

# Discovery of the Large Blue Flycatcher *Cyornis* [*banyumas*] *magnirostris* breeding in northern Kachin State (Burma/Myanmar) and taxonomic implications for the *Cyornis*-group

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**Abstract** The little-known taxon *Cyornis* [*banyumas*] *magnirostris* has long been treated as a race of the widespread Hill Blue Flycatcher *C. banyumas*, with which it was thought to be allopatric during the breeding season. On the basis of morphology, *magnirostris* has lately been considered a full species, endemic as a breeder to north-eastern India. Our recent field work during migration and the breeding season (September 2005 and June–July 2006) has, however, resulted in the first records of *magnirostris* from northern Burma/Myanmar, establishing that its breeding range broadly overlaps the range of *C. banyumas whitei*. We demonstrate how historical factors, sources of error, including fraud, errors of omission and commission, and inferences based on lack of data have all negatively affected assessment of species limits and conservation status in this speciose group of flycatchers. We also provide evidence that the taxon *C. [banyumas] lemprieri* is highly distinct and should be treated as a full species.

**Keywords** *Cyornis banyumas* · *Cyornis magnirostris* · Burma · Biogeography · Flycatcher · Myanmar · SE Asia · Taxonomy

## Introduction

The blue flycatchers of the Oriental Region comprise a speciose assemblage of taxa that are very similar despite having brilliantly plumaged males, and their taxonomy has therefore long vexed systematists (at least since Rothschild 1926). Within the Indian subcontinent and Southeast Asia, most taxa are relatively well known and common, with the notable exception of the distinctive and enigmatic *Cyornis* [*banyumas*] *magnirostris* (Blyth, 1849). Despite its relatively early description, *magnirostris* has long seemed rare and hence has remained poorly known. Stresemann (1925) was the first to place *magnirostris* as a race of his newly enlarged *C. banyumas* “Formenkreis”, implying that *magnirostris* is entirely allopatric with other included taxa. Although disputed by Robinson and Kinnear (1928), Stresemann’s (1925) treatment of *magnirostris* within *banyumas* has since been unanimously followed until Rasmussen and Anderton (2005) considered *magnirostris* to be a full species primarily on the basis of its distinctive morphology, especially in comparison with *C. banyumas whitei*, the form geographically nearest to it that Stresemann (1925) placed within *banyumas*, but this treatment has not been adopted in some subsequent works (e.g., Wells 2007).

During fieldwork in Putao District, North Burma/Myanmar, in September 2005, we collected two flycatchers (an adult male and a juvenile female) that we later determined to be *magnirostris*. These are the first records of this taxon from anywhere in North Burma/Myanmar (Smythies

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1953, 2001; Robson 2000), but given that these were taken during the migration period, we could not ascertain whether they were in transit from the only historically known breeding grounds of the taxon in Sikkim, or whether they were on their breeding grounds. However, during further fieldwork in the same areas in North Burma/Myanmar in June and July 2006, we found the species to be locally among the most common understory passerines. We netted several adult and juvenile *magnirostris* there, conclusively demonstrating for the first time that the taxon breeds in Burma/Myanmar.

We present details of records of *magnirostris* and *whitei*, discuss their implications on the taxonomic status of *magnirostris*, and present the first mensural analyses bearing on its specific status. We demonstrate how historical factors, fraud, errors of omission and commission, and inferences based on lack of data have all negatively impacted assessment of species limits and hence conservation status in this group. In addition, we re-evaluate the specific status of *C. [banyumas] lemprieri* of the Palawan area (treated as specifically distinct by Taylor 2006).

## Methods

To conduct an inventory of the birds of the Hkakabo Razi region (Northern Forest Complex, in northern Kachin State, Burma/Myanmar; Renner et al. 2007) we undertook five expeditions to the region, in January–March 2001, February 2004, September 2005, March 2006, and June–July 2006. During this field work we mist-netted birds at selected locations and determined species, body mass, and where possible sex and age for each captured bird. Individuals diverging obviously from available sources (King et al. 1995; Robson 2000; Smythies 2001; Rasmussen and Anderton 2005) were collected for further analysis in museum collections. Two *magnirostris* collected in September 2005 were exported to the NMNH bird collection (acronyms explained in the Acknowledgments), and 12 *magnirostris* were netted in June–July 2006, and photographs, measurements and body mass were taken.

For each specimen, we took the following measurements with digital calipers to the nearest 0.5 mm: culmen length from base of skull and from distal-most feathers on culmen ridge (not narial area); bill width from distal-most feathers and at proximal end of gape; bill height from feathers; flattened wing; Kipp's distance (distance from wingtip to outermost secondary); alula length (from bend of wing to distal tip of longest alular feather); shortfall of tip of primaries 1–10 (P1 being the outermost, measured ascendantly) to tip (longest feather) of folded wing; tarsus length; hallux phalanx 1 length; hallux claw (unguis) length; tail length from insertion point between central

rectrices; and tail graduation (distance from longest to shortest fully grown rectrices). Not all measurements were taken from all individuals. We also measured specimens from other institutions for comparison (see Acknowledgments). We used Systat 8.0 for statistical analyses.

Geographic coordinates for the locations were derived from online resources (<http://www.tageo.com/>, accessed 5 September 2007), Collar et al. (2001), and *The Times Atlas of the World: Comprehensive Edition* (11th Edition, 1999). We converted all coordinates to decimal degrees if needed and plotted the location with ArcGIS 9.2 including attributes (taxon, collection date) to further analyze and model sympatric versus parapatric distribution of *whitei* and *magnirostris* (Fig. 2).

We compared plumage visually. Nomenclature of plumage parts basically follows Robson (2000). Ideally, we had specimens in hand and used artificial collection light to compare plumage colors; we used natural light under shady conditions in the field.

