

## CONSERVATION UPDATE

# Conservation breeding and the most threatened (song)birds in Asia—ten years on

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## The ever-deepening Indonesian songbird crisis

Ten years ago, as the extent of the impact of trade in birds across Indonesia was coming to light, *BirdingASIA* reported on the response of the zoo community to a situation in which it was suddenly easier to find certain species in captivity than in the wild (Collar *et al.* 2012). That report began with an outline of the different levels of urgency that individual species occupy and hence the degree of importance to attach to their management and husbandry in captivity; this simple categorisation of priorities was duly expanded into a comprehensive list of species not just from Indonesia (and not just songbirds) for which *ex situ* interventions would be most justified in conservation terms (Collar & Butchart 2014). Even so, the focus on Indonesia and its songbirds only intensified during the 2010s, in response to ever-increasing evidence of the plight of ever-increasing numbers of species (see Sykes 2017). The number of species involved is, admittedly, in part a reflection of considerable upheaval in taxonomic judgement, but more importantly it is a product of the remarkable intensity with which the status of songbirds (which comprised 84% of bird confiscations in Indonesia in the 2010s: Indraswari *et al.* 2020) has been scrutinised in the past decade under various initiatives and programmes.

How serious the Asian songbird crisis is can be gauged from various pieces of evidence and evidence-based conjecture. ‘When our 1 km transect surveys in the forest found only seven passerine species, whilst our observations in local homes found 18’, wrote Iqbal *et al.* (2020b), ‘it is clear that finding lower montane forest birds in South Sumatra is easier in local homes than in the forest itself’. Simultaneously a study of bird-keeping in Java led to the speculation that there might be more birds in captivity on the island than there are in the wild (Marshall *et al.* 2020a). If this extraordinary idea is right, a major contribution to the circumstance is being made by the Javan Pied Starling *Gracupica jalla*, which is—as far as anyone knows—extinct in the wild and yet widely available in markets and bird shops across Java (van Balen & Collar 2021, Nijman *et al.* 2021a), with no fewer than 1,144,000 individuals estimated to be held in the island’s households (Marshall *et al.*

2020a). There is no other bird species on the planet in such a paradoxical situation, rendered all the more disturbing by the fact that there is no recovery plan or programme for it beyond what private initiatives are willing to attempt (see below). Indeed, as an indication of just how constrained the authorities are, within weeks of placing the Javan Pied Starling on a list of protected species in 2018 the Indonesian government removed it in response to fierce lobbying from the country’s bird traders (Chng *et al.* 2018b; see also Leupen & Shepherd 2018).

Other evidence is no less alarming. As already reported from the West Sumatran (Barusan) Islands (Eaton *et al.* 2015), songbird species on small islands have disappeared in the blink of an evolutionary eye: the endemic form *barbouri* of White-rumped Shama *Copsychus malabaricus* was ‘reasonably common’ on Maratua in 2010, but ‘drastically reduced’ in 2011 and unfindable in 2016 (Burner *et al.* 2018); likewise the endemic form *baweanus* of Black-headed Bulbul *Brachypodius atriceps* was ‘the most common forest bird’ on Bawean in 2011 but unfindable in 2016 (Burner *et al.* 2018). Online traders brazenly advertise Critically Endangered Black-winged Mynas *Acridotheres melanopterus* as coming from Baluran National Park, the last place on earth with a reasonable if small chance of preserving a wild population of the species (Bruslund *et al.* 2021, Squires *et al.* 2022). In Sumatra the median maximum distance trappers go into the forest each day is 5 km so, since almost half the island’s remaining forests are within 5 km of a road, even seemingly ‘remote’ bird populations are being depleted on an industrial scale (Harris *et al.* 2017). Again in Sumatra, comparison of bird flock data taken two decades apart found that 49 species known to be favoured by trappers in 1997 had significantly declined by 2016, degrading the structure of the flocks and very possibly compromising their ecological function and indeed the survival of the remaining species (Marthy & Farine 2018).

These important but depressing contributions from the field have been matched by a flurry of studies of markets, the species traded in them, and the people who buy and sell them. A team led by

Vincent Nijman at Oxford Brookes University has shown how the songbird trade (1) may jeopardise wild populations of protected species like Black-winged Myna even if most birds put up for sale are captive-bred (Nijman *et al.* 2018); (2) can badly compromise populations of unprotected species like Asian Fairy-bluebird *Irena puella* and Javan Crocias *Laniellus albonotatus* (Nijman *et al.* 2019, 2021b); and (3) facilitates biological alien invasions, most notably involving Javan Mynas *Acridotheres javanicus* (Nijman *et al.* 2021c). A team led by Stuart Marsden at Manchester Metropolitan University (MMU) has (1) estimated that a third of Java's 36 million households keep 66–84 million cage-birds (Marshall *et al.* 2020a), (2) parsed bird-keepers into 'hobbyists' (pet-owners), 'contestants' (song competitors) and 'breeders' (entrepreneurs), each with particular traits through which to influence their future behaviour (Marshall *et al.* 2020b), and (3) judged that public opinion against keeping wild-caught birds could be harnessed to divert demand towards captive-bred stock (Marshall *et al.* 2021, in prep.). Even so, researchers in Kalimantan have found disconcerting evidence that establishments there purporting to be breeding birds in captivity 'appeared to be simply a front' (Rentschlar *et al.* 2018).

This last revelation points to an issue that divides opinion over the conservation response to Indonesia's super-exploitation of wild songbirds. If it is indisputable that captive breeding is used quite widely at least in Java to produce stock to help meet public demand, it is equally indisputable that some institutions and individuals use the 'captive-bred' label to disguise and 'launder' wild-caught birds. The first activity is legal if licensed, the second obviously not—and is therefore clandestine and untrackable. What is the risk that espousing large-scale captive breeding as the solution to the songbird crisis will just make it easier for traders to exploit wild-caught birds? Conservationists find the issue frustrating because official involvement is so weak ('almost nonexistent' in Kalimantan: Rentschlar *et al.* 2018). Consequently, the enforcing of laws on wildlife trade in Indonesia is increasingly being posited as a precondition for NGOs to engage with communities and consumers and try to resolve the songbird crisis equitably and constructively (e.g. Gunawan *et al.* 2017, Rentschlar *et al.* 2018, Miller *et al.* 2019, Indraswari *et al.* 2020, Setiyani & Ahmadi 2020, Bruslund *et al.* 2022, Nijman *et al.* 2022).

But for a final demonstration of the scale of the crisis in Indonesia it is worth considering the growth in the number of songbird taxa that are now priorities for possible 'conservation breeding'. In 2015, at the first Asian Songbird Crisis Summit,

12 species were identified for immediate action ('Tier 1') (listed in Sykes 2017). In 2017, following the second summit, with taxonomies revised to align better with Eaton *et al.* (2016) and del Hoyo & Collar (2016), the list rose to 17. And now, in 2022, the most recent assessment by the IUCN Asian Songbird Trade Specialist Group (ASTSG), founded in 2017 (see Shepherd & Cassey 2017, Sykes 2017, Chng *et al.* 2019), the list has more than doubled to 43 (S. C. L. Chng *in litt.* 2022). While this is in good part owing to the separation out of taxa that need to be treated independently whether they are regarded as species or subspecies (notably 12 in the White-rumped Shama complex), it still represents an immense challenge. So how is the conservation community—and in particular the conservation breeding community—responding to it?

