark, have worked together to rehabilitate more than 1000 ha of open savanna resulting in increasing populations of ungulates. To prevent the loss of the last Grey-backed Mynas, they are formulating a conservation programme that aims at developing a conservation breeding center in Baluran NP with the purpose of breeding enough birds to release back into the park and, concurrently, raise local awareness, explore potential associated community income, and combat ongoing illegal trapping in the park.

The species remains at the brink of extinction, but with dedicated conservation intervention, there is a good chance that it will continue to exist in its natural habitat in the future.



Grey-backed Myna being examined in the field and the team on the ground in Baluran National Park, Indonesia. Images by Hariyawan A. Wahyudi

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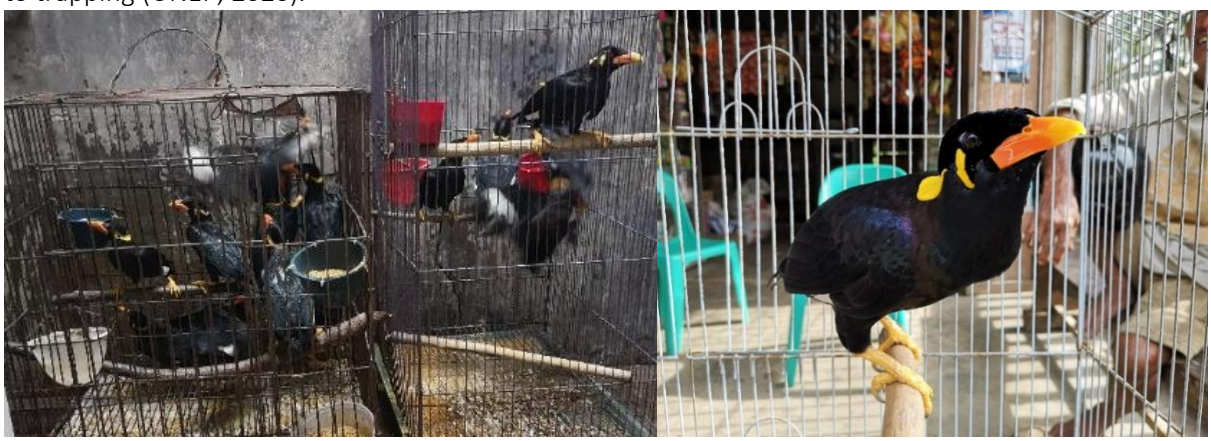
Prioritizing Nias Myna Conservation in Indonesia

By Simon Bruslund (Marlow Birdpark), Nata'alui Duha (Nias Heritage Museum) and Thomas Amey (Ecosystem Impact)

Hill mynas *Gracula* spp. are massively popular in the pet bird trade, and due to their exceptional mimicking skills, they are kept as pets for entertainment and social prestige. Keeping hill mynas as pets is regionally becoming a symbol of higher social status. Captive breeding of hill mynas is unfortunately challenging and rarely reliable, leading to wild capture or wild harvesting of nestlings being the overwhelming source of traded birds. Nestlings or juveniles are preferred as these are more easily tamed and more readily mimic human speech (Bruslund pers. obs.). The Common Hill Myna *Gracula religiosa* was identified in the UNODC study contributing to this report as the 4th and in the TRAFFIC Trade database as the 7th most commonly seized songbird species worldwide (UNODC 1999-2018, TRAFFIC 2020). This is a strong indicator of the popularity of this species in the pet trade and the subsequent preparedness for illegal activities. Additionally, the EU reported legal imports of 46,952 birds between 1998 and 2007 (UNEP-WCMC, 2009). Most range countries have reported declines due to trapping (UNEP, 2020).



