Conservation Action Plan for Javan Green Magpie

(Cissa thalassina)

2026-2035

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List of Acronyms and Abbreviations

ASTSG	Asian Songbird Trade Specialist Group
BAPPEDA	Badan Perencanaan Pembangunan Daerah
BAPPENAS	Badan Perencanaan Pembangunan Nasional Republik Indonesia
BKSDA	Balai Konservasi Sumber Daya Alam
BMKG	Badan Perencanaan Pembangunan Nasional Republik Indonesia
BRIN	Badan Riset dan Inovasi Nasional
CWC	Cikananga Wildlife Center
Ditjen Gakkum	Direktorat Jenderal Penegakan Hukum
Ditjen KSDAE	Direktorat Jenderal Konservasi Sumber Daya Alam dan Ekosistem
EAZA EEP	European Association of Zoos and Aquaria Ex situ Programmes
IUCN	International Union for Conservation of Nature
IdSSG	Indonesia Species Specialist Group
IPB	Institut Pertanian Bogor University
MoF	Ministry of Forestry
NGO	Non-Governmental Organizations
NUS	National University of Singapore
Perum Perhutani	Perusahaan Umum Kehutanan Negara
PKBSI	Perhimpunan Kebun Binatang Se-Indonesia
PVMBG	Pusat Vulkanologi & Mitigasi Bencana Geologi
SSC	Species Survival Commission
TBS	The Biodiversity Society

TSI	Taman Safari Indonesia
UAJY	Universitas Atma Jaya Yogyakarta
UGM	Universitas Gadjah Mada
UI	Universitas Indonesia
WCS	Wildlife Conservation Society
YIARI	Yayasan Inisiasi Alam Rehabilitasi Indonesia

Conservation Action Plan for Javan Green Magpie (*Cissa thalassina*) [2026-2035]

1. Introduction

1.1. Biological and Ecological Information

The Javan Green Magpie “Ekek-geling jawa” *Cissa thalassina* is a medium-sized songbird and a member of an Asian lineage of tropical forest corvids of the genus *Cissa* with unique bright green plumage. It was first described by Dutch zoologist Coenraad Jacob Temminck in 1826. Due to its elusive and secretive nature, remoteness of its montane forest habitat and its extreme rarity, very little is published on the natural history of this distinct Javan endemic (dos Anjos, 2009; Madge & Burn, 1994). Formally considered conspecific with the Bornean Green Magpie *Cissa jefferyi* it is now treated as a distinct species based on morphology, vocalization and genetic evidence (van Balen *et al.,* 2013).

1.1.1. Taxonomy and Nomenclature

Class:	Aves
Order:	Passeriformes
Suborder:	Oscines
Family:	Corvidae (crow family)
Genus:	*Cissa*
Species:	*thalassina*
Subspecies:	None (Monotypic)
Author:	Temminck, CJ
Protonym:	*Kitta thalassina* (Temminck, 1826)
Accepted name:	Cissa thalassina (Temminck, 1826)

1.1.2. Morphology

The Javan Green Magpie is 30-33 cm in length and weighs 124-135g. The sexes are alike. It has bright green plumage on head, body and scapulars, the relatively short, bluntly graduating tail is uniformly darker green than the rest of the body. The crown is bright yellowish green, forming a short crest above a black facial mask, which extends from the base of bill, across both sides of the head, enclosing the eyes and joining at the nape under the crest. The black feathers above the eyes can be raised to form “eyebrows” when the bird is excited, alarmed or on display. The primary and secondary feathers are a rich reddish-chestnut brown, the tertiary feathers are pale opaline whitish green. It has a distinctly large coral-red bill, orange-red legs, feet and eye-ring. The iris is reddish-brown surrounded by a white sclera. Juveniles fledge with a duller green plumage than the adults, the tail is shorter, the bill is black, and the legs and feet are pinkish grey. Following van Balen et al (2013) the Javan Green Magpie was split from its closest relative, *Cissa jefferyi* the Bornean Green Magpie based on distinct morphological and vocal differences.

Fig. 1: Adult male and female Javan Green Magpie
(Photo:Steve Rawlins, Chester Zoo)

Fig. 2: Close-up of head of adult Javan Green Magpie(
Photo:Steve Rawlins, Chester Zoo)

Fig. 3: Wild caught fledgling from Halimun-Salak National Park, West Java 2012

Its specific name is *thalassina* (meaning sea-green or bluish-green, the general colour of preserved skins or of faded birds kept in captivity) was given by its describer, C. J. Temminck.

The Javan Green Magpie's vibrant plumage is derived from lutein, a yellow carotenoid pigment. Lutein is obtained by animals directly or indirectly, from plants and its yellow pigment is absorbed in living organisms which eat it, including birds (Hill, 2010). The green plumage of this and other *Cissa* species is made up of blue structural feathers, which become green when the yellow lutein pigment is absorbed into the bird's system through the food that it eats and is transferred to the freshly growing feather follicles during the bird's moult.

As the yellow lutein pigment is not part of the structure of the feathers or stable in the bird's system, a lack of it being consumed over time will result in the bird's green feathers progressively fading to blue, the rich brown feathers fade to a dull grey brown and the bright red bill fades to a pale orange. This phenomenon is seen in birds in captivity that have been fed on a diet lacking in lutein and in birds exposed to bright sunlight (Owen, 2019).

Fig. 4: A Javan Green Magpie rescued from the trade that had not received sufficient dietary lutein (photo : Andrew Owen).

1.1.3. Distribution and Habitat Status and Trends

The Javan Green Magpie is endemic to montane and submontane evergreen forests of West and Central Java, Indonesia, where it is restricted to a small number of mountains within its fragmented range. Historically it primarily inhabited forests at elevations of 500-2,000m asl. At lower elevations the Javan Green Magpie was occasionally seen at the edges of forests, and in adjacent cultivated areas such as tea gardens (van Balen *et al.,* 2013).

Due to agricultural expansion and loss of habitat, few forested areas now remain below 800m asl. On Java, most forest below 1,000m, and in some areas up to 1,500m, has been cleared, which is suspected to have caused serious declines in this species' population (van Balen *et al.*, 2013). Forest loss in Java's highlands is ongoing, but has slowed since the Millenium, and is less severe at higher altitudes and within protected areas (Higginbottom et al. 2019).

Fig. 5: Natural habitat of Javan Green Magpie
(location where two birds were heard November 2013 by Owen and Tritto).

1.1.4. Population Status and Trends

The Javan Green Magpie is Critically Endangered (CR) with very few individuals remaining and the population thought to be extremely small; with populations estimated from plausible range to be as low as 50-250 individuals (BirdLife International, 2025). The species has already been reported as extinct across much of its former range (van Balen *et al*., 2013).

The wild population is highly fragmented, restricted to only a few protected sites and recent surveys (Marsden *et al*., 2023) failed to confirm the presence of the species at any of the 12 mountains surveyed across West and Central Java.

Since the year 2000, there have been only a few scientific and anecdotal reports of the species occurring at (in a west to east sequence) Mount Halimun-Salak National Park, Mount Gede-Pangrango National Park, Mount Simpang Nature Reserve, Mount Sawal Wildlife Reserve, Mts Pembarisan, Mts Dieng, and Mount Merapi National Park. Of these only six have been since 2015. The species is sedentary and does not migrate.

1.1.5. Diet and Feeding Ecology

The Javan Green Magpie is an obligate carnivore/insectivore that forages in the mid-to-upper levels of the forest and on the ground. The old names Hunting Crow or Hunting Cissa (Madge and Burn, 1994) very aptly describe its voracious nature. Historically Javan Green Magpies were found in pairs or small flocks (presumably small family groups), joining mixed species flocks (Delsman, 1927 in van Balen *et al.,* 2013) and not uncommonly with Rufous-fronted Laughingthrushes *Garrulax rufifrons* (van Balen *et al.,* 2013, van Balen *pers. comm*.). Although data are limited and recent observations of the species feeding in the wild are lacking, analysis of stomach contents from 34 museum specimens confirm its diet is composed mainly of invertebrates, including snails, crustaceans–crayfish *Astacidae* (Decapoda); pill bugs *Armadilliidae* (Isopoda); insects–cockroaches *Blattidae* (Dictyoptera), grasshoppers (Orthoptera), ‘may-beetles’ *Scarabaeidae*, weevils *Curculionidae, Chalcothea* spp. *Cetoniidae,* horned beetles *Cerambycidae,* click beetles *Elateridae (Coleoptera),* cicadas (Homoptera), caterpillars (Lepidoptera) and large ants *Formicidae* (Hymenoptera) (van Balen *et al.,* 2013 and references therein).

In addition to invertebrates, its diet also includes small vertebrates including lizards, frogs, snakes, and the eggs and nestlings of other birds. Fruits are thought to form only a small part of the diet (van Balen *et al.,* 2013).

1.1.6. Breeding

Little is known regarding breeding ecology in the wild; information is limited to a few historical and more recent anecdotal accounts. Although data are scarce and conclusions cannot be reliably drawn, it appears that breeding takes place during most of the year with a preference for the wettest months, i.e. October–April in West Java.

The nest was reported as a "...cup-shaped nest on the thin twigs of a large-leaved tree, consists of a base of stronger stalks or branches, then tendrils and thin twigs, intertwined with many dry leaves of bamboo, rice etc; inside lined with black thin roots; 80 mm high, 170-180 mm wide, inner cup 65 mm deep and 110 mm wide." (Meyer 1884 in van Balen 2013). Bartels (1897-1931) "... found its nest twice on thin trees in a tree fork close to the trunk, of rather solid built, but not very large in relation to bird's size…". Hoogerwerf & Kadir (1949) "...usually not high above the ground (3–6 m)...in not thick branches...base and outside consists of dry leaves, both from trees and rattan etc. Nest cup lined with plant parts looking like thin, dark rootlets, and petioles, stems, etc...". Becking (unpubl. data) reported a nest in a *Tarenna incerta* tree at 2.5 m above the ground in a Manglietia experimental plot, another in a small tree in undergrowth at 3 m above the ground in primary forest (van Balen *et al.* 2013).

This is corroborated by Nurwatha (unpublished report 2016), who conducted interviews with Javan Green Magpie trappers, "Around the year 2004/2005, bird trapper Apud has twice taken juvenile Javan Green Magpies from their nest in the forest near Central Village, Citalahab. The position of the nest was about 1.5-2m high from ground level. The nest was found on a small tree branch (the diameter of the tree about 15cm). The local name of the nest tree is Kiseueur (*Antidesma* sp.). Nest made from twigs, with moss and dried leaves in the center of the nest. The location of the nesting tree was not far (about five metres) away from a small stream. The first time, Apud took two juveniles from the nest. Two months later, the adult Javan Green Magpies built a nest again in the same tree but on a different branch and produced one juvenile, which was also taken away by Apud".

From observations of birds in ex-situ care, nest construction is carried out by both sexes and is usually completed within 4-5 days. A variety of materials are used, including sturdy twigs, thin flexible twigs, plant stems, rootlets, bamboo leaves, long pine needles and coconut fibres. The exterior of the nest is built using the thicker twigs, rootlets and fibres and the nest cup is usually lined with finer material such as bamboo leaves and coconut fibres.

Two or occasionally three eggs form the normal clutch. The eggs are oval, moderately glossy, with blueish-white or greenish-white ground colour with few grey-violet primary stains and marked on the entire surface with uniformly distributed smaller reddish-brown

secondary stains; eggs of *C. t. thalassina* average 32.78 mm (range 29.0-34.3 mm) x 22.61 mm (range 20.5–23.30mm).

Incubation is carried out by the female, who is provisioned on the nest by the male. Eggs hatch after a 20–21-day incubation period and the chicks are fed on a variety of invertebrate and small vertebrate prey items by both parents. The hatchlings are altricial, meaning they are born featherless and are completely dependent on their parents for care. The chicks fledge between 21 and 23 days of age (Owen, 2019).

Fig. 6: *First two (infertile) eggs laid at Cikananga Conservation Breeding Center 2013* (Photo: Stephan Bulk)

1.1.7. Genetics

A genetic study on the Javan Green Magpie population held within EAZA institutions was carried out in 2024 under the supervision of Dr Sarah Griffiths of Manchester Metropolitan University to determine the relatedness and kinship of the population. Despite genetic signatures of a bottleneck, genetic diversity was still moderate within the sampled population.This study indicated that wild-caught founder birds are unrelated to each other and genetic diversity within the population is reasonably healthy. (Griffiths et al. in prep.).

1.2. Protection and Regulation Status

1.2.1. International Regulations

The Javan Green Magpie was last assessed by the IUCN Red List of Threatened Species in August 2020. With less than 50-249 mature individuals, the species is listed as Critically Endangered under criteria C2a(i) (BirdLife International, 2021). The species is not listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

1.2.2. National Regulations

The Javan Green Magpie is listed as a protected species in Indonesia under the government regulation of the Ministry for the Environment and Forestry PermenLHK No. P.106/MENLHK/SETJEN/KUM.1/12/2018. A protected species is defined as: A species that is legally protected under Indonesian conservation law, meaning that it is illegal to catch, injure, kill, keep, possess, trade, or transport them. This protection is granted to species that are native to Indonesia, have a limited range, and have a dwindling population.

Legal Protection:
Indonesia's conservation law prohibits commercial use of protected species, meaning they cannot be caught, killed, traded, or used for any commercial purpose.

1.3. Social and Cultural Values

The local name for the Javan Green Magpie—Ekek Geling—originates from the Sundanese community and reflects Indonesia’s cultural tendency to name birds based on their sounds rather than their appearance (Sukmantoro et al., 2007; Eaton et al., 2022). The name mimics the bird’s distinctive vocalization, often described as “kek kek kek... geleng geleng,” embodying the deep auditory connection between people and their natural surroundings. This naming practice arises from Indonesia’s dense tropical forests, where birds are often heard before they are seen. Consequently, local naming traditions emphasise acoustic recognition, leading to a rich diversity of bird names that reflect people’s familiarity with their environment.

The name Ekek Geling suggests that early local appreciation of this species was closely tied to its vocal presence in the forest. Communities recognised it as a bird that

brightens the wilderness with its lively, cheerful calls, contributing to the forest's soundscape and vitality. The bird's song not only symbolises the harmony of the forest but also serves as a cultural marker of place and identity for the people who live near its habitat. Without its resonant voice, locals describe the forest as quieter and less alive—revealing how the bird holds intangible ecological and emotional value beyond its biological significance.

Over time, this appreciation evolved into a broader social and cultural phenomenon embedded within Indonesia's songbird-keeping and contest culture (Kunto, 1986; Jepson, 2010; Iskandar, 2014). The Javan Green Magpie's varied and distinctive call made it desirable among hobbyists, leading to its capture and use as a "master bird" to train other species for contests (Iskandar, 2014; Imat, pers. comm.). While it is rarely used in bird contests directly, its song is prized for enhancing the vocal abilities of competition birds, symbolising prestige and expertise among enthusiasts (Yanto, unpublished data). This intertwining of cultural admiration, tradition, and economic value reflects the transformation of the species from a symbol of natural harmony into a cultural asset within Indonesia's dynamic bird-keeping community—one that mirrors the complex human–nature relationship shaping the country's conservation challenges today.

2. Background of the Need of Conservation Planning for Javan Green Magpie

The Javan Green Magpie has been recognised as requiring urgent conservation attention. Its status, confirmed following its taxonomic elevation in 2011 by Van Balen, Eaton, and Rheindt, has highlighted the need for coordinated and strategic action to prevent its extinction (van Balen *et al.*, 2013).

The species faces severe threats, primarily driven by unsustainable trapping and trade, which have significantly reduced its population in the wild. As with many songbirds in the region, the Javan Green Magpie has become emblematic of the broader songbird crisis in Southeast Asia. In response to these challenges, a facilitated workshop was convened between 30th of September and 3rd of October 2025, to bring together key stakeholders, including government representatives, conservation organisations, and zoological institutions. The workshop was jointly organised by the IUCN SSC Asian Songbird Trade Specialist Group (ASTSG), the IUCN SCC Indonesia Species Specialist Group (IdSSG), and facilitated by the IUCN SSC Conservation Planning Specialist Group (CPSG). This collaboration reflects a growing recognition that multi-institutional and cross-sectoral engagement is essential for effective conservation planning.

The ASTSG, established in 2017, has been actively involved in addressing the threats posed by the songbird trade, particularly in Indonesia, where the highest number of at-risk taxa are found. Its formation was one of the key outcomes of the 2016 Songbird Crisis Summit held in Singapore. Since then, ASTSG has worked to support in-situ conservation efforts, building on earlier initiatives led by the European Association of Zoos and Aquaria (EAZA).

Additional support has been provided through the EAZA Silent Forest Campaign, which raised significant funds for in-country conservation projects and adopted the Javan Green Magpie as its emblem. Funding from this campaign contributed to the organisation of the current workshop.

The involvement of leading zoological institutions—including Taman Safari, Gembira Loka, Chester Zoo, Cologne Zoo, Copenhagen Zoo, and Mandai Nature—has further underscored the importance of ex-situ and in-situ collaboration in species recovery efforts.

Given the species' precarious status and the complexity of the threats it faces, the development of a Conservation Action Plan has been identified as a critical outcome of this workshop. Such a plan is intended to consolidate existing knowledge, define clear conservation priorities, and establish a framework for coordinated action. A One Plan Approach, integrating both in-situ and ex-situ strategies, has been proposed to ensure that all stakeholders are aligned in their efforts.

By fostering consensus and shared responsibility, the Conservation Action Plan is expected to serve as a roadmap for the recovery of the Javan Green Magpie, ensuring that conservation measures are both effective and sustainable.

3. Vision

On the 30th of September 2025, all participants gathered at IPB Bogor Convention Centre in Bogor for the opening of the Javan Green Magpie Conservation Planning Workshop. The first plenary session featured a visioning exercise where all stakeholders brainstormed an ideal future for the species over the next 30 years. This exercise is a key step in the conservation planning process, as the resulting vision statement will serve as a guiding framework for the conservation actions to be developed.

Each participant wrote a vision statement that comprised no more than two sentences. They were then asked to form groups of five and collaboratively merge their statements into a single, consolidated version. This interactive exercise continued until only three vision statements remained, which were presented to the plenary. The vision working

group worked on the statements further over the workshop and developed a concise vision statement in both Bahasa and English.

The final vision statement reads as:

> “Within 30 years, the Javan Green Magpie is cherished, respected and thriving in its biodiverse mountain forest home. A symbol of pride, it is safeguarded/saved by national collaboration among government, civil society (organizations), and local communities with global support.”