### **The conservation breeding response: institutions**

Irrespective of its widespread illegality, the bird trade in Indonesia represents a significant component of the national economy; so any project aiming to influence it for the benefit of wild bird populations will need to be epic in scale. What *can* be done in the immediate interests of conservation is to attempt to preserve individual species considered most at risk from trade, not so much through *in situ* conservation, which is another epic challenge in itself, as through *ex situ* interventions, which are simpler steps to buy time (and a degree of peace of mind) while the bigger issues of population restoration and protection are considered. Simply acquiring birds already in trade and placing them in institutions which can care for them and breed them, with a view to returning their descendants to the wild one day, represents the most basic form of conservation insurance. Unsurprisingly, therefore, the response to the Asian Songbird Crisis in the past decade has largely been led and funded by institutions with major *ex situ* agendas, otherwise known as zoos.

Starting as an informal group of interested bird curators (with a couple of ageing conservationists thrown in), most of them with long experience of breeding and negotiating over the Bali Myna *Leucopsar rothschildi*, the movement has always focused on the practicalities of managing terrifyingly rare birds. Known first (in 2011) as TSAWG (Threatened Songbirds of Asia Working Group) and then TASA (Threatened Asian Songbird Alliance), and with vital early support to breeding centres from the Segré Foundation initially via ZGAP (Zoologische Gesellschaft für Arten- und Populationsschutz), the group steadily developed an identity and functionality under the patronage of the European Association of Zoos and Aquaria

(EAZA) (Collar *et al.* 2012, Sykes 2017). This arrangement opened the opportunity for an EAZA fundraising initiative, and under the indefatigable leadership of group members Simon Bruslund and Tomas Ouhel the ‘Silent Forest’ campaign (2017–2019), involving many zoos across Europe, raised well over €500,000 to spend on songbird conservation projects in Indonesia (see Bruslund *et al.* 2020). TASA itself has become the ‘Silent Forest Group’ (<https://www.silentforest.eu/>) and helped to oversee the process of choosing how this small conservation fortune might be spent.

Two other major contributors to this emerging programme bear mention here. Chester Zoo, UK, provided over £350,000 to CCBC (see below) in the years 2011–2021 along with technical husbandry and veterinary support, with Roger Wilkinson and Andrew Owen playing key roles. It has also put £75,000 into the MMU research outlined above (and in the final paragraph) plus £20,000 towards Bali Myna studies. Mandai Nature (previously called Wildlife Reserves Singapore)—the umbrella organisation of Singapore Zoo, Jurong Bird Park and Singapore River Safari, and dedicated to wildlife conservation in South-East Asia—has independently contributed significant staff time and finances to the conservation breeding initiatives that have been supported in the past decade and particularly in the past five years. Indeed, it hatched and hosted the pioneering Asian Songbird Summits of 2015 and 2017 (see Sykes 2017) at which so much of the work outlined below was planned and promoted.

Five conservation breeding initiatives, all funded in part by Silent Forest, with Mandai Nature, Chester Zoo, Vogelpark Marlow and ZGAP playing important roles, are profiled below. These are not the only efforts—there are programmes for individual species at Bandung Zoo, Taman Safari Indonesia and Batu Secret Zoo—but they represent major not-for-profit conservation enterprises that need to be better known and understood. Scientific names of species are given in the section following this.

#### **Cikananga Conservation Breeding Center (CCBC), West Java**

The Cikananga Wildlife Center (CWC) was founded in 2001 as a rescue centre for confiscated and injured wild animals. CCBC developed as a component of CWC with a particular remit to breed threatened species. Its programme began in 2009 with the Black-winged Myna and Sumatran Laughingthrush, in partnership with ZGAP and with support from, among others, Waddesdon Manor Aviary in the UK. Then in 2011, as a result of concerns raised at the first meeting of TSAWG,

it began to search for, assemble and husband captive individual Javan Green Magpies and Rufous-fronted Laughingthrushes, although this complement of four songbird species took the institution to carrying capacity. With Chester Zoo’s strong support CCBC pioneered the breeding of the species in its care (e.g. Owen 2017, 2019) and the first trial reintroductions of Black-winged Mynas (see under that species below). The holdings for each taxon at the end of 2021 (as given in Anon. 2021) are listed in the individual accounts below. (Sources in this paragraph are <https://www.silentforest.eu>, Owen *et al.* 2014, Anon. 2021, Owen 2021, Wirth 2021.)

#### **Prigen Conservation Breeding Ark (PCBA), East Java**

Following the 2015 Asian Songbird Crisis Summit in Singapore, the potential value of a new centre in Java focusing on threatened species became sharply apparent. Taman Safari Indonesia and its new conservation wing the KASI Foundation, in partnership with ZGAP, committed to the creation of such a centre at Prigen, under Gunung Arjuno between Surabaya and Malang. Vogelpark Marlow quickly became a key long-term funding partner, and multiple other donors, both international and increasingly Indonesian, have given support. The project only began in 2017 but already an extensive suite of over 240 aviaries and enclosures has been constructed (Plate 1), and PCBA now houses a remarkably broad swathe of the taxa on the ASTSG priority list. The newly completed ‘Augsburg complex’ has been designed for breeding ‘difficult’ species, including those which require great seclusion and those which, like the Asian Pied Starling, are speculated to do well in ‘colonies’. The holdings for each taxon at the end of 2021 (as given in Menner 2021) are listed in the individual accounts below. (Sources in this paragraph: <https://prigenark.com>, <https://www.silentforest.eu>, Menner 2021.)

#### **Sumatra Songbird Sanctuary, North Sumatra**

With the redevelopment of the facilities at Ian Singleton’s Orangutan Haven near Medan (a project of Yayasan Ekosistem Lestari and the Swiss-based PanEco Foundation), the opportunity arose to add 24 aviaries to maintain populations of Sumatran Laughingthrush, Sumatran Mesia, Nias Hill Myna and Barusan White-rumped Shama (S. Bruslund *in litt.*), and Silent Forest has set aside €69,000 for the project. However, the coronavirus pandemic greatly delayed progress on the construction work; the Jersey-based Durrell Wildlife Conservation Trust is providing detailed guidance (<https://www.silentforest.eu>).



**Plate 1.** Aerial view of PCBA, March 2022.

### Magiao Breeding Centre (MBC), Nias Island

The Nias Heritage Museum, in Gunungsitoli on Nias (the largest of the Barusan or West Sumatran Islands), was founded in 1991 as a means to preserve and promote the distinctive human culture of the island, but its work now extends to research, education, sustainable tourism, environmental awareness and natural heritage. Driven by Simon Bruslund, then at Heidelberg Zoo (now Vogelpark Marlow), an agreement was reached in 2017 to build an off-exhibit breeding and holding facility for the Nias Hill Myna (local name *Magiao*), for which a ‘Save Magiao’ pride campaign has been launched (*Magiao Newsletters* 1 and 2, 2017; Plate 2).