## Results

### Morphological analyses

Mensural analyses (Table 1) show that *magnirostris* is clearly distinct from all taxa now placed within *banyumas* (following the taxonomy of Dickinson 2003). It is larger in most bill measurements than all other taxa except the otherwise quite dissimilar *lemprieri* of Palawan (Table 1), and is most different from continental taxa including *whitei*. It is also significantly longer-winged than all taxa except *lemprieri*, and has significantly greater primary projection (Kipp's distance) than all taxa in the study. Although long-winged and large-billed, *magnirostris* does not have longer tarsi or tail than most other taxa, and in fact, it is significantly shorter-tailed than *whitei*.

Principal component analysis (PCA) likewise shows the distinctness of *magnirostris* in comparison with all other taxa within *banyumas* (Fig. 1, Table 2). Principal component 1 (PC1) is a strong size axis, on which most measures are strongly positive. Only shortfall of primary 2 from tip, tarsus length, and tail length are negatively correlated with the other measures on this axis. On PC1, PC-scores of individual *magnirostris* show complete separation from all specimens of *whitei* (including *lekahuni* and *deignani*), and they overlap only with *lemprieri*. This axis shows that some *banyumas* (including *ligus*) and *coeruleatus* are almost as large as the smallest *magnirostris*. PC2 contrasts mainly shortfalls of primaries 1 and 2, wing, and tail versus bill width from nares, bill width from feathers, and culmen hook length; although this axis has a significant eigenvalue, it does not separate out any of the taxa. PC3, however,

