

Quick guide

The Asian songbird crisis

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What crisis? Globally, the trade in wildlife is worth billions of dollars. Yes, billions. In South-East Asia, and particularly Indonesia, demand for caged birds is so intense that what forests remain have been emptied of their songbirds in many places. It is estimated that one-third of Java's 36 million households keep between 66 and 84 million birds. That may be more birds behind bars than left in the wild. This merits the moniker 'crisis' and is a major conservation challenge.

Which species are affected?

Although around one thousand bird species are traded across South East Asia, a few hundred species make up the bulk of the traffic. In Java, where bird ownership is most prevalent, the bulk of birds kept are exotic lovebirds and canaries, but millions of some species of resident native forest species are also kept, most of which

will have been wild caught (Figure 1). In China the pattern is broadly similar, but also involves high numbers of migratory songbirds, with a peak in diversity of trapped birds occurring in autumn, many destined to be food as well as pets. For example, a survey of 60 markets in Guangzhou, China between October 2011 to June 2013 revealed 95,912 birds of 147 species in trade.

Where are they sourced and sold?

Indonesia is the major market for cage-birds, which are harvested from across Java, Borneo, Sumatra and Peninsular Malaysia, although trade is also intense further north in China, Taiwan and Vietnam. Some wild-caught birds even come from as far afield as East Africa. Birds are sold openly in markets (Figure 1) and, increasingly, online.

What impact is this having?

The trade impacts dozens of globally threatened bird species in Indonesia. Indeed, many species find themselves on the global Red List solely because of their commercial value. Some species are more sought after than others. The endemic Javan Pied Starling *Gracupica jalla* is now extinct in the wild, the Bali Myna (*Leucopsar*

rothschildi; Figure 1) just about clings on there, while the Straw-headed Bulbul (*Pycnonotus zeylanicus*) has disappeared from much of its vast range. All of these species are Critically Endangered with others in the queue for admission — the Javan White-eye (*Zosterops flavus*) has declined by 80% in a decade for example. Meanwhile another white-eye, *Zosterops* sp. novo, restricted to the 155 km² island of Wangi-Wangi in south-east Sulawesi, has yet to be bestowed a scientific name, but is known to be kept in captivity — another Red List entrant in waiting. Many species formerly had large global population sizes. For instance, the global population of migratory Yellow-breasted Buntings (*Emberiza aureola*) crashed by 90% between 1980 and 2013 as demand for its usage as a medical supplement emerged. One million of these buntings were estimated to have been consumed in China's Guangdong province alone.

Harry Potter and the extinction crisis?

The trade isn't confined to just songbirds. The release of the *Harry Potter* books and films in Indonesia precipitated an increase in trade and ownership in owls. Formerly known as 'Burung Hantu' or 'Ghost birds', they



Figure 1. Bird trade and traded birds.

(Left) Sangkar White-eyes (*Zosterops melanurus*; IUCN Vulnerable; photo: Pramana Yuda). (Center) Bird market Pasar Pon Ambarawa (Central Java; photo: Pramana Yuda). (Right) Bali Myna (*Leucopsar rothschildi*; IUCN Critically Endangered; photo: Alexander Lees).



were rebranded ‘Burung Harry Potter’ or ‘Harry Potter Birds’.

What might this loss of songbirds mean for the environment? Short answer: we don’t know yet; this an experiment in defaunation at large scales and one that no ecologist wanted to see undertaken. The island of Guam in the Pacific may give us clues. It lost almost all its songbirds after Brown Tree Snakes (*Boiga irregularis*) were introduced accidentally. The snakes ate the birds to extinction. Freed from the tyranny of bird predation, the island’s forests then shifted to a nightmarish alternative state as a spider-dominated ecosystem. Within Indonesia there is already evidence from Sumatra of the degradation of networks of avian mixed species foraging flocks — with the loss of one or two traded species causing flock meltdown. The trophic cascades that are certain to follow merit urgent investigation.

What does the law say? Most of the birds in trade are legally protected by national and international laws, meaning that trade is illegal, but enforcement of the rules is often lax.

So why do people buy live birds? Short answer: tradition. Keeping cage-birds is a long-established social and cultural practice in the region. Fundamental to this is an appreciation of bird song as well as beautiful plumage, and species with subjectively more attractive songs are in higher demand. This appreciation has been given a competitive edge with a huge growth in singing contests in which where entrants vie to win cash prizes and prestige for the bird with the best repertoire. If it sounds more appealing than *Pop Idol*, that’s because it is. Along with some pet birds, money also talks, there are also strong economic incentives for young people to become involved in an industry worth millions.

What is being done about it? After a series of Asian Songbird Trade Crisis Summits, the Asian Songbird Trade Specialist Group www.asiansongbirdtradesg.com was formed to reduce the threat from the trade to songbirds. Efforts to mitigate the trade have operated along multiple

fronts. Apprehension of illegally caught species and disruption of trade hubs are a perennial tool in the enforcers kit. More promise perhaps lies in captive breeding and accreditation to reduce demand for wild caught birds. *Ex situ* conservation actions led by outfits such as the Prigen Conservation Breeding Ark and Cikananga Wildlife Center are central to the restoration of wild populations, and then there is the not insignificant matter of making sure there are any forests left to release them in...