### EcosystemImpact Foundation, Simeulue Island

The main aim of EcosystemImpact (EI) is to preserve key species (birds and turtles) *in situ* in the complex of relatively intact islands north of Nias, namely Simeulue, where the organisation is based, and the smaller groups formed by Salaut 40 km to the north-west, Babi and Lasia 30 km to the south-east and the Banyak archipelago (in particular Bangkaru) 50 km east of Babi. All these islands have been targeted by highly organised poaching teams, and all except Simeulue have turtle beaches that EI patrols. Of the songbirds,

Simeulue hosts (or hosted) two highly threatened endemic taxa, the hill myna *Gracula religiosa miotera* and the shama *Copsychus malabaricus hypolizus*. Babi (uninhabited and with intact forest) hosts the hill myna *Gracula robusta* (shared with Nias and Bangkaru) and, with nearby Lasia, possibly still the endemic shama *C. m. opisthochrus*.

**Plate 2.** Schoolgirls learning about the Nias Hill Myna *Gracula robusta* in 2019.



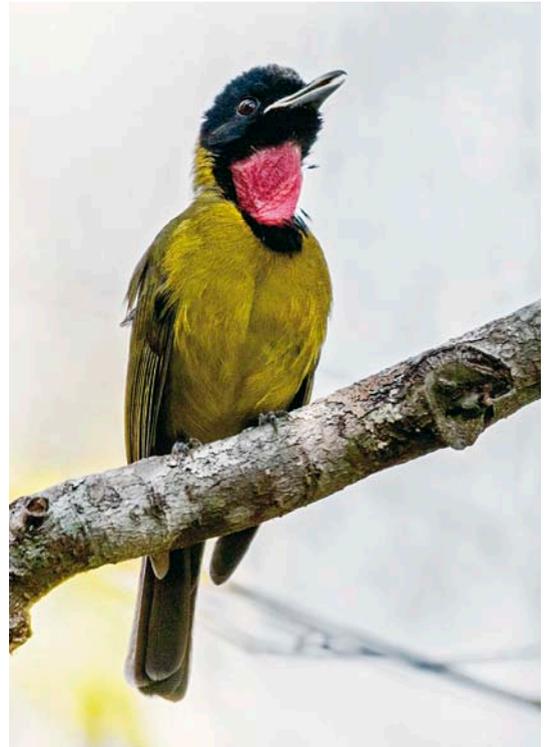
Bangkaru hosts *G. robusta* and an unidentified form of the shama. Within the security of the Mahi-Mahi Surf Resort (on the west coast of Simeulue on a latitude with the capital Sinabang)—and with the support of Silent Forest, Vogelpark Marlow, Copenhagen Zoo and Mandai Nature—EI has built aviaries for a small population of the endemic shama (*hypolizus*), acquired by purchase from local bird-keepers, and has plans to build similar facilities for the endemic hill myna (*miotera*). EI is currently developing a plan to use the shamas to repopulate the inshore island of Linggam off north-west Simeulue. (Sources in this paragraph: Amey 2021, <https://www.silentforest.eu>, <https://www.ecosystemimpact.com>)

### The conservation breeding response: ASTSG priority taxa (Tier 1)

The Tier 1 list separates individual taxa. For simplicity and without prejudice we collect taxa commonly considered subspecies under the commonly considered parent species, as treated in BirdLife International (2022), where IUCN Red List categories are also given, with taxonomic changes highlighted where appropriate. To the extent possible we try to avoid repeating information and sources in Collar *et al.* (2012), Eaton *et al.* (2015) and Sykes (2017). Holdings of birds in conservation breeding facilities are shown first as the total number followed in brackets by three numbers separated by a stop indicating, in order, number of male, female and unsexed birds. Data on holdings at CCBC and PCBA at the end of 2021 derive from Anon. (2021) and Menner (2021) respectively; additional data on holdings elsewhere are from Species 360 (2022). Initials EEP = EAZA Ex-situ Programme; JKM = J. K. Menner *in litt.*; SB = S. Bruslund *in litt.*; TAG = Taxon Advisory Group.

#### Bare-throated Whistler *Pachycephala nudigula* (LC)

One of only two species in Tier 1 without a Sundaic distribution, this whistler (Plate 3) is confined to the Nusa Tenggara islands of Flores (nominate *nudigula*) and Sumbawa (form *ilsa*), where it is (or was) locally common in the lower and middle storeys of forest above 1,200 m (Eaton *et al.* 2021). It has, at least since the mid-2010s, become highly prized by bird-fanciers for its loud, variable song, but is traded by specialist dealers using social media rather than in physical markets: before the 2020 pandemic, hundreds were being advertised on Java each week, but the birds were also being offered on all main Indonesian islands, with prices jumping from 450,000 IDR (US\$37) in 2014 to 900,000–3 million IDR (US\$65–215) in 2019,



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**Plate 3.** Bare-throated Whistler *Pachycephala nudigula*, Flores, July 2015.

suggesting an exponentially growing imbalance between demand and supply (JKM). There is no information on long-term husbandry in the species, which apparently survives relatively poorly in captivity, so the first steps are to acquire a few pairs to learn more about it. At the end of 2021 PCBA held 1 (0.0.1).

#### Crested Jay/Jay Shrike *Platylophus galericulatus* (NT)

Crested Jay is a ‘master bird’, having a distinctive alarm call—a ‘machine-gun-like loud, startling, rapid rattle’ (Eaton *et al.* 2021)—which keepers of White-rumped Shamas want their birds to mimic in singing contests; even though most keepers use recorded sound rather than living birds, some keepers insist on the latter (JKM). ASTSG is concerned with the form *galericulatus* endemic to Java, which has been so heavily persecuted by trappers that by the mid-2010s it had largely disappeared not only from the wild but also from bird markets, and was consequently being substituted by the form *coronatus* from Sumatra and Borneo (Eaton *et al.* 2015). In a recent survey of 12 mountains in West and Central Java the species was recorded at only five sites on four mountains (Marsden *et al.* in review). Iris colour



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**Plate 4.** Crested Jay *Platylophus galericulatus* of the nominate taxon that is endemic to Java. Note the pale blue iris, apparently unique to this subspecies. Prigen Conservation Breeding Ark, East Java, May 2018.

in this species seems to have gone unnoticed, and checks are needed to confirm the stability of the character, but it appears that all nominate (Javan) birds have blue eyes (Plate 4) in strong contrast to other forms, in which the eyes are brown. This may bear on the taxonomic rank of the highly threatened Javan population.

A number of zoos in Europe and the USA kept the species in the past. In 1994 a pair of nominate *galericulatus* secretly—so no nesting data were collected—raised three out of five chicks they hatched in a large, densely planted aviary at San Diego Zoo, USA, but otherwise all efforts to breed the species in captivity to date have failed (RW). In April 2022 PCBA held 1 (0.0.1) (nominate).

#### Javan Green Magpie *Cissa thalassina* (CR)

Irrespective of its stunning appearance (Plate 5), this corvid has high status among ‘contestants’ and ‘breeders’ as a ‘master bird’, because its vocabulary of odd sounds and mimicry can be acquired by songbirds reared in its company as part of their training for singing competitions (Yanto *et al.* 2022). It is in consequence in high demand, and a recent survey of 12 mountains in West and Central Java produced no records (Devenish *et al.* 2021, Marsden *et al.* in review),

but subsequent evidence from this and related projects is currently being assessed.

