

FIELD STUDY

# The status of the Japanese Paradise Flycatcher *Terpsiphone atrocaudata* and Chinese Paradise Flycatcher *T. incei* in Indonesia

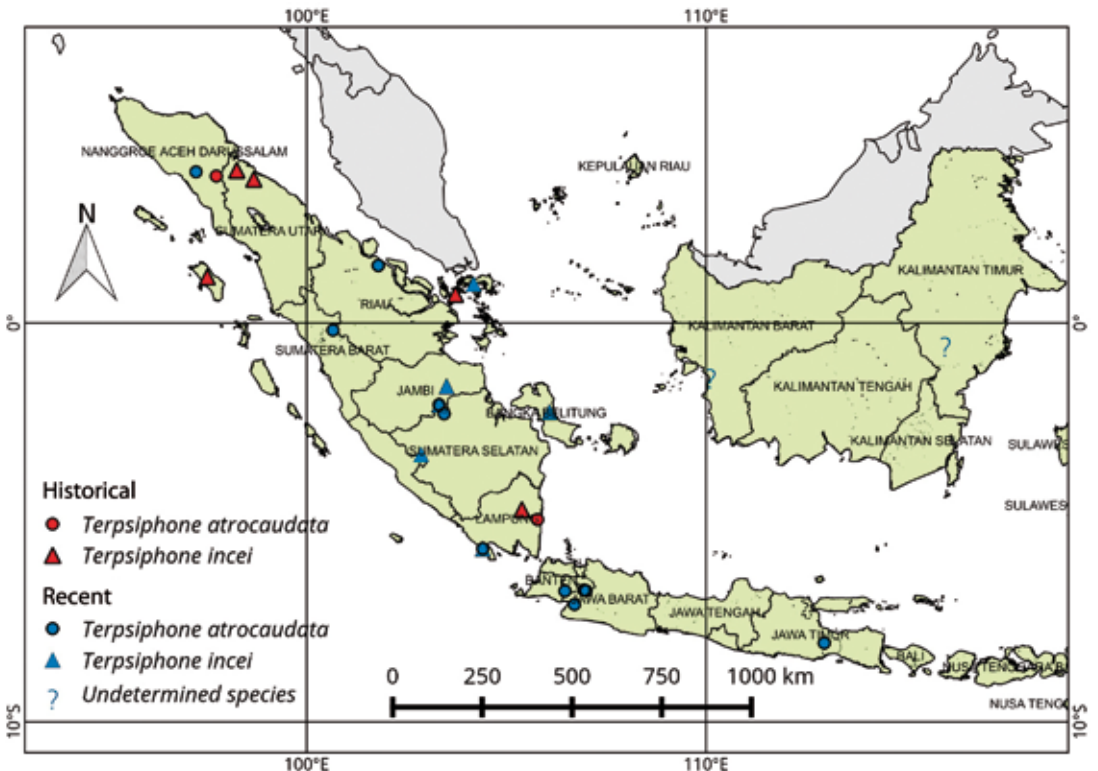
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**Introduction**

Three *Terpsiphone* paradise flycatcher species occur on the Great Sunda islands, Indonesia: the migratory Japanese Paradise Flycatcher *Terpsiphone atrocaudata*, the migratory Chinese Paradise Flycatcher (also known as Amur Paradise Flycatcher) *T. incei* and the resident Oriental Paradise Flycatcher *T. affinis* (van Marle & Voous 1988, Robson 2008, del Hoyo *et al.* 2019a,b, Moeliker 2019). The Japanese Paradise Flycatcher’s range extends from central Korea and Japan south to Lanyu island, Taiwan, and the Batan islands, northern Philippines, and it winters in South-East Asia and the Greater Sunda islands (Nuytemans 1998, Moeliker 2019). It migrates widely in Asia during September and October,

returning to its breeding grounds in about April (Nuytemans 1998, Moeliker 2019). The range of the Chinese Paradise Flycatcher extends from breeding grounds in Ussuriland, Far East Russia, North Korea and north-east, east and central China, south to wintering grounds in South-East Asia, where it is thought to be common, and Sumatra, where it is little known (del Hoyo *et al.* 2019b). It winters in Sumatra at the same time as the Japanese Paradise Flycatcher, from September to April (Robson 2008, del Hoyo *et al.* 2019b, Moeliker 2019), but is probably frequently overlooked due to its close morphological resemblance to the resident Oriental Paradise Flycatcher, which has recently been elevated to full species status (del Hoyo *et al.* 2019a). The Oriental Paradise Flycatcher is a