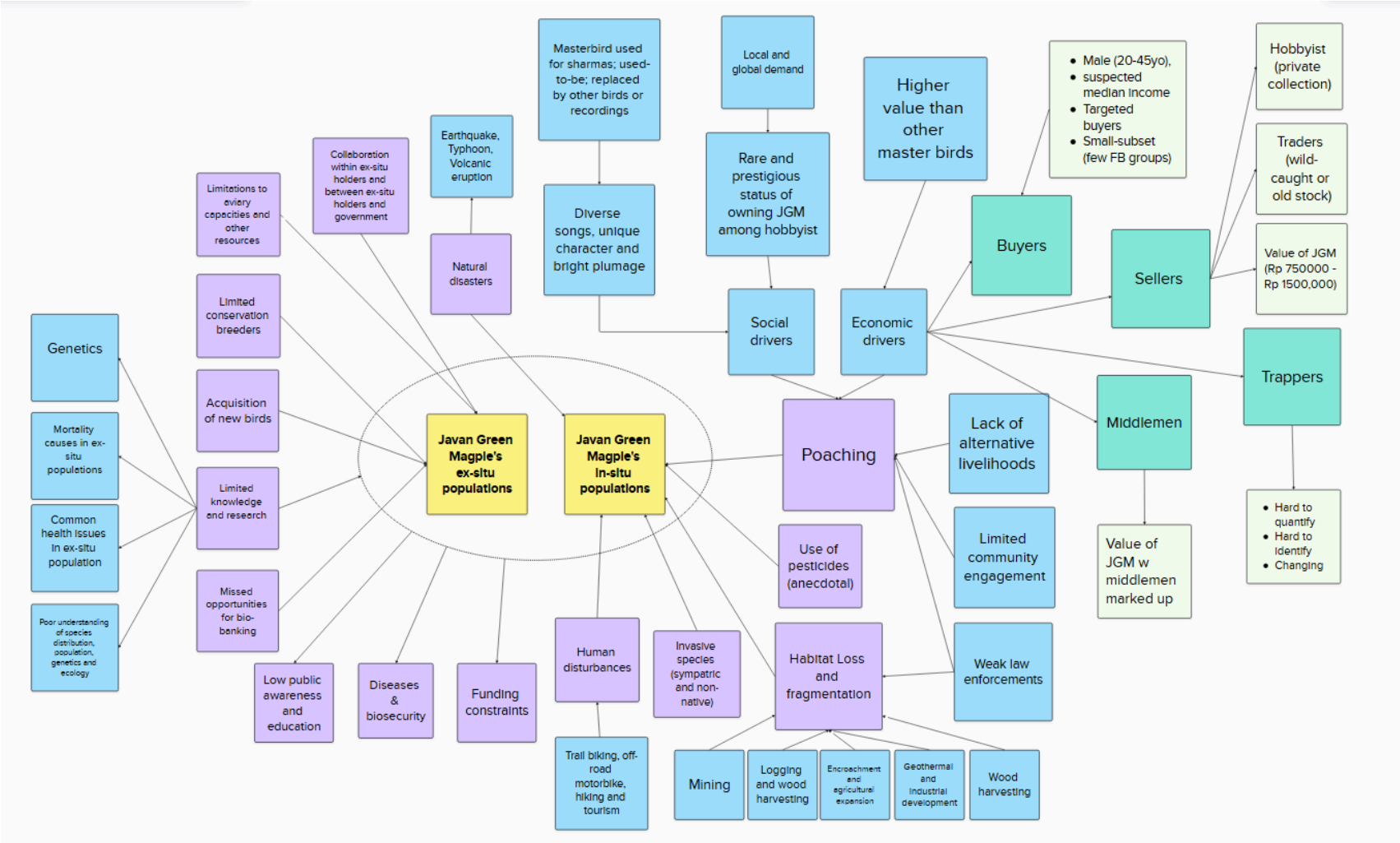


Fig. 7: Challenges, threats and their drivers to both in-situ and ex-situ populations of the Javan Green Magpie

4. Threats to Javan Green Magpie

Once the vision was identified and agreed upon by all participants in the workshop, participants proceeded to detail out all the possible threats to the Javan Green Magpie that are currently preventing the vision from becoming a reality. The section below details out all the threats, their drivers impacting the species as well as ways in which these can be overcome to facilitate Javan Green Magpie recovery spelled out as objectives and actions below

4.1. Poaching and Illegal Trade

Poaching of the Javan Green Magpie, especially in West Java, is driven by targeted requests from songbird kiosk (small shop) owners or middlemen, who commission specialised hunters to capture the species for potential buyers. These intermediaries often provide funding, supplies, and even “decoy” birds, forming a well-connected hunting network that shares information and coordinates operations. The motive is primarily economic—hunters in Mount Tilu earned up to IDR 1 million (60 USD) per trip in 2013, excluding expenses (Imat, pers. comm.). However it should be noted that recent surveys in the SafeNest Indonesia programme indicate that some local opportunistic poaching is characterised as a pastime or hobby and at least in some cases is primarily driven by interest in the forests and the birds (S. Bruslund, pers. comm).

Evidence of poaching of all types of birds is widespread in the field, including observations of glue traps (*leugeut*), observation huts, poles for nets, and numerous footpaths leading into conservation areas. Mist nets are sometimes found abandoned, with dead birds still trapped within them. Online trade advertisements and available audio lures on dedicated internet platforms and interviews with trapper and bird trade communities provide further indications of continued widespread poaching for wild birds. Historical records show poaching hotspots in Mount Halimun (1990–1995) and Dieng Mountains (mid-1990s). More recent reports describe hunters exploiting the flying termite season in October, using termites—sometimes laced with poison—to lure magpies (van Balen et al., 2013). Though there is currently no scientific publication, field investigation further suggests that these poisoned baits cause intoxication or paralysis. If not treated, the baits can further intensify the mortality rate.

4.1.1 Illegal Trade of the Javan Green Magpie

Trade in the Javan Green Magpie has historically been reported as small-scale and sporadic, however this assumption is based on results from market surveys that were

not systematically conducted and carried out infrequently. Between 1979–1986, the species was inconsistently available in Bandung and Bogor markets, with the highest record at 25–125 birds in 1978 (Iskandar, 1980). By 1987, sightings in Jakarta markets had disappeared (Basuni & Setiyani, 1989). Surveys in 1992–1993 recorded the species in 25 of 39 markets across Java, fetching up to IDR 1.2 million (72 USD) per bird (R. Sözer, pers. comm).

Today, the trade has shifted more and more from traditional markets to online platforms such as Facebook and WhatsApp. In 2024, Cikananga Wildlife Center documented 16 Javan Green Magpies offered online for IDR 750,000–1,500,000, far below the 2013 Kamojang price of IDR 3.5 million (Pupung F. Nurwatha, pers. comm). The number of Javan Green Magpie individuals offered contrasts sharply with 202 online listings for the more common Common Green Magpie (*C. chinensis*), indicating its extreme rarity.

4.1.2 Social Drivers: Songbird Culture and Contests

The decline of the Javan Green Magpie in the wild is closely linked to Indonesia's entrenched songbird-keeping culture and competitive bird contests (van Balen et al., 2013; Eaton et al., 2015). The species' cultural appeal lies in its melodious calls. Bird-keeping traditions date back to colonial times (Kunto, 1986) and have flourished with urban bird markets and growing numbers of enthusiasts (Jepson, 2010; Iskandar, 2014).

Although the magpie's vivid coloration often fades in captivity, its loud and varied song makes it desirable to hobbyists (van Balen et al., 2011). Cikananga Wildlife Center's surveys (2023–2024) in Sukabumi, Bandung, and Ciamis found no open trade; transactions now occur covertly online (Yanto, unpublished data). Only one captive individual was recorded in Kamojang, Garut, during two months of field surveys.

Citizen-science data further highlight its rarity in captivity. Between July 2024 and January 2025, Amati Sangkar (AKAR) recorded 688 bird species (214,846 individuals) being kept across Indonesia, mostly in Java—but only two Javan Green Magpies (Amati Sangkar, 2025). Similarly, *Burungnesia* has reported no wild sightings since 2016, while eBird has no accepted sightings since 2005, and just one unconfirmed record in 2016 (that lacked documentation) which compared to the nine records between 1972-1999, underscores the species' critical status.

4.1.3 Songbird Contests and Their Impacts

Indonesia's songbird contests began in the 1970s, initially centered on Zebra Doves (*Geopelia striata*), and later diversifying to other species (Jepson, 2010; Turut, 2012). Non-native species like the Chinese Hwamei (*Garrulax canorus*) and Canary once dominated, but import restrictions after the 1998 monetary crisis shifted focus toward native birds (Iskandar & Iskandar, 2015). This expansion, while culturally significant, intensified poaching pressures. For instance, demand for Straw-headed Bulbuls (*Pycnonotus zeylanicus*) surged, driving them to near extinction. There is a clear link between the rise of bird contests, growing hobbyist numbers, and declining wild populations (Iskandar, 2014). Contest winners fetch high prices, incentivising wild capture and trade.

Since the 2000s, contests have evolved into a decentralized, tiered system—local ("latber"), regional, and national events—organised by independent groups rather than solely by the *Perhimpunan Burung Indonesia* (PBI). Local events occur weekly, regional every few months, and national annually (Iskandar, 2014).

Contest species fall into two categories: "main contest birds," like the White-rumped Shama (*Copsychus malabaricus*) and Orange-headed Thrush (*Geokichla citrina*), and "master birds," used to train/enhance the vocalisations of contest birds. Over time, these "master birds" themselves—such as the Javan Pied Starling (*Gracupica jalla*) and Singing Bush Lark (*Mirafra javanica*)—became contest species (Iskandar, 2014; Imat, pers. comm.).

Although the Javan Green Magpie is rarely contested directly, it plays an important role in this system as a "master bird." Contest caretakers use its distinctive song to train competition birds, believing its vocal patterns produce superior performances. This reputation makes the species valuable and sustains covert trade among enthusiasts, despite its protected status.

4.1.4 A Crime Science Approach: The Integrated Prevention Model (IPM)

To address poaching effectively, a crime science-based strategy such as the Integrated Prevention Model (IPM) can be applied. Rooted in Problem-Oriented Policing (POP), this model uses the SARA framework—Scan, Analyse, Respond, Assess—to identify root causes, minimise crime opportunities, and design measurable, context-specific interventions (Fig. 1). As the core of the approach is to transform the strategic thinking by becoming highly proactive rather than reactive, POP has proven to reduce targeted crime problems by an average of 34% (Lemieux et al., 2022).

Fig. 8: The SARA Process

In Indonesia, IPM has shown success in conservation areas. In Way Kambas National Park, Lampung, IPM reduced tiger prey snaring through community engagement, alternative livelihoods, and multi-agency coordination (Susyafrianto et al., 2024). Similarly, in Bukit Barisan Selatan National Park, analysis of bird-hunting networks led to rehabilitation of former hunters through forest restoration work and formation of Forest Farmer Groups (*Kelompok Tani Hutan*). Awareness programmes for kiosk owners and targeted patrols further lowered hunting incidents. As a result, 69% of identified hunters abandoned poaching, reducing hunting intensity across the park (Risdianto et al., 2025).

Inspired by these results, this action plan aims to apply IPM principles to Javan Green Magpie conservation—integrating interventions that target both the supply (hunters and local villagers) and demand (hobbyists and traders). By tailoring measures to each group's motivations and connections within the supply chain, the project seeks to reduce poaching pressure, shift behaviors, and ensure the species' long-term survival. It is noted that the population of the species and thereby the amount of illegal trade reported could now be at a critical level, where a single, opportunistic, trapping and trade event could be devastating for the species survival.

Tab. 1: Objective and actions (A) Poaching and Illegal trade

Objective A1: Eliminating market demand for the Javan Green Magpie			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
A1.1: Mapping consumer demand for Javan Green Magpie by analysing preferences for the masterbird technology and alternative species; investigating price dynamics (including reasons for price drop); and assessing consumer perceptions	1 year	Birdpacker-Burungnesia, Cikananga Wildlife Center (CWC)	Garda Animalia, Yayasan Inisiasi Alam Rehabilitasi Indonesia (YIARI)
A1.2: Raising awareness to the community involved in the Javan Green Magpie supply chain (for example: Kicaumania, etc)	5 years	BKSDA, Halimun Salak NP, Gunung Gede Pangrango NP	Perusahaan Umum Kehutanan Negara (Perum Perhutani), Village Head, Customary leader (Pemangku Adat)
Objective A2: Eliminating supply of the Javan Green Magpie			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
A2.1: Encouraging village/local regulations (Peraturan Desa) in villages adjacent to Javan Green Magpie population; **A2.1.1**: Educate photographers/hikers to refrain from tagging the exact location of wild Javan Green Magpie sightings on all social media platforms	3 years	Village government	BKSDA, National Parks, Burung Indonesia, BISA Indonesia, and SwaraOwa

A2.2: Enhancing empowerment of alternative livelihoods suitable for trappers (e.g. with conservation community development program)	3 years	BISA Indonesia & SwaraOwa	The Biodiversity Society, Burung Indonesia
Objective A3: Supporting Law Enforcement Regulations of Javan Green Magpie			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
A3.1: Capacity building to help strengthening existing cyber patrol policy (online IWT)	2 years	WCS, SafeNest Indonesia	IDEA (Indonesian E-commerce Association), Ministry of Forestry (including KSG & GAKKUM)
A3.2:Reviewing existing case of Javan Green Magpie confiscation (if any), and make trade gap analysis	5 years	SCENTS Indonesia	Ministry of Forestry (including KSG,BKSDA & GAKKUM)

4.2. Habitat Loss and Fragmentation

Habitat loss occurs when the environment that the species depends on is destroyed or converted for human use. For rare bird species such as the Javan Green Magpie, habitat loss can be particularly devastating as it relies on a critical habitat of intact primary rainforests between 500-2,000 m asl (see section 1.1). In Java, a large proportion of the suitable habitat in the species' lower altitude range has been destroyed or disturbed before the year 2000, including most suitable habitat up to 1,000 m asl and much of the suitable habitat up to 1,500 m asl. More recently, local intensive habitat destruction due to agricultural expansion is seen at 1,000-2,000 m asl due to favourable conditions for growing vegetables like potato, tomato, spring onions, onion, cabbage, and similar crops at this altitude. A side effect of habitat loss in Java has been the increased accessibility to areas which are particularly suitable for the species, allowing poachers and trappers easier access to such areas.

Relevant drivers for habitat loss and fragmentation within the range of the species are agricultural expansion, encroachment, geothermal or industrial development, logging and wood harvesting as well as a lack of protection and the enforcement of laws within existing protected areas. Given that West Java has the highest population density of Indonesia, habitat loss and fragmentation due to the above-mentioned drivers has been a relevant threat to the natural environment and continues to be so. Each driver is briefly explained below.

4.2.1. Encroachment and Agricultural Expansion

Encroachment refers to the gradual invasion of human activities into suitable habitat. Encroachment can consist of illegal settlements, where people build homes and establish villages within boundaries of legally protected land. West and Central Java are the most populated regions of Indonesia. Consequently, encroachment has and continues to be one of the major threats to Javan Green Magpie habitat. Encroachment often includes agricultural expansion, which refers to the conversion of habitat for agricultural use. The expansion would lead to further loss of habitat for the species. Agricultural expansion is a particularly relevant threat outside protected areas, although protected areas can also be affected. In the case of Gunung Halimun Salak National Park (GHSNP), the expansion of the conservation area to reduce impact of climate change and protect biodiversity has triggered agriculture expansion in the GHSNP area. According to global forest watch (World Resource Institute, 2025) agricultural expansion has been the dominant driver of tree cover loss (>80,000 ha) in Java Barat from 2001-2024. In Central Java, agricultural expansion is particularly evident in the Dieng Plateau and surrounding slopes where considerable effort is made to make every piece of land arable and only the steepest slopes remain forested in some areas.

Tab. 2: Objectives and actions (B) Habitat loss and fragmentation

Objective B1: Reduce expansion of encroachment activities outside protected areas			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
B1.1: Identify all priority areas (protected and unprotected) (refer to complementary Actions E1.1 and J1)	6 months	Cikananga, TBS	Ministry of Forestry, Perhutani, NGOs, Agrarian Affair and Spatial Planning Agency, Regional Government, BRIN
B1.2: Identify site-specific stakeholders (land rights, land users) in and outside protected areas	1 year	SafeNest	Agrarian Affair and Spatial Planning Agency, Regional Government, Encroachers, NGOs
B1.3: Identify site-specific motivations/drivers for harmful use in and outside protected areas	1 year	SafeNest	Agrarian Affair and Spatial Planning Agency, Regional Government, Encroachers, NGOs
B1.4: Initiate dialogue and awareness raising, develop stakeholder-specific incentives for protection	1-10 years	Site specific stakeholder once sites are identified	Local communities, Poachers, NGOs, Regional Government, Village elders, Farmer forums, Community & Outreach (IUCN SSC Asian Songbird Trade Specialist Group/ASTSG, IUCN SSC Indonesia Species Specialist Group/IdSSG),

			Youth Groups (Karang Taruna)
Objective B2: Stop encroachment activities in protected areas			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
B2.1: Develop cooperation agreement between authorities and NGOs for action **B1.1**, **B1.2**, and **B1.3** in protected areas	6 months	Cikananga	Ministry of Forestry i.e Dirjen KSDAE, National Park Agency, BKSDA, Perhutani, NGOs (Cikananga, TBS), Agrarian Affair and Spatial Planning Agency, Regional Government
B2.2: Improve the quantity and quality of patrolling; build the capacity and motivation of the forestry police, rangers, and community patrols through SMART training, exchange, equipment, salaries, and "Ekek Ranger" unit branding	6 months	National Park, BKSDA	National Park, BKSDA, NGOs
B2.3: Local community empowerment and alternative livelihood development for commitment to prevent encroachment	1 year	Site specific stakeholder once sites are identified	Ministry of Forestry, NGOs, Village Government

4.2.2. Geothermal and Industrial Development

Geothermal and industrial development can affect Javan Green Magpie habitat. Areas for such development measures are often overlapping with potential habitat of the species. West Java harbours more than 60% of Indonesia's geothermal power generation capacity and geothermal development is also happening on the slopes of Mt.

Slamet in Central Java. Recognising that geothermal sites, and the forested areas within those sites, given their high security and restricted access, may provide safe havens for Javan Green Magpies if they are present there, and positive engagement can be made with geothermal developers.

Tab. 3: Objectives and actions (C) Geothermal and industrial development

Objective C1: Ensure that industrial development such as mining, geothermal, and hydropower, has minimal impact on the Javan Green Magpie			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
C1.1: Build relationships with developers and decision-makers, enable recognition of "potentially suitable" habitat for Javan Green Magpie in environmental impact assessments	2-10 years	IUCN SSC (Specialist Groups), Government	Ministry of Energy & Mineral Resources, Ministry of Forestry, Regional Government, Private sector developers, ASTSG Policy and legislation
C1.2: Provide authorities with data regarding habitat, potential distribution, and connectivity of the Javan Green Magpie	2-10 years	BRIN, IUCN SSC (Specialist Groups)	Ministry of Forestry, BAPPENAS, Local Governments, Academic partners, NGOs

4.2.3. Logging and Wood Harvesting

Logging and wood harvesting refers to the process of felling trees, cutting them into transportable sections, and moving the logs from the forest to a place for further processing. One can distinguish commercial logging, which typically refers to large-scale, industrial operations for timber, and wood harvesting or timber harvesting which usually refers to small-scale clearing of planted or natural trees by local communities. The extracted wood is used for a variety of products, including constructions, furniture, charcoal, and firewood.

The intensity of logging and wood harvesting in the species' range (West and Central Java) is characterised by a strong historical presence of state-managed forests combined with a significant increase in small-scale community based forestry.

Although logging and wood harvesting is a potential threat to remaining suitable habitat, its intensity is difficult to estimate as there are no mapped range data available for the species. Historically, it has contributed to the fragmentation of Javan Green Magpie habitat. However, opportunistic harvesting of timber and firewood has frequently been associated with other types of forest resource-use such as trapping and poaching of songbirds.