When the true taxonomic and conservation status of this species—last undisputedly seen in the wild in 2006—became apparent just before the first meeting of TSAWG in 2011, the meeting mandated its host, Chester Zoo, to approach CCBC to acquire specimens from bird-keepers on Java as a matter of urgency. Eventually 13 birds were assembled and the first breeding began in January 2013 (Owen *et al.* 2014), with best practice husbandry guidelines duly following (Owen 2019). By April 2022 CCBC held 40 birds (16.23.0), while PCBA held 23 (6.12.5), with the majority in both institutions being born as part of the breeding programme; moreover, sharing the responsibility Chester Zoo held 13 (6.7.0), Jersey Zoo 5 (3.2.0), London Zoo 1 (0.1.0), Newquay Zoo 2 (1.1.0), Prague Zoo 5 (3.2.0), Taman Safari in Bogor 5 (3.2.0) and Batu Secret Zoo in East Java 5 (2.2.1)—almost 100 birds in total.

Silent Forest is funding a new drive by CCBC, MMU and Chester Zoo to investigate trade, identify potential reintroduction sites and engage with local communities (Yanto *et al.* 2022), and OBC has also supported important new surveys to follow up promising leads.

**Horsfield's Bushlark *Mirafra javanica* (LC)**

ASTSG is concerned with the endemic forms *javanica* in Java and *parva* in Nusa Tenggara (except Timor, where *timorensis* replaces it). This species was the sixth commonest bird for sale in Jakarta's bird markets in a survey in 2014 (Chng *et al.* 2015), and eighth commonest in a survey of Sukahaji market, Bandung, on 4 September 2016 (Chng *et al.* 2016). The nominate form *javanica* was omitted as a threatened taxon in Eaton *et al.* (2015), but was described as rare in Eaton *et al.* (2016) and mapped as having historical records only in Eaton *et al.* (2021), where trapping was blamed for its implied extinction. Captive birds command extremely high prices, comparable to those paid for Straw-headed Bulbuls (SB, JKM). According to one anonymous 'lark fancier', Javan birds have a very distinct song but are no longer available from the wild; the vocally inferior *parva* is now being traded in increasing numbers as a substitute (SB). The weak differences in plumage and unspecified differences in voice (if these have not been introduced by vocal training) are such that, particularly in captive birds, discriminating taxa may be a serious challenge. The species is not currently held in any conservation breeding institution.

**Brown-cheeked Bulbul *Alophoixus bres* (EN)**

Following taxonomic revision the species referenced here is endemic to Java and Bali (Eaton *et al.* 2016, del Hoyo & Collar 2016). Persecution of the broader species (including Grey-cheeked Bulbul *A. tephrogenys* of Sumatra, Borneo and mainland South-East Asia) began when a substitute was needed for the increasingly rare and expensive Straw-headed Bulbul, which shared the same range (Eaton *et al.* 2015). Once widespread and common in all types of forest and forest patches across Java and Bali, *A. bres* (Plate 6) has become rare and difficult to locate in a very short time, indicating a population decline of 50–79% in the past 10 years, almost entirely owing to trapping (BirdLife International 2022). Birds can change hands for as much as US\$150 for a 'good' singer, with *A. bres* more expensive than *A. tephrogenys* (JKM). The species is not currently held in any conservation breeding institution.

**Straw-headed Bulbul *Pycnonotus zeylanicus* (CR)**

Brief details in Eaton *et al.* (2015) of the deteriorating status of this hugely expensive and culturally revered songster helped move it from IUCN Vulnerable to Endangered in 2016, but within two years it was uplisted further to Critically

**Plate 5.** Javan Green Magpie *Cissa thalassina*, CCBC, March 2016.





SIMON BRUSLUND

**Plate 6.** Brown-cheeked Bulbul *Alophoixus bres* moulting in a silent forest of bars, Bandung, Java, November 2017.

**Plate 7.** Sangkar White-eye *Zosterops melanurus*, Java, August 2007.



JAMES EATON

Endangered, based on accumulating evidence of persecution, declines and extirpations (Bergin *et al.* 2018, Leupen & Shepherd 2018, Rentschlar *et al.* 2018, Chiok *et al.* 2019). Singapore remains now the best hope for the persistence of the species in the wild (Yong *et al.* 2018), with a recent estimate of  $573 \pm 185$  individuals nationwide representing '22.9–57.3% of the global wild population' (Chiok *et al.* 2021). A newly formed Singapore Straw-headed Bulbul Working Group, managed jointly by the National Parks Board and Nature Society, aims to understand and promote the ecology and conservation needs of the species and to establish an *ex situ* strategy for it (A. Jain *in litt.*). Jurong Bird Park, which has produced best practice husbandry guidelines for the species (Kumar 2018), currently holds 19 (9.7.3), including three breeding pairs; and under an EEP birds will be transferred to Chester and Jersey Zoos (A. Tritto *in litt.*). In April 2022 PCBA held 8 (4.4.0).

#### Sangkar White-eye *Zosterops melanurus* (VU)

The split of this species (Plate 7) as a Java-and-Bali endemic was asserted to have 'important conservation implications as this taxonomic treatment renders it the most heavily trapped bird species on Earth' (Lim *et al.* 2019). However, two years later it proves to have a subspecies *sumatranus* in Sumatra that is 'common in forest' and mapped as present throughout the island's mountains (Eaton *et al.* 2021). A formal explanation is presumably in preparation, but observations in Sumatra indicate that birds are trapped there too, justifying their Vulnerable status (J. A. Eaton *in litt.*). The species is not currently held in any conservation breeding institution.

#### Javan White-eye *Zosterops flavus* (EN)

In the mid-2010s, when this oddly distributed bird (southern coastal Kalimantan, northern coastal Java) was Near Threatened, trapping was not listed as a threat until Eaton *et al.* (2015) furnished some ominous evidence. Now trapping is by far the most serious threat, albeit with major woodland and mangrove loss also, and the species has disappeared from a number of sites where it was once common (BirdLife International 2022). Resurvey in 2018–2019 of sites visited in 2006–2009 found an 84% decline in overall numbers (van Balen *et al.* *in press*).

At the end of 2021 PCBA held 38 (7.6.25), roughly half of which were hatched there.

#### Wangi-wangi White-eye *Zosterops* sp.

This unnamed species has been illustrated in Eaton *et al.* (2016, 2021) and all-but formally described in O'Connell *et al.* (2019). It is confined to the island

of Wangi-wangi in the Tukangbesi ('Wakatobi') Islands south-east of Buton off the coast of Sulawesi, and was judged 'relatively common' after being netted repeatedly in scrub and forest edge in fieldwork up to 2017 (O'Connell *et al.* 2019). Subsequent visitors have found it less common and only in forest patches (Menner 2020b, A. Reuleaux *in litt.*), prompting the suspicion that trappers might have visited the island in the intervening period. This possibility is supported by the sudden appearance of this species in trade, following the opening-up of Wangi-wangi to tourism from Java (Menner 2020a, O'Connell *et al.* 2021). Having detected this trade Jochen Menner moved with admirable alacrity to procure and build an insurance population, and at the end of 2021 PCBA held 26 (7.16.3), of which almost 50% were hatched there.

PCBA and its parent organisations KASI/Taman Safari have recently signed an agreement with Wakatobi National Park, which encompasses Wangi-wangi and the three other main islands in the group, to strengthen protection for the remaining habitat for the white-eye and the last population of the endemic Yellow-crested Cockatoo *Cacatua sulphurea paulandrewi* (Menner 2021).