**Figure 1.** Map showing location of records of migrant paradise flycatchers on Sumatra and Java, Indonesia.



breeding migrant in north-east South Asia and is resident in tropical forests throughout continental South-East Asia, Borneo, Sumatra and its satellite islands (van Marle & Voous 1988, del Hoyo *et al.* 2019a). The three paradise flycatcher species are sexually dimorphic, with two of the male's middle retrices being extremely long (25–30 cm); male Oriental and Chinese Paradise Flycatcher both have less common white morphs (Eaton *et al.* 2016, del Hoyo *et al.* 2019a,b).

The Japanese and Chinese Paradise Flycatchers are still poorly known in Indonesia. This paper summarises and updates the occurrence of both migrant species in the Greater Sunda region, particularly on Sumatra and Java, based on data from mist-netting surveys in Sumatra in 2010–2011 and on historical and recent encounter data and photographic records of both species.

### Mist-netting surveys

Our field data was obtained during a mist-netting project targeting the effects of post-logging conservation on the avifauna at three sites in lowland rainforest areas in Sumatra between early December 2010 and late October 2011. Two mist-net sites were located in the Harapan Rainforest Ecosystem (hereafter Harapan) restoration area (2.13°S 103.38°E)—almost 1,000 km<sup>2</sup> of logged secondary lowland rainforest (50–80 m), interspersed with patches of more mature secondary or primary forest (BirdLife International 2019). The sites in Harapan—designated DEG3 and DEG1—were post-logging secondary forest at different stages of regeneration. DEG3 was at an early stage of regeneration and was generally characterised by a lack of large trees, thick vegetative ground cover and extensive canopy gaps, whereas regeneration at site DEG1 was more advanced, with larger trees up to 30 cm diameter at breast height (DBH), less ground cover and more closed canopy (Hua *et al.* 2011). We worked at site DEG3 from 1–14 December 2010, 8–21 February 2011 and 9–23 October 2011, and at site DEG1 from 17–29 December 2010, 26 February–9 March 2011 and 24–25 October 2011—this last session was cut short due to safety issues in the field.

The third site was at Way Canguk Research Station (WCRS), managed by the Wildlife Conservation Society Indonesia Programme, located in the 3,568 km<sup>2</sup> Bukit Barisan Selatan National Park, Lampung province (5.656°S 104.406°E), on the south-west tip of Sumatra, and holds extensive primary lowland rainforest (O'Brien & Kinnaird 1996). Our mist-netting site (PRIM) was primary lowland rainforest lying between 30–60 m, with abundant large trees more than 50 cm DBH, reduced ground cover and generally closed canopy.

We worked here from 17–25 January 2011, 21–29 March 2011 and 6–15 July 2011.

## Data collection

### Mist-netting

Mist-netting at each site was carried out in a 450 × 600 m plot using 30 mist-nets (12 m long × 2.6 m high) arranged in three parallel lines of 10 nets and spaced about 150 m apart, opened simultaneously between 06h00 and 17h30 hours on days without rain or strong winds. During each period, net arrays effectively sampled one third of the plot before being moved to cover the next section. We identified and ringed all captured individuals and recorded all recaptures; morphological measurements were made when time allowed. In all, our mist-netting effort occupied 783 field hours. We used Indonesian numbered rings, issued by the Indonesian Birdbanding Scheme (supervised by the Indonesian Institute of Science), our procedures followed Redfern & Clark (2001) and body parameter measurements were made with sliding calipers following Novarino *et al.* (2008). Field identification followed MacKinnon *et al.* (1998). We took a few photographs of lateral, frontal and dorsal aspects of captured individuals for record purposes (Plates 1–4). At busy times we suspended morphological measurements to avoid holding birds for prolonged periods.