Tab. 4: Objectives and actions (D) Logging and wood harvesting

Objective D1: Ensure that logging activities do not affect the Javan Green Magpie populations			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
D1.1: Develop understanding of the socio-economic drivers of illegal logging	2 years	Universities	General Directorate of Law Enforcement (Dirjen Gakkum), Local communities, Timber buyers, NGOs, Universities/researchers, Local government, Timber certification schemes
D1.2: Build trust and dialogue with logging communities and state-owned forest plantations, enable recognition of "potentially suitable" habitat for the Javan Green Magpie in logging planning and blocking areas (HCVA)	2-10 years	All stakeholders conducting community engagement projects	Logging communities, Perhutani, Ministry of Forestry (Dirjen KSDAE), NGOs, village leaders
D1.3: Strengthen community-based forest monitoring and reporting (self-policing) to reduce illegal logging activities, including retrospective enforcement of	2-10 years	All stakeholders conducting community engagement projects	Local communities, NGOs, BKSDA, National Park Agency, village forest management groups

already logged areas			
D1.4: Engaging local communities in restoring degraded or already logged areas relevant to Javan Green Magpie awareness, connectivity or buffer for existing habitat preventing further land use	2-10 years	All stakeholders conducting community engagement projects	Local communities, NGOs, Perhutani, regional government, donors (funding agencies), universities

4.2.4. Challenges with Habitat Protection and Enforcement

Improving habitat protection and enforcement remains an important priority for conservation efforts. While legal frameworks and policies exist to safeguard the habitats and biodiversity of Indonesia, including the Javan Green Magpie, implementing them effectively can be challenging. Some aspects that hinder application of existing laws include insufficient enforcement coverage that could arise from staffing issues, coordination gaps among stakeholders, and other governance complexities. To encourage compliance to regulation, it is important to consider the needs, cultural traditions and livelihoods of the local communities.

For the Javan Green Magpie, creating a detailed habitat is an important step to ensure coverage within protected areas.

Environmental assessments are (globally) most frequently looking at species presence or absence in assessments made for development purposes. The situation in Java calls for an adjusted approach as the high trapping pressure may have led to focal species being locally trapped out of suitable habitat. Presence/absence survey should not be the only deciding factor for suitable habitats of the Javan Green Magpie; its historical range and habitat usage should be taken into consideration.

Tab. 5: Objectives and actions (E) Challenges with habitat protection and enforcement

Objective E1: Increase the area of legally or otherwise protected habitat			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
E1.1: Analyse and identify suitable habitat for establishing new protected areas	1 year	SafeNest	Research institutions, NGOs, MoF, Regional Government (BAPPEDA), BAPPENAS
E1.2: Advocacy and policy work with government and communities for more protected areas	1-10 years	IUCN SSC Center for Species Survival Cologne Zoo, IUCN SSC ASTSG	MoF, Regional Government, BAPPENAS, NGOs, international conservation networks (e.g., IUCN), village leaders.
E1.3: Investigate alternatives to legal protection of community and private areas which are sustainable and effective	5-10 years	TSI	Local communities, customary institutions, private landowners, NGOs, local government
E1.4: Strengthening protection at future planned release sites; action to be aligned with future translocation plan (refer to Section 6.3)	3-10 years	CWC, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)
E1.5: Raise awareness in local communities	3 years	Cikananga, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)
E1.6: Agreement and collaboration with the Protected Area Management	3 years	Cikananga, TSI Prigen	BKSDA, National Park Agency, NGOs, international

Unit			partners (ex-situ conservation facilities)
E1.7: Local community group involvement (habituation, monitoring, guarding, reporting): training and salary	4 years	Cikananga, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)
E1.8: Construction of Temporary Field Station at trial release sites for the purpose of translocation; action to be aligned with future translocation plan (refer to Section 6.3)	5 years	Cikananga, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)
E1.9: Release and monitoring of captive bred habituated Javan Green Magpie; action to be aligned with future translocation plan (refer to Section 6.3)	6 years	Cikananga, (TSI) Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)
E1.10: Develop more focus on areas of importance by promoting international certifications like Key Biodiversity Areas, Green Listing for Protected Areas or Key Bird Areas	1-5 years	IUCN SSC Center for Species Survival Cologne Zoo, IUCN SSC ASTSG	Ministry of Forestry i.e Dirjen KSDAE, National Park Agency, BKSDA, Perhutani, NGOs (Cikananga, TBS), Agrarian Affair and Spatial Planning Agency, Regional Government, ASTSG
Objective E2: Improve enforcement in protected areas			
Action	Timeframe	Main responsible party	Key stakeholder partners
E2.1: Motivate and encourage communities and authorities to	1-10 years	BKSDA National park, local	BKSDA, National Park Agency, local

carry through the enforcement of illegal encroachment and habitat destruction activities		authorities	authorities, NGOs
E2.2: Strengthen coordination between enforcement agencies and local actors at site of crime	2-10 years	Local NGOs	MoF, police, military, Perhutani, regional government, NGOs., local communities
E2.3: Enable capacity building in acoustic monitoring (chainsaws, gunshot, motorbike, human voice)	1-2 years	Cikananga, BISA	TBS, Universities (Cornell), research institutions, NGOs, local communities, MoF
E2.4: Improve legal follow-up and prosecution of offenders	1-5 years	Wildlife Conservation Society (WCS) Indonesia Program	Judiciary, police, MoF, regional prosecutors, NGOs (as watchdogs)

4.3. Human Disturbance

The Javan Green Magpie now persists only in small, isolated montane forest remnants in Java, while access into these elevations expands via hiking routes, motorbike/trail-bike tracks, and new infrastructure (BirdLife International, 2024). Recreation alone can erode community quality: on Mount Prau, heavily used trails supported lower species richness, Shannon diversity, and Pielou evenness than quieter routes, indicating that repeated human presence degrades upland bird assemblages (Abdullah et al., 2024). Motorised access escalates impacts from transient disturbance to substrate damage—traffic compacts soils, cuts ruts, accelerates erosion, and fragments structure in volcanic parks (Saputra et al., 2024). Industrial roads for high-elevation geothermal exploration make these changes more permanent; on Mount Slamet, intact forest was cut, vehicle entry reached formerly foot-only areas, and open corridors remained (Darmawan, 2025). Behavioural responses add a further squeeze: many montane birds avoid people at ~10–20 m, so frequent close encounters on narrow ridges can convert suitable microhabitat into behaviourally lost space; species-specific thresholds for Javan Green Magpie are not yet known (Avenzora et al., 2024; BirdLife International, 2024). If Javan Green Magpie becomes a high-elevation “target” for wildlife photography and birding, people, voices, and playback may concentrate within the same small patches (Avenzora et al., 2024; BirdLife International, 2024).

In some systems, human presence can deter illicit activity. But on Java's mountains, access routes also facilitate trapping of rare songbirds: multi-mountain surveys highlight the scarcity of heavily traded endemics and ongoing concerns about access-enabled take (Devenish et al., 2022; Marsden et al., 2023). Much access originates in livelihoods: motorbikes and informal "motor trails" reduce harvest-transport costs on steep slopes; repeated trips deepen tracks, create rest points, and normalise vehicles along upland margins (Saputra et al., 2024; Ihsan, *pers. comm*; Yanto, unpublished data). At the same time, hiking for research, pilgrimage, and recreation brings visitors into core forest (Abdullah et al., 2024). Site snapshots show a shared trajectory of expanding access—e.g., a livelihood track at Kamojang–Danau Ciharus; off-road use at Gunung Simpang halted after strict BKSDA enforcement; active coffee trails in Ciamis; geothermal roads driving high-elevation access on Slamet; disturbance at Dieng dominated by hiking; and tighter motorised control on Merapi Darmawan, 2025; Abdullah et al., 2024; Balai Besar Taman Nasional Gunung Gede Pangrango, 2025; Saputra et al., 2024, Yanto, unpublished data; Ihsan, *pers. comm.*). Taken together—hikers, motorised access, and infrastructure—these pressures erode the quiet forest cores that the Javan Green Magpie depends on.

Tab. 6: Objectives and actions (F) Humans disturbance

Objective F1: Filling research gaps on the impact of disturbance threats			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
F1.1: Creating a threat map (motor trails, hiking, tourism) that may overlap with Javan Green Magpie habitat.	2 years	BKSDA, CWC, TBS, SwaraOwa	Perum Perhutani, village government
Objective F2: Control mitigation routes and capacity of the hikers (outside the protected areas)			
Action	Timeframe	Main responsible party	Key stakeholder partners
F2.1: Awareness-raising on the importance of the Javan Green Magpie and its habitat to hiking trail managers.	1 year	Perum Perhutani, village government	Hiking trail manager, NGO, Nature Enthusiast Group (*Kelompok Pecinta Alam*)
F2.2: Installation of information boards about Javan Green	1 year	Hiking trail manager, village	Hiking trail manager, NGOs, Nature

Magpie conservation (including do's and don'ts) as educational media for hikers on each trekking route.		government, Perhutani	Enthusiast Group (*Kelompok Pecinta Alam*)
F2.3: Provide recommendations to each trekking route manager located directly adjacent to the main habitat of the Javan Green Magpie.	1 year	Hiking trail manager, village government, Perhutani	Hiking trail manager, NGOs, Nature Enthusiast Group (*Kelompok Pecinta Alam*)

4.4. Use of Pesticides and Insecticides

The intensive use of chemical pesticides and insecticides in agricultural areas surrounding forests in West Java and Central Java poses a significant environmental threat that indirectly affects the Javan Green Magpie (*Cissa thalassina*). Although this species primarily inhabits montane forests, chemical runoff from lowland agricultural fields and buffer zones can contaminate soils and water bodies (Morrissey et al., 2015; Putri et al., 2022). This contamination triggers cascading ecological disruptions that ultimately degrade the food webs and habitat quality essential to the species' survival (Sánchez-Bayo, 2021).

This threat originates from intensive agricultural practices that heavily depend on synthetic chemicals to maintain crop productivity and control pests. Farmers' reliance on these inputs is further reinforced by limited access to environmentally friendly alternatives and weak oversight of pesticide use (Møller et al., 2021).

As a result, the Javan Green Magpie is affected through reduced prey availability and declining ecosystem quality. Pesticide exposure diminishes populations of insects, amphibians, and small vertebrates—key food sources for the species (Van Dijk et al., 2013; Møller et al., 2021). Amphibians, which are highly sensitive to chemical pollution, experience the most severe declines, particularly in contaminated river systems (Wanger et al., 2023). Moreover, soil and freshwater pollution weakens the ecological integrity of forest-edge habitats that the species occasionally relies upon for foraging (Putri et al., 2022).

These interconnected impacts are intensified by the close proximity of agricultural areas to the remaining forest habitats and the absence of landscape management systems that effectively integrate conservation and agricultural production. Limited public

awareness of the relationship between farming practices and forest ecosystem health also contributes to this threat being frequently overlooked (Sánchez-Bayo, 2021).

The severity of pesticide impacts varies across landscapes. Lowland agricultural zones and areas near forest margins show the highest chemical use and the greatest contamination risk (Putri et al., 2022). Consequently, Javan Green Magpie populations inhabiting forest–agriculture transition zones face greater indirect ecological risks than those residing in more intact montane forests.

Tab. 7: Objectives and actions (G) Use of pesticides and insecticides

Objective G1: Reduce the risk of pollution- related incidents in Javan Green Magpie Habitat both in the river/creek and land			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
G1.1: Map potential sources of pollution which could negatively affect areas in or near Javan Green Magpie habitat.	1 year	BRIN	Universities, NGOs
G1.2: Support environmental analysis of water quality and potential toxic loads in prey species of Javan Green Magpie	10 years	BRIN, Faculty of Agriculture and Biology (UGM, IPB, UI)	NGO, Laboratorium
Objective G2: Reduce agricultural pollution and its impacts on Javan Green Magpie habitats through the promotion of organic farming, stakeholder collaboration, and scientific monitoring of soil and prey quality.			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
G2.1: Conduct a stakeholder analysis to identify solutions	5 years	Local University (researcher, students), Companies with	Department of Agriculture or Agriculture Office (dinas pertanian),

		Organic Fertiliser	farmer groups, Villagers
G2.2: Promote organic farming, particularly in Javan Green Magpie habitat areas with high potential for insecticide/pesticide pollution (e.g. using dolomite and weeds as components of organic farming)	10 years	Department of Agriculture or Agriculture Office (dinas pertanian), farmer group, village government	NGOs, farmer group
G2.3: Support environmental analysis of soil quality and potential toxic loads in prey species of Javan Green Magpie	10 years	Laboratorium, University (researchers)	Ministry of Agriculture or Agriculture Office (Dinas Pertanian), farmer groups, Villagers

4.5. Diseases and Biosecurity

Although there has not been any recorded evidence of disease lethally impacting wild Javan Green Magpie, the devastating effect that disease can have on wild bird populations is well known e.g. Avian Influenza, West Nile virus. Contributing threat factors for this include the seasonal presence of migratory passerine birds within the species' habitat and the presence of bird markets that can exacerbate spread of infectious disease located near to wild bird habitats where there is possible interaction with wild birds that share habitats with Javan Green Magpie.

Due in part to climate change, hotspots of zoonotic and emerging wild bird associated pathogens are expected to further expand in tropical regions such as South America, Central Africa, and East and South Asia (Qui et al, 2024). Climate change is expanding the range of mosquitoes, particularly disease-carrying species, by creating warmer and wetter conditions suitable for breeding in previously inhospitable areas at higher altitudes and latitudes (Abassi, 2025). It is therefore probable that the mosquito, which acts as a vector for many diseases including those that affect Javan Green Magpies, such as avian pox, will expand its range into montane habitat due to changing weather. Mosquitoes and ticks can transmit viruses or bacteria to birds, other animals, and humans through their bites or by attaching to the feathers of wild birds. The migration of

wild birds can serve as a pathway for the expansion of pathogen geographic distribution through the long-distance transfer of these vectors (Qui et al, 2024).

Due to the difficulty of studying disease in wild birds in the field (including the proven difficulty of locating and tracking any individual Javan Green Magpies up to now), it is not feasible to study the effect of disease on wild Javan Green Magpie populations. Expert opinion within the participants judge this threat to be relatively low at current levels. Due to their small populations, if disease is detected in the wild or there is a disease alert near the habitat, no action can practically be taken to protect the species. If wild birds are caught, opportunistic testing for all health parameters should be attempted if possible. The threat of introducing disease in conservation translocations of this species should be highly considered with rigorous biosecurity measures in place for any conservation release of captive birds in the future.

4.6. Invasive Species (Sympatric and Non-native)

Invasive species can disrupt delicate forest ecosystems by outcompeting native flora and fauna, altering food webs, and introducing new diseases. Although the primary threats to the Javan Green Magpie are illegal trapping for the songbird trade and habitat loss, invasive species exacerbate these pressures by degrading the quality of remaining habitats and reducing the availability of suitable nesting and feeding sites. As a critically endangered species with expected very small and fragmented populations, Javan Green Magpies are deemed highly sensitive to changes in their habitat, including nest sites and prey availability.

The IUCN's *Guidelines on the Use of Ex-Situ Management for Species Conservation* (IUCN, 2014) emphasise that successful reintroduction of captive-bred individuals must be preceded by thorough habitat assessments, including the removal or control of invasive species that could threaten survival post-release. These guidelines stress that without addressing invasive threats, efforts such as captive breeding and reintroduction may be undermined, as released birds could struggle to adapt or compete in compromised ecosystems. Invasive predators, for example, may prey on eggs or chicks, while invasive plants can alter forest structure and reduce insect populations, which are vital to the magpie's diet. Therefore, tackling invasive species is not just a supplementary action but a foundational requirement for the long-term recovery and sustainability of Javan Green Magpie populations in the wild.

Non-native species identified during the workshop included potentially harmful birds (via competition or hybridisation, or disease transmission), such as Common Green Magpie, Bornean Treepie, Sumatran Treepie; and potentially harmful prey species that outcompete or damage populations other prey species, e.g. Poisonous frogs, chytrid

fungus. Unregulated release of wildlife confiscated by government officials was also identified as a potential threat due to the sensitivity of the populations, although there are already regulations in place to prevent this. The key action identified to mitigate the threat of alien species is socialising the impact of release of potentially invasive species and their negative impact on Javan Green Magpie with government authorities and hobbyist communities.

Tab. 8: Objectives and actions (H) Invasive species

Objective H1: Control the release of potentially harmful birds (via competition or hybridisation, or disease transmission) into Javan Green Magpie habitat (E.g: Common green magpie, Bornean tree pie, Sumatran tree pie)			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
H1.1: Socialise the impact of release of invasive potentially harmful birds and its negative impact on Javan Green Magpie with government authorities and hobbyist communities	Ongoing	IUCN SSC Indonesia Species Specialist Group (IdSSG (to be confirmed)	KSDAE, Pengamat Burung Indonesia, Dr Wanda from BRIN
Objective H2: Control the release of confiscated wildlife to ensure that Javan Green Magpie population is not affected			
H2.1: Coordinate with the government to ensure release of confiscated wildlife as per regulation Permen LHK No. 17 tahun 2024 tentang Penyelematan Jenis Satwa (Animal Rescue) does not impact Javan Green Magpie	1 year	IUCN SSC Indonesia Species Specialist Group (IdSSG), IUCN SSC Asian Songbird Trade Specialist Group (ASTSG)	KSG, Local government agencies responsible for the release of wildlife (BKSDA Central Java and West Java; Quarantine Agencies)
Objective H3: Control the release of non-native species that can be harmful and reduce prey availability for Javan Green Magpie			
H3.1: Education campaign on the impact of the release of non-native species and its negative impact on Javan	Ongoing (Material developed within 2 years)	All stakeholders conducting education programmes in Javan Green	Local schools, hobbyist community, religious institutions

Green Magpie prey availability with hobbyist communities		Magpie habitat	

4.7. Natural Disasters

Survey evidence suggests that natural disasters have already impacted Javan Green Magpie populations: Galunggung is one of the historical ranges of the species, however it is thought to have been extirpated from the area due to loss of habitat. Mount Merapi is another historical location,but the Javan Green Magpie was last seen in the area in 2005, but is thought to be lost due to an earthquake and subsequent volcanic eruption in mid 2006. For a species with such a limited range, much of which lies within areas of active volcanic activity, habitat loss through natural disasters can have a devastating impact on the species. Typhoons occur every year in suitable habitat and in some scenarios up to even 30-40% of the possible habitat has been found to be disturbed; forest fires and earthquakes can also lead to habitat destruction and disturbance.

Although it is not feasible to take preventative measures against natural disasters, the possibility of natural disasters within the range must be considered when planning conservation for the species, including potential conservation translocations in the future.

Tab. 9: Objectives and actions (I) Natural disasters

Objective I1: Ensure that the in-situ population of Javan Green Magpie is spread across multiple locations to safeguard from natural disasters			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
I1.1: Ensure that all natural disasters are included in the risk assessment process for future conservation-translocation programmes for Javan Green Magpie; action to be aligned with future translocation plan (refer to Section 6.3)	Alongside conservation-translocation plan development	Javan Green Magpie conservation-translocation working group and relevant stakeholders	Indonesian Agency for Meteorology, Climatology, and Geophysics (BMKG) & Center for Volcanology and Geological Hazard Mitigation (PVMBG) under Ministry of

			Energy and Mineral Resources (open access application)

5. Key Knowledge Gaps

During the workshop key knowledge gaps were identified to address alongside conservation activities. These include actions to increase knowledge on habitat and ecology, as well as the songbird trade characteristics and dynamics. It was agreed that due to the Critically Endangered status of the species, expert understanding of the current situation is sufficient to begin actions as detailed in the action plan, whilst these knowledge gaps are achieved. It was also considered that some of the actions required to fill in these knowledge gaps will be unrealistic or unfeasible, and therefore not a priority to achieve within the lifetime of the action plan.

Selected knowledge gaps were addressed with objectives and actions added within the workshop. A list of knowledge gaps were also compiled over the course of the workshop based on discussions within the separate working groups. On the final workshop day, a prioritisation exercise was held and each workshop participant voted on their priority knowledge gaps, which are detailed below.