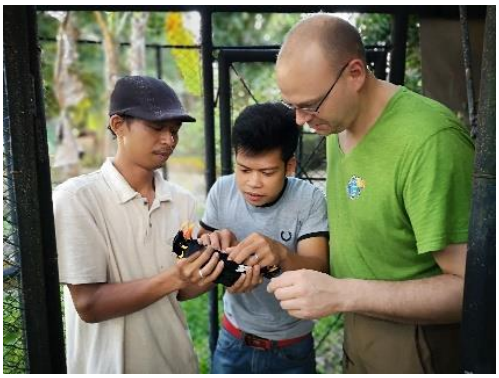
A group of trapped Nias Mynas on route to wholesale buyers and a single bird opportunistically sale on the streets in Nias. Images Simon Bruslund

Of all the hill myna's, the restricted range Nias Myna *Gracula robusta* is by far the largest and one of the rarest. It is therefore much sought after (Ng et al. 2020). In the species' main distribution area, the Island of Nias off the west coast of Sumatra, it has been considered extinct since at least 2015 (Rheindt et al. 2020). Surviving now only on a few outlaying and tiny islands, in numbers estimated between 50-249 individuals (BirdLife International, 2018).

In 2018 alone, at least 60 individuals of the severely threatened Nias Myna were detected in the illegal pet trade (Bruslund pers. obs.), and smuggling between Indonesia and Thailand has been reported at both ends by anonymous sources. The last known importation into Europe was to Germany in 2000, where none of the birds survived for longer than two years. However, a strong trade interest persists, and collectors regularly advertise searching for the species.

At the first Asian Songbird Trade Crisis Summit in 2015, ASTSG identified Hill Myna *Gracula religiosa,* including *G. robusta,* as a 'species of high conservation priority' listed in Tier 1 under the '12 taxa identified as of highest priority and in need of immediate action' (Lee et al. 2016). Continued unsustainable trapping for the illegal cage bird trade, particularly domestically, is a major concern for the survival of the Nias Myna, which is now listed as Critically Endangered (BirdLife International, 2018).

On Nias Island, the Nias Heritage Museum is taking the lead, supported by Marlow Birdpark, the Silent Forest Group, and the campaign 'zoo animal of the year' in developing an awareness and pride campaign preparing local communities for future conservation translocations. There are intentions to establish a national conservation breeding programme in Indonesia. In the northernmost distribution area, another NGO, Ecosystems Impact, is monitoring the protected areas where most of the remaining birds in the wild still occur and is working closely with local communities there.



Nias Myna Project SAVE Magiao team examining a rescued Nias Myna. Image: Nias Heritage Museum

Although originally described and long recognized as a separate species, taxonomists have had deviating views on the species status of the Nias Myna and the similar Common Hill Myna, treating the birds from Nias either as a species or as a subspecies. At the time of the CITES Appendix II listing in 1997, the established view of most taxonomists was that the hill myna was a single species with multiple subspecies, including the "Nias Hill Myna". Today, most major taxonomic authorities, including BirdLife and therewith also IUCN, acknowledge the Nias Myna as a separate species, although not yet adopted by Howard and Moore, which is the taxonomy followed by CITES (del Hoyo, 2020). However, after the "split", the CITES listing could be interpreted as if *Gracula robusta* is now no longer protected by CITES, although this form and other subspecies were explicitly mentioned in the original proposal for inclusion of the *Gracula religiosa* in Appendix II (UNEP, 2020). However, for the main report, we did include the Nias Myna under its parent species' listing in Appendix II.

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UNEP-WCMC. (2009). Malaysia: a review of trade in CITES-listed species. A Report to the European Commission. UNEP-WCMC, Cambridge. - ANNEX I. TRADE IN CITES-LISTED SPECIES FROM MALAYSIA TO EU-27, 1977-2007, AS REPORTED BY BOTH TRADING PARTNERS.

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Further information

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SAVE Magiao project page on the Silent Forest website https://www.silentforest.eu/in-situ-projects/magiao-nature-heritage-conservation-breeding-centre/

EcosystemImpact Foundation website on Bangkaru rangers https://www.ecosystemimpact.com/bangkaru-island-turtles

ZAA - Zoo and Aquarium Association - Australasian region

Chris Banks (Manager International Conservation, Zoos Victoria)

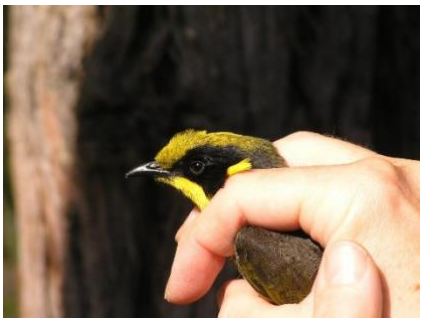
Currently, over 200 species of passerine are listed in the Zoo and Aquarium Association (ZAA) regional population plan, including numerous endemics to Australia and New Zealand and various other exotic species.