Where can I find out more?

- Chiok, W.X., Miller, A.E., Pang, S.E., Eaton, J.A., Rao, M., and Rheindt, F.E. (2019). Regional and local extirpation of a formerly common Sundaic passerine, the Straw-headed Bulbul *Pycnonotus zeylanicus*. *Forktail* 35, 3–11.
- Fiennes, S., Zhang, M., Sun, F., and Lee, T.M. (2021). Understanding retail dynamics of a regionally important domestic bird market in Guangzhou, China. *Conserv. Sci. Pract.* 3, e487.
- Fink, C., Toivonen, T., Correia, R.A., and Di Minin, E. (2021). Mapping the online songbird trade in Indonesia. *Appl. Geogr.* 134, 102505.
- Harris, J.B.C., Tingley, M.W., Hua, F., Yong, D.L., Adeney, J.M., Lee, T.M., Marthy, W., Prawiradilaga, D.M., Sekercioglu, C.H., Suyadi, et al. (2017). Measuring the impact of the pet trade on Indonesian birds. *Conserv. Biol.* 31, 394–405.
- Indraswari, K., Friedman, R.S., Noske, R., Shepherd, C.R., Biggs, D., Susilawati, C., and Wilson, C. (2020). It’s in the news: Characterising Indonesia’s wild bird trade network from media-reported seizure incidents. *Biol. Conserv.* 243, 108431.
- Marshall, H., Collar, N.J., Lees, A.C., Moss, A., Yuda, P., and Marsden, S.J. (2020). Spatio-temporal dynamics of consumer demand driving the Asian Songbird Crisis. *Biol. Conserv.* 241, 108237.
- Marthy, W., and Farine, D.R. (2018). The potential impacts of the songbird trade on mixed-species flocking. *Biol. Conserv.* 222, 222–231.
- Nijman, V. (2010). An overview of international wildlife trade from Southeast Asia. *Biodivers. Conserv.* 19, 1101–1114.
- Nijman, V., and Nekaris, K.A.I. (2017). The Harry Potter effect: The rise in trade of owls as pets in Java and Bali, Indonesia. *Glob. Ecol. Conserv.* 11, 84–94.
- O’Connell, D.P., Martin, T.E., Kelly, D.J., Marples, N.M., Analuddin, K., and Karya, A. (2021). Threats to an undescribed songbird species in Indonesia. *Oryx* 55, 10.
- Rogers, H., Hille Ris Lambers, J., Miller, R., and Tewksbury, J.J. (2012). ‘Natural experiment’ demonstrates top-down control of spiders by birds on a landscape level. *PLoS One* 8, e43446.
- Shepherd, C.R., and Cassey, P. (2017). Songbird trade crisis in Southeast Asia leads to the formation of IUCN SSC Asian Songbird Trade Specialist Group. *J. Indon. Nat. Hist.* 5, 3–5.
- Wang, Y., Xue, W., and Wang, H. (2019). Save China’s yellow-breasted bunting. *Science* 365, 651–651.

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Quick guide

Birdsong and music

Emily Doolittle

What’s the connection between birdsong and human music? People have noted a similarity between birdsong and human music for as long as oral and written records can tell us. The entwining of birdsong and music is everywhere: from [ancient Mexican bird whistles](#) to traditional [Gaelic sung imitations of birdsong](#) to the cuckoo calls in the 13th century round *Sumar Is Icumen In*, one of the earliest notated examples of secular music in Europe. Multiple mythological, religious and philosophical traditions even suggest that human music may have originated from birdsong. First century BCE Roman philosopher Lucretius, for example, believed people learned music by vocally imitating birdsongs, while the third century BCE Chinese text *Lüshi Chunqiu* credits the (mythical) phoenix bird as the origin of wind instruments and their tuning systems. Christian lore holds that the sixth century Pope Gregory received ‘Gregorian’ chant from a dove. While these origin stories may be fanciful, there is no doubt that imitation of birdsong is prevalent in human music, and that birdsong and human music share many features. French composer François-Bernard Mâche goes so far as to claim that “there is not a single musical procedure which does not have its equivalent or its prototype in one or other of the innumerable signals of animals”, illustrating this bold assertion with multiple compelling examples in his seminal 1983 zoomusicological tome, *Music, Myth and Nature, or The Dolphins of Arion*.

Why does birdsong sound musical to people? Many of the similarities are obvious, even to the casual listener. Birds such as [canaries](#) and [Eurasian blackbirds](#) sing with a timbre (sound colour) reminiscent of human musical instruments like the flute or oboe, and in a frequency range that is comfortable for human hearing. Some species of bird sing successions of pitches that are easy for human