5.1. Species Distribution, Population, Genetics and Ecology

Despite its critical conservation status, there remain significant knowledge gaps in our understanding of the Javan Green Magpies distribution, population dynamics, genetics, and ecology. Currently, only one genetic sequence of the species has been recorded, and no genetic data exists from within Indonesia, either from in-situ or ex-situ populations.

Ecological information is largely derived from limited historical records and captive individuals, with limited data on microhabitat preferences such as territorial range, dietary habits, or nesting tree species. Some anecdotal evidence suggests a preference for habitats near rivers, but this requires validation. Given the extremely low numbers of in-situ populations, determining habitat carrying capacity may not be an immediate limiting factor, though it remains important for long-term planning.

The species' distribution is poorly understood. While general range boundaries are known, specific localities and population sizes are not well documented. Small populations have been reported in areas such as Pembarisan and Dieng in Central

Java, with unconfirmed acoustic detections in Mount Slamet. Some unverified sightings exist across the species' range, often based on local or poacher reports. Targeted surveys are lacking, particularly due to limited knowledge of specific habitat requirements and limited funds for surveys targeting a single species. To address this, strategic, targeted surveys in addition to opportunistic surveys across the species' historic range, especially in areas with unconfirmed records, are essential. A focused approach is likely to be more effective given the species' low population density.

Citizen science could play a valuable role in improving distribution models and confirming sightings. Platforms like AKAR allow users to input detailed information, including market sightings, which can help trace the origin of captured individuals. AKAR's network of special investigators may also provide additional insights and verification of reports. Information from poachers suggests that Javan Green Magpie exhibits territorial behaviour during the breeding season, which could be leveraged to improve survey effectiveness. Notably, a recent sighting of four individuals in Ciwidey highlights the potential for discovering previously unconfirmed populations.

Finally, assessing habitat suitability through analysis of the species' historic range may reveal changes in distribution and help identify priority areas for conservation. Addressing these knowledge gaps will support the development of effective conservation strategies and support the long-term survival of the species.

Tab. 10: Objectives and actions (J) Javan Green Magpie research gaps

Objective J1: Conduct a targeted Javan Green Magpie survey across the entire historic range, including areas of unconfirmed records			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
J1.1: Develop a species distribution model for the Javan Green Magpie to help guide targeted surveys to predict where a species lives or could live, creating a predictive map of its geographic range	2 months	Cikananga Wildlife Center, Burung Indonesia, and The Biodiversity Society	KSDAE, University of Gadjah Mada (UGM), Universitas Atma Jaya Yogyakarta (UAJY).
J1.2: Identify all areas where targeted Javan Green Magpie surveys need to be done, including those predicted by the	Ongoing	Local government management authority +	Pengamat Burung Indonesia, relevant permitting authority

species distribution model		relevant local partners and university	
J1.3: Conduct periodic in-person targeted Javan Green Magpie surveys following standardised methodology in all identified areas, including sites suggested from community surveys to record population dynamics	Ongoing	Local government management authority + relevant local partners and university	Pengamat Burung Indonesia, relevant permitting authority
J1.4: Validate citizen science records from market data (AKAR) and in per-market visits to confirm Javan Green Magpie distribution by facilitating in-person surveys	Ongoing (each report can be completed within 2 weeks)	Birdpacker-Burungnesia	Citizen scientists, Birdwatcher community
J1.5: Review and identify key transition areas between known or suspected Javan Green Magpie habitats and assess protection needs.	1-3 years	Cikananga	Ministry of Forestry Perhutani NGOs (Cikananga, TBS) Agrarian Affair and Spatial Planning Agency Regional Government
Objective J2: Understand population genomic diversity and kinship of all wild and captive Javan Green Magpies			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
J2.1 Collect blood or feather samples from all appropriate birds within the Indonesian ex-situ population, including individuals confiscated from trade and opportunistically from wild individuals. Samples will be	1 year to get permits; after receiving permits, sample collection will be done	BRIN (M. Irham), UAJY (Pramana)	Holders, Private owners, EEP coordinator, Chester Zoo, NUS (Frank Rheindt).

analysed at a designated laboratory using agreed methodologies to assess kinship and relatedness across the global ex-situ population.	within 6 month		
J2.2: Analyse genomic diversity and kinship by conducting full genome sequencing in captive populations and opportunistically from wild individuals	1 year from sample collection completion (1 month to run samples)	BRIN, Universitas Atma Jaya Yogyakarta (UAJY)	National University of Singapore (to compare genomics methodology), KSDAE, EEP coordinator, all holders, Chester Zoo, Frank Rheindt (NUS).
Objective J3.1: Understand home range and territorial behaviour			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
J3.1.1: Identify a suitable methodology for tracking wild birds, including risk analysis of GPS tracker use, colour banding, microchips, etc., by conducting trials in captive birds [Note: This will also be relevant for translocation monitoring methodology]; action to be aligned with future translocation plan (refer to Section 6.3)	1 year	Javan Green Magpie conservation translocation working group	Chester Zoo, Cikananga Wildlife Center, Taman Safari Indonesia
J3.1.2: Use of technology including bioacoustic monitoring, trial results from **J3.1.1** and others to understand home range of the species.	5 years	Universitas Atma Jaya Yogyakarta (UAJY), IPB University	ASTSG, Relevant local partners (Cikananga Wildlife Center, Mt. Slamet)

Objective J3.2: Get a clear understanding of the diet of the species in the wild			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
J3.2.1: Analyse fecal samples from fresh wild-caught individuals	Opportunistic	All stakeholders conducting field surveys to have sample collection tubes; analysis conducted by University.	BRIN, Permit Makers.
J3.2.2: Anecdotal data collection of feeding observations by local community members	3 years (in line with field surveys for population distribution)	All stakeholders conducting field surveys following standardised protocol for interviews.	Poacher community.
Objective J3.3: Understand breeding ecology			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
J3.3.1: Anecdotal data collection of breeding behaviour by local community members	Opportunistic	All stakeholders conducting field surveys following standardised protocol for interviews.	Poacher Community, Birdpacker-Burungnesia, KSDAE.
J3.3.2: Long term monitoring of identified nest sites	Opportunistic	All stakeholders conducting field surveys.	Poacher Community, Birdpacker-Burungnesia, KSDAE.

5.2. New Areas of Limited Knowledge Identified

Thirty-nine (39) additional knowledge gaps were identified during the workshop, detailed below. Grouped together, these can be summarised into four interconnected themes. First, understanding the species itself—this includes its ecological needs and assessing

the suitability of potential reintroduction sites. Second, to understand the dynamics of wildlife trade, aiming to quantify demand and evaluate how this pressure might affect a newly established population. Third, it investigates the socio-ecological conditions necessary for a discovered or reintroduced population to thrive. Finally, integrating this information to design a robust release strategy that maximizes the chances of successful recolonization and long-term survival of the species in the wild.

Areas of research prioritised by participants, receiving over 10 votes include:

1. Understanding the socio-economic drivers of the Javan Green Magpie threat in different sites: Who is trapping Javan Green Magpies; Why do people trap Javan Green Magpies in different sites; When and how (19 votes)
2. Characteristics of suitable habitat for the Javan Green Magpie for future releases and maintenance (15 votes)
3. Identify suitable site/s for a trial conservation-translocation (13 votes)
4. Community engagement to identify suitable livelihood alternatives to prevent songbird hunting (12 votes)
5. How to generate funding for Javan Green Magpie projects (12 votes)
6. Use of PAM bioacoustic data on the vocal behaviour of Javan Green Magpie for model training to monitoring release sites and remaining natural populations (10 votes)

It was agreed by participants that in addition to implementing the actions identified above, new actions pertaining to these six key knowledge gaps will also be identified and implemented during the course of this action plan. Refer to **Appendix 3** for the complete list of the 39 additional knowledge gaps identified during the workshop.

6. Other Important Conservation Measures

6.1. Public Awareness and Education

Lack of knowledge and awareness about the species and the importance of its conservation can hinder buy-in for Javan green magpie conservation activities. This conservation plan highlights the need to work with communities throughout, including trappers, bird keepers, hikers and other groups, with actions to reduce key threats of hunting and disturbance to Javan Green Magpie populations. The objective listed in this section indicates a wider environmental education approach aimed at children, with the aim to cultivate a generation that values biodiversity and is empowered to protect it. This is integral to the long-term success of Javan Green Magpie conservation and

threat reduction. Education efforts will be targeted to communities living alongside the species, with particular focus of resources on key areas prioritised for Javan Green Magpie protection and potential conservation translocation (see Chapter 6.3).

According to anecdotal evidence from poachers, hunting wild animals is often considered a hobby, and sometimes parents invite their children to join them in hunting in the forest (pers comms). Youth environmental education programmes are therefore important to educate on the ecosystem and Javan green magpie conservation from an early age. An education approach targeting elementary schools ensures reach and access in rural areas close to Javan green magpie habitat.

One of the key challenges in driving a movement based on knowledge is that all people hold different pre-existing backgrounds, including their interests and attitudes. Increasing knowledge alone to those who have low self-efficacy leads to low expected results and buy-in (Boyes & Stanisstreet, 2012). Actions will therefore target groups with an existing interest in nature, such as scouts in elementary schools and nature lover groups (for high schools), so that participants can become community role models that promote species and habitat conservation activities to their peers, leading to wider uptake of the message (Dearing & Cox, 2018).

Beyond establishing the role models for peer-to-peer influence, a further layer of interventions aims to influence teachers themselves. Instilling the knowledge of Javan Green Magpie conservation in schools will establish an enabling environment, bolstered through developing two to five green school champions surrounding the species' habitats. Schools will be encouraged to pledge to lead the conservation actions and promote this action to their school networks.

To ensure a scalable and measurable impact of these interventions, we plan to close the gaps of existing interventions by developing clear indicators to identify the progress of idea adoption and awareness raised for those targeted layers of audiences, which could lead to a behaviour change in the long run. Indicators of behaviour change will be monitored annually, as well as pre-post interventions during the mid and long term of applying awareness raising, ensuring that interventions are scalable and effective.

Tab. 11: Objectives and actions (K) Public awareness and education

Objective K1: Raising awareness of the importance of Javan Green Magpie in school students across priority areas in the Javan Green Magpie habitat			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
K1.1 Codevelop school	3 years	Cikananga	1000 teacher

education programme for elementary and junior high schools with identified environmental education stakeholders across the range		(YCKT)	organisation, NGO partners.
K1.2 Deliver education programme and resources to teachers across the range	Ongoing	Cikananga and BKSDA (education team)	1000 teachers; Scout leaders, school networking groups, NGOs e.g. Yapeka, Djarum Foundation, Tanoto Foundation
K1.3 Deliver education programme and resources to students and scout groups across the range	Ongoing, 10 years to reach all schools in target range	Cikananga and selected partner from 6.1.1	scout groups, nature lover groups, elementary schools, BKSDA, 1000 teacher organisation
K1.4 Monitor impact of delivering education on behaviour and perceptions in target audiences	Ongoing	Cikananga, Nuruliawati from WCS	IPB university, IUCN IdSSG

6.2. Ex-situ Interventions

Current ex-situ status

In 2012, following the publication of the paper Biology, taxonomy and conservation of the Short-tailed Green Magpie (van Balen *et al.*, 2013), when the level of endangerment and risk of extinction was first highlighted, an urgent effort to establish an ex-situ conservation breeding insurance population for the species was initiated. This strategy was endorsed by expert avian conservationists including the IUCN SSC ASTSG (2025), who listed the Javan Green Magpie as a priority species in urgent need of conservation action, including the establishment of an insurance conservation breeding programme. Owen *et al*. (2014) highlighted the importance of conservation breeding as an essential tool in the recovery of Indonesia's most threatened passerines. Collar and Butchart (2013) outlined the necessity for ex-situ action, including the species in the highest level of threat category, stating "Necessary programmes without which species would have or

will become extinct, because they are or were extinct in the wild or extremely close to being so; captive breeding is thus the primary conservation response".

In 2012, no Javan Green Magpies were known to be kept in captivity and after months of searching, a small number of birds were rescued from small regional bird markets across West Java and were taken to Cikananga Conservation Breeding Center (CCBC) in Sukabumi district, West Java. CCBC is a facility within Cikananga Wildlife Center, focused on breeding highly threatened Indonesian endemic species. With the support of Chester Zoo, UK, new breeding aviaries were built, husbandry techniques were developed and established for the species and the first breeding of Javan Green Magpie occurred in 2013. Over the following years, more birds were found and rescued from the illegal wildlife trade, strengthening the genetic diversity of the population. In 2015, for security reasons, it was thought prudent to establish a further insurance population in European Zoos, and six pairs of birds from CCBC were quarantined at Taman Safari Bogor, before transfer to Chester Zoo. Four pairs from this EAZA (European Association of Zoos & Aquaria) population were kept at Chester Zoo, and pairs were sent to Durrell Zoo, Jersey, Channel Islands and Prague Zoo, Czech Republic. Breeding increased at CCBC, and a small number of birds were transferred to Taman Safari Bogor in 2017. The newly established Prigen Conservation Breeding Ark (PCBA) joined the breeding programme in 2019 and Batu Secret Zoo, Malang also acquired the species. In 2025, Gembira Loka Zoo, Yogyakarta, became the fourth Indonesian institution to receive the species, as part of the conservation breeding programme. EAZA Best Practice Husbandry Guidelines were published in 2019, based on the knowledge gained from the Institutions in Indonesia and EAZA (Owen, 2019).

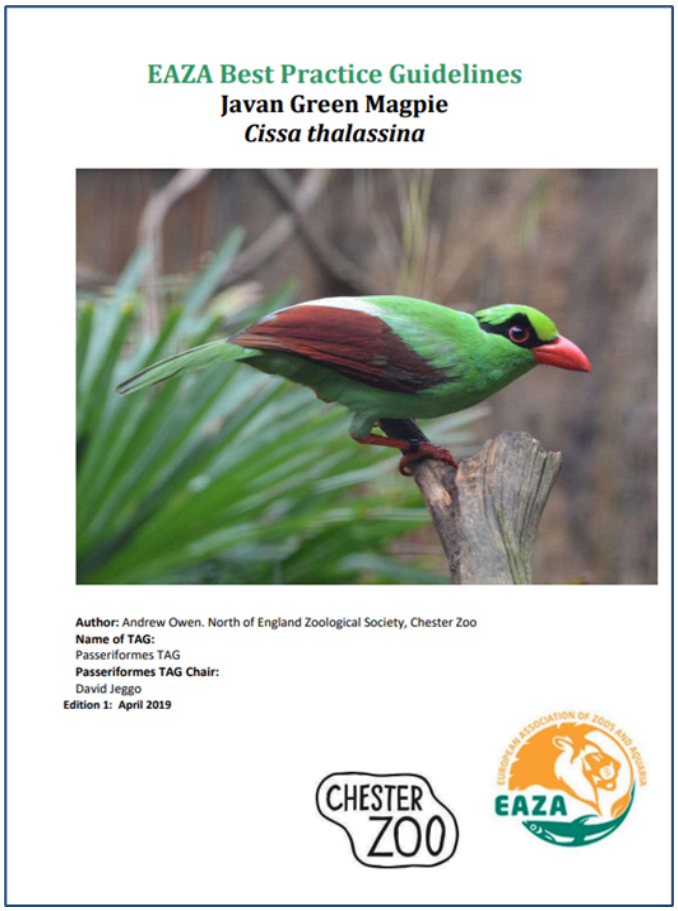


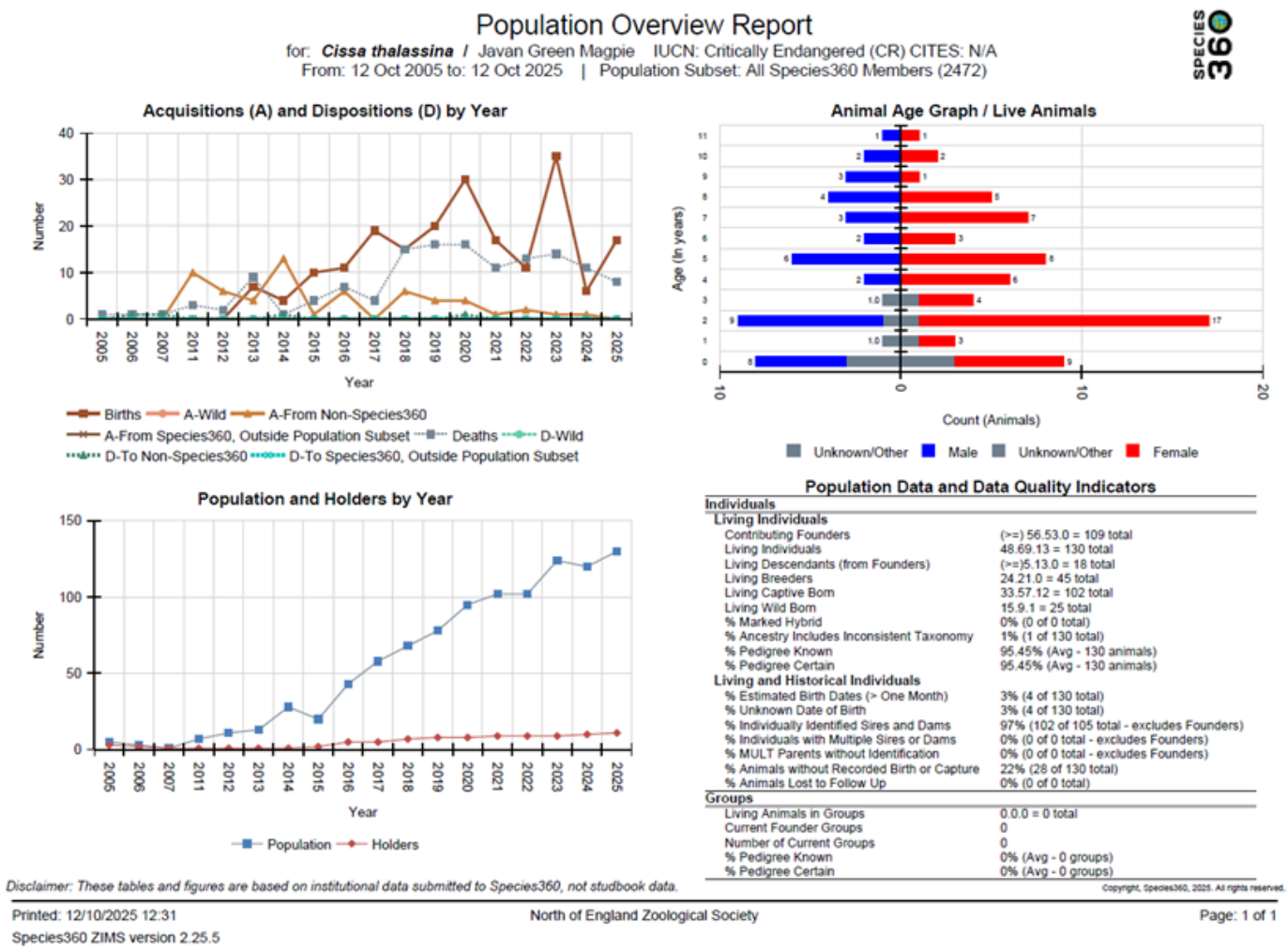
Fig. 10: EAZA Best Practice Guidelines published in April 2019

Tab. 12: List of current ex-situ holders.