The ZAA Bird and ZAA NZ Fauna Taxon Advisory Groups formally and collaboratively manage five species. These include the Regent Bowerbird, Helmeted Honeyeater, Regent Honeyeater, New Zealand Bellbird, and Tui. Both the Helmeted and Regent Honeyeater Programmes continue to produce birds for release into the wild as part of their respective National Recovery Plans in coordination with the relevant Recovery Teams.

Helmeted Honeyeater and Regent Honeyeater

The Helmeted Honeyeater *Lichenostomus melanops cassidix* is one of the faunal emblems for the state of Victoria in south-east Australia. A subspecies of the Yellow-tufted Honeyeater *L. melanops*, they feed on eucalypt sap, insects, and flower nectar. Once patchily distributed throughout the forests east of Melbourne, populations of Helmeted Honeyeater have declined dramatically from historic forest clearing. They are now confined to a single locality at Yellingbo Nature Conservation Reserve (YNCR), about 50 km east of Melbourne. The birds rely on dense shrubs for nesting and food and are threatened by vegetation dieback in some areas and insufficient natural regeneration.

New measures implemented by the recovery programme have been highly successful. From just 50 birds in 2013, the wild population currently contains ~ 200 birds, the largest number since the recovery programme commenced. One of the program's major goals is a stable population of at least 500 Helmeted Honeyeaters spread across five localities. Expanding suitable habitat and establishing new populations are critical priorities for the recovery team. Priority release areas have been identified, and a new translocation strategy will enable the establishment of new populations beyond Yellingbo. Since 2014, more than one million trees and shrubs have been planted to create suitable new habitat.

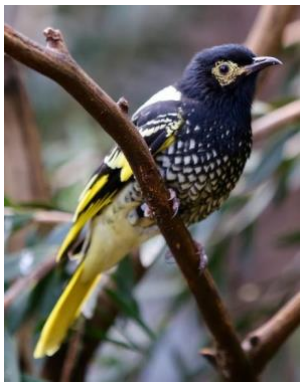


Helmeted Honeyeater, Image: Zoos Victoria

This recovery effort is underpinned by strong working partnerships across Zoos Victoria, government agencies, community groups, and universities. The Friends of the Helmeted Honeyeater, a volunteer community group, provides extensive support, including supplementary feeding and regular tree planting.

Effective genetic management is critical, and with geneticists from Monash and La Trobe Universities, work is focused on alleviating inbreeding and restoring some of the lost genetic diversity in the population. This also includes swapping eggs and/ or nestlings yearly between the wild and captivity. Since 1989, Healesville Sanctuary, one of Zoos Victoria's three zoos, has bred more than 370 Helmeted Honeyeaters and released more than 250 to the wild.

