tributed and less evenly spaced, creating a pale 'boomerang' (like in juvenile Pallid Harrier *C macrourus*) more often than in juvenile male. The dark secondaries are darker on the underside and, on average, also darker on the upperside, with more obvious dark bars. On the upperwing, the primaries are generally darker, with a less grey wash and less obvious pale primary base; consequently, in flight, there is a less obvious contrast between the dark secondaries and the pale primary base. As already described, the axillaries and the greater underwing-coverts have distinct dark marks. Only rarely, these marks are less distinct, with a pattern similar to that of juvenile male. The white rump-patch is normally more extensive, broader than in juvenile male. The tail is in most cases darker than in juvenile male, with darker rectrices having darker and more obvious bars, especially on the outer rectrices. The central rectrices never show a grey wash as in juvenile male.

Bare parts
The iris is distinctly darker than in juvenile male, ranging from dark-brown to warm-brown or blackish-brown. In nestlings, the iris is perhaps similarly coloured as the pupil or a shade paler; after fledging, the iris becomes gradually paler but, throughout the first year, it is still brown (cf Clarke 1996, Forsman 1999).

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Juvenile plumage of Javan Crested Honey Buzzard, with comments on mimicry in south-eastern Asian *Pernis* and *Spizaetus* species

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On 16 October 1995, when travelling between Pelabuhanratu and Bogor, West Java, Indonesia, Rona Dennis and Eric Meijaard discovered an immature raptor at a roadside bird market. Initially, the bird was thought to be an immature Javan Hawk-eagle *Spizaetus bartelsi* and, because of the protected status of raptors in Indonesia in general and of this rare raptor endemic to Java in particular, it was photographed for documentation and identification purposes. Three weeks later, the bird was still present and Paul Jepson took additional photographs. However, examination by Bas van Balen and Reflit Sözer of the taken photographs showed that it was not an immature Javan Hawk-eagle or another *Spizaetus* (or *Hieraaetus*) eagle but a juvenile Javan Crested Honey Buzzard *Pernis ptilorhyncus ptilorhyncus*, another (very) rare raptor

endemic to Java which, according to del Hoyo et al (1994), may be close to species threshold.

As no descriptions or illustrations of the juvenile plumage of Javan Crested Honey Buzzard are available in the literature, and in view of its confusing resemblance to the immature plumage of the sympatric Javan Hawk-eagle, it seems useful to publish the compiled description of the photographed juvenile Javan Crested Honey Buzzard and to discuss its identification. Furthermore, it seems appropriate to comment on mimicry in south-eastern Asian *Pernis* and *Spizaetus* species.

The data presented in this article are largely derived from observations done during field studies by the authors throughout the Indonesian part of the ranges of Crested *P ptilorhyncus* and Barred Honey Buzzards *P celebensis* (ie, Bali, Java, Kalimantan, Sulawesi and Sumatra) in the period of 1980-98.

Description

The description is based on the photographs taken of the juvenile Javan Crested Honey Buzzard. Also, comparisons were made with skins of Javan and other Crested Honey Buzzards in the collections at the National Museum of Natural History, Leiden, the Netherlands, and at the Museum Zoologicum Bogoriense, Bogor, Indonesia.

STRUCTURE Head long and narrow, with long and erect crest. Tail (very) short, apparently still growing. Bill weak. Tibia feathered ('trouser'); tarsus short (about as long as middle toe) and unfeathered, talon slightly curved.

HEAD Forehead with white frontal band. Crown much darker than in any Javan Hawk-eagle, forecrown predominantly sooty-black and hindcrown (especially more central part) distinctly paler and browner. Crest sooty-black, shorter feathers with brown tip and longer ones with whitish tip. Nape and rest of neck buff-brown, feathers with dark centre (shaft-streak) (approaching buff-cinnamon of underparts). Lore whitish, lore-feathers seemingly scaly (not clearly visible on the photographs). Ear-coverts brownish, with black 'crescent' below eye and black spot at rear edge, and surrounded by white line, running from rear corner of eye down around ear-coverts to base of bill. Chin and throat whitish, showing traces of black outline or mesial stripe typical of adult Javan Crested Honey Buzzard (chin- and throat-feathers seemed to be damaged or were moulting).

UPPERPARTS Dark brown, feathers with pale brownish fringe.

UNDERPARTS Plain buff-cinnamon, feathers with slightly darker shaft-streak. 'Trouser' pale buff to whitish.

WING Primaries blackish-brown. Secondaries, tertials and wing-coverts dark brown with pale brown fringe.

TAIL Undertail-coverts buff-cinnamon. Base of underside of tail white (rest of tail hardly visible on photographs).

BARE PARTS Iris brown, no obvious contrast with pupil. Orbital ring white to dirty-white. Upper mandible greyish; lower mandible whitish, greyish towards tip; cere bright yellow. Tarsus and foot pale yellow, talon black.