### Online database searches and citizen science

We reviewed the published literature available to us and also searched online for published and unpublished data on Japanese and Chinese Paradise Flycatcher, mainly on the online bird databases [www.VertNet.org](http://www.VertNet.org), [Oriental Bird Images \(www.orientalbirdimages.org\)](http://www.orientalbirdimages.org) and [Internet Bird Collection \(www.hbw.com/ibc\)](http://www.hbw.com/ibc), and extended our search through an enquiry posted on bird-based Facebook groups at national and regional level (including [Pengamat Burung Indonesia](http://Pengamat Burung Indonesia), [Be Wildlife Photographer](http://Be Wildlife Photographer) and [Indonesia Wildlife Photography](http://Indonesia Wildlife Photography)). We requested details of location and time of encounter together with images to validate records and had personal discussions with the birdwatchers and photographers involved. We also secretly monitored some Facebook online bird-trading groups to seek additional data (Plates 5 & 6).

## Results

### Fieldwork

We caught 31 individual paradise flycatchers during the mist-netting project—nine Japanese, 12 Chinese and 10 Oriental Paradise Flycatcher (the latter not discussed here).

Five male and four female adult Japanese Paradise Flycatchers were caught (no immatures),



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**Plate 1.** Lateral view of male Japanese Paradise Flycatcher *Terpsiphone atrocaudata* 02A-005202 captured at mist-net site DEG1, Harapan Rainforest, Jambi, Sumatra, Indonesia, 28 February 2011.



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**Plate 2.** Lateral view of female Japanese Paradise Flycatcher 02A-005109 captured at mist-net site PRIM, Way Canguk Research Station, Bukit Barisan Selatan National Park, Lampung, Sumatra, 21 January 2011.



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**Plate 3.** Lateral view of male Chinese Paradise Flycatcher *T. incei* 02A-005019 captured at DEG1, 26 February 2011.



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**Plate 4.** Lateral view of female Chinese Paradise Flycatcher 02A-005088 captured at PRIM, 20 January 2011.

of which one male had a full-length tail. All the birds were caught in the same winter period between 2 December 2010 and 4 March 2011 at sites DEG1 (six), DEG3 (one) and PRIM (two). Body parameters measured indicated that, on average, males were bigger than females (Table 1).

Seven male and five female Chinese Paradise Flycatchers were caught—10 during the same winter period as the Japanese Paradise Flycatchers at sites DEG1 (seven), DEG3 (one) and PRIM (two). Then, during the subsequent southbound migration in mid to late October 2011, two males were caught at sites DEG1 and DEG3. All birds were adults, except for male 02A-002074 which showed evidence of juvenile plumage (Eaton *et al.* 2016). Male Chinese Paradise Flycatchers were also slightly bigger than females (Table 1). An adult male (02A-005019) caught on 26 February 2011 and the immature male (02A-002074) caught on 8 March 2011 were both retrapped at site DEG1.

The mist-net capture rate data suggests that migrant paradise flycatchers prefer advanced secondary forest DEG1 (14 captures) to both primary forest PRIM (four captures) and secondary

forest in the early stages of regeneration DEG3 (three captures). We suspect that maturing secondary forest is a better source of food than early stage secondary forest as long as it retains more-open areas where birds can hunt flying insects.

#### Online and literature search results

Our search of VertNet.org returned 248 records of Japanese and 175 records of Chinese Paradise Flycatcher. However, only four records were from Indonesia—two Chinese Paradise Flycatchers from North Sumatra province, a male (AMNH 651886) taken on 19 December 1917 at Tarutung and a female (AMNH 651887) taken on 17 February 1919 at Deli Serdang, both credited to A. van Heyst (VertNet.org), and two inconclusive recordings of calls from Kalimantan, both deposited with the Macaulay Library, one dated 5 October 2000 from Gn Palung National Park, West Kalimantan province (ML 164153), and one dated 11 June 2012 from Kutai Barat Regency, East Kalimantan (ML 183350). Our searches of Oriental Bird Images and Internet Bird Collection yielded only one sound-recording (see below).



Our enquiry posted on Facebook groups yielded more results. Several birdwatchers and photographers submitted records of both species, mostly accompanied by images. Migrant paradise flycatcher species were also being traded on a Facebook online bird-trading group site (Table 2). **[Editors' note:** In addition to VertNet.org, the Naturalis Biodiversity Center website [www.naturalis.nl/en/collection](http://www.naturalis.nl/en/collection) was used to identify historical specimens held in the ZMA collection.]