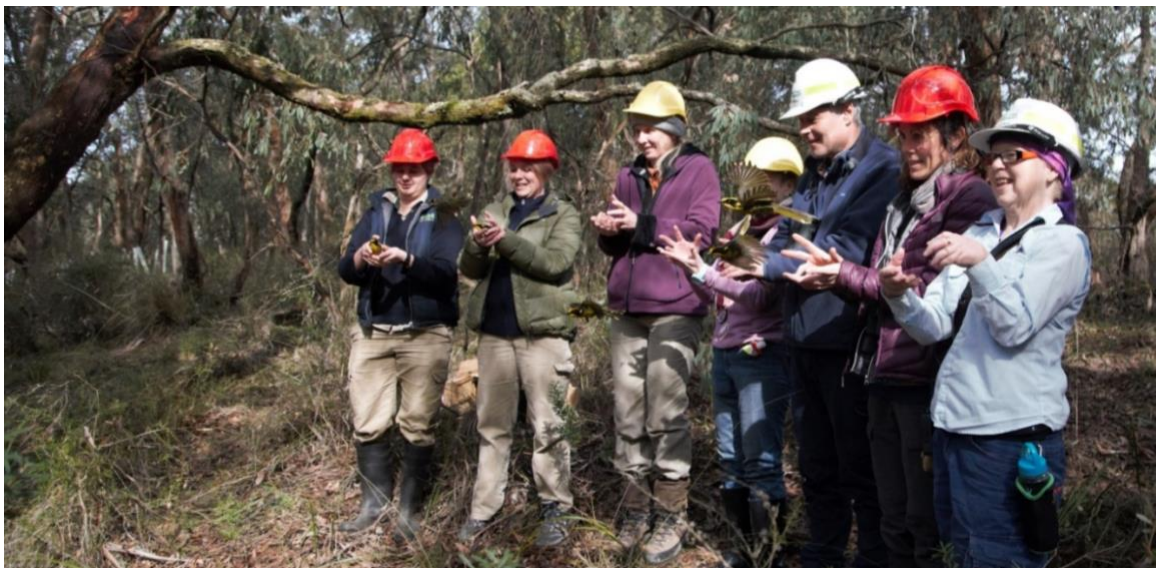
The Regent Honeyeater *Anthochaera phrygia* is patchily distributed in eastern Australia, from central Victoria in the south to south-east Queensland in the northern part of its range. The species currently has four key breeding areas: the Chiltern Area in Victoria, and the Bundarra Barraba, Capertee, and Hunter Valley districts in New South Wales. It is highly mobile, following the flowering of preferred eucalypt trees, and occurs only irregularly at most sites. The unpredictability of movements and the vast distances they travel make it difficult to obtain reliable population estimates. At times, the whereabouts of many birds is unknown. Allowing for this, the wild population is thought to be less than 500 individuals.



Regent Honeyeaters occur mainly in box-ironbark forest and woodland areas inland of the Great Dividing Range. They particularly prefer habitat on moist and fertile soils, such as valleys and floodplains, areas that have also been preferentially targeted for agricultural development. The major cause of the long-term decline of the species is the clearing and degradation of their woodland and forest habitat. Other critical threats include increased competition for nectar resources by other birds and high nest predation rates.

Regent Honeyeater. Image: Healesville Sanctuary

The small size of the wild population, coupled with continuing decline, is a major concern. A successful captive-breeding and release program, led by Taronga Conservation Society Australia, Birdlife Australia, and the Victorian Department of Environment, Land, Water & Planning, has been underway since 1995 to bolster the wild population. Zoos Victoria's role is to support these partners by increasing Regent Honeyeaters' holding and breeding capacity and assisting habitat protection actions.



Feature: Helmeted Honeyeater - In August and September 2019, 36 birds were released into Yellingbo Nature Conservation Reserve (YNCR) to bolster the wild population. This included juveniles produced in the 2018-19 breeding season and adult birds from the breeding population. In May 2020, 14 juvenile birds from the 2019-20 breeding season were released into YNCR. Image: Zoos Victoria

Further information

Zoo and Aquarium Association website https://www.zooaquarium.org.au/

Saving the regent honeyeater Birdlife Australia https://birdlife.org.au/documents/WL-Regent_Honeyeater_A4-Bro_v10.pdf

Friends of the helmeted honeyeater inc. website https://www.helmetedhoneyeater.org.au/

Zoos Victoria website on helmeted honeyeater https://www.zoo.org.au/fighting-extinction/local-threatened-species/helmeted-honeyeater/

Freeland

By Juliana Machado Ferreira (Executive Director Freeland-Brasil)

Freeland is an international non-profit organization that helps protect vulnerable people and wildlife from organized crime and corruption while revitalizing ecosystems and communities for a more secure world. Freeland's vision is a world free of wildlife trafficking and human slavery. Freeland's global team of law enforcement and development experts work alongside government officers, local communities, students, and other NGOs in Asia, Africa, and the Americas to educate, empower, and catalyze action. Freeland-Brasil is based in Sao Paulo, and its regional mission is to conserve biodiversity by combating wildlife trafficking.