The current ex-situ Conservation breeding population for Javan Green Magpie is 130 individuals (48.69.13) at 11 institutions (12th October 2025). (Species 360, ZIMS Zoological Information Management System, 2025)

Institution	Number of Individuals
BASEL / Zoologischer Garten Basel, Switzerland	2 (0.2.0)
BATUSECRE / Batu Secret Zoo, Indonesia	5 (2.2.1)
BOGOR / Taman Safari Indonesia I, Bogor, Indonesia	7 (3.2.2)

CHESTER / North of England Zoological Society, UK	12 (5.5.2)
CIKANANGA / Cikananga Wildlife Center (PPSC), Indonesia	68 (26.40.2)
JERSEY / Durrell Wildlife Conservation Trust, Channel Islands, UK	3 (1.2.0)
LONDON RP / ZSL London Zoo, UK	2 (1.1.0)
PASURUAN / PT Taman Safari Indonesia II, Prigen, Indonesia	23 (7.10.6)
PRAHA / The Prague Zoological Garden, Czech Republic	4 (2.2.0)
WHIPSNADE / ZSL Whipsnade Zoo, UK	2 (0.2.0)
YOGYAKARTA / Gembira Loka Yogyakarta, Indonesia	1 (1. 0.0)



Population Overview Report

for: ***Cissa thalassina*** / Javan Green Magpie IUCN: Critically Endangered (CR) CITES: N/A

From: 12 Oct 2005 to: 12 Oct 2025 | Population Subset: All Species360 Members (2472)

SPECIES 360

Acquisitions (A) and Dispositions (D) by Year

Number

Year

Births A-Wild A-From Non-Species360

A-From Species360, Outside Population Subset Deaths D-Wild

D-To Non-Species360 D-To Species360, Outside Population Subset

Animal Age Graph / Live Animals

Age (in years)

Count (Animals)

Unknown/Other Male Unknown/Other Female

Population and Holders by Year

Number

Year

Population Holders

Population Data and Data Quality Indicators

Individuals	
Living Individuals	
Contributing Founders	(>=) 56.53.0 = 109 total
Living Individuals	48.69.13 = 130 total
Living Descendants (from Founders)	(>=)5.13.0 = 18 total
Living Breeders	24.21.0 = 45 total
Living Captive Born	33.57.12 = 102 total
Living Wild Born	15.9.1 = 25 total
% Marked Hybrid	0% (0 of 0 total)
% Ancestry Includes Inconsistent Taxonomy	1% (1 of 130 total)
% Pedigree Known	95.45% (Avg - 130 animals)
% Pedigree Certain	95.45% (Avg - 130 animals)
Living and Historical Individuals	
% Estimated Birth Dates (> One Month)	3% (4 of 130 total)
% Unknown Date of Birth	3% (4 of 130 total)
% Individually Identified Sires and Dams	97% (102 of 105 total - excludes Founders)
% Individuals with Multiple Sires or Dams	0% (0 of 0 total - excludes Founders)
% MULT Parents without Identification	0% (0 of 0 total - excludes Founders)
% Animals without Recorded Birth or Capture	22% (28 of 130 total)
% Animals Lost to Follow Up	0% (0 of 0 total)
Groups	
Living Animals in Groups	0.0.0 = 0 total
Current Founder Groups	0
Number of Current Groups	0
% Pedigree Known	0% (Avg - 0 groups)
% Pedigree Certain	0% (Avg - 0 groups)

Disclaimer: These tables and figures are based on institutional data submitted to Species360, not studbook data.

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Species360 ZIMS version 2.25.5

Fig: 11: Population Overview Report for Javan Green Magpie (*Cissa thalassina*)

(including acquisitions and dispositions by year, age graph for living animals, population and holders by year and population data and data indicators).

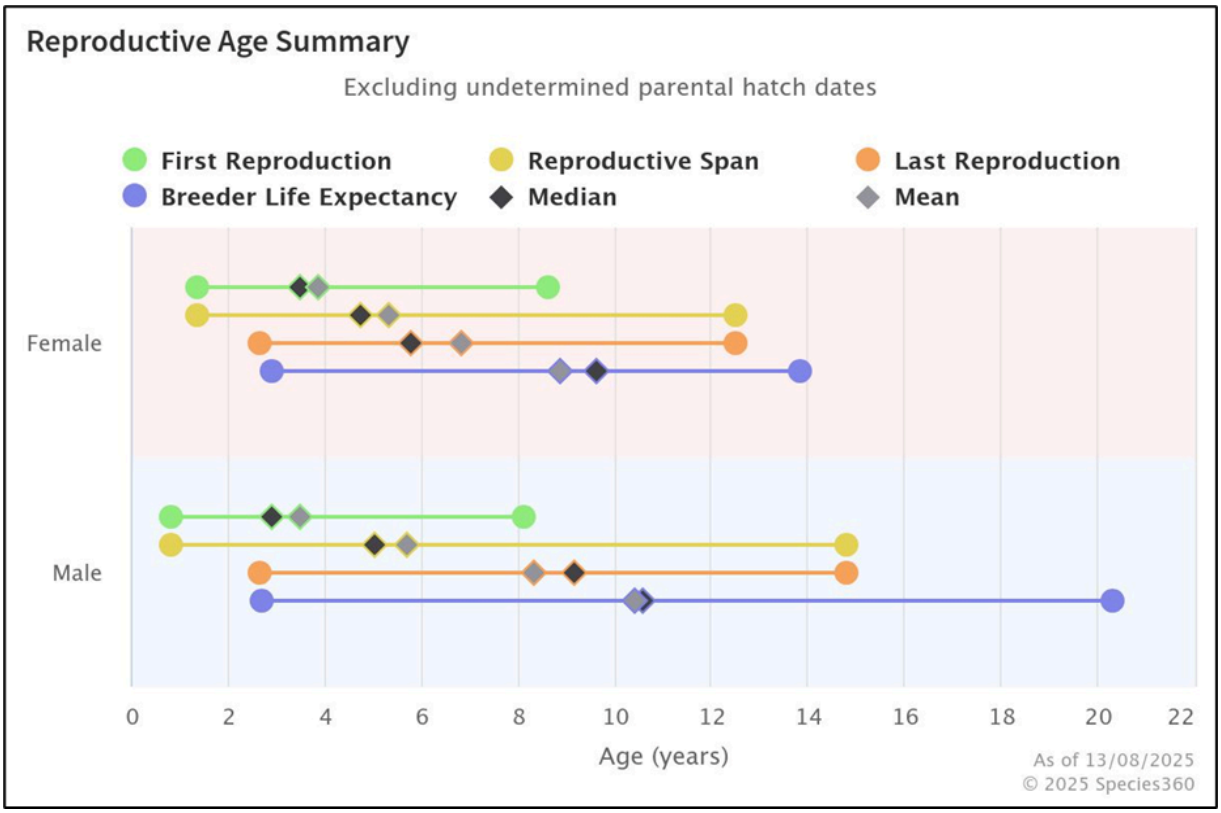

Fig. 12: Reproductive age summary for Javan Green Magpie (*Cissa thalassina)*

6.2.1. Challenges in Collaboration Within Ex-situ Holders and Between Ex-situ Holders and Government

Since the inception of the Javan Green Magpie conservation breeding programme, collaboration between ex-situ holders, particularly within the Indonesian ex-situ population—has been limited. Transfer recommendations between ex-situ holders for the exchange of genetic materials in birds were not made and these inter-institutional transfers were rarely attempted. This is due to the historically low number of birds within the Indonesian ex-situ population. As a result, the understanding of the species' breeding requirements had been prioritised.

As the global conservation breeding programme has progressed, ex-situ breeding requirements are now well understood and the Indonesian ex-situ population has grown steadily, achieving greater success than its European ex-situ population.

However, a significant hurdle in managing the Indonesian ex-situ sub-population is the complex and often slow process for securing official animal transfer permits. This involves navigating multiple layers of bureaucracy across both sending and receiving regions, the capacity to procure some of the documents and ensuring effective communication among all stakeholders. Over time, this may have a negative impact on the long-term genetic and demographic health of the population. While this process is not insurmountable—and has been successfully achieved for Javan Green Magpies from CCBC—it remains challenging. A time-saving, well-organised, and mutually agreed upon solution is needed to facilitate collaboration between ex-situ holders and the government (KSG), with the shared goal of attaining target population sizes across institutions.

With a currently healthy and growing Indonesian ex-situ population, there is now a clear need to strengthen networks among existing ex-situ holders and engage potential new ones. Regular meetings should be convened to develop a consolidated roadmap and ex-situ action plan, led by the appointed Studbook Keeper (Action L1.1). This plan should encompass population management, capacity building, transfer recommendations, and a staff exchange programme to promote the sharing of husbandry and veterinary expertise.

Similar to the species committees in EAZA, establishing an Indonesian ex-situ holders working group would significantly enhance coordination. Clear communication between the studbook coordinator, Programme Officer and the relevant government departments is essential. Without such a network, communication remains fragmented, and valuable genetic and other information may remain isolated within individual institutions, compromising on the robustness of the multi-institution conservation breeding programme.

Tab. 13: Objectives and actions (L) Challenges in collaboration within ex-situ holders and between ex-situ holders and government

Objective L1. To Increase co-ordination and collaboration between ex-situ holders and government			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
L1.1 Hire and designate a Studbook Keeper appointed by PKBSI to be an in-country representative for coordination of ex-situ activities with the government in conjunction with EEP Coordinator	1 year	PKBSI and newly appointed Studbook Keeper	EEP coordinator, Studbook Keeper, Holders, PKBSI, BKSDA
L1.2 Regular programmatic and status update reports submitted by Studbook Keeper to the government to foster transparency in communication and accountability	1 year	EEP coordinator and Studbook Keeper	EEP coordinator, Studbook Keeper, Holders, PKBSI, KSDAE
Objective M2. Strengthen collaboration, institutional expertise and knowledge exchange between current and potential ex-situ holders			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
M2.1 Initiate and organise regular internal meetings with current institutions in collaboration with EAZA EEP	Ongoing	EEP coordinator and Studbook Keeper	EEP coordinator, Studbook Keeper, Holders, PKBSI, KSDAE
M2.2 Develop a consolidated roadmap by all ex-situ holders according to studbook recommendations, include population management, capacity building, transfer recommendations and	1 year	EEP coordinator and Studbook Keeper	EEP coordinator, Studbook Keeper, Holders, PKBSI, KSDAE

distribution of Javan Green Magpie			
M2.3 Facilitate staff exchange programmes for knowledge exchange between current and potential ex-situ holders	Ongoing	Studbook Keeper	local and international Holders, PKBSI
M2.4 Strengthen knowledge and awareness by disseminating and translating Best Practice Guideline (Owen, 2019) between all ex-situ holders	1 year	PKBSI, EEP coordinator	Holders

6.2.2. Limited Aviary Capacities and Other Resources Within Indonesian Ex-situ Holders

There is a need to increase high-quality ex-situ carrying capacity in Indonesia to reach the agreed target minimum of 200 individuals—an additional 100 birds. This is essential to ensure a healthy and robust insurance population and to provide individuals for future conservation translocation initiatives, once safe and secure release sites have been established. Leveraging the expertise and knowledge of current ex-situ holders is the preferred strategy for expanding the Javan Green Magpie ex-situ population.

To achieve this there is a need to assess both current and future carrying capacity for existing conservation breeding facilities in terms of both quantity and quality. Each institution should evaluate its individual collection plans and conduct an exercise to determine how many additional aviary spaces can be allocated to the Javan Green Magpie conservation-breeding programme. A costing exercise should also be undertaken to develop a budget plan for the programme. The number of additional birds that can be accommodated at existing ex-situ facilities will depend on the availability of funding and physical space capacity, which may be limiting factors.

If current ex-situ holders are unable to meet the required capacity, an evaluation of potential new holders within the conservation breeding and PKBSI Zoo network should be conducted. This may require support and training from existing holders to ensure new institutions are adequately prepared.

Tab. 14: Objectives and actions (N) Limited aviary capacities and other resources within Indonesian ex-situ holders'

Objective N1 Provide high quality ex-situ capacity to grow ex-situ population to target number of 200 individuals and 130 additional aviaries in Indonesia			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
N1.1 Determine current and future carrying capacity for existing conservation breeding facilities and address issues to reach the desired target	3 months	EEP Coordinator, Holders	Holders, EEP Coordinator
N1.2 Determine and address limitations to grow aviary capacity	6 months	Holders, EEP Coordinator	Holders, EEP Coordinator, funding partners

6.2.3. Expanding Network of Conservation Breeders

To support the expansion of the Javan Green Magpie conservation breeding programme, it is important to explore legal avenues for both commercial and non-commercial breeding in accordance with Indonesian national legislation. Currently, there are four types of legal permits that allow private individuals or institutions to hold, keep, and breed protected species:

1. Zoo permit (*Izin lembaga konservasi umum*)
2. Rescue or breeding centre permit (*Izin lembaga konservasi khusus*)
3. Commercial breeding permit (*Izin penangkaran*)
4. Non-commercial breeding permit for personal enjoyment (*Izin pemeliharaan untuk kesenangan*)

Understanding and navigating these permit types is essential for expanding the ex-situ conservation network while ensuring full legal compliance. Collaboration with relevant government authorities, such as BKSDA and Ministry of Forestry, will be necessary to identify suitable new ex-situ holders and facilitate the permitting process.

Tab. 15: Objectives and actions (O) expanding network of conservation breeders

Objective O1: Incorporate new ex-situ holders into the ex-situ Javan Green Magpie conservation breeding programme			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
O1.1 Identify and engage with additional suitable PKBSI zoos to include in the conservation breeding programme	By 2026	Studbook Keeper, Holders	Studbook Keeper, EEP Coordinator, PKBSI, PKBSI zoos
O1.2 Train staff from suitable PKBSI zoos (identified in Action O1.1) through structured placements at current Javan Green Magpie holding institutions. These zoos will continue participating in training and capacity building activities as part of their commitment to the global conservation breeding programme	By 2028	Studbook Keeper, Holders	Studbook Keeper, EEP Coordinator, Holders, identified PKBSI zoos
O1.3 Establish active participation of suitable PKBSI zoos (identified in Action O1.1) within the conservation breeding programme by ensuring each holds at least one breeding pair of Javan Green Magpie and collaborates regularly with programme partners to support coordinated breeding efforts	By 2029	Studbook Keeper, Holders	Studbook Keeper, EEP Coordinator, PKBSI, PKBSI zoos
Objective O2. Explore potential legal commercial breeding and non-commercial breeding			

Action	Timeframe	Main responsible party	Key stakeholder partners
O2.1 Establish framework to include guidelines and regulations for commercial and non-commercial breeding	Start by 2029	Studbook Keeper	Holders, KSDAE

6.2.4. Acquisition of New Birds

There is the need to acquire new founder birds through confiscations from the illegal wildlife/pet trade, in compliance with national legislation. Effective collaboration between government authorities, ex-situ holders, and key stakeholders is essential to ensure that all confiscated Javan Green Magpies are transferred to designated facilities within the conservation breeding programme.

Currently, no formal mechanism is in place for the confiscation of Javan Green Magpies from illegal bird markets or private holders, despite the species being protected under Indonesian law. As a result, potentially valuable and genetically distinct individuals—unrelated to the existing ex-situ population—are not being integrated into the breeding programme, representing a missed opportunity for species recovery.

Establishing a practical and enforceable system would allow illegally held Javan Green Magpies to be confiscated and contribute meaningfully to conservation efforts. To achieve this, improved dialogue and coordination among government agencies, ex-situ holders, and conservation partners are needed to develop a workable solution that supports the long-term survival of the species.

Tab. 16: Objectives and actions (P) Acquisition of new birds

Objective P1: Acquisition of new birds in compliance with national legislation			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
P1.1 Collaboration needed between government and ex-situ holders, for all acquired Javan Green Magpies from confiscations and other sources and ensure birds are sent to designated ex-situ holders within the conservation-breeding programme	Ongoing	KSDAE/BKSDA, Holders	KSDAE/BKSDA, Holders, Burung Indonesia
P1.2 Conservation breeding institutions support government-led rescue and confiscation operations targeting illegally kept pet birds or birds in trade. This assistance includes providing trained personnel, necessary equipment, and time to carry out operations in coordination with BKSDA staff	Ongoing	Holders, BKSDA	Holders, BKSDA

6.2.5. Limited Knowledge and Research Regarding Ex-situ Populations

6.2.5.1. Genetics

There is a need to carry out genetic studies on the Indonesian ex-situ population to assess relatedness and kinship. These findings should be evaluated alongside existing genetic data from the EAZA population to inform coordinated breeding strategies. Additionally, full genome sequencing of the Indonesian ex-situ population would benefit our understanding of the species and support long-term recovery planning.

This research can be undertaken in Indonesia, collaborating with institutions such as Universitas Atma Jaya Yogyakarta and BRIN. All individuals within the Indonesian ex-situ population should be sampled, and a detailed genetic study published to guide breeding recommendations.

To proceed, appropriate government permits and a Memorandum of Understanding (MoU) between ex-situ holders and the research institutions are required to enable sample collection. Genetic testing should also be conducted on any newly acquired individuals entering the conservation breeding programme. Effective coordination and communication among all stakeholders is essential, and securing funding for the project remains a priority.

6.2.5.2. Mortality Causes

A full evaluation of mortality causes within the Javan Green Magpie population will help ex-situ holders and veterinarians to determine best practice methodologies and appropriate treatments for the birds under human care. Both historical and recent post mortem reports should be submitted to the Javan Green Magpie EEP veterinary advisors, who will carry out a thorough analysis of the findings and share them with all ex-situ holders and appropriate government agencies. To facilitate effective information exchange, it is important to maintain open communication between ex-situ holders, their veterinary teams, and the Javan Green Magpie EEP veterinary advisors. This collaboration enables the sharing of health-related issues and supports the development of informed solutions that contribute to best practices in species management.

Tab. 17: Objectives and actions (Q) Mortality causes

Objective Q1. Understand the causes of mortality within the ex-situ populations in Europe and Indonesia			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
Q1.1 Sharing of historical and future post-mortem reports from ex-situ holders institutions to the EEP coordinator and Javan Green Magpie veterinary advisors in Chester Zoo	Ongoing	Holders and EEP Vet Advisor	All Holders, EEP Coordinator, EEP Vet Advisor, Specialist pathologist, PKBSI, BKSDA

6.2.5.3. Common Health Issues in Ex-situ Population

To better understand health issues within the global ex-situ population in both Europe and Indonesia, in-country blood sampling to collect iron, calcium and vitamin D parameters should be conducted. Using agreed protocols, the findings will be shared with all ex-situ holders to improve overall population health. Ideally, all current individuals (~100) or a representative subset of the Indonesian ex-situ population should be sampled. If international testing is required, government support will be essential for securing the necessary permits for sample collection.

To ensure consistency and reliability, the EEP veterinary advisors should coordinate a meeting with all ex-situ holder veterinarians to establish standardised methodologies for blood collection, sample storage, and appropriate analysis. Funding will be required to support this initiative, and government permits must be obtained if samples are to be tested outside Indonesia. Collecting key health parameters data is a vital step towards increasing reproductive performance within the population.

Tab. 18: Objectives and actions (R) Common health issues in ex-situ population

Objective R1. Understand health issues within ex-situ populations in Europe and Indonesia			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
R1.1 Carry out in-country blood sampling to collect iron, calcium and vitamin D parameters using agreed protocols and share findings to improve overall health of all ex-situ populations. The addition of a specialist pathologist will improve the quality of diagnostics for the species.	1 year	Indonesia Holder's Vets, EEP Javan Green Magpie Vet advisor	All Holders, Studbook Keeper, EEP Coordinator, PKBSI, BKSDA

6.2.6. Funding

Funding constraints affect all aspects of the Javan Green Magpie conservation strategy, including ex-situ activities. A detailed budgeting exercise should be undertaken to assess the financial needs of ex-situ conservation. This should cover key areas such as facilities and infrastructure, staffing and capacity building, food production, veterinary care, permits and licenses, and conservation translocation costs.

