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A more-than-human political ecology of Indonesian songbird trade

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Abstract

Since its inception, conservation science has considered wildlife trade a problem. In focusing on conservation outcomes, conservationists almost completely ignore the welfare of traded animals and plants and the harms they endure. We developed a political ecology approach that incorporates the interconnectedness of people with animals and natural habitats (more than human) to study the Indonesian bird trade, which is deeply culturally embedded, monetized, and speciose. We used marketplace observations of harm, one-on-one interviews with experts, and focus groups with law enforcement to examine the trade flow of birds and the interactions and power dynamics in the Indonesian bird trade. We considered human perspectives and recognized birds as active participants in their own experiences. We examined previously unconsidered harms experienced by birds, such as feather plucking, dismemberment, sinus infections, overcrowding, suffocation, and death. Different forms of harm occurred to birds in different parts of the supply chain, and the harm depended on the human actors the birds interacted with. Loss of freedom occurred at harvest, and physical and physiological harm occurred during transit and at the point of trade. However, highly sought-after species were subject to fewer harms. These species are difficult to source and are well cared for by affluent collectors, but more harms came to these species when demand was high, and supply-side factors lead to broad harvesting and less consideration of welfare. Men of different classes engaged with birds for various reasons, such as socialization, investment, and connecting with Javan traditions. Our results highlight the harms birds experience in the wildlife trade, relating to the five domains welfare model. Critical to understanding the harms traded wildlife endure are issues of class, gender, and culture in Indonesia.

KEYWORDS
birds, harms, Indonesia, more than human, political ecology, wildlife trade

INTRODUCTION

Global capitalism and international trade have formed flows of animals, plants, and fungi (Hodgetts & Lorimer, 2015), commonly referred to wildlife trade (Phelps et al., 2016). Some claim wildlife trade is an "extinction market" (i.e., species are trafficked to extinction) (Felbab-Brown, 2017), though the extent to which wildlife trade drives extinctions is unclear, especially because many species are threatened by both habitat fragmentation and climate change (Hinsley et al., 2023). As such, wildlife trade is predominantly seen as the concern of conservation by policy makers, conservation organizations, and regulatory bodies (Duffy, 2022). Wildlife trade has been justified on the basis that it can be legal, safe, sustainable, and traceable. Others argue against wildlife trade, based on its public health risks, such as zoonosis (Yang et al., 2020) and animal welfare concerns

(Wyatt et al., 2022). Illegal wildlife trade (IWT), a narrow set of activities in breach of national-level regulations (Duffy, 2022), usually connotes trade in rare species or at unsustainable levels. However, IWT is not always detrimental to wild species, and recent evidence suggests that legal trade can be just as harmful and unsustainable (Marshall et al., 2025).

Discussions about wildlife trade within conservation omit the materiality and experience of the individual entity that is trafficked and how their lives are transformed as they enter the wildlife trade circuit (Collard, 2014). This omission is partly due to conservation's normative (e.g., ethical and moral) commitments to nonhuman animal populations and their habitats (Campbell, 2012) and the perception of animals as objects. Affect for individual animals is often seen as the remit of animal welfare advocates and animal rights activists, though both conservation and animal rights movements have been criticized for promoting unjust and uneven politics in the name of nonhuman lives (Oommen et al., 2019). Rather than recognizing the trafficked animals as agents, conservationists and wildlife traders see animals as objects, properties, and commodities, rather than subjects, individuals, and sentient beings, whether they are objects to be conserved or sold (Wyatt et al., 2022). Viewing wildlife as objects limits understanding of wildlife trade because it ignores the social and cultural ideas that shape trades, neglects how the material properties of the animals influence how trade happens, and marginalizes the welfare implications of trades.

The physical properties and behaviors of animals shape how they experience trade and harm but also shape markets. For example, the fleshy property of caviar enables its laundering (Dickinson, 2022). Its chemical-isotope profile (over time the flesh of illegally laundered sturgeon can develop similar characteristics to that of captive-bred sturgeon) and composite form (caviar eggs are small, and when thousands of legal and illegal eggs are mixed in tins, it is impossible to verify their origin) contribute to its existence as a gray trade (i.e., the legality or illegality of a wildlife product is unclear) (Dickinson, 2022).

The exploitation of uncharismatic wildlife for food, as pets, and for recreation is a major driver of wildlife harm (Hutchinson, 2023). One complex case of wildlife harm is the caged bird trade in Indonesia, the global center for bird trade. A segment of the market caters to Javan traditions that dictate men need various possessions (e.g., *kukila* [cockfight bird or songbird]) to have a good life (Yulindrasari, 2017). Men keeping birds is also influenced by the former nobility, who used to display rare and expensive species outside their palaces (Pradita & Wardhana, 2021). These royal practices formed the foundation of birds being kept as status symbols.

Singing competitions emerged from these older practices and gained popularity in the 1970s (Mirin & Klinck, 2021). These competitions involve the training of various species of songbirds to sing and outcompete other birds. The commercialization of singing competitions means that birds now provide important real and imagined animal capital (Hodgetts & Lorimer, 2015). Competitions elevate social status or engage with Javanese traditions and have instrumental and relational value (i.e., selling rare and expensive birds, selling competition winners, and earnings from singing competitions). Bird capital is intrinsically tied to the physical nature of birds; they are easy to transport and hide (Maulany et al., 2021), and Indonesia's high avian diversity ensures that one species is fungible for another (Fiennes et al., 2024).

Pons-Hernandez (2024) argues that "it is easier to exploit (trade, traffic, or eat) nonhuman animals if we do not see their suffering." A harms-based and victim-centered approach to wildlife trade (Hutchinson, 2023; Wyatt et al., 2022) can aid understanding of the scale and nature of animal suffering and what harms reveal about the underlying structural drivers of IWT (Duffy, 2022). Multispecies ethnography (MSE) is used to study the human and nonhuman actors in IWT and recognizes animals as subjects, individuals, and sentient beings (Wyatt et al., 2022). MSE has focused on, horses and mice (Tomlinson, 2020) and the matsutake mushroom (*Tricholoma matsutake*) (Tsing, 2015). MSEs of live wild animals in the wildlife trade, however, are scarce.