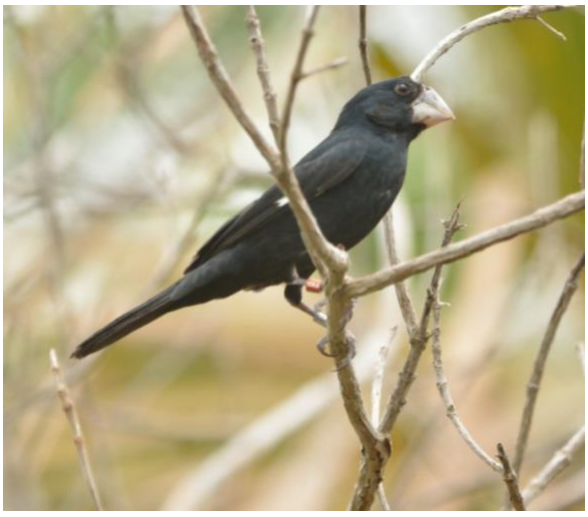
Songbird Trafficking and Confiscations in Brazil

Two of the known routes of wildlife trafficking in the region, confirmed by IBAMA and Federal Police agents interviewed (Charity & Ferreira, 2020), are inverse trafficking routes for passerine songbirds from either Venezuela or Peru into Brazil.

In addition, numerous sources (Verheij, 2019; local news articles) suggest there may be a substantial trade in passerine songbirds along the borders of Brazil, French Guiana, Suriname, and Guyana, as well as Venezuela. Species frequently found in seizures in these regions include the Chestnut-bellied Seed-Finch *Sporophila angolensis* and the Great-billed Seed-Finch *Sporophila maximiliani*. Despite regulations and the existence of legal trade, seizures of birds of these species are common in Brazil.

In the Amazon region alone, a total of 1,171 illegal Chestnut-bellied Seed-Finches were seized throughout the period 2012 – 2019. Although there is no information on the intended destination of the seized individuals, bird-singing contests with this species are now common not only in Latin American countries (mongabay.com) but are also growing in importance in the US (nytimes.com).

On the other hand, seizures of Great-billed Seed-Finch are not so common anymore, probably due to the scarcity of the species in nature (Cabral. R, presentation delivered at a workshop on wildlife trafficking legislation organized by Freeland Brasil and the Public Prosecutor's Office of São Paulo state, May 2019), since the population in Brazil is estimated at no more than 250 individuals (MMA, 2014) and declining (IUCN Red List, 2020). At the time of the analysis, 10 specimens had been seized in 2017 (looking only at seizures of 10 or more individuals), but in 2019 some 26 specimens had been seized by September, a considerable increase compared to previous years. In the analysis conducted for this paper, with IBAMA seizure data (all seizures) between 2013 and 2017, 747 Great-billed Seed-Finches were seized; however, according to IBAMA agents, due to their scarcity in nature, they may not all have been poached from nature. Instead, they may have been from illegal captive breeding.



Great-billed Seed-finch *Sporophila maximiliani.* Image: Flavio Ubaid

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SAVE Brasil

By Alice Reisfeld (Gerente de Projetos BirdLife/SAVE Brasil)

SAVE Brasil (Society for the Conservation of Birds in Brazil) is a non-profit, non-governmental organization dedicated to conserving Brazilian birds and nature, representing the global partnership of BirdLife International in the country. Like in other parts of the world, Brazilian birds are threatened by the illegal trade that supplies both the national and international markets. Many species among the most desired by the market are threatened with extinction, such as the Seven-coloured Tanager *Tangara fastuosa* and the Buffy-fronted Seedeater *Sporophila frontalis*. As one of the means to address this threat, SAVE Brasil works with the government on different levels to establish protected areas and so far has been able to assist in creating 9 public protected areas (184,509 hectares). In parallel, our projects focus on community engagement to raise awareness about the harms caused by capturing and buying wild birds while showing people that observing birds in the wild is a much more pleasant experience. To do this, we carry out birding activities with the local communities for people of all ages and encourage them to build feeders in their houses to attract birds to visit their gardens and experience the beauty of watching birds in their natural habitat. Besides, in 2017, as a result of workshops involving scientists and practitioners, SAVE Brasil published a protocol with guidelines for releasing and monitoring seized birds in partnership with the Secretariat for Infrastructure and Environment of São Paulo. Since then, SAVE Brasil has facilitated the release of more than 3,000 birds in partnership with rescue and rehabilitation centers, following this protocol. The releases are proving successful, and released birds are still sighted in the areas four years later, fulfilling their ecological roles and having a second chance to live in the wild.