These financial requirements should be integrated into a broader, long-term funding strategy. A robust and well-structured funding plan is essential to sustain and advance the conservation breeding programme and ensure the long-term recovery of the species.

6.2.7. Diseases and Biosecurity

To reduce the risk of disease transmission across ex-situ populations, it is essential to uphold high standards of biosecurity and health screening. Ex-situ holders should review their disease prevention and biosecurity standard operating procedures (SOPs) against established Best Practice Guidelines (Owen, 2019), through discussions with EEP veterinary advisors and other ex-situ holders.

A comprehensive review of existing diseases and health issues within the ex-situ population should be conducted, followed by the development of a protocol to guide disease management. To support this, it is important to maintain communication among veterinarians from all ex-situ holders, the EEP coordinator, and veterinary advisors. This will facilitate regular information exchange and collaborative problem-solving.

Tab. 19: Objectives and actions (S) Diseases and biosecurity

Objective S1. Reduce the risk of disease transmission across the captive populations by ensuring high standards of biosecurity and health screening			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
S1.1 Review ex-situ holders' disease and biosecurity standard operational procedures against Best Practice Guidelines (Owen, 2019) through discussion	Ongoing	Holders	EEP Coordinator, Vet advisors

with EEP vet advisors and all ex-situ holders			

6.2.8. Opportunities for Bio-banking

Bio-banking plays a vital role in the conservation of threatened species which includes long-term preservation of genetic material, supporting species' health management and genetic insights to guide future translocations. If this opportunity is seized, protocols for the opportunistic collection and preservation of tissue samples for bio-banking should be established. For the purpose of standardisation, is it essential for veterinarians from all ex-situ holders to discuss and establish standardised guidelines covering sample collection, transport, storage, and long-term preservation.

These guidelines should be disseminated among all ex-situ holders to raise awareness of the importance of sample preservation and ensure consistent practices across institutions. A centralised strategy for sample storage and processing may be considered where appropriate infrastructure is available. If the opportunity to bio-bank is missed, this might potentially limit future understanding of the species' genetics, health, and conservation needs.

Tab. 20: Objectives and actions (T) Opportunities for bio-banking

Objective T1: Preservation of tissue samples for opportunistic use in bio-banking			
Action	**Timeframe**	**Main responsible party**	**Key stakeholder partners**
T1.1 Provide guidelines and protocols on collection, transport, storage & preservation of samples to holders for a consolidated sampling effort	2 years from 2028	Programme Coordinator and TSI	Holders, EEP Vet advisor, KSDAE

6.3. *Conservation- Translocation*

Goal: To work towards ensuring healthy, self-sustaining wild–populations of Javan Green Magpies in safe, secure natural habitat within its original range by 2036.

To work towards ensuring thriving wild populations within their natural range through a collaborative approach, which will include developing a holistic conservation-translocation programme. This effort will be led by a dedicated Conservation Translocation Working Group composed of all relevant stakeholders, including government agencies, ex-situ holders, National Park representatives, researchers and community representatives.

The conservation-translocation plan is expected to extend beyond this ten-year action plan, depending on several critical factors. These include the strategic framework developed in consultation with experts from the IUCN SSC Conservation Translocation Specialist Group, the feasibility and design of the project, comprehensive risk assessments, implementation success—including trial conservation-translocation releases—using adaptive management techniques, monitoring outcomes, availability of funding, and timely government approvals.

While numerous challenges may arise that could hinder progress, it is essential for the survival of the species that translocation is approached in a strategic, cohesive, and inclusive manner. The active participation and alignment of all stakeholders will be key to developing a robust and adaptive plan that can guide future conservation-translocation efforts for the Javan Green Magpie.

To guide this process, Table 21 outlines the four broad objectives that will be undertaken to ultimately achieve healthy, self-sustaining populations of Javan Green Magpie within their historical range.

Tab. 21: Four broad objectives for the translocation of Javan Green Magpie to be further detailed by the Conservation Translocation Working Group

Objective	Timeframe
U1 Establish a conservation-translocation working group	January 2026 - June 2026

U2 Develop conservation-translocation plan with IUCN SSC CTSG and other stakeholders	July 2026 - July 2027; one year after establishing Conservation-translocation working group
U3 Conduct conservation translocation trials using adaptive management techniques to refine and enhance protocols to inform future conservation translocations	August 2027 onwards
U4 Upscaling conservation translocation to a broader geographic scale	Dependent on the success of Objective U3

7. Conclusion

A total of **46 actions** were created as a result of the workshop to safeguard against threats such as poaching, habitat loss and fragmentation, human disturbances, use of pesticides and insecticides, invasive alien species and natural disasters. In addition, **13 actions** were identified and prioritised to address key knowledge gaps within the timeframe of this action plan. **22 actions** were developed to enhance public awareness and support ex-situ conservation efforts. Furthermore, **four overarching objectives** were established to guide future translocation initiatives.

To support the conservation of the Javan Green Magpie the action plan should consider a multi-pronged fundraising approach. An example includes establishing campaigns inspired by successful initiatives e.g., *Java-Wide Leopard Survey (JWLS),* which illustrate how integrating government funding, engaging local Corporate Social Responsibility (CSR) channels, academic partnerships, and NGO coordination can provide a more resilient foundation for large-scale conservation efforts. The *Silent Forest Campaign* is another successful fundraising effort in tackling the Asian Songbird Crisis contributing through public fund raising efforts, zoo visitor engagement campaigns and donation from international zoos. Ex-situ holders in Indonesia are encouraged to allocate ongoing financial support specifically for Javan Green Magpie conservation efforts. Expertise from fundraising professionals should be sought to design and implement effective campaigns, including those targeting zoo visitors to raise public awareness and generate contributions. In addition, finalising the Species Recovery Action Plan (SRAK) and presenting it to the Ministry of Forestry (MOF)

through IdSSG and university partners will be essential for securing government financial support.

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9. Appendices

Appendix 1 List of Workshop Participants

No.	Name	Affiliation
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8	Budhi Chandra, S.H., M.H.	Halimun Salak National Park
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10	Ria Saryanthi	Burung Indonesia
11	Corinne Bailey	Chester Zoo
12	Andrew Owen	Chester Zoo / IUCN SSC ASTSG
13	Bertie Ferns	Cikananga Wildlife Rescue Centre
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15	Haryawan Agung Wahyudi	Copenhagen Zoo/SafeNest Indonesia
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18	Vanda Tirtayani	Gembira Loka Zoo
19	Roopali Raghavan	Mandai Nature/ CPSG SEA
20	Isabelle Tan	Mandai Nature/ CPSG SEA
21	Imam Taufiqhurrahman	SwaraOwa
22	Pramana Yuda	Universitas Atma Jaya Yogyakarta/IUCN SSC ASTSG
23	Mohammad Irham	BRIN/ member of ASTSG
24	Swiss Winasis	Burungnesia
25	Panji Gusti Akbar	BISA Indonesia
26	Meidi Yanto	Cikananga Wildlife Centre
27	Dedy Supandy	Cikananga Wildlife Centre
28	Fifit Cholifah	Cikananga Wildlife Centre
29	Simon Bruslund	Copenhagen Zoo
30	Tony Sumampau	Taman Safari Indonesia/ CPSG Indonesia
31	Bongot Huaso Mulia	Taman Safari Indonesia
32	Jochen Menner	TSI Prigen Conservation Breeding Ark
33	Prof. Ani Mardiastuti	IPB University/Burung Indonesia
34	Ady Kristanto	Jagat Satwa Nusantara
35	Ihsan Jaya	MMP Gunung Sawal
36	Asman Adi Purwanto	BISA Indonesia
37	Achmad Ridha J.	Burung Indonesia
38	Nuruliawati	WCS Program Indonesia
39	Leonardo Niko Tirtono	Gembira Loka Zoo
40	Iqbal Patiroi	Garda Animalia
41	Nunik Prabawaningtyas	Taman Safari Indonesia Bogor
42	Resit Sozer	Cikananga Wildlife Rescue Centre
43	Keni Sultan	Taman Safari Indonesia
44	Juni Setiawan	Biodiversity Society
45	Pupung F. Nurwatha	Independent

No.	Name	Affiliation
46	M. Desna	Balai TNGHS
47	Jamaludin	Balai TNGHS
48	Senjaya	Balai TNGHS

Appendix 2 Compilation of matrix of all objectives and actions

Issue A: Poaching and illegal trade								
Objective A1: Eliminating market demand for the Javan Green Magpie								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
A1.1 Mapping consumer demand for Javan green magpie by analysing preferences for the masterbird technology and alternative species; investigating price dynamics (including reasons for price drop); and assessing consumer perceptions	- A closed offline market that is difficult to penetrate - Resistance of information sharing because this species is protected - Funding	1 year	Online and offline data collected and analysed	Completed	Completed	Birdpacker-Burungnesia. , Cikananga Wildlife Center (CWC)	Garda Animalia, Yayasan Inisiasi Alam Rehabilitasi Indonesia (YIARI)	100,000,000
A1.2 Raise awareness to the community who's involved in the javan green magpie supply chain (for example: Kicaumania, etc)	- Resistance - Lack of educational actors beyond the BKSDA (Balai Konservasi Sumber Daya Alam/Natural Resources Conservation Agency)	5 years	Stakeholders are mapped	- Programs developed according to stakeholder needs (Year 2) - Strengthening stakeholders and institutions (Year 3) - Stakeholders are able to develop programs independently (Years 4–5)	Stakeholders are able to develop programs independently (Year 4–5)	BKSDA, Halimun Salak NP, Gunung Gede Pangrango NP	Perusahaan Umum Kehutanan Negara (Perum Perhutani), Village Head, Customary leader (*Pemangku Adat*)	2,000,000,000 (50,000,000/village for 1 year; 8 locations x 5 villages)
Objective A2: Eliminating supply of the Javan Green Magpie								
A2.1: Encouraging village/local regulations (Peraturan Desa) in villages adjacent to Javan Green Magpie population **A2.1.1**: Educate photographers/hikers to refrain from tagging the exact location of wild Javan Green Magpie's sightings on all social media platforms	Commitment of the village government; Low interest from the communities and stakeholders; Geographic restrictions with different knowledge background	3 years	Communities are approached and socialized	Village regulations issued (Year 2)	Completed	Village government	BKSDA, National Parks, Burung Indonesia, BISA Indonesia, and SwaraOwa	2,000,000,000 (50,000,000/village for 1 year; 8 locations x 5 villages)
A2.2 Enhancing empowerment of alternative livelihoods suitable for trappers (e.g. with conservation community development program)	- Resistance - Difficulty in finding alternative livelihoods - Geographic restrictions with different knowledge background	3 years	Year 1: awareness of the trappers / perception change Year 2: implementation of conservation based economy program	Behaviour change (year 3)	Completed	BISA Indonesia & SwaraOwa	TBS, Burung Indonesia	230,000,000/village/y ear
Objective A3: Supporting law enforcement regulations of Javan Green Magpie								
A3.1: Capacity building to help strengthening existing cyber patrol policy (online IWT) (currently there is an MoU between KSG, GAKKUM and IDEA)	-No continuation of current MoU (2 years)	2 years	Year 1: Javan Green Magpie is included to the list of birds in the cyber patrol			WCS, SafeNest Indonesia	IDEA (Indonesian E-commerce Association), Ministry of Forestry (including KSG & GAKKUM)	60,000,000 (for 2 years)
A3.2: Reviewing existing case of Javan Green Magpie confiscation (if any), and make trade gap analysis	data deficiency (not available on online platform: SIPP), manpower and commitment to the analysis	5 years	Identifying related stakeholders who potentially hold the data, getting baseline access on SIPP			SCENTS Indonesia	Ministry of Forestry (including KSG,BKSDA & GAKKUM)	50,000,000 (for 2 years)

Issue B: Habitat loss and fragmentation								
Objective B1: Eliminating supply of the Javan Green Magpie								
Action	**Challenges to implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
B1.1: Identify all priority areas (protected and unprotected) (refer to complementary Actions E.1.1 and J1)	- Data sharing agreement, coordination across agencies - Data standardisation - Limited access to official data	6 months	-Agreement between stakeholders (data provider and data user) formulated - Priority areas are identified	NA	Data repository established and being updated regularly	Cikananga, TBS	Ministry of Forestry, Perhutani, NGOs, Agrarian Affair and Spatial Planning Agency, Regional Government, BRIN	300,000,000.00
B1.2 Identify site-specific stakeholders (land rights, land users) in and outside protected areas	- Illegal land use causing sensitivity of land issues - Potential conflicts	1 year	Stakeholders identified in 10 sites	Stakeholders in priority sites are mapped and analysed	Completed	SafeNest	Agrarian Affair and Spatial Planning Agency, Regional Government, Encroachers, NGOs	400,000,000
B1.3 Identify site-specific motivations/drivers for harmful use in and outside protected areas	Getting honest responses	1 year	Site-specific motivations identified	Completed	Completed	SafeNest	Agrarian Affair and Spatial Planning Agency, Regional Government, Encroachers, NGOs	Budget included in the action above
B1.4 Initiate dialogue and awareness raising, develop stakeholder-specific incentives for protection	- Scepticism from local communities - Social jealousy	1-10 years	Dialogue with targeted locals initiated	- Incentives developed - Targeted group has a high level of awareness	Incentives proven effective	Site specific stakeholder after identification of priority sites	Local communities, Poachers, NGOs, Regional Government, Village elders, Farmer forums, Community & Outreach (IUCN SSC Asian Songbird Trade Specialist Group/ASTSG, IUCN SSC Indonesia Species Specialist Group/IdSSG), Youth Groups (Karang Taruna)	1,000,000,000
Objective B2: Stop encroachment activities in protected areas								
B2.1 Develop cooperation agreement between authorities and NGOs for action **B1.1, B1.2**, and **B1.3** in protected areas	- Data sharing agreement, coordination across agencies - Data standardization - Limited access to official data	6 months	- Agreement between stakeholders (data provider and data user) formulated - Priority areas are identified	Characteristics of the Javan Green Magpie suitable habitat established	Data repository established and being updated	Cikananga	Ministry of Forestry i.e Dirjen KSDAE, National Park Agency, BKSDA, Perhutani, NGOs (Cikananga, TBS), Agrarian Affair and Spatial Planning Agency, Regional Government	300,000,000
B2.2 Improve the quantity and quality of patrolling; build the capacity and motivation of the forestry police, rangers, and community patrols through SMART training, exchange, equipment, salaries, and "Ekek Ranger" unit branding	- Difficult area (environmental challenges) - Limited number of personnel and budget	6 months	Targeted patrolling areas identified	Capacity building events have been conducted at prioritized sites	Regular patrolling reports in target areas available	National Park, BKSDA	National Park, BKSDA, NGOs	200,000,000 per site
B2.3 Local community empowerment and alternative livelihood development for commitment to prevent encroachment	- Scepticism from local communities - Social jealousy	1 year	Buffer village around the conservation areas	One local community shaped	Local community is sustainable	Site specific stakeholder after identification of priority sites	Ministry of Forestry, NGOs, Village Government	100,000,000

Issue C: Geothermal and industrial development								
Objective C1: Ensure that Industrial Development Such as Mining, Geothermal, and Hydropower, Has Minimal Impact on the Javan Green Magpie								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
C1.1 Build relationships with developers and decision-makers, enable recognition of "potentially suitable" habitat for Javan Green Magpie in environmental impact assessments	- Getting information from the government - Getting access to the national development plan - Risk of being aligned with powerful companies	2-10 years	List of relevant concessions available and contacts established	Interest and dialogue established through regular forums	Potential habitat should be recognized by relevant stakeholders	IUCN SSC (Specialist Groups), Government	Ministry of Energy & Mineral Resources, MoF, Regional Government, Private sector developers, IUCN SSC ASTSG Policy and legislation	100,000,000
C1.2 Provide authorities with data regarding habitat, potential distribution, and connectivity of the Javan Green Magpie	Knowledge gap in identifying the Javan Green Magpie potentially suitable habitat	2-10 years	Further studies on the Javan Green Magpie are initiated	Characteristics of the Javan Green Magpie suitable habitat established	Javan Green Magpie important areas considered in spatial planning and Environmental Impact Assessment	Badan Riset dan Inovasi Nasional (BRIN), IUCN SSC (Specialist Groups)	Ministry of Forestry, BAPPENAS, Local Governments, Academic partners, NGOs	0.00
Issue D: Logging and wood harvesting								
Objective D1: Ensure that logging activities do not affect the Javan Green Magpie populations								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
D1.1 Develop understanding of the socio-economic drivers of illegal logging	- Limited transparency - Sensitive topic for communities	2 years	First site-specific motivations identified	Completed	Completed	Universities	General Directorate of Law Enforcement (Dirjen Gakkum), Local communities, Timber buyers, NGOs, Universities/researchers, Local government, Timber certification schemes	100,000,000
D1.2 Build trust and dialogue with logging communities and state-owned forest plantations, enable recognition of "potentially suitable" habitat for the Javan Green Magpie in logging planning and blocking areas (HCVA)	- Resistance from logging stakeholders - Need incentives	2-10 years	Dialogue with relevant stakeholders established	The "potential suitable habitat" is accepted, and HCVA is mapped for the Javan Green Magpie	Demonstrate changes in stakeholders' behaviour by "potential suitable habitat" routinely included in environmental impact assessments	All stakeholders conducting community engagement projects	Logging communities, Perhutani, Ministry of Forestry (Dirjen KSDAE), NGOs, village leaders	400,000,000
D1.3 Strengthen community-based forest monitoring and reporting (self-policing) to reduce illegal logging activities, including retrospective enforcement of already logged areas	- Sustaining community engagement - Resource limitations - Weak judicial processes - Corruption risks	2-10 years	First communities motivated to monitor their own areas	Communities enabled networking and capacity building	Annual status reports received from communities in all key areas	All stakeholders conducting community engagement projects	Local communities, NGOs, BKSDA, National Park Agency, village forest management groups	25,000,000
D1.4 Engaging local communities in restoring degraded or already logged areas relevant to Javan Green Magpie awareness, connectivity or buffer for existing habitat preventing further land use	Misunderstanding of the purpose as habitat or sanctuary, while it is actually a buffer and a potential alternative livelihood activity	2-10 years		Number of hectares restored; survival rate of planted trees	Established as an effective alternative livelihood for pastime activity logging	All stakeholders conducting community engagement projects	Local communities, NGOs, Perhutani, regional government, donors (funding agencies), universities	25,000,000.00

