

## The illegal trade of Indonesian raptors through social media

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**Summary.** The use of social media in Indonesia is changing traditional trading methods in the country, and this extends to the sale of protected wildlife such as raptors. Between January and December 2015 the authors monitored 38 Facebook groups and recorded 2,471 individuals from 21 diurnal raptor species being offered for sale. Most were juveniles, and the Black-winged Kite *Elanus caeruleus* was the most frequently offered species. The peak of raptor trading was in July and August, coincident with the breeding season of most raptors as many birds are taken as nestlings. Regular scrutiny of social media sites and increased punitive action by law enforcement agencies, and public awareness campaigns by governments and NGOs, are desperately needed to eliminate this audacious market for illegal trade.

**Ringkasan.** Penggunaan media sosial telah merubah metode perdagangan di Indonesia, dan hal ini juga memperluas jangkauan penjualan satwaliar dilindungi seperti raptor. Antara bulan Januari dan Desember 2015 penulis melakukan monitoring terhadap 38 grup Facebook dan mencatat 2471 ekor dari 21 jenis raptor yang ditawarkan, yang sebagian besar pada usia remaja, di mana Elang Tikus *Elanus caeruleus* adalah jenis yang paling sering ditawarkan. Perdagangan raptor paling banyak terjadi pada bulan Juli dan Agustus di mana hal ini berkaitan dengan musim berbiak, karena sebagian besar raptor diambil pada saat masih di sarang. Tindakan seperti pemeriksaan rutin situs media sosial oleh lembaga penegak hukum, serta kampanye kesadaran publik oleh pemerintah dan LSM sangat dibutuhkan untuk menghilangkan pasaran untuk perdagangan ilegal yang tidak tahu malu ini.

### Introduction

Keeping birds as pets in Indonesia is a very popular and widespread hobby (Jepson & Ladle 2005). This often includes raptors, despite their protected status under Indonesian law (Law No.5 1990 and Government Regulation No.7 1999; Noerdjito & Maryanto 2001). Raptors are still traded illegally on the black market, usually covertly (Haryanta *et al.* 2011). Illegal trapping and trade is emerging as the major threat to raptor populations in Indonesia apart from habitat loss (Bildstein *et al.* 1998; Rodríguez-Estrella *et al.* 1998; van Balen *et al.* 2000; Noerdjito & Maryanto 2001; Nijman 2006; Supriatna 2012). During a survey of three traditional bird markets in Bandung, Garut and Tasikmalaya area (West Java) in 2008, Haryoko (2010) found only two individuals of two species of diurnal raptors. In striking contrast, Iqbal (2016) found an astonishing 7,514 individual raptors of at least 33 species offered for sale through five Facebook groups. Of these 4,774 individuals belonged to 22 diurnal species, all of which are supposedly protected by Indonesian law (Noerdjito & Maryanto 2001). However, it is well known that such laws are rarely enforced and lead to a rampant illegal market (e.g. Chng *et al.* 2015). The trading of raptors has become widespread and now appears to occur in almost every city in Indonesia. Online bird trading via social media represents a serious threat as it is more difficult to control than traditional markets (Iqbal 2015, 2016).

Yuliana (2004) found that the advancement of internet technology is changing the way people conduct business, especially trading. Facebook is one of the most popular social media platforms in Indonesia, which in 2015 had the fourth largest number of users registered in the

world (Statista 2015). Facebook connects people and businesses, and breaks down financial barriers to marketing (Deloitte 2015). The opportunities presented by the internet have now been embraced by raptor traders, who are increasingly using social media such as Facebook as their main marketing outlet. This paper reports on a survey of 38 Facebook groups whose members offered raptors for sale. We also compare our results with those of Iqbal (2016), who conducted a similar survey of a smaller number of Facebook sites.