Further information
SAVE Brasil website http://savebrasil.org.br/

The Red Siskin Initiative

By Miguel A. Arvelo and Valentina Cedeño (The Red Siskin Initiative)

The Red Siskin Initiative (RSI) is an international partnership of public and private institutions, communities, and people working to help understand, protect, and restore sustainable populations of the endangered Red Siskin *Spinus cucullatus* in Venezuela and Guyana. This species is endangered, locally protected, and listed on Appendix I by CITES.

In the European Union, the Red Siskin is listed in the COMMISSION REGULATION (EC) No 865/2006 Article 62(1) Annex A, exempting captive-bred specimens from documentation with a CITES certificate, potentially opening up for illegal activities, which is a concern considering the ongoing and documented trafficking of wild birds towards the EU.

In the US, the species has been included in the United States Endangered Species Act since 1976. This puts in place great barriers for private breeders to hold captive-bred birds unless they comply with strict permitting procedures. Despite this scenario of regulations and market limitations in the US, this approach is not effective in preventing illegal trade since it is widely known that Red Siskins continue being heavily trafficked in the country.

In April 2020, Ada Sánchez-Mercado and her co-authors published the paper "Social network analysis reveals specialized trade in an Endangered songbird" in *Animal Conservation* on the plight of the Red Siskin.

Using social network analysis of the domestic and international trade, the researchers found evidence for "specialized trafficking" indicating specific market demands where few expert actors control the market. The domestic trade in Venezuela was found to be highest, with a preference for wild-caught (67%) over captive-bred individuals. The highest incidence of international trade was found involving Spain, but also Brazil and Colombia.

Red siskin. Image: Jhonathan Miranda, RSI

The results suggest that in this case, only a few actors are involved in the illegal trade and that it may be possible to reduce unsustainable harvest by engaging the bird owner networks in information campaigns to stimulate a dialogue leading to behavior change.

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Further information

Red Siskin Initiative website https://www.redsiskin.org/

AZA North American Songbird Conservation

By Shelly Grow (Association of Zoos and Aquariums)

Zoos and aquariums accredited by the Association of Zoos and Aquariums actively protect songbirds. They tackle conservation challenges through their own operations, education and outreach, and collaborations with partner organizations. They often use window treatments that minimize bird collisions with glass. They enhance or develop bird habitat on zoo grounds, field stations, and in the communities they serve. They promote and sell bird-friendly coffee in their gift shops. Many zoos participate in citizen and community science through migratory bird tracking stations, banding efforts, national bird counts, and Lights Out programmes on and off zoo property. These institutions use and promote wildlife-friendly pest control, including eliminating harmful compounds like neonicotinoids.

Recently, zoos and aquariums began addressing the sensitive issue of reducing the devastating impact of roaming cats on bird mortality through messaging and exhibits featuring “catios”. Not only do they practice what they preach, but zoos and aquariums engage visitors to do the same, including through celebrations of International Migratory Bird Day. Zoos and aquariums also help songbirds by working with animal rehabilitation centers by sharing husbandry expertise and housing non-releasable birds.

Songbirds are trapped and traded in North America despite laws like the Migratory Bird Treaty Act (MBTA) in the United States, which generally prohibit such activities. There are currently 1,026 birds covered by the MBTA, including resident and neotropical migrants that spend part of their annual cycle in the United States or its Territories. Trade in live specimens, eggs, feathers, and nests is covered by the law. Songbird trade in North America is not entirely prohibited; for example, there is legal collection and trade in Mexico. Thus, species that are completely protected in one country may be subject to exploitation in other countries in their migratory route. Zoos and aquariums are lending their resources to reduce songbird trafficking. They assist law enforcement efforts by housing seized specimens during litigation or assisting with placement of non-releasable birds.