**Japanese Paradise Flycatcher**

There are very few published records of migrant Japanese Paradise Flycatcher from Indonesia prior to recent times. All were from the Sumatran 'mainland', but with little hard data. Most are summarised by van Marle & Voous (1988), who pointed out that the species may have been overlooked because there are records of passage



**Plate 5.** A male Japanese Paradise Flycatcher was captured with two other paradise flycatchers and a sunbird. It was posted on a bird-trading group on Facebook in December 2017.

**Plate 6.** A male Chinese Paradise Flycatcher was captured and posted as 'to sell' in a bird-trading group on Facebook, December 2018.



migrants from islands in the Malacca Straits. They report a specimen collected from Lampung province, Sumatra, attributed to Vorderman in 1895 and lodged in the Bogor Museum according to Kloss in 1931 and two specimens collected from Ketambe, Aceh, September 1977 and Way Kambas Reserve, Lampung province, October 1978.

The sparse later records we have found are: a bird in Gn Leuser NP, Aceh, in June 1993 (Wind 1996) and a sound-recording of a male at Masai Rusa River, Jambi province, Sumatra, on 17 February 2003 (Internet Bird Collection 2015). All the most recent records, including our work, are shown in Table 2.

The first Japanese Paradise Flycatcher records for Java (Table 2) were from West Java province, reported by Emmanuel & Yordan (2013), and it has recently been recorded from East Java (Prasetya & Siswoyo 2017, Taufiqurrahman *et al.* 2019).

Of three records from Kalimantan, only one, on 23 January 1992 from Kutai National Park, East Kalimantan, was confirmed as Japanese Paradise Flycatcher (Phillipps & Phillipps 2014). Two recordings (VertNet.org) were not identified (see above).

There is also a single record of a male Japanese Paradise Flycatcher in January 1992 from Mt. Kinabalu, Sabah state, Malaysian Borneo (Robson 1992).

**Chinese Paradise Flycatcher**

Similarly, there are few historical records of migrant Chinese Paradise Flycatcher, at that time regarded as race *incei* of the Asian Paradise Flycatcher *T. paradisi*. These were all from Sumatra and its satellite islands and it was presumed to be



**Table 1.** Details of Japanese and Chinese Paradise Flycatchers caught during our mist-net surveys in Sumatra. M denotes male; F denotes female; M\* denotes males with developing or fully-grown mid-rectrices, with measurements shown.

Site	Date	Ring No.	Sex	Age	Wing length (mm)	Bill length (mm)	Head length (mm)	Tail length (mm)	Weight (g)
<b>Japanese Paradise Flycatcher <i>Terpsiphone atrocaudata</i></b>									
DEG3	02/12/2010	02A-002042	F	Adult	86	15	40	85	18.0
DEG1	19/12/2010	01A-006062	M	Adult					
DEG1	20/12/2010	01A-006063	F	Adult					
DEG1	24/12/2010	02A-005020	M	Adult					
DEG1	27/12/2010	01A-006068	M	Adult					
PRIM	21/01/2011	02A-005109	F	Adult	84	14	38	82	15.0
PRIM	21/01/2011	02A-005110	M	Adult	90	16	39	102	17.0
DEG1	28/02/2011	02A-005205	M*	Adult	94	16	41	97/275	17.9
DEG1	04/03/2011	02A-005220	F	Adult	89	16	39	87	17.0
<b>Chinese Paradise Flycatcher <i>T. incei</i></b>									
DEG1	21/12/2010	02A-002097	F	Adult					
DEG1	22/12/2010	02A-005004	F	Adult					
DEG1	24/12/2010	02A-005021	F	Adult					
DEG1	28/12/2010	02A-005031	M	Adult					
PRIM	20/01/2011	02A-005088	F	Adult	82	14	37	87	15.0
DEG3	17/02/2011	02A-005184	M	Adult	90	16	41	108	17.1
DEG1	26/02/2011	02A-005019	M*	Adult	94	17	40	98/147	19.0
DEG1	26/02/2011	02A-005200	M	Adult	87	16	39	94	15.0
DEG1	08/03/2011	02A-002074	M	Imm.	88	15	40	91	16.8
PRIM	21/03/2011	02A-005244	F	Adult					16.8
DEG3	19/10/2011	02A-002190	M	Adult	92	16	41	107	18.1
DEG1	24/10/2011	03Y-001343	M	Adult	89	13	38	90	16.3