**Table 1** Univariate statistics for taxa of the *Cyornis banyumas* complex

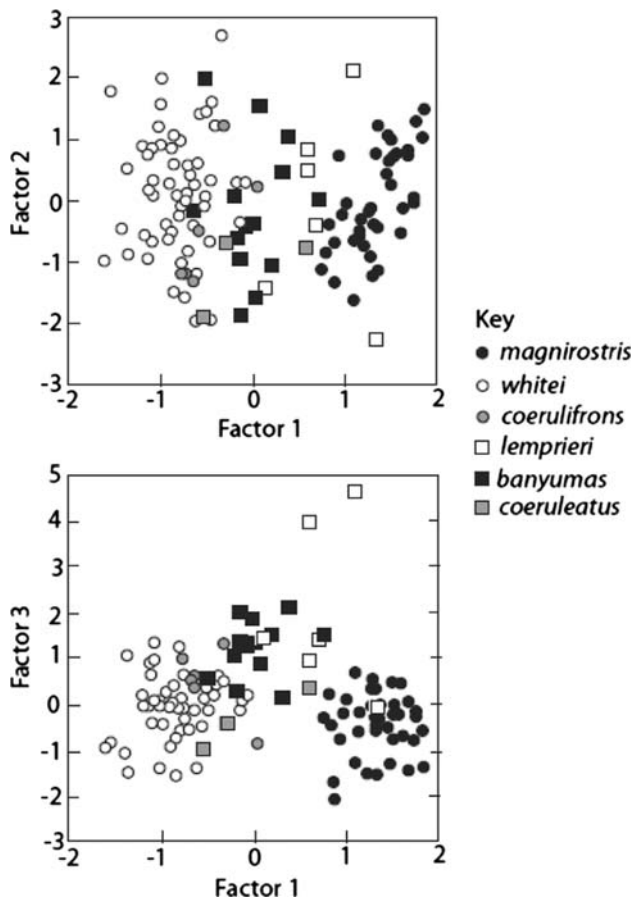
Variable	<i>magnirostris</i>	<i>whitei</i>	<i>lekahani</i>	<i>deignani</i>	<i>coerulifrons</i>	<i>lemprieri</i>	<i>banyumas</i>	<i>ligus</i>	<i>coeruleatus</i>
Culmen l from skull	m	19.32 ± 0.43 (28)	15.85 ± 0.66 (38)	16.10 ± 0.50 (3)	16.90 ± 0.63 (4)	16.33 ± 0.82 (4)	17.84 ± 0.73 (5)	16.37 ± 0.55 (8)	16.67 ± 0.91 (3)
	f	19.01 ± 0.41 (14)	15.55 ± 0.89 (26)	16.6 (1)	16.50 ± 0.20 (3)	16.07 ± 0.38 (3)	18.00 ± 0.39 (4)	15.50 ± 0.71 (2)	16.40 ± 0.59 (5)
	P	3, 3, 3, 3, 3, 3, 3	0, 1, 0, 3, 0, 0	0, 0, 1, 0, 0, 0	0, 1, 0, 0, 0	3, 0, 0, 0	3, 3, 1	0	0
Culmen l from feathers	m	14.44 ± 0.78 (29)	11.69 ± 0.80 (38)	11.90 ± 0.10 (3)	13.23 ± 0.31 (3)	12.30 ± 0.96 (4)	15.00 ± 0.63 (5)	13.36 ± 0.84 (9)	13.13 ± 1.17 (3)
	f	14.29 ± 0.68 (14)	11.50 ± 0.88 (26)	10.7 (1)	12.47 ± 0.61 (3)	12.37 ± 0.40 (3)	15.00 ± 0.79 (4)	12.65 ± 0.49 (2)	13.00 ± 0.5 (5)
	P	3, 3, 3, 0, 3, 1	0, 1, 0, 3, 0, 3, 0	0, 0, 3, 0, 1, 0	0, 3, 0, 0, 0	3, 0, 0, 0	2, 3, 3	0	0
Bill w from feathers	m	8.09 ± 0.40 (31)	6.36 ± 0.57 (38)	6.70 ± 0.14 (2)	7.10 ± 0.60 (3)	6.95 ± 0.64 (4)	7.58 ± 0.48 (6)	7.4 (1)	8.00 ± 0.41 (9)
	f	8.00 ± 0.36 (15)	6.63 ± 0.53 (27)	7.0 (1)	7.13 ± 0.06 (3)	6.83 ± 0.65 (3)	8.37 ± 1.03 (4)	6.70 ± 0.00 (2)	7.90 ± 0.41 (5)
	P	3, 2, 2, 3, 0, 1, 0	0, 0, 0, 3, 0, 3, 2	0, 0, 0, 0, 1, 0	0, 0, 0, 0, 0	2, 0, 3, 0	0, 0, 0	0	0
Bill w from gape	m	11.30 ± 0.90 (31)	9.25 ± 0.87 (37)	9.55 ± 0.92 (2)	9.67 ± 0.29 (4)	10.23 ± 0.48 (4)	10.77 ± 0.39 (4)	9.8 (1)	10.59 ± 0.72 (9)
	f	10.78 ± 0.92 (15)	9.70 ± 0.53 (21)	10.0 (1)	9.90 ± 0.66 (3)	9.73 ± 0.42 (3)	10.80 ± 0.66 (4)	8.65 ± 0.35 (2)	10.30 ± 0.35 (5)
	P	3, 0, 2, 0, 3, 0, 0	0, 0, 0, 3, 0, 3, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Bill h from feathers	m	4.55 ± 0.28 (18)	3.84 ± 0.22 (20)	-	-	3.9 (1)	4.1 (1)	-	4.19 ± 0.23 (8)
	f	4.66 ± 0.24 (11)	3.89 ± 0.29 (8)	-	-	-	4.00 ± 0.00 (2)	-	4.12 ± 0.29 (5)
	P	3, -, -, 0, -, 2, 3, 3	-, -, 0, -, 0, 2, 0	-	-	-, 0, 0, 0	0, 0, 0	0	0
Wing arc	m	79.34 ± 2.06 (33)	71.16 ± 2.40 (54)	70.33 ± 0.58 (3)	70.25 ± 1.89 (4)	71.75 ± 2.22 (4)	77.83 ± 1.72 (6)	75 (1)	74.94 ± 2.05 (9)
	f	76.63 ± 1.69 (15)	69.34 ± 2.66 (28)	66 (1)	67.00 ± 0.0 (3)	67.67 ± 1.15 (3)	73.88 ± 1.55 (4)	72.00 ± 1.41 (2)	71.30 ± 2.44 (5)
	P	3, 3, 3, 0, 1, 3, 3	0, 0, 0, 3, 0, 3, 0	0, 0, 3, 0, 0, 0	0, 3, 0, 2, 0	3, 0, 0, 0	0, 0, 0	0	0
Kipp's distance	m	19.59 ± 1.97 (30)	14.14 ± 1.39 (40)	13.97 ± 1.25 (3)	13.35 ± 1.78 (4)	11.90 ± 1.16 (3)	15.08 ± 1.69 (5)	14.7 (1)	14.02 ± 1.33 (9)
	f	19.79 ± 2.24 (15)	13.59 ± 1.12 (28)	15 (1)	12.33 ± 0.58 (3)	12.58 ± 1.85 (4)	12.97 ± 2.56 (3)	15.60 ± 0.85 (2)	11.68 ± 1.81 (5)
	P	3, 3, 3, 3, 3, 3, 3	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Alula l	m	27.39 ± 3.38 (10)	20.63 ± 0.84 (19)	20.77 ± 0.31 (3)	20.87 ± 1.32 (4)	21.70 ± 0.83 (4)	24.62 ± 1.49 (4)	-	23.78 ± 1.26 (5)
	f	24.95 ± 2.13 (4)	20.59 ± 0.93 (14)	20.2 (1)	20.53 ± 0.29 (3)	16.40 ± 6.05 (3)	26.27 ± 4.52 (3)	-	22.77 ± 1.57 (3)
	P	3, 3, 3, 3, 0, -, 2, -	0, 0, 0, 3, -, 2, -	0, 0, 2, -, 0, -	0, 3, -, 0, -	3, -, 0, -	-, 0, -	-	-
Primary 1 s	m	40.99 ± 1.85 (29)	35.31 ± 2.22 (33)	32.67 ± 0.58 (3)	34.25 ± 1.50 (4)	34.22 ± 1.46 (4)	35.95 ± 1.59 (5)	34.6 (1)	34.76 ± 2.42 (8)
	f	39.05 ± 1.65 (15)	34.03 ± 1.79 (28)	30 (1)	31.00 ± 1.00 (3)	32.9 ± 1.56 (3)	33.30 ± 2.56 (3)	33.45 ± 1.91 (2)	32.40 ± 1.90 (4)
	P	3, 3, 3, 3, 3, 3, 3	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Primary 2 s	m	11.56 ± 1.48 (29)	11.46 ± 1.52 (32)	12.00 ± 1.41 (2)	12.25 ± 0.96 (4)	12.10 ± 1.52 (4)	11.48 ± 1.13 (5)	11.5 (1)	12.10 ± 1.91 (8)
	f	10.33 ± 1.35 (15)	11.21 ± 0.67 (28)	10.0 (1)	10.00 ± 1.00 (3)	10.53 ± 1.86 (3)	10.57 ± 1.25 (3)	13.10 ± 0.57 (2)	10.85 ± 1.71 (4)
	P	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Primary 3 s	m	2.26 ± 0.65 (29)	3.26 ± 0.71 (32)	3.33 ± 1.15 (3)	2.88 ± 0.25 (4)	3.95 ± 0.82 (4)	2.94 ± 0.72 (5)	0 (1)	3.74 ± 0.73 (8)
	f	1.93 ± 0.50 (15)	3.14 ± 0.67 (28)	2.0 (1)	2.67 ± 0.58 (3)	3.27 ± 0.46 (3)	2.33 ± 0.58 (3)	4.40 ± 0.85 (2)	3.43 ± 1.22 (4)
	P	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Primary 4 s	m	0.00 (29)	0.40 ± 0.53 (33)	0.67 ± 0.29 (3)	0.62 ± 0.48 (4)	0.80 ± 0.72 (4)	0.20 ± 0.45 (5)	0 (1)	0.89 ± 0.54 (8)
	f	0.00 (15)	0.50 ± 0.54 (28)	0 (1)	0.33 ± 0.29 (3)	0.67 ± 0.29 (3)	0.00 ± 0.00 (3)	0.50 ± 0.71 (2)	0.62 ± 0.75 (4)
	P	3, 0, 0, 2, 0, 0, 3, 0	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 1, 0	0	0