#### Chestnut-backed Scimitar-babbler *Pomatorhinus montanus* (LC)

ASTSG is concerned with the forms *montanus* and *ottolanderi* on Java (treated together as a single full species, Javan Scimitar-babbler (Plate 8), in Eaton *et al.* 2016, 2021). They were not identified as threatened taxa in Eaton *et al.* (2015) and were merely deemed 'uncommon' in Eaton *et al.* (2016), but five years later they were 'locally now rare' (Eaton *et al.* 2021). This perceived change in status is abrupt, yet market surveys (e.g. Chng *et al.* 2015, 2016, 2018, Iskandar *et al.* 2019) do not show large numbers or suggest a sudden surge in the trade. Nevertheless, the species proved to be unexpectedly

**Plate 8.** Chestnut-backed (Javan) Scimitar-babbler  
*Pomatorhinus montanus*, Java, November 2012.



YANN MUZIKKA

rare in recent fieldwork on Gunung Slamet, possibly owing to trapping pressure (Devenish *et al.* 2021) and at only 3/37 sites in a total of 4/11 other mountains surveyed to the west of Slamet (Marsden *et al.* in review). Ironically an introduced population is now common on Gunung Rinjani on Lombok (Eaton *et al.* 2021). The species was kept in European zoos in the past, and two nominate *montanus* currently live at Vogelpark Walsrode, Germany, descendants of a successful breeding endeavour (Rinke & Jensen 2000), but no birds are held in any Indonesian conservation breeding facilities.

#### Rufous-fronted Laughingthrush *Garrulax rufifrons* (CR)

This species consists of two distinct forms, *rufifrons* in West Java and *slamatensis* in Central Java. Simply as a *Garrulax* endemic to Java it was registered as a species of potential concern at the 2011 TSAWG meeting, after which enquiries by CCBC revealed that it had indeed recently become rare in trade, with a ten-fold hike in market price since the start of the century, and only five birds (one, remarkably, *slamatensis*) could be acquired in the two years to early 2013 (Collar & van Balen 2013, Owen *et al.* 2014, Eaton *et al.* 2015, Shepherd *et al.* 2016). Somewhat surprisingly, recent surveys of 12 mountains in West and Central Java found the species at 14 sites on 6 mountains, one of which was Slamet (Marsden *et al.* in review; also Devenish *et al.* 2021). However, birds have remained difficult to find in markets (only c.90 a year: see Nijman *et al.* 2020) and, despite best practice husbandry guidelines (Tritto 2019), difficult to breed in captivity (Ferns 2022), but by April 2022 CCBC held 14 (7.5.2) nominate *rufifrons* and 6 (3.3.0) *slamatensis*, while PCBA held 7 (2.4.1) *rufifrons* and 7 (4.3.0) *slamatensis*. The first-ever captive breeding of *slamatensis* occurred at CCBC in early 2022 (Anon. 2022). Devenish *et al.* (2021) mention 11 specimens of *slamatensis* being acquired from markets by breeding centres, 'five in 2017, and six in 2018', and these presumably found their way to CCBC and PCBA.

#### Sumatran Laughingthrush *Garrulax bicolor* (EN)

Endemic to Sumatra, this species has been heavily persecuted by trade throughout this century; Eaton *et al.* (2015) contrasted a report of 3,000 birds being counted over three months in the markets of Medan, North Sumatra, with a record of a single bird in a nine-month field survey of five mountains in the same province; and Shepherd *et al.* (2016) reported only six areas on Sumatra with sightings since 2000. However, a covert investigation of the six top bird vendors in Medan's Jalan Bintang

market found they traded as many as 2,610 birds in the year March 2015 to February 2016 (Bušina *et al.* 2018). This figure was judged far higher than what could have been estimated by simply counting birds for sale, and further analysis suggested that the numbers involved were ten times greater than what visual inspection would have indicated (Bušina *et al.* 2021). This would certainly help explain why the species was, astonishingly, the tenth most numerous in market surveys in Bali in 2017 (Chng *et al.* 2018). There is also evidence that birds have been reaching Europe in what are judged to be inevitably illegal importations (Heinrich *et al.* 2021).

Four pairs were assembled at CCBC from markets in Java, and by early 2013 these had successfully parent-reared 12 young (Owen *et al.* 2014). By the end of 2021 CCBC held 23 (17.6.0), but breeding was suspended for a review of the programme, which aims ‘to export the remaining individuals to other facilities, either nationally or internationally, to initiate new regional satellite populations’ (Anon. 2021). At the end of 2021 PCBA held 7 (3.4.0). CCBC and PCBA birds are part of an EEP studbook maintained by Andrew Owen, who has produced best practice husbandry guidelines for the species (Owen 2017), and by April 2022 the managed population had increased to 146 individuals (79.65.2) in 34 institutions across two regions (Asia and Europe).

#### Sunda Laughingthrush *Garrulax palliatus* (NT)

ASTSG is concerned with the form *palliatus* in Sumatra, and (in Tier 2) *schistochlamys* in north-central Borneo. The two forms (which make up the entire species) are rather distinct owing to the latter’s grey vs chestnut mantle and back, and less black on the face. The Sumatran form was identified as ‘severely declining’ in the mid-2010s owing to both trade and forest loss (Harris *et al.* 2015). It was then found in *ad hoc* checks on Javan bird markets to be the commonest *Garrulax* (Shepherd *et al.* 2016), but market surveys over 30 years show an inexorable decline from ~50 birds per survey in the 1990s to ~20 in the 2000s and <10 in the 2010s (Leupen *et al.* 2020), while ornithologists report their own and others’ increasing difficulty of finding it in the field (J. A. Eaton *in litt.*). In April 2022 PCBA held 14 (6.4.4) and Prague Zoo 8 (3.5.0).

#### Sumatran Mesia *Leiothrix laurinae* (EN)

The species consists of two forms, dark-eyed *rookmakeri* in northern Sumatra (Aceh) (Plate 9) and pale-eyed nominate *laurinae* in west-central montane Sumatra. While in the mid-2010s *rookmakeri* was still in ‘fairly large numbers in Jakarta markets’ (Plate 10), nominate *laurinae*



SAMUEL PROGIN

Plate 9. Sumatran Mesia *Leiothrix laurinae*, Aceh, August 2016.



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Plate 10. Sumatran Mesia *Leiothrix laurinae* (subspecies *rookmakeri* based on dark irides) for sale in Malang, Java, November 2017.

was assessed as almost vanished, with one sighting in the wild and one in trade since 2008 (Eaton *et al.* 2015). Another study simultaneously identified the latter as ‘severely declining’ owing to both trade and forest loss, and 49 trappers in North Sumatra province interviewed in 2013 reported that ‘daily catches of [*laurinae*] (which was once caught in large numbers according to trappers) have fallen to nearly 0 birds taken per day (only one trapper reported catching this species in 2013)’ (Harris *et al.* 2015, 2017). Nevertheless, the species (presumably subspecies *rookmakeri*) is currently available in some Sumatran markets and is expected to be acquired for conservation breeding at the Sumatra Songbird

Sanctuary (I. Singleton per D. F. Jeggo *in litt.*).

In April 2022 PCBA held 3 (0.0.3) *rookmakeri*.