## Methods

Of the 38 Facebook groups monitored, eleven were open and 27 were closed (Appendix 1). Not all groups were specialised towards raptors, birds of prey or falconry. Some groups also offered other birds, such as parrots, or other wildlife, such as otters and reptile groups. The groups' names were either in Indonesian or English. Monitoring was conducted for 12 months from January to December 2015, though data for November were accidentally lost.

Using false identities, the first two authors were able to join both open and closed groups as members and hence, observe their activity. Data were collected on any group where raptors were offered for sale, including the species, number of individuals, age (chick, juvenile or adult), and price. We were careful to avoid double counting in cases where the same individual raptor(s) was offered for sale by different groups. For example, one vendor was found to be advertising on four Facebook accounts, and some vendors posted photographs by other vendors. We checked photographs carefully to see if they involved the same individual birds, and when a posting seemed suspicious, we spoke directly to the vendors or their colleagues. Vendors operating in the provinces of West Java, Banten and DKI Jakarta were combined into one group (Western Java), and those from Yogyakarta combined with others from Central Java.

## Results

In total 2,471 individuals from 21 species of diurnal raptors were offered for sale by 38 Facebook groups between January to December 2015. This included 127 individuals of Javan Hawk Eagle *Nisaetus bartelsi*, which is an endangered species and represents Indonesia's national emblem (van Balen *et al.* 2000). The most frequently traded species were Black-winged Kite *Elanus caeruleus* (534 individuals), Changeable Hawk Eagle *Nisaetus cirrhatus* (380), and Brahminy Kite *Haliastur indus* (319). Beside these resident raptor species, a number of migratory or partially migratory raptor species were offered for sale, including (in order of frequency) Peregrine Falcon *Falco peregrinus*, Oriental Honey Buzzard *Pernis ptilorhynchus*, Chinese Goshawks *Accipiter soloensis*, Grey-faced Buzzard *Butastur indicus* and Black Baza *Aviceda leuphotes*, Black Kite *Milvus migrans*, Japanese Sparrowhawk *Accipiter gularis* and Osprey *Pandion haliaetus*.

The ages of birds on offer varied according to species. Overall juveniles predominated, accounting for 45% of all birds. In all but one of the eight species in which the total sample exceeded 100 birds, juveniles were the dominant age group represented, accounting for 60% or more of the Crested Goshawk *Accipiter trivirgatus*, and White-bellied Sea Eagle *Haliaeetus leucogaster* (Table 1). Nestlings contributed 33% of the total sample, though they outnumbered other age classes only in the Black-winged Kite (Plates 1, 2). Adults comprised 24% of the total sample, and predominated among migratory species, especially the Peregrine Falcon, of which two-thirds were adult (Table 1).