Identification

The unfeathered tarsus and the long narrow head excluded the possibility that the photographed raptor was a Javan Hawk-eagle or another *Spizaetus* (or *Hieraaetus*) eagle. In fact, the short unfeathered tarsus, the long narrow head with the weak bill and the yellow cere only fitted Crested Honey Buzzard. The long, sooty-black and pale-tipped crest was typical of juvenile Javan Crested Honey Buzzard. Presumably, it was a recently fledged bird on account of the 'simultaneously growing' crest-feathers and 'very short' tail (Kees Roselaar pers comm). The partly sooty-black head and the plain buff-cinnamon underparts strongly resembled those of immature Malaysian Crested Honey Buzzard *P p torquatus* (of which skins were studied at Museum Zoologicum Bogoriense). The white pattern on the head is also found in immature Siberian Crested Honey Buzzard *P p orientalis*. Apart from the long crest, Javan and Malaysian Crested Honey Buzzards differ from the almost-crestless Siberian Crested Honey Buzzard by the structure of the feathers of the upperneck: broad and rounded in Javan and Malaysian Crested Honey Buzzards and long and lanceolate in Siberian Crested Honey Buzzard (M E G Bartels in litt in van Heurn & van Heurn 1923).

The sooty-black pattern on the head and the sooty-black crest were more like an adult Blyth's Hawk-eagle *S alboniger* or even a Rufous-bellied Eagle *H kienerii* but the buff-brown neck (including the nape) made the bird look more like a Javan Hawk-eagle, especially when seen from aside or from behind.

Status on Greater Sundas

As already mentioned, Javan Crested Honey Buzzard is endemic to Java. There are only two skins of Javan Crested Honey Buzzard among the 50 skins of Crested Honey Buzzard in the Bartels collection from Java brought together between 1898 and 1942 (René Dekker pers comm), suggesting that Javan Crested Honey Buzzard has always been (very) rare. However, van Heurn & van Heurn (1923) reported the presence of no less than 14 skins (and one egg) of Javan Crested

Honey Buzzard in the Bartels collection (now at National Museum of Natural History). The 12 missing skins may have got lost during World War II. Four skins of Javan Crested Honey Buzzard are at Museum Zoologicum Bogoriense. It should also be pointed out that well-documented field records of Javan Crested Honey Buzzard are rare.

Convergent evolution or mimicry

Immature Javan Crested Honey Buzzard may cause confusion with immature Javan Hawk-eagle. Apart from the above-described similarities in plumage, the flight silhouettes are also similar. Both raptors are confined to Java and have not been recorded on any of the off-lying islands like, for instance, Bali, Kangean and Madura. Although few data are available, Javan Crested Honey Buzzard and Javan Hawk-eagle seem to be confined to primary and secondary rain forests. Their altitudinal ranges largely overlap although, in the (upper) montane forest zone, only Javan Hawk-eagle is recorded, albeit infrequently. Although Javan Crested Honey Buzzard and Javan Hawk-eagle occur largely in the same habitat and show similarities in plumage and flight silhouette, there is little resemblance in morphology or hunting and flight behaviour. Bill, head, foot and talon differ markedly in morphology. Javan Hawk-eagles feed on vertebrates taken from either perches inside the forest or by soaring close to the canopy. Javan Crested Honey Buzzards mainly prey on social insects, including larvae, taken both from forest and non-forest areas. Hawk-eagles have a higher wing-loading (tail included) than Crested Honey Buzzards, 34-39 and 22-23 Newton per square metre, respectively (eg, Gamauf et al 1998b). In general, a higher wing-loading is associated with a more rapid flight (Burton 1989). Javan Crested Honey Buzzard flies with deep wing-beats and Javan Hawk-eagle with more shallow ones (Nijman & Sözer 1998).

In conclusion, the resemblance between Javan Crested Honey Buzzard and Javan Hawk-eagle may represent mimicry rather than convergence, similar to other *Pernis-Spizaetus* pairs discussed below.

Mimicry in south-eastern Asian *Pernis* and *Spizaetus* species

Despite the fact that mimicry is a frequently discussed phenomenon, it has been verified by few studies and until now has been scarcely taken into consideration in raptors. As pointed out by Gamauf et al (1998a), members of the genus *Pernis* exhibit the highest local variability in plumage colour and pattern among raptors world-wide, including dark morphs in some taxa (del Hoyo et al 1994). The general trend of this variation in Crested Honey Buzzards is for the taxa inhabiting tropical forests to be darker or more richly barred in adults, with a crest and a black gorget surrounding a whitish throat to be common; immatures are paler than adults but browner than in the more northern taxa (Brown & Amadon 1968).