a winter visitor (between September and April) based on specimens collected from North Sumatra province; Waldeck collected three specimens (undated in van Marle & Voous 1988) from Deli-Serdang in 1901 (ZMA 14026 & 14027 both male, ZMA 56307 sex unknown); van Heyst collected the two specimens taken in 1917 and 1919 recorded on VertNet.org (see above for details); van Heyst collected a male on 22 September 1919 from Tuntungan, Deli (ZMA 56302), and two from Tasik River, Langkat, on 14 November 1919 (female ZMA 56303) and 25 December 1919 (male ZMA 56304); De Bussy collected a male in 1916 from Medan area, Deli (ZMA 56306), which was not recorded in van Marle & Voous (1988). In addition, a specimen taken in Lampung province and lodged in the Bogor Museum was reported by Kloss in 1931 (van Marle & Voous 1988). Two specimens were taken from Sumatra's satellite islands, Durian Island, Riau Archipelago, to the east in November 1923 and Nias Island to the west, date unknown, reported by Büttikofer in 1896 (van Marle & Voous 1988).

All the most recent records, including our work, are shown in Table 2.

### Discussion

Historically the published Indonesian records of Japanese Paradise Flycatcher were restricted to Sumatra and its satellite islands; today it is a regular visitor to Java since first recorded in 2012 (Emmanuel & Jordan 2013) and it appears to be spreading east. Most Javan records of the species are above 600 m, although in Sumatra it has been reported from lowland sites, whilst on its South-East Asian wintering grounds it has been reported at up to 700 m (Moeliker 2019). On Java the remaining forested areas are mainly found at higher altitudes (MacKinnon *et al.* 1998) and the records reflect this: about 600 m in Sukabumi (Supian pers. comm.), about 1,000–1,500 m in West Java (Emmanuel & Jordan 2013), above 1,000 m in East Java (Prasetya & Siswoyo 2017, Taufiqurrahman *et al.* 2019) and 700 m in Gn Merapi foothills, Yogyakarta (Taufiqurrahman *et al.* 2019).

**Table 2.** Records of Japanese and Chinese Paradise Flycatchers from Indonesia from the time our work commenced in 2010 to date.