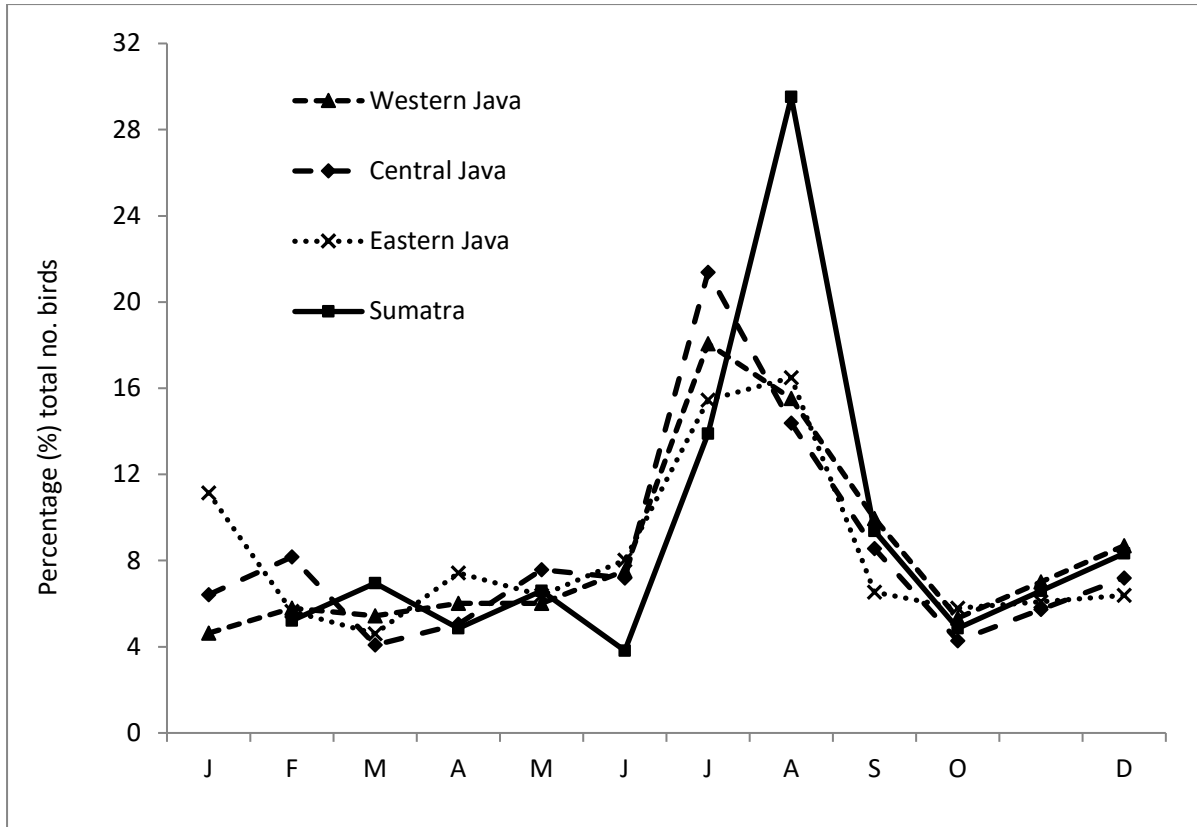
Prices of raptors also varied widely, from US\$19 for Black-thighed Falconets *Microhierax fringillarius* to \$296 for both Peregrine Falcons and Rufous-bellied Eagles *Hieraetus kienerii* (Table 1). The next most expensive raptors were among the largest: White-bellied Sea Eagles, Black Eagle *Ictinaetus malayensis* and Grey-headed Fish Eagle

*Icthyophaga ichthyaetus*, each fetching over \$100 per bird (Table 1). Median raptor prices were significantly correlated with median body length (Spearman rank correlation  $r_s = 0.675$ ,  $p = 0.002$ ). Surprisingly the Endangered Javan Hawk Eagle (Plate 1) commanded only moderate prices, from \$89 to \$111, depending on age and skill.