As first described for Sulawesi by Meyer & Wigglesworth (1898), in the Indo-Malayan and Philippine archipelagos, plumage colour and pattern of geographically distinct populations of Barred and Crested Honey Buzzards closely resemble those of sympatric hawk-eagles, either in adult plumage, as on Borneo and Sumatra, or in immature plumage, as on Java, or in both plumages, as in the Philippines and on Sulawesi. Five mimetic species pairs can be distinguished. Similarities in these species pairs extend to flight silhouette, presence of crest (pairs 1-4 with crest and pair 5 without crest), breast and belly coloration and tail pattern (with a broad pale bar).

1 Malaysian Crested Honey Buzzard *P p torquatus* (adult dark morph) and Blyth's Hawk-eagle *S alboniger*: Borneo and Sumatra
2 Malaysian Crested Honey Buzzard *P p torquatus* (adult normal morph) and Wallace's Hawk-eagle *S nanus*: Borneo and Sumatra
3 Javan Crested Honey Buzzard *P p ptilorhyncus* (immature) and Javan Hawk-eagle *S bartelsi* (immature): Java
4 Barred Honey Buzzard *P celebensis steerei/winkleri* (adult and immature) and Philippine Hawk-eagle *S philippensis*: Philippines
5 Barred Honey Buzzard *P c celebensis* (adult and immature) and Sulawesi Hawk-eagle *S lanceolatus*: Sulawesi

Mimic or model?

The central question now lies in identifying in what direction the mimicry has evolved, ie, which species is the mimic and which is the model. Crested Honey Buzzard as a mimic may take advantage from the fierceness of hawk-eagle whereas especially immature hawk-eagles as mimics may gain from the innocence of Crested Honey Buzzards.

Gamauf et al (1998a) proposed that, at least in the Philippines, the 'weak' Barred Honey Buzzard is, through its similarity, protected against attacks by the 'aggressive and dominant' hawk-eagles. This is because the latter would avoid aggressive interactions with similarly coloured

203-204 Javan Crested Honey Buzzard / Javaanse Wespendief *Pernis ptilorhyncus ptilorhyncus*, juvenile, roadside bird market between Pelabuhanratu and Bogor, West Java, Indonesia, 16 October 1995 *(Rona Dennis)* **205** Javan Crested Honey Buzzard / Javaanse Wespendief *Pernis ptilorhyncus ptilorhyncus*, adult, Taman Safari Zoo, Cisarua, West Java, Indonesia, 10 December 1994 *(Bas van Balen)* **206** Javan Hawk-eagle / Javaanse Havikarend *Spizaetus bartelsi*, immature, Taman Safari Zoo, Cisarua, West Java, Indonesia, 10 December 1994 *(Bas van Balen)*

Juvenile plumage of Javan Crested Honey Buzzard

207 Javan Hawk-eagle / Javaanse Havikarend *Spizaetus bartelsi*, adult, Taman Safari Zoo, Cisarua, West Java, Indonesia, 10 December 1994 *(Bas van Balen)* **208-209** Javan Hawk-eagle / Javaanse Havikarend *Spizaetus bartelsi*, adult, bird market, Jakarta, Java, Indonesia, 5 July 1989 *(Arnoud B van den Berg)*

competitors to avert injury in escalated fights. The coloration may protect Barred Honey Buzzard also from being attacked by other birds. A prediction that arises from this hypothesis is that hawk-eagles would always avoid confrontations with conspecifics whereas other raptors are normally attacked. Although hawk-eagles may appear fierce, no aggressive interactions between Javan Hawk-eagles and other raptors were observed (cf Nijman & Sözer 1995). Also, other bird species with good powers of flight did not seem to be alarmed by the presence of Javan Hawk-eagles, in contrast to their reaction to patrolling falcons or accipiters (Mooney 1997). Compared with Javan Hawk-eagle, other Indonesian hawk-eagles were less intensively studied but no aggressive interactions between them and other raptors were observed either. The more abundant a mimic relative to the model, the less well-protected a mimic is (Calow 1998). Furthermore, the model should have larger or at least equal geographical and ecological distributions. On Sulawesi, Barred Honey Buzzard is slightly more abundant than Sulawesi Hawk-eagle (Meyburg & van Balen 1994) but, on Java, Javan Crested Honey Buzzard is far less often recorded than Javan Hawk-eagle. Siberian Crested Honey Buzzard is an abundant visitor to Java in the northern winter (it is largely a passage migrant on Borneo and Sumatra while there are no records on Sulawesi). This abundance would make the less abundant model less useful. It must be noted, however, that Siberian Crested Honey Buzzards may only superficially resemble Javan Hawk-eagles, ie, in flight but less so perched as they lack a crest and have different coloration of the underparts.