AZA SAFE (Saving Animals from Extinction): North American Songbirds is a collaborative effort of 30 member institutions working to identify the species involved in trade, determine the extent of the trade, and assess trade trends in North America. SAFE: North American Songbirds is coordinating with the U.S. Fish and Wildlife Service Office of Law Enforcement and other partners to: 1) establish a mechanism for placement of seized birds, and 2) produce a toolbox of educational material for use by zoos and aquariums for targeted science-based messaging.

Further information
SAFE North American Songbirds Action Plan 2020-2023
https://assets.speakcdn.com/assets/2332/north_american_songbird_safe_action_plan_final.pdf

Songbirds Ex-situ Management in Zoos

By S. Sunny Nelson (Hope B. McCormick Curator of Birds, Lincoln Park Zoo)

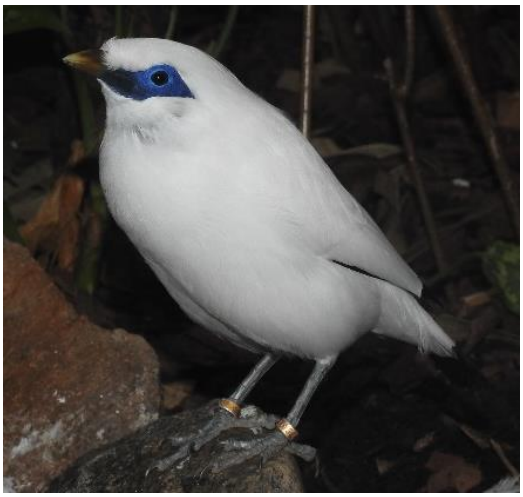
In order for accredited zoos and aquariums to share our vision and mission to inspire, educate, provide excellent animal care, and support conservation, we must jointly maintain sustainable and viable populations of species within our care. This is true for any accrediting umbrella organization for zoological institutions, whether that be for the largest, such as the Association of Zoos and Aquariums (AZA) and European Association of Zoos and aquarium (EAZA), or other regional associations (see table 11 in main document). A critical component of that process requires collaboration and cooperation within and across these member organizations. For the most part, gone are the days of collecting animals from the wild to display in our facilities. Today, modern zoos and aquariums rely on each other in partnership, sharing expertise and experience to successfully manage a variety of species.

This behind-the-scenes collaboration requires various individuals' knowledge, skills, and commitment by various individuals to manage coordinated ex-situ populations effectively. Within any institution, animal care staff provide the day-to-day expertise in animal care and husbandry necessary to keep individual animals healthy and promote positive welfare. Registrars or animal records managers ensure that individual and organizational records are maintained for regulatory and historical purposes. Curators, zoological managers, and collections managers are responsible for identifying appropriate species for ex situ management by developing species or collection plans and ensuring individual animals can thrive with proper nutrition, veterinary care, and husbandry considerations.

Beyond our individual institution planning, there is a reliance on other experts to help achieve institutional goals and to sustain populations across our associations. Taxon Advisory Groups (TAGs) provide a structure and framework to organize ex situ programmes on specific taxonomical groups they govern. They are comprised of experts who work together to support cooperation of animal programmes in various ways and help guarantee species are sustainable in zoos and aquariums. TAGs work in collaboration with individual programme leaders or breeding programme coordinators and studbook keepers who organize vital records, such as births, hatches, and transfers of regional or even global ex-situ populations. This intricate weaving of knowledge, expertise, and analysis culminates into a regional collection plan (RCP). These plans identify species that are recommended or not recommended for ex-situ management by considering variables such as the species' husbandry needs, the available space to house individuals, institutional interest in maintaining the species, and conservation messaging coupled with global conservation priorities. Assessing the multiple songbird species housed across multiple facilities can be challenging, as conservation priorities and threats to many species' wild counterparts shift and change, and since RCPs are assessed and reviewed over time as populations or needs change. This cooperation now extends more broadly to inter-regional cooperation. As such, more information and knowledge sharing will be needed to identify priority species and conservation opportunities in the future. Information continues to be shared through husbandry guidelines, protocols, and publications. Joint TAG meetings under the auspice of the World Association of Zoos and Aquaria (WAZA) facilitate an exchange among experts from various regional zoo associations, encouraging complementation of efforts and increasingly introducing formal cooperation between regional ex-situ species management on a global level, as is the case with a Global Species Management Plan (GSMP). Historically, species information or knowledge was left to