#### **Javan Pied Starling *Gracupica jalla* (CR)**

A reclassification of this Java-and-Bali endemic as Extinct in the Wild seems to be appropriate, a sad irony when as many as 80,000 birds of this species are sold annually in markets on Java and Bali, from which a captive population of half-a-million has been calculated (Nijman *et al.* 2021), although another analysis, as noted in the Introduction, doubled that estimate to over a million (Marshall *et al.* 2020a). The rapid disappearance of this species in the past four decades is attributable largely to trade but also probably to agricultural pesticides, a factor that any reintroduction will need to consider (van Balen & Collar 2021). Unfortunately, the very large numbers of birds in commercial breeding farms in Java are of little or no use for the longer-term conservation of the species owing to breeders' selection for colour mutations and hybridisation with imported individuals of what in a new taxonomic revision are proposed to be called Thai Pied Starlings *Gracupica floweri* (Baveja *et al.* 2021, RW).

At the request of ASTSG, pure-bred and mutation-free Javan Pied Starlings are being collected together at PCBA while such animals are still available. PCBA has an opportunity to experiment with the establishment of a free-flying population within its extensive and pesticide-free grounds, which might pave the way for similar measures in other secure compounds. The birds breed well in captivity and in April 2022 PCBA held over 50 (JKM). Through its Songbird TAG and with support from Vogelpark Marlow, EAZA is planning an EEP to help with the management of this and other eligible captive populations on Java (SB).

#### **Bali Myna *Leucopsar rothschildi* (CR)**

At risk of extinction from the bird trade many decades before the others on this list, the Bali Myna has already been claimed to have been 'saved' by conservation breeding (Butchart *et al.* 2006), but its Critically Endangered status indicates how precarious its position remains. Nevertheless, the continuing supplementation programme at Bali Barat National Park has over the past decade produced a free-flying population that is steadily colonising anthropogenic quasi-savanna landscapes and making strong use of the many nestboxes that have now been provided, such that 256 birds were counted in 2019 (Yuni *et al.* *in press*, Squires *et al.* submitted). A benign introduction on Nusa Penida by the Friends of National Park Foundation (<https://www.fnpf.org/>) was thought to have failed owing to trapping (see Eaton *et al.*

2015), but following nestbox repairs and deployment a population of some 25 pairs now exists on the island (D. Donato *in litt.* to T. M. Squires). The Begawan Foundation continues to seek to establish a free-flying flock around its headquarters in Sibang, southern Bali (Nijman *et al.* 2017, [www.begawan.life](http://www.begawan.life)). Other (re)introduction initiatives are mooted. Meanwhile, hundreds of birds are held by many zoos around the world involving three regional studbooks, and the iconic status of the species is such that it is unlikely that interest in conservation (or simply captive) breeding will diminish for some time.

#### **Black-winged Myna *Acridotheres melanopterus* (EN)**

This species consists of three distinct forms, nominate *melanopterus* in Java east to the longitude of Surabaya, *tricolor* in the rest of Java and *tertius* in Bali. Modern evidence suggests that *melanopterus* is extinct in the wild (Eaton *et al.* 2021), *tricolor* survives in a potentially viable but small (c.180 birds) and persistently poached population only in Baluran National Park (Bruslund *et al.* 2021, Squires *et al.* 2022; see below), and *tertius* retains 35–100 individuals in and around Bali Barat National Park (BirdLife International 2022). If these numbers are correct, the extraordinary volume of birds sold in Java—some 10,000–15,000 a year, the great majority *melanopterus*—is captive-bred, following the legalisation of commercial breeding in 2013, although the lack of closed rings on most birds (were they therefore bred under licence?) means that wild-caught birds could still be appearing undetected in markets (Nijman *et al.* 2018).

CCBC began work with *melanopterus* in 2008, using 20 founder birds of which seven were confiscations and 13 acquired from Klaten, near Yogyakarta, where a major commercial bird captive-breeding industry is based; and—hole-nesters like starlings being easier to manage than cup-nesters like laughingthrushes—by 2012 200 birds had been bred (Owen *et al.* 2014). These numbers dropped dramatically following a major robbery (see Eaton *et al.* 2015) and several experimental and sadly unsuccessful reintroductions (although the birds bred and might have flourished if not for the trapping they suffered: Owen *et al.* 2014, Eaton *et al.* 2015), but in April 2022 CCBC held 65 (31.32.2) and, after a pause to build new facilities, is aiming to pursue a major breeding programme (Anon. 2021). Batu Secret Zoo in East Java holds 10 (5.3.2) and an unknown number of *tricolor* (A. Tritto *in litt.*). In due course PCBA may acquire and breed *tricolor*.

A free-flying and successfully breeding population of *melanopterus* has been established

within the large, well-protected grounds of Taman Safari in Bogor, following the release of 40 captive-bred birds in 2016 (Plate 11); numbers peaked at over 80 but were halved in a storm in 2019 (BirdLife International 2022, RW), then recovered to at least 58 by December 2020 (Wirth 2021). This population needs close scientific study to improve the evidence base for future reintroductions, which will surely be needed if additional fully protectable sites can be found elsewhere.

For the surviving wild population in Baluran—which, incidentally, is puzzling in that birds there show greyish rumps, tending towards those of *tertius* just across the strait on Bali (NJC pers. obs.)—a suite of *in situ* measures involving ‘habitat restoration and enhancement, elevated protective vigilance, and strong community engagement’ has been proposed (Squires *et al.* 2022), and Copenhagen Zoo, which is a major supporter of the park with dedicated staff on site, has recently won a grant to pursue these ideas plus possible *ex situ* management (SB).



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**Plate 11.** Free-flying Black-winged Mynas *Acridotheres m. melanopterus* at Taman Safari in Bogor, June 2018.

### Common Hill Myna *Gracula religiosa* (LC)

ASTSG is concerned with the West Sumatran (Barusan) Island forms *miotera* on Simeulue, *batuensis* in the Mentawai Islands, and *enganensis* on Enggano, for reasons outlined in Eaton *et al.* (2015). Of the three, *enganensis* is sometimes treated as a species but *miotera* is the most differentiated, having a white wing-flash midway in size between the very large *G. robusta* and all other taxa in *Gracula* except the little-known *halibrecta* of the Nicobars (del Hoyo & Collar 2016).

Moreover, it proves to be genetically distinct (Ng *et al.* 2020) unless indeed derived from the unsampled *halibrecta*. Unfortunately it is also much the most threatened: although EI has received ‘multiple accounts’ of birds in the wild, no ornithologist has encountered it on targeted surveys (Amey 2020, Iqbal 2021); indeed, as a consequence of this failure Ng *et al.* (2020) baldly asserted that ‘Simeulue Hill Mynas have recently become extinct in the wild’. Captive birds are also relatively scarce (Iqbal 2021), and there may be a danger that owners hybridise them with imported birds, rendering the need for conservation breeding extremely urgent (Ng *et al.* 2020). EI is planning to build eight aviaries to house captive *miotera* (T. Amey *in litt.*).

The EAZA Songbird TAG has established an EEP for all *Gracula* taxa to support in-region breeding efforts as well as funding (SB). The form *batuensis* is taxonomically and nomenclaturally troublesome, and is not dealt with here. The form *enganensis* is ‘now very difficult to find’ in the wild, having suffered intense trapping for two decades, and currently commands locally ‘amazing’ prices (US\$70–140) (Iqbal *et al.* 2020a). At the end of 2021 PCBA held 8 (5.3.0), and it might be that this tiny population represents the best opportunity to prevent the complete loss of this form.