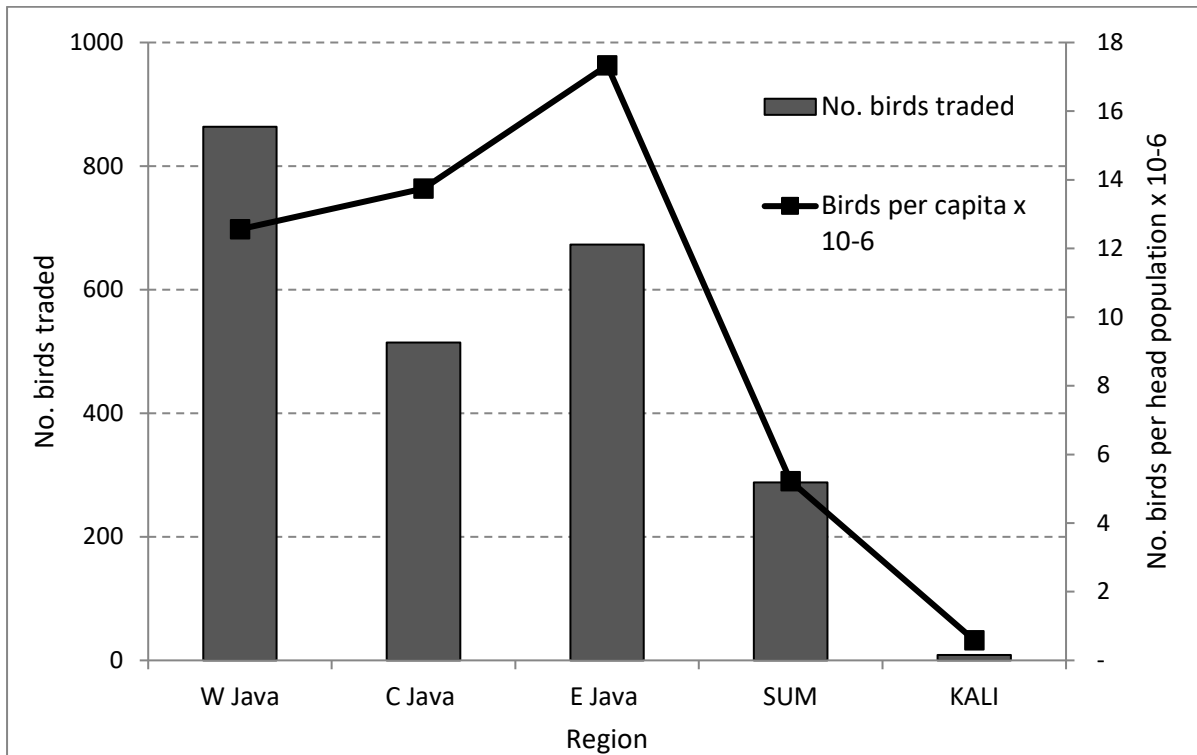
The three most frequently offered species had minimum prices of \$26-\$44, but there was no significant relationship between the number of individuals offered and their median price (Spearman rank correlation  $r_s = 0.183$ ,  $p = 0.468$ ). Raptors were offered in every month, but the largest numbers were in July and August (Fig. 1). Among the regions sampled, Western Java offered the largest number of raptors (31.8%), while Kalimantan offered the least (0.4%) (Fig. 2). However, in terms of human population of each region (data adapted from Brinkhoff 2017), East Javan websites offered the greatest number of birds (Fig. 2).

**Table 1.** Age and price of diurnal raptors offered for sale through 38 Facebook groups in Indonesia from January to December 2015, in order of decreasing frequency. Asterisks denote migratory or partially migratory species. Body length data from Thiollay (2017). Nd, no data. Age categories: Nest. = Nestling; Imm. = Immature; Ad. = Adult. Price range US\$ shows price per bird.