institutions or individuals to collect and report, frequently leading to gaps in knowledge. Today, shared record-keeping systems, such as Species360/ZIMS, allow data to be easily shared and to be readily available for use by members, contributing to our ability to utilize data to improve the management and care of individual animals and species in our collections.

For passerines in ex-situ management, cooperation and collaboration are vital. Songbirds make up the largest order of birds and are extremely diverse in species biology and, therefore, in management needs. AZA's passerine TAG currently manages approximately 30 SSPs, including critically endangered species like the Bali Myna *Leucopsar rothschildi* and Blue-crowned Laughingthrush *Garrulax courtoisi*, while also monitoring many other passerine species. Some of the TAG's goals include promoting excellence in husbandry and management, identifying conservation priorities, creating connections between ex-situ management and in-situ conservation, and maintaining sustainable populations for key species over time through studbooks and SSPs, identified through the regional collection planning process. That is no easy task with challenges as varied as the species of songbirds are. Songbirds are generally small with relatively short generation spans. Whereas the overall space needed may be small compared to large mammals, a large number of individuals and continuous breeding success are required to ensure the population's demographic stability. Some species may be difficult to breed, making it challenging to maintain a healthy genetically and demographically stable population long enough to establish and improve husbandry expertise in multiple facilities. Space constraints, competition with other species, priorities, and budget limitations may impede the breeding success of a species or can result in the need to limit the number of offspring that can be produced. At facilities without a taxa-specific interest in songbirds, there is sometimes erosion of husbandry knowledge over time.



Moving forward, collaboration between regional TAGs will be essential in assessing species for ex-situ management and then creating plans to sustain those populations in the future. This cooperation can afford the programme leaders and coordinators the ability to capitalize on expertise, experience, and even space outside regional constraints. While the Blue-crowned Laughingthrush is the first songbird species to be managed formally under this global framework, it will likely not be the last as global efforts to manage and conserve songbirds expand and grow.

Asian Fairy Bluebird *Irena puella* is an Asian songbird held in AZA and cooperatively managed as an SSP. It is a sexually dimorphic species with remarkable plumage and the ability to be managed in various habitats. While the IUCN status lists the species as Least Concern, the wild population may be declining due to overconsumption and reduced habitat. And while it is a species that has been in AZA facilities for several decades, unlike the Bali Myna (see box 16 in main document), the population has not met the target population size set by the TAG's RCP in recent years. There can be various potential causes for this lack of growth, from a

limited interest in maintaining the species to competition for space with other Asian species that could occupy the same habitat or ecosystem, or even a lack of husbandry knowledge or focus. At approximately 50 birds currently living in AZA facilities, a significant increase in breeding and offspring survival will be needed to ensure the AZA population does not continue to decline over the next decade. And while the captive population is not an assurance population for a formal reintroduction program, it is another species held in various zoos that can amplify and tell the story of threats that Asian songbirds face in the wild.

Images: Bali Myna and Fairy Bluebird by Simon Bruslund

Further information

AZA Species Survival Plans https://www.aza.org/species-survival-plan-programs

EAZA Ex-Situ Programmes https://www.eaza.net/conservation/programmes/

PAAZAB African Conservation Programme & Studbooks https://www.zoosafrica.com/2013-01-29-13-03-35/population-sustainability.html

SEAZA Species Management http://www.seaza.asia/species-management/

WAZA International Studbooks https://www.waza.org/priorities/conservation/international-studbooks/

ZAA Species Programmes https://www.zooaquarium.org.au/public/Public/Conservation/Species-Programmes.aspx