Building on Oyanedel et al.'s (2024) framework for understanding wildlife markets as complex systems, we incorporated birds as nonconsenting actors whose physical traits and behaviors shape their experiences of trade. Although Collard (2013) and Wyatt et al. (2022) have explored animal welfare in wildlife trade, they did not use MSE or focus on Southeast Asian markets. We extended political ecology through a more-than-human lens (Greenhough, 2014; Lorimer & Hodgetts, 2024) by treating wildlife trade as a cultural phenomenon that is influenced by social differences, such as gender (Margulies et al., 2023), class, and race (Margulies et al., 2019), that shape harms committed to traded animals. We explored the harms done to individual humans and nonhumans in the wildlife trade and how this is shaped by human culture and the material properties of animals involved.

METHODS

We drew from 5 months of fieldwork (January to June 2023) across Java (Jakarta, Bandung, Yogyakarta, and Surabaya) and West Kalimantan (Pontianak) in Indonesia. We conducted a short multispecies ethnographic study at bird marketplaces, focus groups with conservation law enforcement officers, and interviews with conservation practitioners and veterinarians. Our methods were informed by a more-than-human political ecology framework, which we applied to understand how power, harm, and agency are distributed across human and nonhuman actors in the wildlife trade.

Visiting wildlife marketplaces

We visited nine wildlife marketplaces in five research locations. Each marketplace was visited at least twice, except for one in Jakarta, which was visited once. There are inherent tensions between creating ethnographic accounts that are empirically thick and the consequences of making people and places less anonymous (Lyon & Back, 2012). To remedy this tension, we

do not refer to marketplaces by name and have not used images in which the marketplace could be identified.

We were inspired by the traditions of sensory ethnography and ethnography to conduct an MSE that is short. Short-term ethnographies are a focused and time-efficient approach to classical ethnographic research in which immersive and participatory methods are used to improve understanding of places (Pink & Morgan, 2013). We used sensory ethnography methods to examine the experience of nonhuman animals (Tomlinson, 2020). In our case, sensory elicitation served as a gateway to MSE by attuning us to the sensory world of birds and the limits of human perception. The five domains model offers a structured medium through which to approximate the birds' experiences of harm. We used a form of MSE that treats nonhuman animals as intersubjective, individual actors who experience pain and emotions (Tomlinson, 2020). Building on ethnographic methods of so-called hanging out, we frequented the market to absorb the sensory and architectural environment of the marketplace. By visually documenting trade, which can enhance understanding of social practices and experiences during a condensed research period (Pink & Morgan, 2013), we sought to provide evidence of harms (Pons-Hernandez, 2024). We used BirdLife DataZone's taxonomy for birds.

Focus groups and interviews

In each city, we held focus groups ($n = 5$) with Indonesian conservation law enforcement agencies (57 participants from these agencies took part; eight to 13 participants per session) to discuss their roles and challenges in enforcing songbird IWT across the supply chain. We collaborated with four agencies: Balai Konservasi Sumber Daya Alam (BKSDA) (nature conservation), Badan Karantina IndonesiaBKP (animal quarantine), Penegakan Hukum (GAKK) (wildlife law enforcement), and Kepolisian Resor (POL) (regional police). We conducted 16 semistructured interviews (eight in person, eight online) with experts from conservation organizations (participant code NGO [nongovernmental organization]) and universities (participant code ACA). Interviewee codes are followed by an L for local or an I for international.

These interviews focused on bird trade as a system, and interviewees were asked to provide feedback on a preliminary supply chain diagram. All participants were compensated at a standard hourly rate and gave their free, prior, and informed consent. The original aim of the project was to investigate the enforcement side of trade and the barriers to enforcement. Information about other actors within the trade network (e.g., traders) emerged from discussions with our target participants (academics, NGOs, law enforcement) who had knowledge of the trade ecosystem, but the other actor groups were not directly involved in the project. As such, we acknowledge that there are some elements of the work that rely on external perceptions of some actor groups by others, including their motivations and behaviors. Where there might be conflict between actor groups, this conflict could lead to bias or misrepresentation of information. To address this problem, we incorporated those additional insights based on our own understanding of the trade and the level of agreement (triangulation) with other data sources. As a result, the study reflects the perspectives of enforcement and conservation practitioners, rather than those directly involved in the trade itself. We analyzed qualitative data from marketplace observations, focus group discussions, and interviews with NVivo 11.

Focus groups were conducted in Indonesian, recorded, transcribed, and translated (Appendix S1). Interviews were conducted in English or Indonesian, transcribed, and translated into English if needed (Appendix S2). We conducted a thematic analysis of the transcripts with both inductive and deductive coding. Initial codes were informed by literature (e.g., enforcement, welfare, multispecies dynamics) and refined through iterative transcript review. Additional themes emerged from the data, particularly around sensory experience and perceptions of harm. This process helped identify how different actors conceptualize harm, responsibility, and the role of birds in trade.

Vignettes and welfare assessment

Birds cannot give their consent to being photographed and surveilled. As spectators, we risked reinforcing anthropocentric hierarchies because by observing animals we reinforced the separation between humans and animals that anthropocentricism is constructed on (Hooper et al., 2022). To address this, we used five vignettes (Figure 1) developed during interviews with veterinarians to document welfare concerns and to examine our own anthropomorphism. These vignettes allowed us to reflect on the implications of projecting human qualities onto nonhuman entities and of the difficulty and limits of accessing animal subjects' experiential worlds (Hodgetts & Lorimer, 2015). As Tomlinson (2020) argues, examining one's anthropomorphism opens a route toward more ethical and situated forms of MSE.