Table 1 continued

Variable	<i>magnirostris</i>	<i>whitei</i>	<i>lekahani</i>	<i>deignani</i>	<i>coerulifrons</i>	<i>tempreri</i>	<i>banyumas</i>	<i>ligus</i>	<i>coeruleatus</i>
Primary 5 s	m	0.52 ± 0.66 (26)	0.08 ± 0.25 (20)	0.00 ± 0.00 (2)	0.00 ± 0.00 (4)	0.00 ± 0.00 (2)	0.00 ± 0.00 (4)	0.06 ± 0.18 (8)	0.00 ± 0.00 (2)
	f	0.67 ± 0.70 (15)	0.00 ± 0.00 (26)	0.00 (1)	0.00 ± 0.00 (3)	0.00 ± 0.00 (3)	0.00 ± 0.00 (2)	0.00 ± 0.00 (4)	0.0 (1)
	P	3, 0, 1, 0, 2, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0, 0	0
Primary 6 s	m	4.03 ± 1.23 (26)	2.16 ± 0.45 (17)	1.67 ± 0.58 (3)	1.62 ± 0.25 (4)	1.85 ± 0.21 (2)	1.13 ± 0.25 (4)	1.25 ± 0.98 (8)	1.67 ± 0.58 (3)
	f	4.21 ± 0.85 (15)	1.76 ± 0.59 (21)	0.5 (1)	1.33 ± 0.29 (3)	1.17 ± 0.76 (3)	1.00 ± 0.00 (2)	0.50 ± 0.71 (4)	0.0 (1)
	P	3, 3, 3, 3, 3, 3	0, 0, 0, 0, 1, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0, 0	0
Primary 7 s	m	10.66 ± 1.36 (26)	7.20 ± 1.13 (10)	7.00 ± 1.73 (3)	6.87 ± 0.25 (4)	6.95 ± 1.34 (2)	5.25 ± 1.26 (4)	5.50 ± 1.38 (8)	7.17 ± 0.29 (3)
	f	10.63 ± 1.04 (15)	6.87 ± 0.68 (21)	2.5 (1)	5.67 ± 0.58 (3)	5.67 ± 1.53 (3)	5.00 ± 1.41 (2)	5.23 ± 0.85 (4)	6.4 (1)
	P	3, 3, 3, 3, 3, 3	0, 0, 0, 2, 0, 3, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Primary 8 s	m	14.21 ± 1.42 (26)	10.99 ± 1.00 (17)	10.00 ± 1.00 (3)	10.12 ± 0.63 (4)	10 (1)	9.33 ± 1.15 (3)	10.29 ± 0.98 (7)	11.63 ± 0.90 (3)
	f	13.79 ± 1.16 (15)	10.00 ± 8.60 (21)	–	9.67 ± 0.58 (3)	9.10 ± 1.01 (3)	8.50 ± 0.71 (2)	8.43 ± 0.23 (3)	9.7 (1)
	P	3, 2, 3, 3, 2, 3, 3	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Primary 9 s	m	16.56 ± 1.35 (23)	13.16 ± 0.98 (16)	12.67 ± 0.58 (3)	12.25 ± 0.96 (4)	11 (1)	12.25 ± 0.96 (4)	12.60 ± 0.74 (6)	13.90 ± 1.84 (2)
	f	16.28 ± 1.30 (14)	11.81 ± 1.44 (21)	–	11.0 ± 1.00 (3)	10.10 ± 0.14 (2)	11.00 ± 0.00 (2)	10.53 ± 0.71 (3)	12.1 (1)
	P	3, 1, 3, 3, 2, 3, 2	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Primary 10 s	m	17.81 ± 2.73 (22)	15.10 ± 0.84 (15)	14.33 ± 0.58 (3)	14.00 ± 1.00 (3)	12 (1)	14.00 ± 1.00 (3)	14.52 ± 0.64 (4)	15.60 ± 1.13 (2)
	f	18.06 ± 1.32 (13)	13.62 ± 1.28 (21)	–	13.00 ± 1.00 (3)	11.90 ± 0.14 (2)	13.50 ± 0.71 (2)	12.20 ± 0.95 (3)	13.4 (1)
	P	3, 0, 3, 3, 0, 3, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Tarsus 1	m	17.90 ± 0.58 (35)	17.45 ± 0.86 (54)	18.15 ± 0.35 (2)	17.82 ± 0.33 (4)	17.82 ± 0.49 (4)	19.92 ± 1.53 (5)	18.82 ± 0.58 (9)	17.95 ± 0.07 (2)
	f	17.77 ± 0.82 (15)	17.46 ± 0.96 (27)	17.4 (1)	17.67 ± 0.40 (3)	17.57 ± 0.32 (3)	17.78 ± 0.87 (4)	18.42 ± 0.41 (5)	16.6 (1)
	P	0, 0, 0, 2, 0, 1, 0	0, 0, 0, 3, 2, 3, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0
Hallux 1	m	6.49 ± 0.32 (10)	5.87 ± 0.30 (18)	5.70 ± 0.00 (3)	5.32 ± 0.45 (4)	5.30 ± 0.29 (4)	5.82 ± 0.76 (4)	5.82 ± 0.40 (5)	–
	f	6.70 ± 0.67 (4)	5.45 ± 0.39 (13)	6.2 (1)	5.23 ± 0.49 (3)	5.30 ± 0.30 (3)	5.03 ± 0.64 (3)	.93 ± 0.45 (3)	–
	P	3, 0, 3, 3, 1, 1, 1	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	–	–
Hallux unguis 1	m	6.80 ± 0.28 (10)	6.14 ± 0.36 (19)	6.40 ± 0.46 (3)	6.25 ± 0.4 (4)	5.75 ± 0.52 (4)	6.20 ± 0.39 (4)	6.28 ± 0.19 (5)	–
	f	6.72 ± 0.46 (4)	6.06 ± 0.35 (13)	6.4 (1)	6.00 ± 0.17 (3)	5.43 ± 0.51 (3)	6.23 ± 0.40 (3)	6.33 ± 0.23 (3)	–
	P	3, 0, 2, 3, 1, 0, 0	0, 0, 1, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	–	–
Tail 1	m	58.39 ± 1.58 (32)	60.77 ± 2.54 (39)	60.00 ± 0.00 (2)	58.75 ± 1.71 (4)	58.78 ± 4.18 (4)	64.25 ± 3.30 (4)	60.66 ± 2.02 (8)	54.20 ± 1.93 (3)
	f	55.85 ± 2.11 (15)	57.34 ± 2.44 (23)	55.0 (1)	54.67 ± 1.53 (3)	57.33 ± 1.53 (3)	57.20 ± 1.06 (3)	57.24 ± 0.51 (5)	51.7 (1)
	P	2, 0, 0, 1, 0, 0	0, 0, 0, 0, 0, 3	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	1, 0, 3	0, 0	1
Tail graduation	m	4.23 ± 0.99 (28)	4.32 ± 1.24 (29)	5.7 ± 1.21 (3)	4.30 ± 2.30 (4)	4.53 ± 1.36 (3)	7.42 ± 0.51 (4)	6.33 ± 1.71 (7)	6.17 ± 1.63 (3)
	f	4.21 ± 1.33 (13)	4.18 ± 1.05 (25)	7 (1)	4.25 ± 1.06 (2)	4.33 ± 0.58 (3)	5.10 ± 1.85 (3)	4.85 ± 0.53 (4)	3.7 (1)
	P	0, 0, 0, 3, 0, 2, 0	0, 0, 0, 3, 0, 1, 0	0, 0, 0, 0, 0, 0	0, 0, 0, 0, 0	0, 0, 0, 0	0, 0, 0	0	0