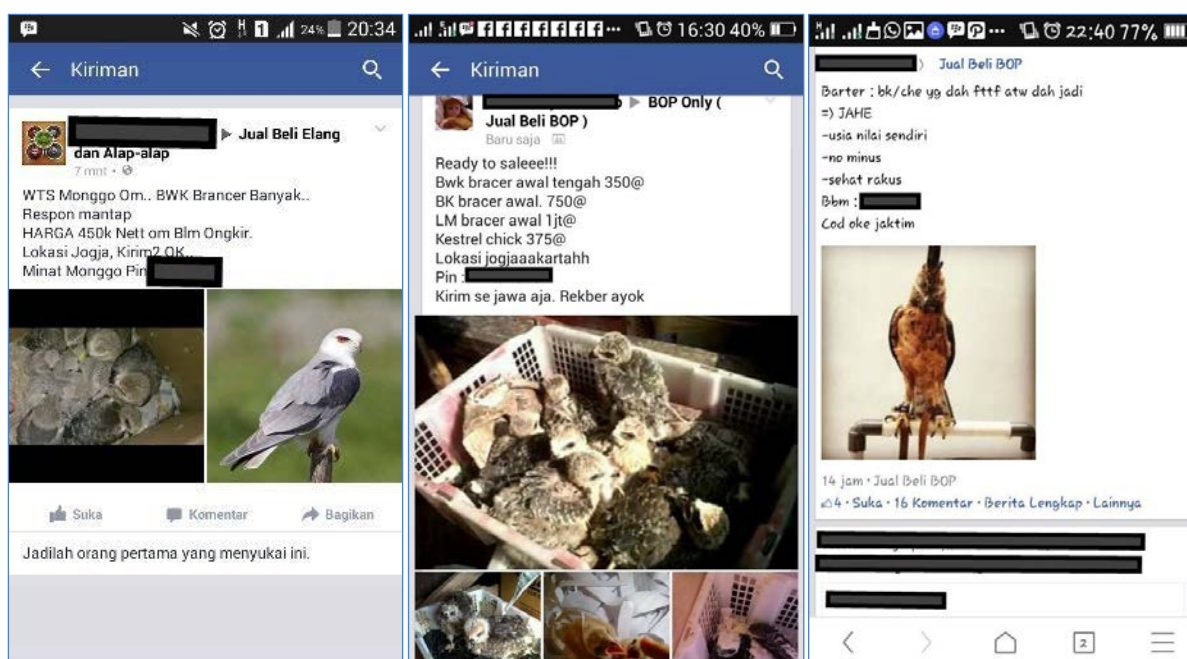
Species Name	Body length (cm)	Age (%)			Total no.	Price range US\$	
		Nest.	Imm.	Ad.			
Black-winged Kite	<i>Elanus caeruleus</i>	30-37	55.8	32.8	11.4	534	26-30
Changeable Hawk Eagle	<i>Nisaetus cirrhatus</i>	51-82	30	52.4	17.6	380	44-96
Brahminy Kite	<i>Haliastur indus</i>	44-52	37.6	38.2	24.1	319	37-59
Crested Serpent Eagle	<i>Spilornis cheela</i>	50-74	27.2	51.2	21.7	217	22-37
Crested Goshawk	<i>Accipiter trivirgatus</i>	30-46	21.2	66	12.7	212	26-30
White-bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	75-85	6.5	60.7	32.7	168	185-222
Spotted Kestrel	<i>Falco moluccensis</i>	26-32	13.7	59.6	26.7	146	26-37
Javan Hawk Eagle	<i>Nisaetus bartelsi</i>	56-60	29.9	40.9	29.1	127	89-111
Grey-headed Fish Eagle	<i>Icthyophaga ichthyaetus</i>	61-75	34	27.7	38.3	94	104-133
Peregrine Falcon*	<i>Falco peregrinus</i>	35-51	0	31.5	68.5	73	222-296
Black Eagle	<i>Ictinaetus malayensis</i>	65-80	28.6	40	31.4	70	111-148
Rufous-bellied Eagle	<i>Hieraeetus kienerii</i>	46-61	0	68	32.0	25	222-296
Oriental Honey Buzzard*	<i>Pernis ptilorhynchus</i>	52-68	32	4	64	25	22-37
Chinese Goshawk*	<i>Accipiter soloensis</i>	23-35	0	26.3	73.7	19	11-15
Black-thighed Falconet	<i>Microhierax fringillarius</i>	14-17	29.4	0	70.6	17	19
Black Baza*	<i>Aviceda leuphotes</i>	28-35	0	0	100	13	26-33
Black Kite*	<i>Milvus migrans</i>	44-66	25	41.7	33.3	12	59-74
Japanese Sparrowhawk*	<i>Accipiter gularis</i>	23-30	0	36.4	63.6	11	11-15
Harrier sp.	<i>Circus sp</i>	47-55	60	0	40	5	nd
Osprey*	<i>Pandion haliaetus</i>	55-58	0	33.3	66.7	3	nd
Grey-faced Buzzard*	<i>Butastur indicus</i>	41-48	0	100	0	1	nd
<b>Total number</b>			<b>776</b>	<b>1099</b>	<b>596</b>	<b>2471</b>	



**Figure 1.** The number of diurnal raptors offered for sale in every month through social media in Indonesia based on region. Data for November were lost. Kalimantan data are omitted due to small numbers.