We discussed a series of images and videos that depicted avian suffering in marketplaces with veterinarians and used them to create the vignettes (Figure 1). Vignettes are useful because they describe information in context (Rizzolo, 2021) and can be used to clarify judgments. We used ours as a source of expert opinion and categorized harms according to the five domains model (Mellor et al., 2020). In this model, animals have psychological and physiological needs. The domains are nutrition, environment, health, behavior, and mental state. Bartels et al. (2022) used an older version, the five freedoms, to assess the welfare of captive-bred birds at marketplaces in Germany (both models are compared in Appendix S3). We considered the five domains in the following ways: differences in diet in the wild versus in trade (nutrition), contrasts between natural habitat and confined spaces (environment), health impacts, potential injuries, and lack of medical care (health), stress behaviors or inability to exhibit natural behaviors in trade settings (behavior), and changes in the first four domains that affect the bird's mental well-being (mental state).

FIGURE 1 Vignettes illustrating challenges in interpreting animal welfare: 1, Asian brown flycatcher (*Muscicapa latirostris*) (left) and a Mugimaki flycatcher (*Ficedula mugimaki*) (right); 2, Hume's white-eye (*Zosterops auriventer*); 3, ochraceous bulbul (*Alophoixus ochraceus*); 4, Sunda scops-owl (*Otus lempiji*); and 5, pair of sooty-headed bulbuls (*Pycnonotus aurigaster*).

Assessing the Indonesian market driving unsustainable bird use

We structured our results based on the three levels of Oyanedel et al.'s (2024) framework: actor, interactor, and market analysis. We focused on the sociocultural and market-based dimensions of the songbird trade and used MSE and the vignettes to examine bird welfare and how birds are moved through supply chains. Interviews and focus groups helped us assess power dynamics within and between human and nonhuman actors. Although our primary data came from enforcement and conservation practitioners, we complemented these data with secondary sources (academic literature and news articles) to contextualize the roles of trade actors. We omitted governance and enforcement records and ecological impact analyses, which Oyanedel et al. (2024) used, because of limited access to enforcement data and our focus on lived experience and trade dynamics. We identified human actors in the caged bird trade, including harvesters, intermediaries, vendors, and consumers, and considered cultural dynamics. We verified actor roles based on Phelps et al. (2016) and noted the multitude of roles in IWT market chains. We considered birds nonhuman actors and detailed their transition from wild to commodity lives relative to the five domains model.

We focused on the relationships and interactions between market actors (human and nonhuman), the structure of supply chains, and the methods used to harvest and transport free-living wild birds to caged environments.

Finally, we considered broader market dynamics, such as supply–demand interactions, legal, gray, and illegal entanglements, and broader human–bird relations in Indonesia. We visually summarized existing information on how human actors are arranged and their relations and how sourcing pressure has been displaced from Java, the center of bird trade, to Sumatra and West Kalimantan.

The University of Leeds (AREA FREC 2023-0419-521) approved our study design, and fieldwork was permitted (311/SIP/IV/FR/11/2022) by Indonesia's National Research and Innovation Agency.

RESULTS

Structure and organization of the songbird trade network

We found that the Indonesian songbird trade is a geographically and socially extensive, multilayered system involving a wide range of human and nonhuman actors (see trade diagrams in Figure 2). It operates through overlapping and often informal supply chains shaped by the species being traded, the location of its capture, and its perceived value in the market. The trade typically begins in rural or forested areas, where birds are captured by local trappers—often men from economically marginalized communities—using a variety of techniques, such as nets, snares, and decoys. Trappers may work independently or as part of larger networks coordinated by intermediaries who