Within each cell, data for males presented first, females second. Significance levels between taxa from ANOVA (sexes combined; Bonferroni-adjusted; 0 = not significant, 1 =  $P \leq 0.05$ , 2 =  $P \leq 0.01$ , 3 =  $P \leq 0.001$ ) presented in each cell for comparison with cells to right in order of Table (e.g., under *magnirostris*, first is for *magnirostris* vs. *whitei*, last is for *magnirostris* vs. *coeruleatus*)

*l* Length, *w* width, *s* shortfall from wingtip, *d* depth; for explanation of other measures, see “Methods”



**Fig. 1** Principal component analysis of morphometrics of *Cyornis* taxa

which is also a contrast axis, does segregate most *lemprieri* from *magnirostris*, and most *banyumas* (including *ligus*) from other taxa. This axis is a contrast primarily of culmen length, culmen hook length, tarsus length, and tail length versus Kipp's distance (primary projection) and shortfalls of primaries 1 and 2. These contrasts largely reflect the different proportions of the two largest, longest-billed taxa, *magnirostris* and *lemprieri*. While *magnirostris* has very long primary projection and a long shortfall of primary 1, it has a relatively short tail and tarsi compared to *lemprieri* and the smaller taxa.

#### Distributional analysis

Two *magnirostris* were captured and collected in September 2005, and 12 were netted in June and July 2006. We did not capture any *magnirostris* during the January–March trips despite intensive sampling. These results are consistent with data from elsewhere showing that *magnirostris* is highly migratory throughout its range. The fact that 11 individuals of *magnirostris* were netted at Nam Ti (27°24.61'N, 97°40.06'E; sometimes spelled Nam Hti)

during just 7 days of sampling effort indicates that the species is actually locally common there at that time of year. In contrast, only one juvenile male was collected during 11 days of sampling effort in the Naung Mung plains (27°30.00'N, 97°48.13'E, 570 m a.s.l.; sometimes spelt Naung Mong or Naun Mong), suggesting that the species breeds primarily in the lower hills such as Nam Ti (950 m a.s.l.). We did not encounter any *C. [banyumas] whitei* during any of our field trips.