**Figure 2.** Numbers of raptors traded per region in Indonesia from 1 January to 31 December 2015, also shown in terms of human population x 10<sup>-6</sup> (data adapted from Brinkhoff 2017).



**Plate 1.** Black-winged Kites and Javan Hawk Eagle offered for sale on Facebook (images compiled from Facebook)

## Discussion

While the keeping of songbirds is a part of Indonesian culture with deep roots (Jepson & Ladle 2005), the keeping of raptors is not a traditional Indonesian pastime. Based on our interviews with falconers, it became a hobby in Indonesia in the 1970s. Initially, Indonesian falconers were zookeepers, but since the advent of internet and social media, falconry has grown rapidly, and it now appears to be a widespread hobby in Indonesia (W. Wardana, pers.comm; Gunawan, pers. obs.). Falconry groups can now be found in almost every city. Members of many falconry groups use Facebook to share information about their activities, as well as to expand their business or networks. One such group, AFSI (Asosiasi Falconer Seluruh Indonesia), has more than 3,200 members spread evenly across Indonesia. Some falconry groups show their birds to the public to attract more members. Each member needs to keep a minimum of one bird. Most collectors and hobbyists keep raptors in cages, sometimes on display in front of their houses. Based on our interviews with raptor owners, people kept raptors for one or more of the following reasons: (a) the bird was a gift; (b) raptors are perceived as symbols of high social status; (c) it is fashionable to keep such birds; (d) concern over the bird's fate in the market; (e) the bird was "accidentally" discovered, presumably after it had escaped from its previous owner.

### *Comparison with previous study*

In the only comparable study, Iqbal (2016) sampled five Facebook groups, of which two were closed, two were secret, and the remaining one public (open). He monitored the public group for the 12 months of 2015, and the other groups for periods of 3-9 months in the same year. Three of the groups were based in Javanese cities (Jakarta, Surabaya and Bandung) but details of the other two were not given. Iqbal (2015) focused on groups specialising in raptors, whereas we surveyed any group that advertised birds for sale, including groups that sold many mammals and reptiles. None of the five Facebook groups Iqbal surveyed, and only two of the 15 additional groups he listed, were used in our survey.



**Plate 2.** Chicks of Black-winged Kite ready to send from eastern Java, July 2015 (images from Facebook)



**Plate 3.** White-bellied Sea Eagles packed into plastic bags (image from Facebook)

Considering only the 18 diurnal raptor species represented in our study, Iqbal reported almost twice as many individuals for sale as we found in our survey. The large discrepancy is mainly due to the very high numbers in Iqbal's study of the two most abundant species (Black-winged Kite and Changeable Hawk Eagle), which represented almost two-thirds (63.5%) of the total numbers of the 18 shared species. Although these species were also the most abundant in the present study, they represented just over a third (37.1%) of the total numbers for all species. This disparity between the results of the two studies is highlighted in the dramatic (more than threefold) drop in numbers between the second and third most abundant species, whereas in our study the decline in numbers among the 12 most abundant species was gradual (Table 1).

The reason for the much greater abundance of top two species relative to other species in Iqbal's study is not known, yet the ratio of abundance between the top two species was similar in both studies (1.0: 0.7). Moreover, the total number of individuals offered among the remaining 16 species is surprisingly similar between the two studies (1548 vs 1721, for present and Iqbal's study, respectively). After the "top two", the six next most abundant species in our study were the same as those in Iqbal's study, but the order differed somewhat. The abundance of six of the remaining ten species in our study differed from that in Iqbal's study by only one to three ranks. Of the other four species, the Oriental Honey Buzzard and Black Kite were commoner in Iqbal's study, while the Rufous-bellied Eagle and Peregrine Falcon were commoner in the present study, especially the latter species as only one individual was offered in Iqbal's study.