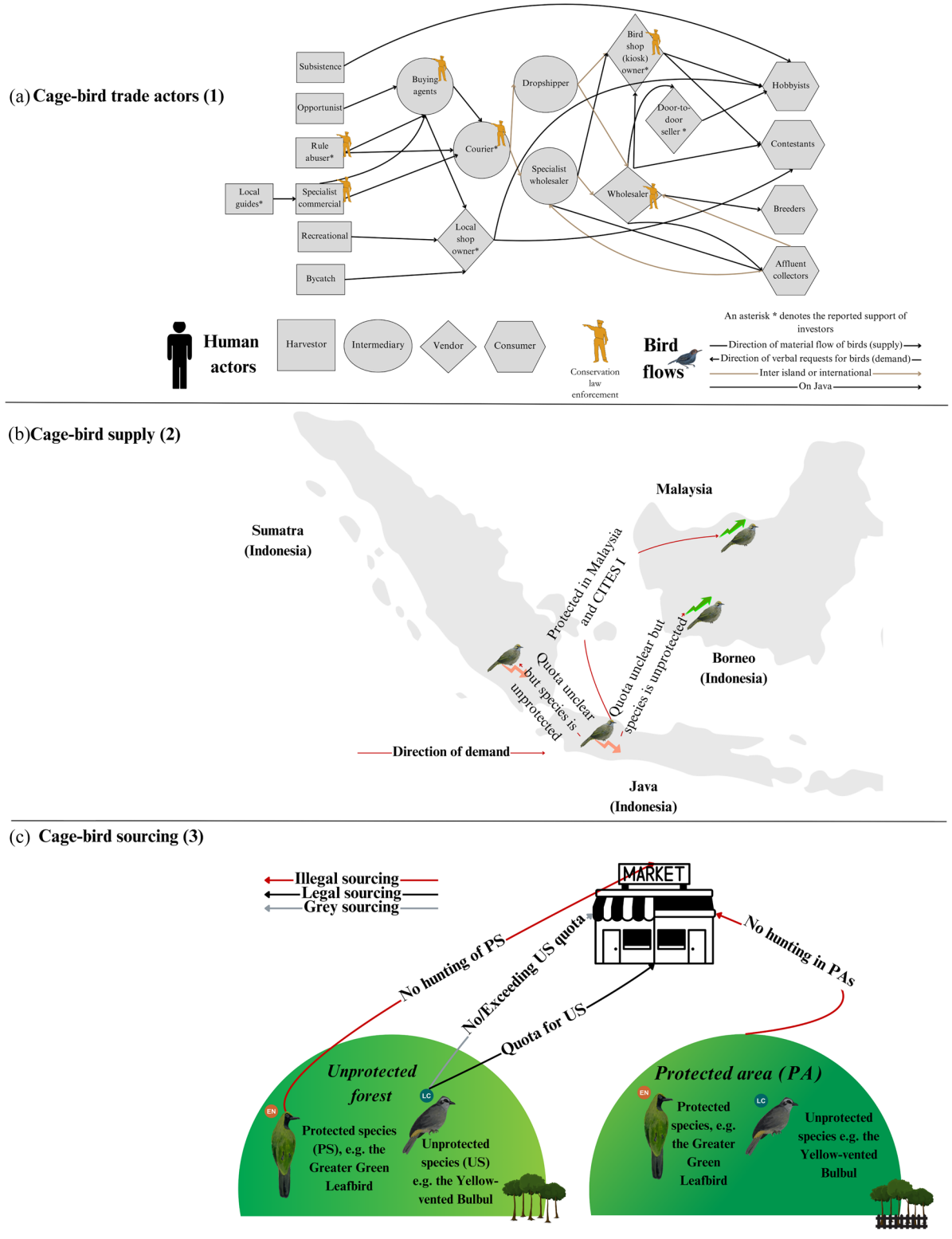

FIGURE 2 (a) Actors (harvesters, intermediaries, vendors, and consumers) involved in the bird trade and the flow of birds through these actors (Appendix S8 contains quotes from each actor category), (b) direction of movement of straw-headed bulbul in Indonesia, represented by the straw-headed bulbul (*Pycnonotus zeylanicus*) (range data based on Chiok et al. [2020]) (drawings by Ishaan Patil), and (c) the structure and dynamics of the wild bird supply chain for legal, gray (i.e., origin unclear), and illegal trade in birds from unprotected and protected areas.

FIGURE 3 (a) User groups in the Indonesian bird trade, including Marshall et al.'s (2020) groups (hobbyist, contestant, and breeder) and our new category, affluent collector, and consumer uses from Phelps et al. (2016). (b) Bird groups in trade (starter birds, master birds, competition birds, and ornamental birds) (hybrid colors, overlap between human user groups; some bird groups are based on broader categories from Jepson et al. [2011] and Basuni & Setiyani [1989]).

provide equipment, advance payments, or information about market demand, consistent with the two parallel supply chains proposed by Jepson et al. (2011): "local people and…syndicates taking birds from forests on a large scale, involving established business elites" (ACAL1). Codes in parentheses are respondent codes. These supply chains are not mutually exclusive.

Once captured, birds are transported—sometimes over long distances—via motorbikes, buses, or informal courier systems. Longer supply chains may be used more for high-volume and low-worth species, packed in bulk under stressful conditions, and intended for entry-level hobbyists and breeders. High-value species may be transported individually in custom cages with shorter, more direct supply chains (Figure 3a). The species composition in the low-worth supply chains is relatively random, reflecting opportunistic harvesting, whereas the high-worth supply chains are targeted and selective, particularly for specific consumer orders. Birds are then delivered to a range of destinations: urban marketplaces, roadside kiosks, specialist bird shops, or directly to private collectors and hobbyists. In some cases, birds change hands multiple times before reaching their final owner.

There are some interactions and blurring between the supply chains. For instance, breeders who traditionally supply common species are now engaging in the trade of expensive and rare species. Interview data suggest that over 80% of songbird trade in Indonesia is illegal (i.e., involving protected species, trapping in protected areas, or exceeding quotas) (Figure 2c) (NGOL7). The trade is best characterized as decentralized and hybrid—partly opportunistic, partly organized (Figure 1). Therefore, the Indonesian wild bird trade is, as on respondent put it, "crime that is organized rather than organized crime" (distinguished by Pires et al. [2016]). This trade complexity played out across the three analytical levels of Oyanedel et al.'s (2024) framework: roles of actors, interactions between them, and broader market dynamics that shape harm to birds and people.

Characterization of bird trade actors

We identified the emergence of an undescribed user group, the affluent collector (Figures 2a & 3a). Existing consumer roles described by Phelps et al. (2016) were also evident and related to the aesthetic and cultural values placed on songbirds by consumers because they are beautiful or seen as trophies (ornamental birds) or because they fulfil deeply entrenched Javan cultural values (competition birds). Other bird groups were traded because of their market-based instrumental value, and consumer cultures were influenced by practices, noticeably *kicauan* (i.e., singing birds), and the historic practices of royalty (expensive ornamental birds) (Figure 3b).

One respondent said, "apart from traditional *sabung ayam*, *manggung*, or *merpati* or well-known good birds, trends are likely dictated by traders and availability [in the wild]" (NGOI1). (Sabunga yam are cockfighting birds, maggung are the same as kicauan or merpati [doves and pidgeons], and good birds are high-end ornamental species, such as the straw-headed bulbul.) Marshall et al. (2020) and Indraswari et al. (2025) also found that the contestant and breeder communities tend to focus on a relatively fixed suite of kicauan species that are used in singing competitions. A single consumer may own birds with various profiles, from low-value ornamental birds for hobbyists to master and competition birds for owners participating in song contestants, and to high-value birds for affluent collectors. These profiles are not mutually exclusive—for example,

TABLE 1 Examples of violations relative to birds in trade of the five domains[a] determined based on marketplace observations.