Issue E: Challenges with habitat protection and enforcement								
Objective E1: Increase the area of legally or otherwise protected habitat								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
E1.1 Analyse and identify suitable habitat for establishing new protected areas	Research and knowledge gap on the data needed for analysis	1 year	All required data is available for analysis	Completed	Completed	SafeNest	Research institutions, NGOs, MoF, Regional Government (BAPPEDA), BAPPENAS	Refer to budget in complementary Action B1.1
E1.2 Advocacy and policy work with government and communities for more protected areas	- Political resistance - Competing interests (e.g., agriculture, industry) - Lengthy bureaucratic processes	1-10 years	Relevant stakeholders analysed and drafted a communication strategy	Priority actions and sites identified	Commitment from government and communities to protect the area	IUCN SSC Center for Species Survival Cologne Zoo, IUCN SSC ASTSG	MoF, Regional Government, BAPPENAS, NGOs, international conservation networks (e.g., IUCN), village leaders.	10,000,000
E1.3 Investigate alternatives to legal protection of community and private areas which are sustainable and effective	- Land tenure conflicts - Limited incentives for communities/private actors - Weak institutional support	5-10 years	Mapping and documentation of areas outside formal protected zones that are critical for the Javan Green Magpie (potential community or private areas)	Establishment of one or more private conservation areas (e.g., managed by foundations, companies, or ecotourism initiatives)	Commitment to manage and protect the suitable area of the Javan Green Magpie by communities and the private sector	Taman Safari	Local communities, customary institutions, private landowners, NGOs, local government	500,000,000
Objective E1: Increase the area of legally or otherwise protected habitat								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
E1.4 Strengthening protection at future planned release sites; action to be aligned with future translocation plan (refer to Section 6.3)	- Securing long-term funding - Ensuring habitat quality and connectivity - Risk of encroachment, the release site will not only be in the officially protected areas	3-10 years	- Relevant ecological baseline indicators developed - Potential suitable release site identified	Operational standard for protection developed	Involved stakeholders accept and apply the operational standard	CWC, Taman Safari Indonesia (TSI) Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)	500,000,000
E1.5 Raise awareness in local communities	Legal basis for developing habituation facilities and keeping protected species by non-licensed parties	3 years	Awareness activities carried out	- Community support increased - Record of bird hunting/poaching/trapping decreased	Released program running safely	CWC, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)	400,000,000
E1.6 Agreement and collaboration with the Management Unit of release site	Legal basis for developing habituation facilities on third-party land	3 years	Agreement finalised and signed	Release site is safe: no degradation, disturbance, or extraction of natural resources	The released program is running safely	CWC, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)	50,000,000
E1.7 Local community group involvement (habituation, monitoring, guarding, reporting): training and salary	Legal basis for developing habituation facilities	4 years	- Local Community Group (LCG)s formed - LCG trained and equipped - LCG operational/working	Release site is safe: no degradation, disturbance or extraction of natural resources	The released program is running safely	CWC, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners	200,000,000
E1.8 Construction of Temporary Field Station; action to be aligned with future translocation plan (refer to Section 6.3)	Legal basis for developing habituation facilities and keeping protected species by non-licensed parties	5 years	Temporary field station acquired or contracted	Release site is safe: no degradation, disturbance or extraction of natural resources	- Agreements and potentially infrastructure in locations where intensive in-situ management and / or translocations are required - The release program is running safely	CWC, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)	100,000,000
E1.9 Release and monitoring of captive bred habituated Javan Green Magpie offspring; action to be aligned with future translocation plan (refer to Section 6.3)	Legal basis for keeping protected species by non-licensed parties	6 years	- Released birds' presence - Released birds are able to find food - Released birds are able to adapt to natural habitats	Released birds reproducing	New population of Javan Green Magpie established and reproducing	CWC, TSI Prigen	BKSDA, National Park Agency, NGOs, international partners (ex-situ conservation facilities)	200,000,000
E1.10 Develop more attention to the area of importance by promoting international certifications like Key Biodiversity Areas, Green Listing for Protected Areas or Key Bird Areas	Lack of exposure to public, may bring specific attention to the Javan Green Magpie habitat in public available documents	1-5 years	Area's current status mapped	Students or organisations encouraged to collect and fill databases and write proposals	Certifications achieved	IUCN SSC Center for Species Survival Cologne Zoo, IUCN SSC ASTSG	MoF i.e Ditjen KSDAE, National Park Agency, BKSDA, Perum Perhutani, NGOs (CWC, TBS), Agrarian Affair and Spatial Planning Agency, Regional Government, IUCN SSC ASTSG	

Objective E2: Improve enforcement in protected areas								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
E2.1: Motivate and encourage communities and authorities to carry through the enforcement of illegal encroachment and habitat destruction activities	Different sites might have specific needs and capacities; it can not be generalized across all Protected Areas	1-10 years	Community members reporting suspicious activities	Community participation in reporting and monitoring increased	The number illegal activities reported has reduced	BKSDA National park, local authorities	BKSDA, National Park Agency, local authorities, NGOs	included in A2.2 [200,000,000 per site]
E2.2: Strengthen coordination between enforcement agencies and local actors at site of crime	- Overlapping mandates - Weak coordination - Turf wars between institutions	2-10 years		Regular meetings of task force groups and relevant stakeholders established	Regular status reporting established	Local NGOs	MoF, police, military, Perum Perhutani, regional government, NGOs., local communities	20,000,000
E2.3: Enable capacity building in acoustic monitoring (chainsaws, gunshot, motorbike, human voice, speaker)	- Lack of expertise - Initial high costs, need for training and maintenance	1-2 years	- Relevant training to capacity building in acoustic monitoring with guidelines - Pilot deployment of acoustic devices in 8 key sites within the Javan Green Magpie habitat	Validated data set that can produced and analysed	- Long-term dataset available, showing population trends and disturbance levels - Dataset regularly used to guide adaptive management and enforcement	CWC, BISA Indonesia	TBS, Universities (Cornell), research institutions, NGOs, local communities, MoF	400,000,000
E2.4 Improve legal follow-up and prosecution of offenders	- Weak judicial system - Corruption risks - Limited deterrence effect of existing penalties	1-5 years	- Stronger coordination between enforcement agencies, prosecutors, and courts established - Documenting and tracking encroachment cases done systematically	Legal system shows consistent prosecution of illegal activities with a stronger deterrent effect; sentencing reflects the seriousness of encroachments	Completed	Wildlife Conservation Society (WCS) Indonesia Program	Judiciary, police, MoF, regional prosecutors, NGOs (as watchdogs)	200,000,000
Issue F: Human disturbance								
Objective F1: Filling research gap on the impact of disturbance threats								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
F1.1 Creating a threat map (motor trails, hiking, tourism) that may overlap with Javan Green Magpie habitat.	- Data limitation on tracking - Negotiation with the local community and stakeholders - Perlu waktu untuk ground check (if needed)	2 years	Data from all sites has been collected	- The threat map is available (year 2)	Completed	BKSDA, CWC, TBS, SwaraOwa	Perum Perhutani, village government	N/A (follow the habitat survey budget)
Objective F2: Control Mitigation Routes and Capacity of the Hikers (Outside the Protected Areas)								
F2.1 Awareness-raising on the importance of the Javan green magpie and its habitat to hiking trail managers. (*pengelola jalur pendakian*)	- Availability of extension officers - Outreach materials	1 year	Outreach at all trekking route locations has been carried out	Completed	Completed	Perum Perhutani, village government	Hiking trail manager, NGOs, Nature Enthusiast Group (*Kelompok Pecinta Alam*)	896,000,000/year
F2.2 Installation of information boards about Javan green magpie conservation (including do's and don'ts) as educational media for hikers on each trekking route.	Provision of infographics	1 year	Information boards are installed on the trekking routes	Completed	Completed	Hiking trail manager, village government, Perhutani	Hiking trail manager, NGOs, Nature Enthusiast Group (*Kelompok Pecinta Alam*)	64,000,000/year
F2.3 Provide recommendations to each trekking route manager located directly adjacent to the main habitat of the Javan green magpie.	Rejection from the trekking route management	1 year	- Preparation of recommendation points completed - Recommendation letter delivered and received by the trekking route management	Completed	Completed	Hiking trail manager, village government, Perhutani	Hiking trail manager, NGOs, Nature Enthusiast Group (*Kelompok Pecinta Alam*)	16,000,000/year

Issue G: Use of pesticides & insecticides								
Objective G1: Reduce the risk of pollution of related incident in Javan Green Magpie habitat both in the river/creek and land								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
G1.1 Map potential sources of pollution which could negatively affect areas in or near Javan Green Magpie habitat.	Data collection and human resource	1 year	- All required data are available - Areas with potential pollution are mapped	Completed	Completed	BRIN	Universities, NGOs	N/A (follow the habitat survey budget)
G1.2 Support environmental analysis of water quality and potential toxic loads in prey species of Javan Green Magpie	Availability of samples and data	10 years	Preliminary water quality analysis data are available	Second-round water quality analysis data are available	Water quality condition data series are available and analyzed	BRIN, Faculty of Agriculture and Biology (Universitas Gadjah Mada/UGM, Institut Pertanian Bogor/IPB University, Universitas Indonesia/UI)	NGOs, Laboratorium	100,000,000 (Three rounds of data analysis: first year, fifth year, and final year)
Objective G2: Reduce agricultural pollution and its impacts on Javan Green Magpie habitats through the promotion of organic farming, stakeholder collaboration, and scientific monitoring of soil and prey quality								
G2.1 Conduct a stakeholder analysis to identify solutions	- Not their interest, farmers are not interested. areas too remote/big	5 years	2 partners / site is identified	all partners identified and able to find rough solution	Completed	Local University (researcher, students), Companies with Organic Fertiliser	Department of Agriculture or Agriculture Office (*Dinas Pertanian*), farmer groups, Villagers	350,000,000
G2.2 Promote organic farming, particularly in Javan Green Magpie habitat areas with high potential for insecticide/pesticide pollution (e.g., using dolomite and weeds as components of organic farming)	- Farmers' dependence on pesticide use - Community rejection - Finding a trusted extension officer	10 years	Outreach to trusted extension officers.	Outreach to local farmers and organic farming training.	Existence of an organic farming group.	Department of Agriculture or Agriculture Office (*dinas pertanian*), farmer group, village government	NGOs, farmer group	896,000,000/year
G2.3 Support environmental analysis of soil quality and potential toxic loads in prey species of Javan Green Magpie	- Availability of labs, personnel, sampling equipment	10 years	Identifying potential partners	having funding to do the work	sampling can be done with the right parameter	Laboratorium, University (researchers)	Ministry of Agriculture or Agriculture Office (*Dinas Pertanian*), farmer groups, Villagers	still unknown depending on the X number of sites. will make budget / site visit & sampling (food, transport, lab cost)

Issue H: Invasive species								
Objective H1: Control the release of potentially harmful birds (Via competition or hybridisation, or disease transmission) into Javan Green Magpie Habitat (E.g: Common green magpie, Bornean tree pie, Sumatran tree pie)								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
H1.1 Socialise the impact of release of invasive potentially harmful birds and its negative impact on Javan Green Magpie with government authorities and hobbyist communities	Clear understanding of communication	Ongoing	Campaign strategy for socialising	Incorporation of recommendations into government regulation of invasive animal species that is currently being developed	No evidence of negative impact to Javan Green Magpie due to release of competitive birds	Focal point for advocacy for Javan Green Magpie to be identified (possible party such as IUCN SSC IdSSG)	Ditjen KSDAE, Pengamat Burung Indonesia, Dr Wanda from BRIN	12,000,000 (15 participants 400,000 / person / day for 2 days meeting).
Objective H2: Control the release of confiscated wildlife by government officials to ensure that Javan Green Magpie population is not affected								
H2.1 Coordinate with the government to ensure release of confiscated wildlife as per regulation Permen LHK No. 17 tahun 2024 tentang Penyelematan Jenis Satwa (Animal Rescue) does not impact Javan Green Magpie	Clear understanding of communication	1 year	Communication platforms with all possible stakeholders responsible for release in Javan Green Magpie habitat established	No evidence of negative impact to Javan Green Magpie due to release of confiscated wildlife	No evidence of negative impact to Javan Green Magpie due to release of confiscated wildlife	IUCN SSC IdSSG, IUCN SSC ASTSG	Direktorat KSG, Local government agencies responsible for the release of wildlife (BKSDA; Quarantine Agencies)	12,000,000 (15 participants 400,000 / person / day for 2 days meeting).
Objective H3: Control the release of non-native species that can be harmful and reduce prey availability for Javan Green Magpie								
H3.1 Education campaign on the impact of the release of non-native species and its negative impact on Javan Green Magpie prey availability with hobbyist communities	Reaching out to all relevant stakeholders, monitoring the effectiveness of the education campaign	Ongoing (Material program developed within 2 years)	Reaching out to all relevant stakeholders, monitoring the effectiveness of the education campaign	Awareness of the impact on releasing non-native species to prey availability of Javan Green Magpie	Reduced evidence of negative impact to Javan Green Magpie due to release of harmful species	All stakeholders conducting education program in Javan Green Magpie habitat	Local schools, hobbyist community, religious institutions	170,000,000/ year
Issue I: Natural disasters								
Objective I1: Ensure that the in-situ population of Javan Green Magpie is spread across multiple locations to safeguard from natural disasters								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
I1.1 Ensure that all natural disasters are included in the risk assessment process for future conservation-translocation programmes for Javan Green Magpie ; action to be aligned with future translocation plan (refer to Section 6.3)	Coordination between all stakeholders	Alongside conservation-translocation plan development	Not applicable	Included in conservation translocation plan discussions	Applied as relevant during conservation translocation Geographic distinction: Across the range	Javan Green Magpie conservation-translocation working group and relevant stakeholders	Indonesian Agency for Meteorology, Climatology, and Geophysics (Badan Meteorologi, Klimatologi, dan Geofisika/BMKG) & Center for Volcanology and Geological Hazard Mitigation (PVMBG) under Ministry of Energy and Mineral Resources.	Included in the translocation plan budget.

Issue J: Javan Green Magpie knowledge gaps								
Issue J1: Lack of knowledge in population distribution and fragmentation								
Objective J1: Conduct a targeted Javan Green Magpie survey across the entire historic range,including areas of unconfirmed records								
J1.1 Develop a species distribution model for the Javan green magpie to help guide targeted surveys to predict where a species lives or could live, creating a predictive map of its geographic range	Reluctance amongst stakeholders to share data or even join a meeting. Socialise the importance of participation in this. Work out data-sharing agreements.	2 months	Species distribution model completed and sites of possible distribution identified. All habitat suitability variables for Javan Green Magpie in the wild identified	Completed	Completed	CWC, Burung Indonesia, and TBS	Ditjen KSDAE, UGM, Universitas Atma Jaya Yogyakarta (UAJY).	20,000,000 (Meeting of 10 people - 400,000 /day/person for 5 days)
J1.2 Identify all areas where targeted Javan Green Magpie surveys need to be done, including those predicted by the species distribution model	Reluctance amongst stakeholders to share data or even join a meeting. Socialise the importance of participation in this. Work out data-sharing agreements.	6 months	List of all sites where a targeted survey needs to be done.	Completed	Completed	Burung Indonesia and TBS	BKSDA,CWC, Mt. Halimun Salak National Park, Mt. Gede National Park, Mt. Merapi National Park, Birdpacker-Burungnesia	4,000,000 (1 day's salary for 10 people - 400,000 /day/person)
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
J1.3 Conduct periodic in-person targeted Javan Green Magpie surveys following standardised methodology in all identified areas, including sites suggested from community surveys to record population dynamics	Funding availability in sites without existing projects, identifying partners in sites without existing projects, permits, and capacity building for standardizing survey methodologies, and terrain difficulties for surveying. Manpower challenges - Lack of interest of university students in doing fieldwork	Ongoing	Identify standardised methodology for the survey; survey completed in the 5 prioritized areas (sites with existing projects) - Mt. Halimun Salak, Mt. Sawal, Dieng Mountain Range, Mt. Merapi, Pembarisan & Mt. Slamet.	survey completed in all identified areas. Identify sites where conducting research to observe the ecological data of Javan Green Magpie will be feasible.	continued survey for monitoring in all area	Local government management authority + relevant local partners and university	Pengamat Burung Indonesia, relevant permitting authority	170,000,000 / year (Estimate a maximum of 10-15 sites to be surveyed over three years. 250,000,000 for three sites in one year (field cost), excluding equipment)
J1.4 Validate citizen science records of Javan Green Magpie from market data (AKAR) and in per-market visits to confirm Javan Green Magpie distribution by facilitating in-person surveys	Capacity building to correctly identify Javan Green Magpie	Ongoing (each report can be completed within 2 weeks)	As per opportunistic records received	As per opportunistic records received	As per opportunistic records received	Birdpacker-Burungnesia	Citizen scientists, Birdwatcher community	Team of 2 administrators and 30 part-time agents (2 days/week) - with a fee of 400,000 / day / person
J1.5 Review and identify key transition areas between known or suspected Javan Green Magpie habitats and assess protection needs.	Dispersal behaviour is poorly known	1-3 years	Parameters for safe transition identified	Mapping of likely habitat corridors completed		CWC	MoF Perum Perhutani NGOs (CWC, TBS) Agrarian Affair and Spatial Planning Agency Regional Government	50,000,000.00

Issue J2: Poor understanding of the genetics of in-situ and ex-situ Javan Green Magpie populations								
Objective J2: Understand population genomic diversity and kinship of all wild and captive Javan Green Magpies								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
J2.1 Collect blood or feather samples from all eligible birds within the Indonesian ex-situ population, including individuals confiscated from trade and opportunistically from wild individuals. Samples will be analysed at a designated laboratory using agreed methodologies to assess kinship and relatedness across the global ex-situ population.	Delay in permits for blood collection, collection from private owners	1 year to get permits; after receiving permits, sample collection will be done within 6 months	MOU's signed and permits received. Samples collected from all appropriate Javan Green Magpie within Indonesian ex-situ population	All birds sampled and genetic study published. Breeding recommendations accomplished. Full genome sequencing carried out on ex-situ population.	Genetic testing carried out on any newly acquired birds into the conservation-breeding programme.	BRIN (Pak Irham), UAJY (Pak Pramana)	Holders, Private owners, EAZA EEP coordinator, Chester Zoo, National University of Singapore/NUS (Frank Rheindt).	For transportation 25,000,000, Using microsatellites 300,000,000 - 505,000,000 Sample storage 1,000,000
J2.2 Analyse genomic diversity and kinship by conducting full genome sequencing in captive populations and opportunistically from wild individuals	funding, permits	1 year from sample collection completion (1 month to run samples)	Not started	Genetic diversity analysed and kinship identified. genetic study published. Breeding recommendations accomplished. Full genome sequencing carried out on ex-situ population.	Genetic testing carried out on any newly acquired birds into the conservation-breeding programme.	BRIN, UAJY	NUS (to compare genomics methodology), Ditjen KSDAE, EAZA EEP coordinator, all holders, Chester Zoo, Frank Rheindt (NUS).	Whole genome sequencing - 505,000, 000 for 100 samples, Manpower cost 1 month - 400,000 / day / person
Issue J3: Poor understanding of the ecology of Javan Green Magpie								
Objective J3.1: Understand home range and territorial behaviour								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
J3.1.1 Identify a suitable methodology for tracking wild birds, including risk analysis of GPS tracker use, colour banding, microchips, etc., by conducting trials in captive Javan Green Magpies [Note: This will also be relevant for translocation monitoring methodology]; action to be aligned with future translocation plan (refer to Section 6.3)	Animal welfare and ethics approval, funding, and permits to do trials in Indonesia	1 year	Comprehensive list of all possible methodologies to track wild birds	Completed risk assessment and trial initiated in the wild	Good understanding of home range and territorial behaviour from the wild	EAZA Song Bird TAG	Chester Zoo, CWC, Taman Safari Indonesia	135,000,000 for completion of risk assessment and trials in the wild
J3.1.2 Use of technology including bioacoustic monitoring, trial results from **J3.1.1** and others to understand home range of Javan Green Magpie	Animal welfare and ethics approval, funding, regulation and permits to do trials in Indonesia, chances of finding suitable birds for trials	5 years	Research and identify suitable technology options	Results from trial of technology use from 1 - 2 birds/ sites	Improved understanding of home range and territory sizes	UAJY, IPB University	IUCN SSC ASTSG, Relevant local partners (CWC, Mt. Slamet)	170,000,000 per bird
Objective J3.2: Get a clear understanding of the diet of the species in the wild								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
J3.2.1 Analyse fecal samples from fresh wild-caught individuals	Finding the fecal samples	Opportunistic	Opportunistic	Opportunistic	Opportunistic	All stakeholders conducting field surveys should have sample collection tubes; analysis conducted by University,	BRIN, Permit Makers	100,000 per tube for sample collection; 3,000,000 / sample for metabarcoding for 10 samples.
J3.2.3 Anecdotal data collection of feeding observations by local community members	Access to people with the correct knowledge	3 years (in line with field surveys for population distribution)	30 interviews conducted of people who have observed Javan Green Magpie in the wild	Complete the interviews in all targeted sites	Completed	All stakeholders conducting field surveys following standardised protocol for interviews	Poacher community	Included in field survey costs
Objective J3.3: Understand breeding ecology								
J3.3.1 Anecdotal data collection of breeding behaviour by local community members	Access to people with the correct knowledge	3 years (in line with field surveys for population distribution)	30 interviews conducted of people who have observed Javan Green Magpie in the wild	Complete the interviews in all targeted sites	completed	All stakeholders conducting field surveys following standardised protocol for interviews	Poacher Community, Birdpacker-Burungnesia, Survey of Facebook Groups	Included in field survey costs
J3.3.2 Long term monitoring of identified nest sites	Finding nest site, permits for nest observation,	Opportunistic	Opportunistic, hence limited chance of increase in knowledge	Possible chance of observation of a single nest site	Clear understanding from long-term monitoring of as many opportunistic nest sites as possible	All stakeholders conducting field surveys following standardised protocol for interviews	Poacher Community, Birdpacker-Burungnesia, Ditjen KSDAE	10,000,000 / camera for observation, 40 days of observation from incubation-rearing period