The asking prices of raptors were very similar between the two studies. The most expensive raptors in Iqbal's study were the White-bellied Sea Eagle (Plate 3) and Mountain Hawk Eagle *Nisaetus nipalensis*, the latter (n=23) presumably imported to Java from East or South Asia, as this species does not occur naturally in Indonesia. White-bellied Sea Eagles were offered for up to \$250, but the median price was \$190, very similar to that found in the present study (\$204). Median prices were almost identical for four species (in order of decreasing price, Grey-headed Fish Eagle, Javan Hawk Eagle, Brahminy Kite and Crested Goshawk), while those for three other species were strikingly different. The Rufous-bellied Eagle was the second most expensive species (median, \$259) in our study, whereas in Iqbal's study they were offered at comparatively low prices, from \$43 to \$142 (median, \$92.50). At the other extreme, the median price of Oriental Honey Buzzards in Iqbal's study was \$111, compared with only \$30 in our study. Similarly, in Iqbal's study, the minimum and maximum prices of Black Kites was almost twice those found in the present study (medians, \$125 vs \$67, respectively). The range of asking prices for Black-winged Kite (\$14-\$107) far exceeded that in our study, resulting in a higher median price (\$61) in Iqbal's study.

### *Age and seasonality of raptors on sale*

In this study the majority of Black-winged Kites offered for sale were chicks (55.8%), possibly because of the accessibility of their nests. Although Iqbal's (2016) report includes images showing nestlings of Black-winged Kites (at least 20), probable Spotted Kestrel (three), Crested Serpent Eagle (1) and Javan Hawk Eagle (1), he did not distinguish between age groups of raptors in his analysis. From 2002 to 2004, 224 individual raptors of 13 species were confiscated and held in six rescue and rehabilitation centres in Indonesia (Jakarta, West Java, Yogyakarta, East Java, Bali and North Sulawesi), yet only one of these birds was a Black-winged Kite (Z. Rakhman & Zulham, pers. comm; Gunawan, unpubl. data). We suspect that the Kites are rarely rescued due to high mortality of chicks taken from the nest.

The number of raptors on sale in Facebook peaked in July and August. This peak partly reflects raptor breeding seasons as a third of the captured birds were nestlings, and many juveniles may have been caught near their nests. Indeed the majority of the traded species are known to breed from March to August in Java (data from Hellebrekers & Hoogerwerf 1967, Gunawan *et al.* 2016, Thiollay 2017). We were informed that trappers typically find and monitor raptor nests, and wait until the nestlings are a few days old before they take them. The trappers then raise the young or sell them to others (brokers) who raise them. A small number of birds are trapped with nylon snares or fishing lines with baited hooks. The first author found one raptor snare consisting of a tangle of fishing line on top of a cylinder of mesh (for enclosing the bait) mounted on top of an old wheel.

### *Correlates of raptor prices*

The asking price of raptors was correlated with their body length, presumably because hobbyists desired birds whose size was impressive, despite such birds presumably costing more to cage and feed. The Peregrine Falcon was a conspicuous exception to this rule, its body length being very close to the median length for all sampled species. However, this species has become a favourite for falconers because of its well-known speed, agility and power (e.g. Ratcliffe 2010), and individuals with proven hunting skills fetch higher prices than those without such skills. The largest proportion of raptor vendors was from Western Java, which is the most populous part of Indonesia, yet relative to its human population, the number of vendors was highest in East Java. We suspect that this reflects the importance of Surabaya as a port of entry for illegally obtained wildlife from Kalimantan, Sulawesi and eastern Indonesia, and poorer levels of law enforcement.