### Nias Hill Myna *Gracula robusta* (CR)

Distinguished by its crow-like size and very large white wing-flash, this hill myna also has a reputation (‘undeserved’—SB) as a particularly fine vocalist, so that trapping has eliminated it from Babi and virtually eliminated it from Nias (Eaton *et al.* 2015), although it could still be found for sale on the latter in 2019 (Plate 12). Two other islands with early records of the species, Tuangku and Bangkaru in the Banyak archipelago (del Hoyo & Collar 2016), remained uninvestigated until the researches of Švejcarová (2017), who found birds on Bangkaru in January 2016. This information remained largely secret until it was publicised by Amey (2021) as part of the EI strategy to promote the international status of the island as a wildlife haven of the highest importance; the island is patrolled regularly and the myna population *appears* to be in reasonable condition, although work to establish its size is still needed. Tuangku was visited in December 2019 and found to be ‘dotted by several villages, with incipient large-scale forest conversion and intense poaching pressure’ (Rheindt *et al.* 2019), but as of 2022 it retains much forest and needs to be surveyed (T. Amey *in litt.*). Meanwhile, however, the species has been rediscovered on Babi (T. Amey *in litt.*), and genetic analysis has assigned birds on the



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**Plate 12.** Nias Hill Myna *Gracula robusta* for sale, Gunungsitoli, Nias, November 2019.

remote island of Simuk, 75 km south of Nias, to *robusta* (Ng *et al.* 2020), although the status of the species there is unknown.

Over the course of 2017 MBC assembled 10 birds for conservation breeding (*Magiao Newsletters* 1 and 2, 2017). PCBA bred the species in 2021 (the first-ever captive-breeding recorded) and at the end of that year it held 8 (3.4.1) individuals.

#### Tenggara Hill Myna *Gracula venerata* (EN)

A 'preliminary' but range-wide survey established that this relatively distinctive hill myna is seriously threatened by trapping combined with logging, with local people themselves reporting declines at 80% of known sites (Reuleaux *et al.* 2018).

PCBA has bred the species (Plate 13) since 2019 and to date 15 chicks have been raised from five pairs, resulting in 26 birds (9.12.5) by April 2022 (JKM).

#### Orange-headed Thrush *Geokichla citrina* (LC)

ASTSG is concerned with the form *rubecula* endemic to Java and Bali. The phenomenon of 'rolling' local extinctions (where trappers remove successively remoter populations) was known to be affecting this species across Java (Eaton *et al.* 2015) but this was not then treated as an existential threat to *rubecula* in part because of a report of a local industry in central Bali which harvests, raises and sells 116,000 birds annually (Kristianto & Jepson 2011). Nevertheless, *rubecula* is 'now local and widely extinct' (Eaton *et al.* 2021), and numbers found in the two bird markets in Denpasar, Bali, in 2017–2018 were so low compared to the harvest figure above that the current state of the industry has been questioned (Chng *et al.* 2018).

Captive birds are highly aggressive and maintaining pairs is a major challenge, but the small population at PCBA is slowly increasing through captive breeding, and in April 2022 it stood at 9 (2.5.2) (JKM).

#### Oriental Magpie Robin *Copsychus saularis* (LC)

ASTSG is concerned with the forms *amoenus* in East Java and Bali, and (in Tier 2) *pluto* in Kalimantan and on Maratua. Information on *amoenus* is nugatory: 'now very rare on Java and most parts of ... Bali ... where heavily trapped' (Eaton *et al.* 2021). No institution has a conservation breeding population, but birds are readily available and easy to breed (JKM).

#### White-rumped Shama *Copsychus malabaricus* (LC)

ASTSG is concerned with the forms: soon-to-be-named (Langkawi Island, off north-west Peninsular Malaysia), *hypolizus* (Simeulue), *opisthochrus* (Babi and Lasia), unnamed taxon (Banyak archipelago), *melanurus* (Nias south to South Pagai Island), *mirabilis* (Panaitan), *javanus* (Java apart from north-west and east; a revived taxon), *omissus* (East Java), *nigricauda* (Kangean Islands) and *barbouri* (Maratua), with (in Tier 2) forms *stricklandii*

**Plate 13.** Female Tenggara Hill Myna *Gracula venerata*, PCBA, May 2018. Note pale irides, wattle extending up central hindcrown and large all-orange bill.



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(northern Borneo) and *tricolor* (Sumatra to north-west Java). The status of most of these taxa was summarised in Eaton *et al.* (2015), and we merely update the information there (omitting the two unnamed taxa and *javanus*, for all of which more data are needed to explain their inclusion). The plight of these forms is best understood in the context of the intense demand for shamas generally in Indonesia, as reflected in the estimated three million held in Javan households in 2018 (Marshall *et al.* 2020a) plus insights from markets and confiscations revealing that most of these birds were and are wild-caught (Leupen *et al.* 2018). It bears mention that White-rumped Shamas occupy very small territories and can therefore occur at very high densities, rendering a Simeulue trapper's story of once driving a thousand birds to market (Iqbal 2021) quite plausible.

As a potential taxonomic insight of some interest it also bears mention that White-rumped Shamas fall into two categories when singing and displaying, in an arrangement that unexpectedly unites rather than divides birds with dark and white undersides to the tail. One group, from mainland Asia, Sumatra, the Barusan Islands and Java, displays with the feathers of the belly smoothed flat, whereas the other, from Borneo, Maratua and Kangean, displays with the belly feathers erect, a condition called *gembung* in Bahasa (JKM). How phylogenetically informative this intriguing insight is remains to be seen, but it certainly suggests that conservation of the Indonesian components of this complex just became another degree more challenging and essential.

Form *hypolizus*.—Four periods of fieldwork on Simeulue 2014–2019 and interviews with local people produced no evidence of survival in the wild, with <100 held captive in homes (Rheindt *et al.* 2019). Nevertheless, the people of Lhok Dalam village reported in 2021 that birds survive deep in the forest in their area (Iqbal 2021). With support from Silent Forest, Jersey Zoo, Copenhagen Zoo and Mandai Nature, EI has built six aviaries and has six pairs in them, and these have bred eight chicks (T. Amey *in litt.*).

Form *opisthochrus*.—Three short visits to Babi 2014–2019 produced no evidence of survival in the wild (Rheindt *et al.* 2019). However, by apparently reliable testimony Lasia still holds birds which poachers continue to target (Iqbal 2021).

Form *melanurus*.—Nias, surveyed for nine days in 2019, is so deforested and so heavily trapped that no birds are judged to survive there (although they are still seen for sale along the island's roadsides); Siberut may retain 'a few dozen individuals' (one was seen in December 2019) in the remotest areas (where in the mid-2010s the

species was trapped 'in the thousands'), but 'their removal is only a matter of time'; and the Mentawai islands of Sipora, North Pagai and South Pagai have been logged and trapped so extensively that they cannot now be expected to support any shamas, although the form is or was 'common in village cages' on these islands and Siberut (Rheindt *et al.* 2019). At the end of 2021 PCBA held 2 (1.1.0) believed to be this taxon (Menner 2021).

Form *mirabilis*.—Birds were reportedly present on Panaitan in the 1980s, but two later visits found none, the loss being attributed by inference to poaching from adjacent Java (Rheindt *et al.* 2019).