Domain	Violation example[b]
Environment	Overcrowding (Appendix S5)
	Birds covered in or in close proximity to excrement (Appendix S5)
	Cages left in direct sunlight (Figure 1, vignette 3)
Health	Broken limbs and damaged feathers (Figure 1, vignette 1) can result from birdlime use
	Infections (sinusitis) from dust in the marketplace sinusitis (Figure 1, vignettes 3 and 4).
Behavior	Being active, trying to fly away or escape (Figure 1, vignettes 3 and 5)
	Plucking feathers on their backs from stress (Figure 1, vignette 2)

[a]Concept that animals have psychological as well as physiological needs.
[b]Vignettes are a brief, context-rich scenario used to present information and clarify judgments. They were used here to highlight the complexity of understanding a bird's experience in trade and are illustrated in Figure 1.

one person's master bird may be another's ornamental bird (Figure 3b).

Vignettes with veterinary experts

Attending to the experiences of nonhuman animals is challenging because "wild animals have a masking phenomenon… They hide sickness to avoid predation" (NGOL3). The vignettes highlighted common misunderstandings around how animal harms are perceived, particularly in the domains of health, behavior, and mental states. In almost every instance, our initial interpretation was incorrect. For instance, the Sunda scops-owl (*Otus lempiji*) (Figure 1, vignette 4) was initially thought to have a trauma wound, but it was later diagnosed with a likely sinus infection.

Harm to birds

The physical properties of traded birds were changed, altered, and removed (e.g., missing limbs) in the marketplace (Table 1). Appendix S4 contains additional harms noted in the literature and hypothesized differences between the wild and captive lives of birds.

The Indonesian songbird trade operates through complex and overlapping supply chains, shaped by species value, sourcing location, and trade volume. Birds are captured in forest areas by a myriad of actors (Figure 2) and transported by various means depending on their size and market value.

Interactions between actors in the trade network are shaped by informal cooperation and hierarchical financing structures. Demand from consumers does not always drive supply. If a vendor receives a request in person or an order, they may cooperate with other vendors: "If his shop sells out of white-rumped shamas and I have some, I can sell them to him" (NGOL8). However, interviewees also noted that more influential actors, such as wholesalers, finance smaller-scale vendors, such as kiosk owners, door-to-door sellers, and external investors (Figure 2a). These financial relationships can limit the autonomy of some vendors, who consequently may have little control over their supply.

Given there has been a massive and difficult-to-quantify drain on Java's wild bird populations, most trade may now be interisland (Figure 2c), made possible through the use of passenger ships (ACL1, GAKK_6, GAKK_9). For orders, "they use private vehicles" (NGOL8, GAKK_8, GAKK_9) "to reduce deaths. Deaths mean losses" (NGOL6).

For the supply of expensive ornamental birds, such as parrots, they use "navy vessels or special aero planes" (GAKK_8), and the modus operandi can be tailored to evade detection by authorities, such as exchanging birds at sea (GAKK_8, BKSDA_17) or going through nonpublic ports (GAKK_9). The quality and condition of birds in the marketplace depend on how far away the source of the bird is from the market. For the main interisland trade routes (i.e., South Sumatra to northern Java and West Kalimantan to East Java via Madura [GAKK_8, GAKK_9]), the journey could be half a day or several days if birds come from farther afield (e.g., Papua [Appendix S5]). The different logistical strategies illustrate the adaptive nature of trade interactions and how actors respond to supply, enforcement risk, and market demands, which are key concerns at the interactor level of Oyanedel et al.'s (2024) framework.

We discovered methods for harvesting birds that have not been reported in the literature: baited hooks, decoy birds, poisoned bait, and canopy cages (Appendix S4). In the Indonesian songbird trade, bird songs are played on speakers to lure birds with decoys, which capitalizes on male–male competition, and other intricate methods derived from other artisanal practices, such as fishing, are used (Figure 4; Appendix S4). This finding is consistent with work on bird hunting in Europe, where bird harvesting draws on knowledge of bird behavior (Lappe-Osthege & Duffy, 2024). How birds are trapped is also linked to the resources available to the trapper: "bird lime is traditional and cheap," whereas "mist nets are quite expensive, costing around USD50" (NGOI2). Birdlime is associated with relatively high mortality rates, and birds subjected to lime sell for less (NGOL7) (Figure 1, vignette 1) and can lose limbs.

Human–bird relations are inherently place based, often concentrated at sites of exchange and interaction such as marketplaces. These relations reflect consumer preferences, cultural attachments, and economic behaviors that shape demand and commodification throughout the trade system. Though mortality rates may be high across the supply chain (Figure 4), these, along with welfare standards, depend on the bird group. Extensive welfare violations and high mortality rates are seen for small-bodied species, such as the munias (Table 1; Appendix S4), which are in the casual bird and cheap ornamental bird groups (Figure 3b).

Gendered social dynamics also shape birdkeeping in Indonesia. Marketplace observations suggest birdkeeping is a predominantly masculine pastime; most traders and consumers are male. Various techniques are used to advertise birds to male

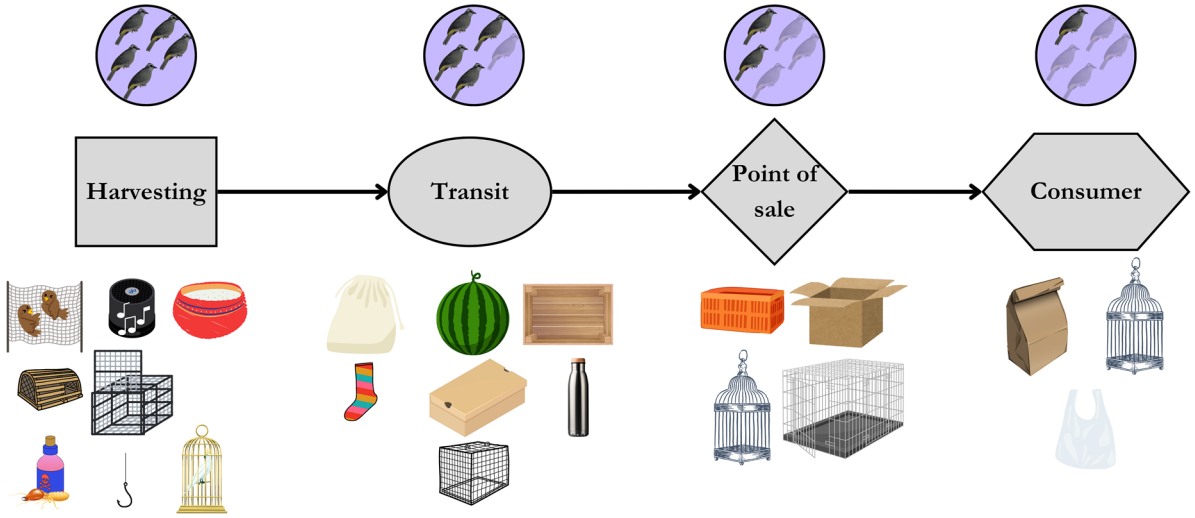

FIGURE 4 Summary of methods for harvesting and transporting birds for the live pet trade in Indonesia.