Despite the fact that we did not encounter *whitei*, specimen records (Fig. 2, Table 3) confirm the strongly migratory habit of *magnirostris*, and show that *magnirostris* and *whitei* are broadly parapatric at least. If the specimen records of *whitei* from northeastern India represent resident populations (which seems likely but requires further field work), the two taxa would be sympatric. There is a breeding record of *whitei* from as far north as Sinlum, Bhamo (24°25'N, 97°50'E), Burma/Myanmar (BMNH 1908.8.2.28, Harrington, “captured on nest”); in June 1901, a *whitei* specimen was collected at Kauri Kachin, Burma/Myanmar (approximately 25°45'N, 96°52'E; BMNH 1905.8.16.236, Rippon); and the species occurs in northwest Yunnan (Yangtze Valley, 27°20'N; BMNH 21.7.15.475, 18 September, Clarke) in summer. Non-breeding season specimen records of *whitei* from the north of its range include two specimens from Htingnan, Burma/Myanmar (26°36'N, 97°52'E; BMNH 1939.12.8.105-106, 11, 10 March 1939, Kaulback) and “Hpunkataung” (not definitely located, but probably Pumkahtawng at 25°22'N, 97°43'E, 658 m), northeast of Myitkyina (BMNH 1937.1.7.132, 25 February 1933, Stanford). Given that the Assam and Htingnan specimens are from almost as far north as any of the known breeding season records, *whitei* is at most a short-distance migrant in the northern part of its range and may well be resident throughout its range (Fig. 2).

#### Comparison of relevant *Cyornis* taxa in Southeast Asia

To evaluate the relative distinctiveness of *magnirostris* within the entire *banyumas* species complex, we compared plumage characteristics at BMNH of the seven distinct taxa considered subspecies by Dickinson (2003). These (with range summaries from Dickinson 2003) are *magnirostris* (central and east Himalayas, Assam to south Burma/Myanmar, and Malay Peninsular), *whitei* (north and east Burma/Myanmar, south-central China, north Thailand, north and central Indochina), *caerulifrons* (central and south Malay Peninsular), *banyumas* (central and east Java), *ligus* (west Java), *coeruleatus* (Borneo), and *lemprieri* (Palawan, Balabac).

The remaining two taxa, *deignani* and *lekahuni*, both from southern Thailand, are arguably distinct at the subspecies level and were not considered here. The summary of plumage and other characteristics of these taxa in Table 4 shows

**Table 2** Summary results of principal component analyses (PCA) of taxa of the *Cyornis banyumas* complex

	Factor I	Factor II	Factor III
Culmen l from skull	0.93	−0.07	0.01
Culmen l from feathers	0.9	−0.15	0.2
Bill w from nares	0.81	−0.3	−0.06
Bill w from feathers	0.82	−0.27	−0.01
Culmen hook l	0.73	−0.21	0.24
Wing l	0.87	0.38	0.03
Kipp's distance	0.8	0.21	−0.35
Primary 1 shortfall from tip	0.75	0.49	−0.32
Primary 2 shortfall from tip	0.02	0.73	−0.11
Tarsus l	0.27	0.1	0.87
Tail l	−0.1	0.75	0.36
Eigenvalues	5.55	1.77	1.22
% variance explained	50.46	16.09	11.07
<i>P</i> levels	b, c, d, e, f, g, h, i	b, c, d, e, f, g, h, i	b, c, d, e, f, g, h, i
a ( <i>magnirostris</i> )	3, 3, 3, 3, 2, 3, 3, 3	0, 0, 0, 0, 0, 0, 0, 0	0, 0, 0, 0, 3, 0, 3, 0
b ( <i>whitei</i> )	0, 0, 0, 3, 0, 3, 2	0, 0, 0, 0, 0, 0, 0	0, 0, 0, 3, 0, 3, 0
c ( <i>lekahunix</i> )	0, 0, 3, 0, 0, 0	0, 0, 0, 0, 0, 0	0, 0, 1, 0, 0, 0
d ( <i>deignani</i> )	0, 3, 0, 0, 0	0, 0, 0, 0, 0	0, 2, 0, 0, 0
e ( <i>coerulifrons</i> )	3, 0, 0, 0	0, 0, 0, 0	1, 0, 0, 0
f ( <i>lemprieri</i> )	1, 3, 1	0, 0, 0	0, 0, 3
g ( <i>banyumas</i> )	0, 0	0, 0	0, 0
h ( <i>ligus</i> )	0	0	0
i ( <i>coeruleatus</i> )			

Individual scores and group polygons are shown in Fig. 1. For matrix of significance levels (from ANOVA, Bonferroni-adjusted): a = *magnirostris*, b = *whitei*, c = *lekahuni*, d = *deignani*, e = *caerulifrons*, f = *lemprieri*, g = *banyumas*, h = *ligus*, i = *coeruleatus*

that by far the most distinctive form of all those placed within *banyumas* in Dickinson (2003) is *lemprieri* of Palawan and associated islands. It differs strikingly in bill shape, overall color, and color pattern, especially in the female, although most of these differences are not apparent in illustrations accompanying Taylor (2006). The most distinct taxon in proportions is *magnirostris*, which is, however, quite similar in plumage to *whitei*. The Peninsular Malaysian form, *caerulifrons*, is similar to *whitei* except in its noticeably richer, deeper plumage overall. The two Javan taxa (*banyumas* and *ligus*) are similar to each other but fairly distinctive from other taxa, and the Bornean taxon (*coeruleatus*) is even more distinctive than the Javan forms, especially in female plumage.