An alternative explanation for the observed instances of mimicry is that the hawk-eagle is actually the mimic. Mimicking Crested Honey Buzzards might be advantageous for hawk-eagles because of the innocuousness of the former. This type of mimicry was described by Jensen (in prep) to explain the mimetic relationship between Wallace's Hawk-eagle and Malaysian Crested Honey Buzzard on Kalimantan. Especially, immature Wallace's Hawk-eagles would take advantage of this as they are ill-experienced hunters and may mislead potential prey animals in this way ('a wolf in sheep's clothing'). On Java, immature Javan Hawk-eagle may profit from the abundance of Siberian Crested Honey Buzzards in the northern winter.

Interestingly, on Java (unlike on the other islands), only immature Javan Crested Honey Buzzards mimic immature Javan Hawk-eagle whereas adult Javan Crested Honey Buzzards do not seem to have a model. This may be because a different situation is prevalent on Java, either through the influx of Siberian Crested Honey Buzzards, in which case the second explanation would come in force (as there would not be enough models for the first explanation), or because, on Java, the adult Javan Crested Honey Buzzard's model has gone extinct through large-scale forest destruction on Java. As it is unlikely that Blyth's Hawk-eagle ever occurred sympatrically with Javan Hawk-eagle (both form allospecies within one superspecies) on Java, the existence may be suspected of an unknown dark crested hawk-eagle that stood model for adult Javan Crested Honey Buzzard. This explanation would still be consistent with the higher (temporary) abundance of Siberian Crested Honey Buzzards as in ancient times the birds would be more dispersed over the then-existing forest.

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Samenvatting

JUVENIEL VERENKLEED VAN JAVAANSE WESPENDIEF, MET COMMENTAAR OP MIMICRY BIJ ZUIDOOST-AZIATISCHE *PERNIS*- EN *SPIZAETUS*-SOORTEN In oktober-november 1995 werd een juveniele Javaanse Wespendief *Pernis ptilorhyncus ptilorhyncus* gefotografeerd op een vogelmarkt tussen Pelabuhanratu en Bogor, West-Java, Indonesië. Javaanse Wespendief is een (zeer) zeldzame en op Java endemische roofvogel. De structuur, het verenkleed en de naakte delen van de gefotografeerde vogel worden beschreven. De gelijkenis van onvolwassen Javaanse Wespendief en onvolwassen Javaanse Havikarend *Spizaetus bartelsi* wordt besproken. Dit in verband met het mogelijke bestaan van een mimetische relatie tussen Javaanse Wespendief en Javaanse Havikarend zoals die ook wordt gevonden bij andere *Pernis-Spizaetus*-soortparen in het Indo-Maleise gebied en op de Filippijnen. Javaanse Havikarend komt eveneens alleen op Java voor.

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Varia

Churchill

Churchill, a small village in north-eastern Manitoba, Canada, is often advertised as the 'Polar Bear Capital of the World'. It is, however, much more than that. Because of its unique location on the shore of Hudson Bay, where taiga and tundra converge, it is a birdwatcher's paradise and in summer large numbers of Beluga Whales *Delphinapterus leucas* gather at the mouth of the Churchill River. Although Churchill's location is not extremely far north (58:46 N), the prevailing winds coming over the Hudson Bay, which is ice-covered for nine months of the year, give the place a truly 'arctic' look and atmosphere.

The first migrants appear in mid-April, but the peak time of migration is late May and early June. During the third week of June most birds start nesting and hatching reaches its peak in early July. Beluga Whales arrive when the river breaks up in June, usually around the second week, and their numbers steadily increase until there are as many as 3000 in the area by the end of July. Polar Bears *Ursus maritimus* come ashore from the sea ice from late July to early November; their presence is almost guaranteed during the last two weeks of October and the first week of November. In autumn, as many as 150 Polar Bears pass close to or even through Churchill. Sometimes a lone individual or even a mother with cubs may be present in spring or early summer. Churchill's bird list has well over 200 species, an unusual high number for such a subarctic location. A visit during the second and third week of June is best, when migration is still in progress and most local birds have arrived. Because of the diversity of habitats, visiting birders can expect to see a wide range of birds.

Wildfowl includes Whistling Swan *Cygnus columbianus*, Snow Goose *Anser caerulescens* and small numbers of Ross's Goose *A rossii*, Green-winged *Anas carolinensis* and Blue-winged Teals *A discors*, American Wigeon *Mareca americana*, King Eider *Somateria spectabilis* (rare), Harlequin Duck *Histrionicus histrionicus*, Long-tailed Duck *Clangula hyemalis*, Black *Melanitta americana*, Surf *M perspicillata* and White-winged Scoters *M deglandi* and Bufflehead *Bucephala albeola* (rare). Pacific Loon *Gavia pacifica*, American Bittern