consumers, usually for low-cost species, for example, in cages branded with international football team logos; for example, traders call a red crimson sunbird (*Aethopyga siparaja*) the Arsenal bird. Other casual birds are spray-painted for marketing to children (Appendix S5). These techniques may help sell "new and unknown species by making them more appealing and exotic" (NGOL4), but for poorer vendors, there is a trade-off between keeping inexpensive birds alive versus letting them die.

Shops specializing in expensive ornamental species (e.g., rare native species, such as straw-headed bulbul [*Pycnonotus zeylanicus*], and prized songbirds from China, such as, black-throated laughingthrush [*Garrulax chinensis*] and Hwameis [*Garrulax canorus*]) and popular kicauan competition birds (white-rumped shama [*Copsychus malabaricus*], Oriental magpie-robin [*Copsychus saularis*], and the orange-headed thrush [*Geokichla citrina*]) were much cleaner. Birds from these groups were sold in larger, excrement-free cages with different foods, and customers were asked to remove their shoes before entering the shop. "High-priced, legally risky, or difficult-to-care-for birds tend to stay longer" (NGOL6), but the vendors can afford to look after those birds.

Poorer consumers have fewer resources available for multispecies care (Bubandt, 2024) and are unable to provide their birds with the best care. Despite financial limitations, bird-keepers create home remedies based on community knowledge, often avoiding veterinary visits (NGOL4) and "since COVID, there has been a rise in people building larger aviaries, allowing birds to spread their wings and fly, which is a significant improvement" (NGOI1). Vendors can still sell sick birds, and the price may be related to how well the species can survive its illness. This provides additional clarity on the cut-flower phenomenon noted among low-level hobbyist consumers (e.g., bird mortality is highest among hobbyists) (Marshall et al., 2020). It might not be that they provide the poorest care but that they are buying cheap birds that are sick already or sensitive to the conditions along the supply chain.

DISCUSSION

We found that the Indonesian songbird trade is highly complex, informal, and composed of several overlapping pathways of supply. Harms to birds included infection, dismemberment, and stress behaviors. However, these harms were mediated by the social differences of human actors and the bird group. Multiple perspectives and value systems are inherent to wicked problems and IWT. It is likely extremely difficult to change how wildlife is valued, and it is evident that songbird trade and associated harms to birds will differ among cultures.

Cooperation, investment, and power

It has been suggested that most wild bird harvest in developing countries is a "cottage industry" (i.e., production in the home) (European Food Safety Authority, 2006). We found that wild bird harvest was not a cottage industry but a series of microenterprises that formed clusters of artisanal traders catering to low-income consumers, where the role of intermediaries and vendors dominated (Tambunan, 2005). The growth of the Indonesian songbird trade is constrained by the reliance of poorer actors on powerful vendors, such as traders, through informal and unequal financial relations.

The poorest human actors in the trade are likely harvesters. This was suggested by several interviewees and collaborators and is supported by earlier work on bird harvesting for food markets, where harvesters in Java and Sumatra were reported to borrow from local wholesalers to support hunting activities (McCarthy & Noor, 1996), which creates financial dependency. Actors who provide labor at the site of bird captures are subject to economic instability and physical risks. Diminishing bird populations drive harvesters deeper into forest interiors, sometimes involving walking more than 3 h on foot, camping for several days, and carrying birds back (Lucas, 2011). The increase

in illegal logging and agricultural encroachment in Sumatra and Kalimantan has created new sources for wild-caught birds (Jepson et al., 2011) and put harvesters at risk of encountering snakes, tigers, and bears (Silalahi, 2020). This precarity also exists in Romania's timber trade (Iordăchescu & Vasile, 2023), in which forest worker and woodcutter livelihoods are precarious.

Turnover is not always high for rare species, and vendors are absorbing the costs of keeping animals alive, as well as competing with online sources, such as drop shippers (those who take customer orders and forward them to a supplier, typically through an online store) (Figure 2a). In surveys of bird traders across West Kalimantan, Miller et al. (2019) found that for 40% of bird shop owners, it was not their sole income source and the trade was not particularly lucrative. Evers and Mehmet (1994) surveyed small-scale agricultural traders in Java and found that nearly half borrowed money for business, mainly from informal sources, such as moneylenders. Wholesalers (traders) and drop shippers are likely to be financially independent and able to offer ordering options to wealthier consumers (Figure 3a). Black-winged myna (*Acridotheres melanopterus*) stolen from a conservation breeding center in West Java were all sold at bird markets in Jakarta the next day, which indicated that the birds were preordered (Sozer & Tritto, 2014).

Intersections of gender and class

The structure of bird trade reflects the broader informality of Indonesia's economy (Hao & Freischlad, 2022), though, as Thomsen et al. (2024) note, birds and other wildlife are reduced to objects in part by the prevailing neocolonial capitalist framework, where developing nations, such as Indonesia, are left with little option but to exploit their own natural resources to partake in global markets. We advance understanding of the gendered consumption of birds (Bubandt, 2024; Miller et al., 2019) by showing that the class of the consumer relates to how birds are treated (i.e., their welfare) and to how consumers interact with other trade actors.