Issue K: Public awareness and education								
Objective K1: Raising awareness of the importance of Javan Green Magpie in school students across priority areas in the Javan Green Magpie habitat								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
K1.1 Codevelop school education programme for elementary and junior high schools with identified environmental education stakeholders across the range	Lack of teacher knowledge/ understanding on environmental issues / Lack of knowledge and network of other NGOs/groups delivering environmental education in the range	3 years	Identify and connect with education stakeholders (teacher groups, habitat protection programmes, smaller development NGOs); Co Develop resources + monitoring measures	completed	completed	CWC	1000 teacher organisation, Safenest programme,	50,000,000
K1.2 Deliver education programme and resources to teachers across the range	Lack of resources, teacher knowledge, and people that can deliver education. Large area	Ongoing, 5 years to reach 80% of teachers in range	Training of teachers in environmental + Javan Green Magpie awareness (2-3 workshops for teachers in 2 priority habitats / habitats identified for future translocations . During the ToT codevelop the metrics for criteria of schools becoming champions,)	60% of educators reached and delivered resources to. 1-2 school champion in a key community for conservation translocation or protection	5 schools becoming green champions invested in Javan Green Magpie conservation and environmental education, education training refreshed every 2 years, network established for sharing resources	CWC and BKSDA (education team)	1000 teachers; Scout leaders, school networking groups, NGOs e.g. Yapeka, Djarum Foundation, Tanoto Foundation	150,000,000
K1.3 Deliver education programme and resources to students and scout groups across the range	Lack of resources, teacher knowledge, and people that can deliver education. Large area	10 years	Identified and engaged with key schools based on priority areas, including schools already working on environmental education (action 1.1)	10 Elementary Schools and 5 scout groups in priority areas receive education programme and resources annually and awareness measured	Schools across key range integrate environmental education , 5 schools and scout groups becoming green/ Javan Green Magpie champions	CWC(expect this to grow based on the above actions)	scout groups, nature lover groups, elementary schools, BKSDA, 1000 teacher organisation	200,000,000
K1.4 Monitor impact of delivering education on behaviour and perceptions in target audiences	difficulty in monitoring effect of intervention on threat reduction	ongoing	identification of monitoring framework and opportunistic pre surveys for baseline information, theory of change developed	consistent data gathering and adaptive management counterfactual techniques used	at least 1 publication on the impact of education strategy in threat reduction from Javan Green Magpie. Data analysis informs strategy	Nuy, CWC	Universities: IPB university, IUCN SSC IdSSG	50,000,000

Issue L: Challenges in collaboration within ex-situ holders and between ex-situ holders and government								
Objective L1. To increase coordination and collaboration between ex-situ holders and government								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
L1.1 Hire and designate a Studbook Keeper appointed by Perhimpunan Kebun Binatang Se-Indonesia (PKBSI) to be an in-country representative for coordination of ex-situ activities with the government in conjunction with EEP Coordinators	- human resources - fundings	1 year	- Studbook Keeper appointed by PKBSI - Quarterly report	- Quarterly reports - Smooth and regular coordination and communication between all stakeholders	- Quarterly reports - Smooth and regular coordination and communication between all stakeholders	PKBSI and newly appointed Studbook Keeper	EAZA EEP coordinator,Studbook Keeper, Holders, PKBSI, BKSDA	84,000,000. Based on a monthly budget of 7,000,000 to cover salary and travel/training costs ; Possible candidate from one of the holders
L1.2 Regular programmatic and status update reports submitted by Studbook Keeper to the government to foster transparency in communication and accountability	Dependent on a particular person	1 year	Annual population management report shared with Ditjen KSDAE and all stakeholders	Annual population management report shared with Ditjen KSDAE and all stakeholders	Annual population management report shared with Ditjen KSDAE and all stakeholders	EAZA EEP coordinator and Studbook Keeper	EAZA EEP coordinator,Studbook Keeper, Holders, PKBSI, Ditjen KSDAE	NA
Objective M2. Strengthen collaboration, institutional expertise and knowledge exchange between current and potential ex-situ holders								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
M2.1 Initiate and organise regular internal meetings with current institutions in collaboration with EAZA EEP	Schedule, and human resource	Ongoing	Bi-annual meeting	Bi-annual meeting	Bi-annual meeting	EAZA EEP coordinator and Studbook Keeper	EAZA EEP coordinator,Studbook Keeper, Holders, PKBSI, Ditjen KSDAE	NA (if meetings are online)
M2.2 Develop a consolidated roadmap by all ex-situ holders according to studbook recommendations, include population management, capacity building, transfer recommendations and distribution of Javan Green Magpie	Limited funding for additional infrastructure and human resources.	1 year	- First draft developed and shared with all stakeholders - Bi-annual meeting	Bi-annual meeting	Bi-annual meeting	EAZA EEP coordinator and Studbook Keeper	EAZA EEP coordinator, Studbook Keeper, Holders, PKBSI, Ditjen KSDAE	NA
M2.3 Staff exchange programmes for knowledge exchange between current and potential ex-situ holders	Limited funding, limited Human resources	Ongoing	- Annual exchange programme - Variable; depending on agreement between institutions needs	- Annual exchange programme - Variable; depending on agreement between institutions needs	- Annual exchange programme - Variable; depending on agreement between institutions needs	Studbook Keeper	Local and international Holders, PKBSI	5,000,000 (local staff exchange) - 50,000,000 (international staff exchange) Based on 1 staff for 1 month
M2.4 Strengthen knowledge and awareness by disseminating and translating Best Practice Guideline (Owen, 2019) between all ex-situ holders	human resource	1 year	BPG reviewed, translated, disseminated, and accessible for current and future holders	BPG accessible for current and future holders. Review as appropriate	BPG accessible for current and future holders. Review as appropriate	PKBSI, EAZA EEP coordinator	Holders	7,500,000 for translation

Issue N: Limited aviary capacities and other resources within Indonesian ex-situ holders								
Objective N1 Provide high quality ex-situ capacity to grow ex-situ population to target number of 200 individuals and additional 130 aviaries in Indonesia								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
N1.1 Determine current and future carrying capacity for existing conservation breeding facilities and address issues to reach the desired target	Each institution's capacity is determined by their own collection plan. Funding	3 months	Establish the carrying capacity (number of Javan Green Magpie) that can be held by all current holders	Current/future holders able to accommodate additional 100 birds	Maintaining a demographically and genetically healthy population of minimum 200 birds across all holders alongside other conservation activities e.g. conservation translocations	Holders	Holders, EAZA EEP Coordinator	2,000,000,000 over 10 years(Keep In View, details will be fleshed out over the next month by holders)
N1.2 Determine and address limitations to grow aviary capacity	Funding, space (available land area at each institution)	6 months	Consolidated information of all limitations in the form of document/ meeting	Formulation of a strategy document	Limitations addressed	Holders, EAZA EEP Coordinator	Holders, EAZA EEP Coordinator, funding partners	NA
Issue O: Expanding network of conservation breeders								
Objective O1: Incorporate new ex-situ holders into the ex-situ Javan Green Magpie conservation breeding programme								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
O1.1 Identify and engage with additional suitable PKBSI zoos to include in the conservation breeding programme of the Javan Green Magpie.	Difficulties in identification of keen suitable holders	1 year (by 2026)	- At least 5 facilities visited and management engaged with on the topic of the conservation breeding of the Javan Green Magpie. - Facilities assessed at these 5 institutions with reports made			Studbook Keeper, Holders	Studbook Keeper, EEP Coordinator, PKBSI, PKBSI zoos	25,000,000.00
O1.2 Train staff from suitable PKBSI zoos (identified in Action O1.1) through structured placements at current Javan Green Magpie holding institutions. These zoos will continue participating in training and capacity building activities as part of their commitment to the global conservation breeding program	Lack of will to collaborate to the desired standard	3 years (by 2028)	- Action O1.1 completed	-Improvements implemented where necessary at destination facilities -Training/placements completed by identified institutions	- Regular communication with Studbook Keeper and holders on success, challenges and needs. - Regular knowledge exchange between new institution and holders	Studbook Keeper, Holders	Studbook Keeper, EAZA EEP Coordinator, Holders, identified PKBSI zoos	15,000,000
O1.3 Establish active participation of suitable PKBSI zoos (identified in Action O1.1) within the conservation breeding programme by ensuring each holds at least one breeding pair of Javan Green Magpie and collaborates regularly with programme partners to support coordinated breeding efforts	Lack of will to collaborate to the desired standard	4 years (by 2029)	- Action O1.1 completed	- Refresher training/placements completed by identified institutions either at current long-time holders facilities or with visits from long-time holders staff to new holders facilities. - Identified institutions are active and collaborating with the conservation breeding program, holding at least one breeding pair of Javan Green Magpie	- New institutions are comfortable with the husbandry of the Javan Green Magpie at their institution and have had breeding success contributing to the global conservation breeding programme - New institutions are able to upscale their contribution to the global conservation breeding program - Additional institutions are engaged using the institutions in Objective A as example institutions	Studbook Keeper, Holders	Studbook Keeper, EAZA EEP Coordinator, PKBSI, PKBSI zoos	
Objective O2. Explore potential legal commercial breeding and non-commercial breeding								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
O2.1 Establish framework to include guidelines and regulations for commercial and non-commercial breeding	limited collaboration with private stakeholders	Start by 2029	- Identifying and visiting unknown breeder that has not been listed - Framework established by 2029	- Trial programme established - Breeders following guidelines and collaborating with breeding programme	Coordinated and controlled breeding done by the commercial and non-commercial breeders.	Studbook Keeper	Holders, Ditjen KSDAE	30,000,000

Issue P: Acquisition of new birds								
Objective P1: Acquisition of new birds in compliance with National Legislation								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
P1.1 Collaboration needed between government and ex-situ holders, for all acquired Javan Green Magpie from confiscations and other sources and ensure birds are sent to designated ex-situ holders within the conservation-breeding programme	- identification of Javan Green Magpie	Ongoing	Confiscated birds and rescued individuals end up in designated ex-situ holders	Confiscated birds and rescued individuals end up in designated ex-situ holders	Confiscated birds and rescued individuals end up in designated ex-situ holders	Ditjen KSDAE/BKSDA, Holders	Ditjen KSDAE/BKSDA, Holders, Burung Indonesia	15,000,000
P1.2 Conservation breeding institutions assist government in rescue sting operations of illegally kept pet birds or birds in the trade by providing manpower, equipment and time to carry out rescues accompanied by BKSDA staff	Requires strong, real-time networking with government stakeholders (BKSDA)	ongoing	Maintain regular communication with local BKSDA staff about potential rescues and logistics.	Ongoing communication, birds are rescued	Ongoing communication, birds are rescued	Holders, local BKSDA	Holders, local BKSDA	15,000,000
Issue Q: Mortality causes								
Objective Q1. Understand the causes of mortality within the ex-situ populations in Europe and Indonesia								
Q1.1 Sharing of historical and future post-mortem reports from ex-situ holders institutions to the EEP coordinator and Javan Green Magpie veterinary advisors in Chester Zoo	Communication between Holders and Vet advisor	Ongoing	All post mortem records shared with EEP vet advisor, results published and shared with all holders.	All post mortem records shared with EEP vet advisor, results published and shared with all holders.	All post mortem records shared with EEP vet advisor, results published and shared with all holders.	Holders and EEP Vet Advisor	All Holders, EAZA EEP Coordinator, EEP Vet Advisor, Specialist pathologist, PKBSI, BKSDA	NA
Issue R: Common health issues in ex-situ population								
Objective R1. Understand health issues within ex-situ populations in Europe and Indonesia								
R1.1 Carry out in-country blood sampling to collect iron, calcium and vitamin D parameters using agreed protocols and share findings to improve overall health of all ex-situ populations. The addition of a specialist pathologist will improve the quality of diagnostics for the species.	Standardise methodologies, funding for test	1 year	All current individuals (~100) in conservation breeding institutions are sampled	Reviewed parameters in line with ongoing research	Health of birds in EEP population evaluated and improved, increased reproductive performance within population	Indonesia Holder's Vets, EEP Javan Green Magpie Vet advisor	All Holders, Studbook Keeper, EAZA EEP Coordinator, PKBSI, BKSDA	1,000,000 / bird
Issue S: Diseases and biosecurity								
Objective S1. Reduce the risk of disease transmission across the captive populations by ensuring high standards of biosecurity and health screening								
Action	**Challenges to Implementation**	**Timeframe**	**Short term indicator (one year)**	**Mid term indicator (five years)**	**Long term indicator (10 years)**	**Main responsible party**	**Key stakeholder partners**	**Budget (IDR) / year**
S1.1 Review ex-situ holders' disease and biosecurity standard operational procedures against Best Practice Guidelines (Owen, 2019) through discussion with EEP vet advisors and all ex-situ holders		ongoing	Review SOPs against BPG	Review the list of diseases that exist within the ex-situ population and produce a protocol to evaluate disease management.	Review the list of diseases that exist within the ex-situ population and produce protocols to evaluate, manage and prevent it.	Holders	EAZA EEP Coordinator, Vet advisors	NA
Issue T: Opportunities for bio-banking								
Objective T1: Preservation of tissue samples for opportunistic use in bio-banking								
T1.1 Provide guidelines and protocols on collection, transport, storage & preservation of samples to holders for a consolidated sampling effort	funds, temporary storage facility before processing in Bogor	2 years from 2028	Dissemination of guidelines, distributed among the holders to understand the protocols and importance of sample preservation	Samples collection already ongoing with target 50% of ex-situ population already stored in designated storage place	Samples collection of 100% of ex-situ population is finished and stored in designated storage place	Studbook Keeper and TSI	Holders, EEP Vet advisor, Ditjen KSDAE	20,000,000 for initial investment;5,000,000 for annual maintenance

Topic U: Translocation							
Goal: To Work towards ensuring healthy, self-sustaining wild populations of Javan Green Magpies in safe, secure natural habitat within its original range by 2036							
Objective U1: Establish a conservation-translocation working group							
	January 2026 - June 2026				Chester Zoo, CSS Cologne Zoo	EAZA EEP Coordinator, All ex-situ holders, National Parks, TSI, BKSDA, Burung Indonesia, BRIN, IUCN SSC CTSG, Javan Green Magpie Vet advisors, Id IUCN SSC, IUCN SSC ASTSG, University (IPB?), IUCN SSC CSS Cologne Zoo	
Objective U2: Develop conservation-translocation plan with IUCN SSC CTSG and other stakeholders							
	July 2026 - July 2027; one year after establishing Conservation -translocation working group						
Objective U3: Conduct conservation translocation trials using adaptive management techniques to refine and enhance protocols to inform future conservation translocations							
	August 2027 onwards						
Objective U4: Upscaling conservation translocation to a broader geographic scale							
	Dependent on the success of Objective H3						

Appendix 3 List of all identified research and knowledge gaps that require actions to be developed

Below is the list of knowledge gaps identified by the participants during the workshop. These were also prioritised and the number of votes received for each topic is indicated in the column beside it.

Knowledge Gaps	**Number of Votes**
Hunting characteristics: Who is trapping Javan Green Magpies; Why do people trap Javan Green Magpies in different sites; When and how?	**19**
Characteristics of suitable habitat for the Javan Green Magpie for future releases and maintenance	**15**
Identify suitable site/s for a trial conservation-translocation	**13**
Community engagement to identify suitable livelihood alternatives to prevent songbird hunting	**12**
How to generate funding for Javan Green Magpie projects	**12**
Analyse monitoring release sites and remaining natural populations using Passive Acoustic Monitoring (PAM) ; Lack of bioacoustic data on the vocal behaviour of Javan Green Magpie for model training	**10**
Local community knowledge and perception across the range of Javan Green Magpie	**9**
Understand genetic kinship/relatedness of ex-situ population	**7**
Lack of knowledge about the floral community structure in Javan Green Magpie habitat. What types of trees are found in Javan Green Magpie habitat	**7**
Research appropriate pre and post release methodologies including post-release tracking	**7**

Lack of knowledge regarding priority areas	**6**
Understand the health of the ex-situ population, carry out comparative study of blood parameters of birds in European and Indonesian populations	**4**
Dispersal behaviour and pattern of the Javan Green Magpie	**4**
Impact of captive breeding on the genetic population profile	**3**
Conduct risk assessments for translocations	**2**
Grouped topics due to similar effort requirements: Impact of loss of habitat on Javan Green Magpies and impact of climate change on Javan Green Magpie's habitat Impact of natural disaster to Javan Green Magpie population Impact of *C. chinensis* on wild Javan Green Magpie Impact of invasive amphibians on prey availability for Javan Green Magpie Impact of invasive plants on Javan Green Magpie habitat Impact of the release of confiscated animals on Javan Green Magpie Understanding biological threats - competitors, predators, disease, parasites etc. for Javan Green Magpie Is there any information on sister species (Bornean Green Magpie & Common Green Magpie) that can be used as a base for ecological and habitat requirements for Javan Green Magpie Study its habitat associations - and then use this knowledge to identify a set of key 'indicators' of Javan Green Magpie suitability - could be presence of certain trees or veg types, altitudinal bands etc that are easily recognised in an area, even with a short visit by non-experts	**2**
Understanding the trends in demand for Javan Green Magpies; Understanding the socio-economic drivers of the Javan Green Magpie threat perpetrator	**1**
Myth and legend regarding Javan Green Magpie (Ethno-ornithology Study)	**1**
Identify local universities to support Conservation translocation research (1)	**1**
Connectivity of Javan Green Magpie territories	**1**
To study the effects, both negative in terms of habitat disturbance, and possibly positive in terms of protection from poaching, of recreational use of Javan Green Magpie areas by hikers and motorbikers etc	**0**
Lack of knowledge of the effectiveness of in-situ conservation efforts on the Javan Green Magpie population	**0**
Need to contact and engage with other conservation translocation expert practitioners for guidance on reintroducing tropical forest birds	**0**

Carry out a literature search into successful (and unsuccessful) releases of tropical forest birds	**0**
Conduct disease risk analysis DRA for Javan Green Magpie conservation translocation	**0**
Research the ecology of potential Javan Green Magpie translocation site/s	**0**