The asking price of raptors was unrelated to the number of birds being offered, suggesting that prices were being driven by factors other than availability. The relatively low asking price (median, USD\$100) for Javan Hawk Eagles was surprising in view of its Endangered status and high profile. Our findings are consistent with those of Iqbal (2016), who recorded 121 Javan Hawk-eagles for sale (vs 127 in the present study, many of which were presumably the same individuals), priced at \$60-142. Illegal trade in this species increased significantly after it was declared Indonesia's National Rare/Precious Animal in 1993 (van Balen *et al.* 2000; Nijman *et al.* 2009). Although the price seems to have risen since around 2004, when the average price was USD\$40 (Nijman *et al.* 2009), this may be due to inflation. The birds on sale in 2015 represent 14-21% of the estimated global population of 600-900 individuals, roughly equating to 300-500 mature individuals, based on a 1:1 ratio of adults to juvenile and immature birds, as recorded in past studies (BirdLife International 2017). Thus, if trapping rates continue at this level for another two years, the global population may be halved. Clearly conservation measures introduced in 1996 to protect the species, including local awareness and community participation workshops and training, nest protection programs and regular monitoring in several parts of West Java (Prawiradilaga 2006), are no longer effective.

The current rate of trade in raptors, particularly large species, from the wild is clearly unsustainable, and many populations are possibly already undergoing irreversible declines. In Afghanistan the capture of raptors through trapping and nest robbing was shown to be one of the main factors leading to a decline in their numbers (Ostrowski *et al.* 2008). Action needs to be taken on two fronts to reduce the illegal trade in Indonesia - law enforcement and public awareness. Police and park rangers need to enforce the law against trappers and traders, and raptors kept by hobbyists and falconers should be confiscated. Tougher penalties may help to reduce the volume of trade. Secondly the public needs to be made aware of the protected status of raptors, and be encouraged to report people who own raptors to the police. Awareness campaigns should promote the benefits of protecting raptors, which are recognized as keystone species and good indicators of ecosystem health (Rodríguez-Estrella *et al.* 1998; Poirazidis *et al.* 2007; Sergio *et al.* 2008). Moreover, raptors can play an important role in controlling introduced pests, and in reducing the spread of infectious diseases (Hiraldo *et al.* 1995; Ogada *et al.* 2012; Moleon *et al.* 2014).

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**Appendix 1.** Names and status of the 38 Facebook groups used in this study, in alphabetical order

<b>Group name</b>	<b>Status</b>
Bandung animal lovers	Open
Bekasi owl community (komunitas pecinta burung hantu Bekasi)	Closed
Bomul (Bogor musang lovers)	Open
Bop& animal shop	Closed
Bop only (jual beli bop)	Closed
Bursa hewan appendix	Closed
Falconry of school	Closed
Forum jual beli Banten	Closed
Forum jual beli bebas	Closed
Forum jual beli iguana Jakarta	Closed
Forum jual beli reptil Bogor	Closed
Hawk eagle handlers	Closed
Hobby bop [birds of prey] eagle and owl	Closed
Indonesia cobra show	Open
Indonesia parrot lovers	Closed
Indonesia terrarium, vivarium, cage and	Closed
Jualbeli bop	Closed
Jualbeli bop bebas	Closed
Jualbeli burung hantu/owl	Closed
Jualbeli/barter/tt hewan Tasikmalaya	Closed
Jualbeli landak mini	Open
Karnivora- predator darat dan air	Closed
Komunitas burung hantu Kota Bogor	Open
Komunitasburung paruh bengkok Bogor	Closed
Komunitaspecinta ular Bogor	Open
Komunitas pedagang burung Pasar Pramuka	Closed
KP3 (komunitas peternak dan penggemar parkit)	Open
Kucinghutan	Closed
Lapakjual beli retic dan dipong	Closed
Musang, linsang ,garangan lovers	Open
Pasarmusang dan sugar glider	Closed
Pedagangburung Surabaya	Closed
Porosuskeeper Indonesia	Closed
Rumahadopsi musang Cirebon	Open
Rumahadopsi musang lovers Indonesia	Open
Scopsowl (celepuk)lovers Indonesia	Closed
The big family of G falconry	Closed
Wadahjual musang otter blacan	Open