Marketplaces are more than transactional sites; they are cultural environments used as social spaces by trade actors, particularly hobbyists, contestants, door-to-door sellers, and bird kiosk owners. Alcano (2016) observed the importance of street-side male socialization and aggregation in low-income neighborhoods in Surabaya, East Java, around activities like pigeon racing and gambling. We drew on conservation practitioner and enforcement perspectives, but other actor groups are crucial for a full understanding of the wider social and cultural context for the trade. Traders, in particular, act as a nexus for the passage of movement and may experience the greatest contact with the largest number of birds throughout the trade. There are open questions as to how traders receive and share information about the trade, whether that information relates to bird welfare, sources of animals, or market dynamics. For example, information exchange is crucial to understanding how zoonoses might emerge from human–animal interactions in wildlife trade (Clifford Astbury et al., 2024). Traders likely also have nonmarket drivers of interactions with the birds, which may stem from emotional or cultural attachments as viewed through gendered roles or personal experiences. Future work focusing on the traders would greatly enrich understanding of such interactions.

Bubandt (2024) suggests that songbird keeping evokes nostalgia for village life, fostering male companionship. However, we noted the coming together of modern hobbies, such as football fandom (Appendix S10), with the bird trade, reflecting contemporary social bonds between men. There are parallels between birdkeeping (kicau mania) and Indonesian football culture (bola mania) (Maulida, 2024) that involve ritualized, male-dominated activities, showing the global and modern aspects of these traditional social spaces.

Gender (specifically cismen) plays a significant role in other trades (e.g., cacti and succulents and aphrodisiacs [e.g., rhino horn or sea turtle eggs]). In cacti and succulent IWT, Margulies et al. (2023) hypothesize that men may be driven by heteromasculine notions of being daring. Conversely, Bubandt (2024) suggests that men see songbird competitions as safer than illegal activities, such as cockfights, even if the competition birds are illegally sourced. Marshall et al. (2021) reported a minimal fear of prosecution relating to songbird keeping among Javan consumers. Our results suggest that certain groups of birds are important as a medium of socialization, something Sánchez-Mercado et al. (2020) noted in the international red siskin (*Spinus cucullatus*) bird trade, where breeders, mainly middle-aged men, sought peer recognition most of all.

Our findings also indicated that men of different classes engage with birds for other reasons, such as for investment and connecting with Javan traditions. Poor contestants (Figure 3a) may view kicauan, competition or ornamental birds (Figure 3b) as an investment and as a means of class mobility (Lowen, 2016). The urban middle class may aspire to be Javanese princes by keeping expensive ornamental birds once favored by princes (Bubandt, 2024). Affluent collectors can reinforce their social status by amassing diverse menageries of species.

Multispecies structural violence of the cage-bird trade

Relationships between human actors and the value of the bird aside, there is still structural violence embedded in the cage-bird trade. We documented several methods of trapping and moving birds (Figure 4) of varying degrees of cruelty, ranging from the use of fishhooks, termites impregnated with poison, and watermelons for transporting birds. These methods bear heavy similarity to fishing and hunting birds for meat. In Indonesia, Tanimbar corellas (*Cacatua goffiniana*) are snared with nooses made from nylon fishing lines (Jepson et al., 2001). Birdlime is used in the European songbird meat trade (Lappe-Osthege & Duffy, 2024) and elsewhere in Southeast Asia, such as Myanmar (Platt et al., 2012).

Birds' behavior influences how species are treated in the trade. Prey species, such as songbirds, hide their pain (Doneley, 2011). This is a critical factor in understanding why their exploitation is normalized, with minimal recognition of individual harms, which Hutchinson (2023) also observed in the

European songbird meat trade. In the case of slaughterhouses, Hodgetts and Lorimer (2015) argue that the architecture and carcerality of the cage disrupt animals' abilities to express their subjectivities and thus human efforts to understand them.

Though bird properties limit the ability to think like a bird in complex and noisy marketplaces, a visual inspection is often all that is possible to document harm to birds. This approach was also fruitful for Pons-Hernandez (2024), who, in a series of photographs, revealed new and unexplored harms in the high-volume eel trade. These included drawing attention to the risks of eels suffocating through transport in plastic bags and providing evidence of anxiety through the secretion of ammonia bubbles by stressed individuals. Though bird behavior can be partially interpreted through visual cues, the five domains model offers a structured approach to assessing welfare by considering nutrition, environment, health, behavior, and mental state. However, this model is not universally applicable, particularly for reptiles, for which welfare indicators are harder to gauge (Baker et al., 2013). The model is also not an option for understanding the materiality of plants or, postmortem, to infer how an organism lived. However, as Collard and Dempsey (2013) note, once in a new home, the animals' lives are a shadow of their previous existence in the wild. The five domains model helps foreground how wild, sentient lives are transformed and supports a more-than-human political ecology by centering animal experience within trade systems.

Socioecological harm reduction interventions

Wildlife trade is diverse and context specific, encompassing legal, illegal, sustainable, and unsustainable practices (Hughes et al., 2023; Marshall et al., 2025). Although some forms may mitigate harm, the label IWT often centers on legality rather than on the impacts on individuals, species, or ecosystems. Our framework instead emphasizes harm as a more meaningful lens and acknowledges that IWT is a social phenomenon shaped by cultural, historical, and structural factors (Margulies et al., 2023).

Given the high social acceptability of the songbird trade (Fiennes et al., 2024; Marshall et al., 2020), eradication-based approaches are unlikely to be effective. Instead, we propose a series of interventions that aim to reduce harm to birds while respecting the livelihoods and cultural practices of human actors involved.

As Termeer et al. (2019) argue, wicked problems, such as the songbird trade, require partial, adaptive solutions rather than singular fixes. Building on Hübschle and Margulies (2024), we propose a series of socioecological harm reduction approaches to songbird IWT that focus on reducing harm to birds without compromising livelihoods along the four stages of the supply chain: harvesters, intermediaries, vendors, and consumers (Figure 2a). To us, safe trade acknowledges and reduces harm (stress, injury, and mortality) to individual birds through less destructive harvesting, improved transport, and enhanced welfare standards.