Location	Date	Source	Remarks
<b>SUMATRA</b>			
<b>Japanese Paradise Flycatcher <i>Terpsiphone atrocaudata</i></b>			
Harapan Rainforest, Jambi (DEG3)	02/12/2010	This study	Adult F
Harapan Rainforest, Jambi (DEG1)	19–27/12/2010	This study	1 F and 3 M
WCRS, Lampung	21/01/2011	This study	M and F
Harapan Rainforest, Jambi (DEG1)	28/02/2011	This study	Adult M
Harapan Rainforest, Jambi (DEG1)	04/03/2011	This study	Adult F
Bukit Batu Nature Reserve, Riau	March, May, October 2011	Fujita <i>et al.</i> (2012)	Individual sighted, sex unknown
Pangkalan, Payakumbuh, West Sumatra	December 2017	Bird trading group on Facebook	M Japanese Paradise Flycatcher caught and sold with two unidentified paradise flycatchers
<b>Chinese Paradise Flycatcher <i>T. incei</i></b>			
Harapan Rainforest, Jambi (DEG1)	21–28/12/2010	This study	1 M and 3 F
WCRS, Lampung	20/01/2011	This study	Adult F
Harapan Rainforest, Jambi (DEG3)	17/02/2011	This study	Adult M
Harapan Rainforest, Jambi (DEG1)	26/02/2011	This study	2 adult M
Harapan Rainforest, Jambi (DEG1)	08/03/2011	This study	Immature M
WCRS, Lampung	21/03/2011	This study	Adult F
Harapan Rainforest, Jambi (DEG3)	19/10/2011	This study	Adult M
Harapan Rainforest, Jambi (DEG1)	24/10/2011	This study	M
Jambi	February–March 2012	A. P. Sayogo (pers. comm. 2013)	M with full grown streamers and F observed separately
Lubuk Linggau, South Sumatra	16/11/2012	A. P. Sayogo (pers. comm. 2013)	F
Bangka Island, Bangka-Belitung	26/11/2012	Syahputra (pers. comm. 2013)	F
Bangka Island, Bangka-Belitung	03/11/2013	Syahputra (pers. comm. 2013)	F
Mencaras Island, Riau Archipelago	November 2016	D. Hatief (pers. comm. 2017)	F
Payakumbuh, West Sumatra	December 2018	Bird-trading group on Facebook	Adult M advertised for sale
<b>JAVA</b>			
<b>Japanese Paradise Flycatcher <i>T. atrocaudata</i></b>			
Cisarua, West Java	24/03/2012	Emmanuel & Yordan (2013)	Adult M
Halimun-Salak National Park, West Java	24/11/2012	Emmanuel & Yordan (2013)	Adult M
Halimun-Salak National Park, West Java	13/03/2013	Emmanuel & Yordan (2013)	Adult M
Puncak Pass and Gn Gede, West Java province	December 2015	K. Yordan to Yong D. L. (pers. comm. 2016)	5 individuals sighted separately: 4 Puncak; 1 Cibodas
Sukabumi, West Java	18/02/2016	I. Supian (pers. comm. 2016)	Adult M photographed
Bromo Tengger Semeru National Park, East Java	12–17/01/2017	Prasetya & Siswoyo (2017)	Adult M photographed
Bromo Tengger Semeru National Park, East Java	28/12/2017	Taufiqurrahman <i>et al.</i> 2019	2 adult M seen; one photographed
Bromo Tengger Semeru National Park, East Java	22/03/2018	Taufiqurrahman <i>et al.</i> 2019	2 adult M
Bromo Tengger Semeru National Park, East Java	11/12/2018	Taufiqurrahman <i>et al.</i> 2019	1 adult F
Bromo Tengger Semeru National Park, East Java	16/12/2018	Taufiqurrahman <i>et al.</i> 2019	1 adult M
Jatimulyo, Kulon Progo, Menoreh Mountains, Yogyakarta, East Java	06/01–29/03/2019	Taufiqurrahman <i>et al.</i> 2019	1 F photographed

We suggest that the recent growth of sightings of Japanese Paradise Flycatcher from Java is due to the ongoing destruction of low-lying primary forests in Sumatra during the last 20 years (Margono *et al.* 2014), which may have caused migratory passerines dependent on low altitude forests in Sumatra to seek alternative wintering grounds. At the same time, the growth of interest in birdwatching, particularly in Java, during the last two decades, spurred on by the national bird atlas 'Atlas Burung Indonesia' initiative (Taufiqurrahman *et al.* 2016), has led to a significant increase in the number and skills of observers active in the field, thus improving the quality and volume of recorded field data.

Given that the migration periods and wintering areas of the two species overlap, it is reasonable to assume that they face similar threats. During our observation period, both species were frequently advertised for sale in at least one of the online Facebook bird-trading groups (Plates 5 & 6), where it was explicitly stated that the birds had been glue-trapped from the wild in Sumatra.

Three records do not fall within the established wintering period of September to April (van Marle & Voous 1988, Moeliker 2019): a Japanese Paradise Flycatcher at Gn Leuser National Park, Aceh, in June 1993 (Wind 1996), a Japanese Paradise Flycatcher at Bukit Batu Natural Reserve, Riau, in May 2011 (Fujita *et al.* 2012) and an undetermined paradise flycatcher heard calling at Kutai Barat Regency, East Kalimantan, on 11 June 2012 (VertNet.org). The latter might be a resident Oriental Paradise Flycatcher and we presume the other individuals did not migrate due to injuries or for other undetermined reasons.

The Chinese Paradise Flycatcher is currently not recognised in the Indonesian Bird Checklist as its publication preceded the taxonomic changes, whilst Japanese Paradise Flycatcher is only listed as a winter visitor to Sumatra (Sukmantoro *et al.* 2007) and its winter range should be extended to Java. Recognition of Chinese Paradise Flycatcher as a stand-alone species in the Indonesian checklist should lead to national protection status for it. An Indonesian common name should be assigned to the Chinese Paradise Flycatcher—which we suggest should connect it with its English common name, its breeding grounds, and distinguish it clearly from the other paradise flycatchers occurring in Indonesia.

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