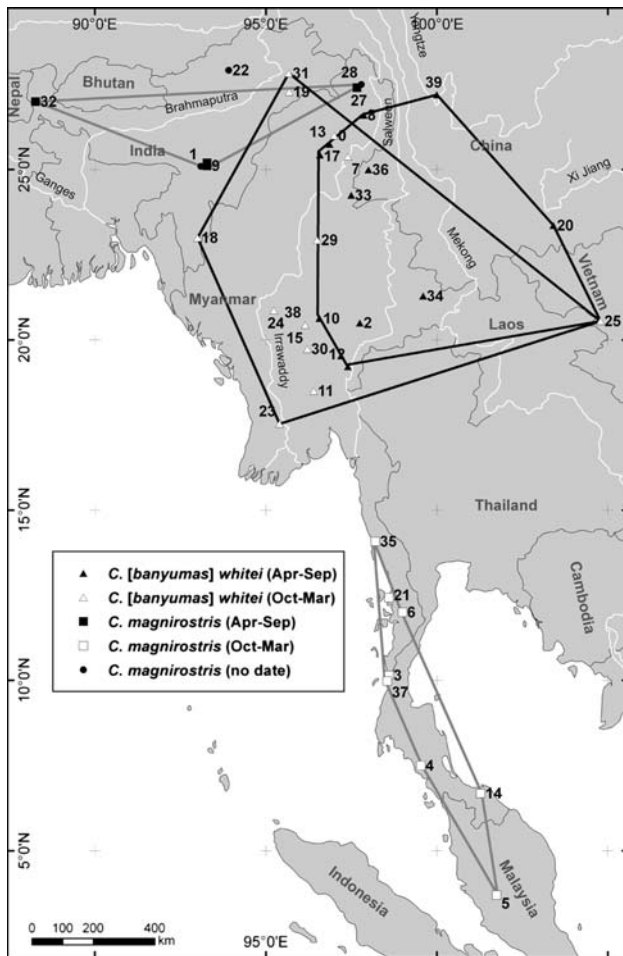
## Discussion

### Distribution

Although we have not found *whitei* in exactly the same areas as *magnirostris*, the ranges of the two taxa show at

least substantial overlap. While it remains to be conclusively demonstrated that the two overlap significantly in the breeding season, this broad geographic overlap of *magnirostris* and *whitei* supports the view of Rasmussen and Anderton (2005) that *magnirostris* is a full species. Stresemann's (1925) original treatment of *magnirostris* as a subspecies of *banyumas* was almost certainly predicated on the supposition that it was allopatric with *whitei*. Further field work will be needed to determine whether the two replace each other elevationally, and the fact that only *magnirostris* was found at Nam Ti and Naung Mung suggests that this may be the case.

Future research should include sampling at higher elevations to determine the elevational limits of both taxa and whether they indeed occur together in the breeding season. In northern Myanmar, *magnirostris* and *whitei* differ distinctly in several aspects, more so than in, for example, races of *banyumas* from southern Thailand. Since *magnirostris* and *whitei* are highly distinct despite being at least parapatric (if not truly sympatric), it is unlikely that gene flow occurs at a level that would justify considering *magnirostris* as a subspecies. Therefore, we consider that,



**Fig. 2** Map of specimen locations of *Cyornis banyumas whitei* and *magnirostris* in Southeast Asia (minimum convex polygons link outermost localities from both species during breeding and non-breeding). Only museum specimens with clearly labeled localities were used. If available, data on specimen sex, age, and capture date is indicated also. *Label numbers* refer to localities as mentioned in Table 3

under the Biological Species Concept, the best treatment is to consider *magnirostris* as a full species.

Taxonomic re-evaluation of other taxa in the *C. banyumas* complex

The form *lemprieri* has sometimes been considered a full species, the Palawan Blue Flycatcher *Cyornis lemprieri* (e.g., Taylor 2006) and we strongly recommend adopting this treatment, because the form is far more distinct than are many other species-level taxa within *Cyornis*. It is especially highly differentiated from any of the Sundaic forms, including the geographically nearest Bornean *caerulifrons*, and there seems no obvious reason to link it with *banyumas* as opposed to several other regional *Cyornis* species.

Other taxa currently placed within *banyumas* are less obviously different, but still require further study to ensure that this species constitutes a monophyletic lineage. Those of particular concern are the two Javan subspecies *banyumas* and *ligus*, and the Bornean *caerulifrons*, which seems a likely candidate for full species status. Should *banyumas* and *ligus* be shown to be not closely related to the Southeast Asian taxa, *whitei* has priority as the species name for the latter group (when *magnirostris* is considered a separate species).

Causes of confusion regarding *C. magnirostris*

The case of *Cyornis magnirostris* illustrates many of the kinds of problems that cloud the understanding of species limits and therefore accurate estimation of avian diversity. These problems (summarized below for *Cyornis*) include error due to label switching, overlooked material, fraud, conclusions drawn in the absence of adequate data, misidentification, and mapping error. As for label switching, shortly after *magnirostris* was originally described by Blyth 1849 (date correct according to Dickinson 2004), a new supposedly African species *Muscicapa riisii* Hartlaub 1857 was described, but much later this was shown to be probably a female of *C. magnirostris* to which the legs and label of another species had been reattached (Sclater 1924; Winkler 2003).

Although correctly identified, the Assam specimens of *whitei* that suggested breeding season overlap with *magnirostris* were long overlooked or confounded with *magnirostris*. The near-total lack of knowledge of bird distributions in northern Myanmar, and particularly during the monsoon, resulted in Stresemann’s (1925) decision—based on the data available to him—to lump *magnirostris* within *banyumas*. The strongly migratory habit of *magnirostris*, known to or suspected by earlier ornithologists, was long confounded by specimens Meinertzhagen stole and re-labeled as having been collected in winter in Sikkim (Rasmussen and Prys-Jones, manuscript). There are several recent sight records of *magnirostris* from Nepal through Arunachal Pradesh in the Indian subcontinent, but none have been presented with sufficient detail to allow confident reassessment, and some are very likely to be *whitei*, especially given that it had long been overlooked for the Indian subcontinent; others (for example those from Nepal) could be the very similar *C. tickelliae*, from which identification of males is difficult under field conditions and especially before the advent of the modern field guides of the past decade. Rasmussen and Prys-Jones (manuscript) found that the only *magnirostris* specimens purportedly taken in the winter in Sikkim, which had led others to the conclusion that it is resident in the Himalayas, were in the Meinertzhagen collection and clearly bear fraudulent data