As our results show, bird harvesting is often carried out by low-income actors with limited access to resources or training, which can mean such actors rely on more harmful harvesting methods. To reduce harm at this stage, the following could be considered: identify and protect species with high sensitivity to capture and captivity based on physiological indicators, such as corticosterone spikes (e.g., Cockrem, 2007); trial payment schemes to incentivize the release of rare or vulnerable species, as seen in Indonesian shark and manta ray fisheries (Booth et al., 2023); phase out use of bird limes due to damage to flight feathers (Platt et al., 2012) and reduced value; and promote peer-to-peer training from expert mist net trappers and fund less lethal hunting methods, such as mist nets, for poor harvesters.

The transport stage is a critical point of vulnerability for birds, particularly for small-bodied insectivorous species that dominate the Indonesian bird trade (S.F., personal observation). Mortality during transit is often high due to overcrowding, stress, and inadequate conditions. To reduce harm during this stage, we propose the following. Improve transport conditions by, for example, transporting birds in a quiet, dark environment with food and water and keep handling to a minimum (Bocetti, 1994). These actions could be adapted for Indonesian contexts, particularly for long-distance interisland transport and when birds are transported in some of the unconventional vessels we reported on here (e.g., socks, bottles, and watermelons). Minimize overcrowding in transport vehicles (European Food Safety Authority, 2006) and improve understanding of species-specific densities for popular birds and transport birds in their normal social groups (European Food Safety Authority, 2006).

We found that bird condition at the point of sale varied significantly, depending on the type of bird and the socioeconomic status of the vendor. Thus, we suggest the following harm reduction interventions: apply conditions provided for expensive birds across all marketplaces (i.e., clean shops, spacious cages, food, and water); install physical barriers between birds and visitors to reduce stress (Bartels et al., 2022); and avoid stacking cages and overcrowding, which can exacerbate injury and disease transmission (Bartels et al., 2022). These suggestions reflect the reality that vendors who can afford to care for birds better tend to do so, suggesting that improving conditions is not only possible but already practiced in parts of the trade.

The following interventions reflect the diversity of bird-keeping practices and the importance of working with, rather than against, existing knowledge systems: engage with aviculture communities to promote welfare models, such as the five domains and improve understanding of folk medicine practices that may influence avian longevity and support do-it-yourself aviary builders and birdkeepers in adopting higher welfare standards through community-led education and outreach. Bird ownership practices vary widely and are shaped by socioeconomic status, cultural norms, and access to resources.

These recommendations are not prescriptive but offer a flexible framework for harm reduction that local communities can adapt. Ultimately, the contours of any intervention must be codeveloped with those most affected to ensure that human and nonhuman needs are addressed in tandem (Green, 2025). To advance a more inclusive and ethical approach to wildlife trade research and policy, we recommend adopting a

more-than-human political ecology perspective. This framework emphasizes the agency, welfare, and lived experiences of nonhuman animals alongside human stakeholders. We recommend the following. First, individual animals should be recognized as stakeholders in policy and practice. This involves incorporating frameworks, such as the five domains, to assess welfare and extending multispecies justice to include animals in legal, transportation, and captivity decisions. It also means attending to animals' materiality and behaviors, physical traits, and actions, which shape how they are captured, valued, and traded. Understanding these dynamics is essential for designing interventions that reduce harm and respect animals' lived experiences. Second, local knowledge and socioecological complexity should be integrated into wildlife trade governance.

Local knowledge systems, such as folk medicine and avicultural practices, should be engaged with to better understand human–animal relationships. Oyanedel et al.'s (2024) framework should be extended and adapted to analyze how market structures, demand chains, and regulatory environments contribute to harm not only to human communities but also to individual animals, allowing for full capture of the socioeconomic and ecological complexity of wildlife trade.

There are various structures of power (framed by economic and class issues) that impose violence on birds, but human actors also do this to varying extents, such as actors who rely on external investment or are tied to the patronage of more powerful actors. We recognized and explored the importance of birds as mediums for socialization and income and as status symbols for a range of men from different socioeconomic backgrounds in Indonesia. By recognizing songbirds as individual victims, we have improved understanding of the harms birds face in trade. Shifts to more sustainable use of birds (i.e., birds subjected to less destructive harvesting and transport methods and at a rate that does not lead to long-term decline) can also reduce social harm to actors more vulnerable to economic inequalities (Lunstrum et al., 2023) in the songbird trade system. Songbird trade is a useful case study of a more-than-human political ecology because it is embedded in complex and overlapping cultural systems (e.g., Javanese, footballing, and more generic consumer cultures) and involves hundreds of species (Fiennes et al., 2024). However, the lessons we learned can be applied to other wildlife trades, including socially acceptable trades and those involving other species, such as invertebrates and plants. Ultimately, we hope our approach can be used to improve understanding of other illegal wildlife economies in terms of the social and cultural ideas that shape them, the material properties of traded entities, and how trade disrupts wild lives.

AUTHOR CONTRIBUTIONS

Sicily Fiennes, Christopher Hassall, George Holmes, Tom Jackson, Novi Hardianto, and Silvi Dwi Anasari conceptualized the study. Data collection was carried out by Sicily Fiennes, Novi Hardianto, Silvi Dwi Anasari, Luthfiyyah Damani, and Jero Haryono. The investigation was conducted by Sicily Fiennes, Novi Hardianto, Silvi Dwi Anasari, Luthfiyyah Damani, Jero Haryono, Christopher Birchall, Christopher Hassall, and George Holmes. Original draft was written by Sicily Fiennes, Christopher Hassall, George Holmes, and Christopher Birchall. Christopher Hassall, George Holmes, Christopher Birchall, and Luthfiyyah Damani provided reviewing, critiquing, and editing.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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