Form *omissus*.—The 'Larwo Shama', judged 'nearly extinct in the wild' (Eaton *et al.* 2021), may only now survive at a single site (a protected area, but under intense trapping pressure, with wild founders being highly sought-after by a very specialised sector of the shama-breeding community: JKM). PCBA acquired its first birds in 2020, finding them 'phenotypically very distinct from all other Indonesian shamas' (Plate 14: much smaller, male weight only 22–25 g, different body shape, and feathers of crown densely bushed in unique display), and achieved a first breeding in 2021, by the end of which it held 8 (3.3.2) (Menner 2021, 2022, JKM).



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**Plate 14.** Male Larwo (White-rumped) Shama *Copsychus malabaricus omissus*, PCBA, January 2022.

Form *nigricauda*.—The explicit suggestion in Eaton *et al.* (2016) that this relatively isolated form 'may merit monotypic species treatment as Kangean Shama' was dropped in Eaton *et al.* (2021), when it was also thought 'now likely extinct'. However, the surprise discovery of some specimens in online trade in 2021 has fuelled speculation that although the taxon may be extinct on Kangean it

must survive on some smaller island(s), and is being used by breeders to cross with specimens of *melanurus* to create a highly desired hybrid (Menner 2022). Moreover, this super-expensive form proves to be distinctive in size (relatively large: male 40–42 g), plumage and behaviour (JKM; Plate 15). At the end of 2021 PCBA held 5 (4.1.0) and the first three chicks were raised in April 2022 (Menner 2021, JKM).



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**Plate 15.** Displaying male Kangean (White-rumped) Shama *Copsychus malabaricus nigricauda*, PCBA, April 2022. Note puff-breasted display posture ('gembung'), white vent and white tips to rectrices.

Form *barbouri*.—As noted in the introduction, this very large (male 52–58 g: JKM) but relatively short-tailed form seems likely to have been trapped out of the tiny island of Maratua (Burner *et al.* 2018, Eaton *et al.* 2021). Through social media PCBA acquired 10 (3.7.0) supposedly all wild-caught individuals, all clearly showing signs of old age, in line with the evidence that the species was trapped to extinction on Maratua some time between 2011 and 2016; but despite their age and aggressiveness, most of these founders are now breeding regularly, such that by April 2022 the population had increased to 28 (11.14.3) (Menner 2021, 2022, JKM). These birds probably now represent the last chance for the taxon, and PCBA is in the early stage of negotiating with potential partners a conservation initiative on Maratua with the ultimate goal to re-establish *barbouri* on the island.

#### Javan Jungle-flycatcher *Cyornis banyumas* (pending)

Until recently many more taxa were incorporated under the name *Cyornis banyumas* as 'Hill Blue-

flycatcher', but following a taxonomic revision (Gwee *et al.* 2019; see also *BirdingASIA* 35: 80) the newly circumscribed Java endemic *C. banyumas* (Plate 16) is being assessed for its IUCN status. The forms *ligus* (West Java) and *banyumas* (rest of Java) are 'now rare (due to excessive trapping)' (Eaton *et al.* 2021), with only a single record from a recent survey of 12 mountains in West and Central Java (Marsden *et al.* in review); a population on Panaitan, sometimes recognised as *mardii*, is likely to have suffered the same fate as that presumed for *Copsychus malabaricus mirabilis* (above).

No conservation breeding institutions are known to hold specimens.



LEONARDUS ADI SAKTYARI

**Plate 16.** Javan Blue-flycatcher (=Javan Jungle-flycatcher) *Cyornis banyumas*, Yogyakarta, Java, May 2021.

#### Sumatran Leafbird *Chloropsis media* (EN)

This poorly documented species has a wide range in the Sumatran mountains but is 'increasingly scarce' owing to trapping (Eaton *et al.* 2021; Plate 17), with a predicted 72% further decline in the next three generations (BirdLife International 2022).

No conservation breeding institutions are known to hold specimens (see next species for EAZA plans).

#### Greater Green Leafbird *Chloropsis sonnerati* (EN)

Despite its wide Sundaic range from southernmost Myanmar and Thailand through Malaysia, Sumatra and Borneo (form *zosterops*), Java and Bali (form *sonnerati*), this once-common leafbird has in recent years been heavily persecuted for the songbird trade (Chng *et al.* 2017, Kurnianto *et al.* 2017, Eaton *et al.* 2021), with a predicted future population



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**Plate 17.** Male Sumatran Leafbird *Chloropsis media* for sale, Malang, Java, November 2017.

decline of 55% over the next three generations (BirdLife International 2022).

The species has been bred at Jurong Bird Park (Kumar *et al.* 2018), but parents show strong aggression towards chicks (A. Tritto *in litt.*); and at the end of 2021 PCBA held 16 (9.7.0), mostly or entirely of the form *zosterops* (JKM), Jurong Bird Park 4 (2.2.0) and Singapore Zoo 1 (1.0.0). Given that these birds require much space and attention (JKM) and that populations in mainland South-East Asia *may* be under less trapping pressure (confirmation needed), the urgency of conservation breeding for this species is perhaps in need of clarification. EAZA's Songbird TAG is establishing a working group to investigate the need and feasibility of a leafbird EEP (SB).

#### Javan Leafbird *Chloropsis cochinchinensis* (EN)

An uncommon bird of lower-lying (<1,400 m) forest (Eaton *et al.* 2021), this Java endemic is under great trapping pressure, with a suspected current rate of decline over 50% (over three generations) predicted to continue into the future (BirdLife International 2022).

In April 2022 PCBA held 13 (7.6.0), but the birds are proving difficult to breed (JKM) (see previous species for EAZA plans).

#### The beginning

Many important developments have occurred in the past ten years in response to the Asian Songbird Crisis. We must mention the formation of ASTSG (<https://www.asiansongbirdtradesg.com/>), the foundation of the wildlife trade group Monitor (<https://mcrsociety.org>), the achievements of Silent

Forest (<https://www.silentforest.eu>), the leadership of Mandai Nature (<https://www.mandainature.org/en>), the emergence in Borneo of Planet Indonesia (<https://www.planetindonesia.org>), and the genomic insights of the Avian Evolution Lab (<https://avianevonus.com/>) at the National University of Singapore. The Oxford Brookes and MMU research programmes are steadily accumulating evidence on the status of species and the societal dimensions of conservation engagement. A survey of some of Java's richest mountains has sought not only to find surviving wild populations of the most threatened birds (so as to know better what *ex situ* work to prioritise) but also to identify potential sites where attempts might one day be made to re-establish extirpated populations (Higginbottom *et al.* 2019, Devenish *et al.* 2021, Marsden *et al.* in review). And as many as 25 of the 43 taxa of greatest concern to ASTSG are now being held in conservation breeding institutions as founders of those potential re-established populations. This is a solid start, but most of the 25 *ex situ* populations are clearly still far too small, and several are proving challenging to breed reliably and need more husbandry research, while the other 18 taxa have yet to be found—as unlikely as that is for a few—and given safe homes; or, to put it another way, all the institutions holding these taxa in Indonesia are still having to train and employ more staff, and build many more aviaries.

However much this article might imply that, after ten years, the most threatened (song)birds of Asia are in good hands, we have to stress that there are many more decades of effort lying ahead. Indeed, how many more species will be added to ASTSG's list by 2032? The work really is only just beginning.

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