**Table 3** Specimen localities and dates of *Cyornis magnirostris* with genuine data and *C. banyumas whitei* examined in this study

Locality	North (decimal degree)	East (decimal degree)	Month, specimen was collected	Reference, as labeled in Fig. 2
<i>C. banyumas whitei</i>				
“Upper Burma”	26.0000	97.0000	January	0
Bampon, Southern Shan States	20.5000	97.7500	July	2
Hpunkatawng, Myitkyina	25.3830	97.4000	February	7
Htingnan, “Upper Burma”	26.6000	97.8667	March	8
Kalaw, southern Shan States	20.6330	96.5670	May	10
Karen Hills	18.5000	96.4000	January	11
Karenni	19.2167	97.4000	March	12
Kauri Kachin	25.7500	96.8670	June	13
Kyaukse, Yamethin District	20.4330	96.1500	November	15
Laukkaung	25.4330	96.5830	April	17
Lushai Hills, Mizoram	23.0000	93.0000	February	18
Margherita, Assam	27.2830	95.6830	December	19
Mengtz, Yunnan	23.3620	103.406	September	20
Mogok	17.5330	95.4000	March	23
Mt. Popa	20.8667	95.2333	October	24
Muang Liep, Tonkin	20.5500	104.7830	January	25
Myitkyina	25.3830	97.4000	October	26
Ohngaing, Mogok, Katha	22.9330	96.5000	October	29
Pyinmana, Yamethin Dt.	19.7330	96.2170	November	30
Sadiya	27.8330	95.6670	January	31
Sinlum, Bhamo	24.2500	97.5000	April	33
Southern Shan States	21.2903	99.5998	April	34
Tengyueh Valley	25.0000	98.0000	April, August, September	36
Yamethin	20.4330	96.1500	November	38
Yangtze Valley	27.2000	100.0000	September	39
<i>C. magnirostris</i>				
Asalu, Cachar	25.1000	93.1000	No date	1
Bankasoon, Malewoun	10.1500	98.6000	December, February, March	3
Chong, Trang, Peninsular Thailand	7.5000	99.5330	December	4
Fraser’s Hill, Pahang, Peninsular Malaysia	3.7170	101.7500	November	5
Han Kachin, Tenasserim	12.0000	99.0000	February	6
Hungrum, northern Cachar (Hungrum Peak)	25.1167	93.2833	May	9
Klong Tung Sai, Junk Seylon, Peninsular Malaysia	6.6830	101.2830	December	14
Laisung, northern Cachar	25.2000	93.2833	April	16
Mergui Archipelago	12.4330	98.6000	February	21
Miri Hills, Arunachal Pradesh	27.9167	93.9167	No date	22
Nam Ti, Burma/Myanmar	27.4102	97.6677	June, July	27
Naung Mung, Burma/Myanmar	27.5030	97.7942	September	28
Sikkim, Native Sikkim	27.0000	88.2667	April, May, June, July, August, September	32
Tavoy, Tenasserim	14.0830	98.2000	March	35
Victoria Point, Tenasserim	9.9830	98.5500	March	37

For *C. b. whitei*, only specimens from localities in India, Myanmar, and China are included herein



**Table 4** Plumage comparisons between BMNH specimens of *magnirostris*, *whitei*, *caerulifrons*, *banyumas*, *ligus*, *coeruleatus*, and *lemprieri*

Taxon Character	<i>magnirostris</i> (m)	<i>whitei</i> (w)	<i>caerulifrons</i> (ca)	<i>banyumas</i> (b)	<i>ligus</i> (li)	<i>coeruleatus</i> (co)	<i>lemprieri</i> (le)
<b>Males (♂♂) adult</b>							
Leg color	Pale	Darker than m	Darker than m	Darker than w	Darker than w	Darker than w	Darker than w
Sides of face	Dark blue	Dark blue	Dark blue than m and w	Blackish-blue	Blackish-blue	Blackish-blue	Dark blue than m and w
Brighter blue shoulder patch	Small, weakly marked	Small, weakly marked	Small, weakly marked	Small, weakly marked	Small, weakly marked	Small, weakly marked	Much more prominent, paler, larger than other taxa
Upperparts color	Dark violet-blue	Dark violet-blue	Richer blue above than m, w, b	Dark violet-blue	Dark violet-blue	Richer, darker violet than others	Paler, colder blue above, especially on wing and rump
Color of supercilium/ frontal band	Paler, cooler blue than w	Fairly rich dark purple-blue	Paler, brighter, and more prominent than in m	Imperceptible in single male studied	Much paler, narrower, and better-defined than in m	Very dark lustrous purple-blue, not prominent	Intermediate between m and w, closer to m
Width of black below rami	Narrow	Slightly broader than in m	Slightly broader than in m, same as in w	Broader than ca and including chin	Broader than ca and including chin	Broader than ca and including chin	Narrow, little black on chin
Pale throat	Very extensive	Very extensive	Not available	Not available	Not available	Least extensive	Very extensive
Underparts color	Breast pale to medium orange-rufous, color extending down flanks but not belly	Most more richly colored and color more evenly distributed than in m, but belly/breast contrast usually stronger	As w but slightly richer and more extensive on flanks	Richer rufous on throat and breast than m, w, and c; lower underparts paler rufous than breast, more extensively rufous than in m, w, c	Much richer rufous on throat and breast, as rich as m on belly and flanks	Almost uniformly rich dark rufous below throat except paler center of belly	Much whiter below than other forms, with white upper throat grading into lower throat, lower breast through vent white, flanks narrowly washed pale rufous; breast and lower throat same pale rufous as m
Vent color	White, occasionally pale buff	White, occasionally pale buff	White, occasionally pale buff	Not available	Rich rufous	Not available	White
<b>Females (♀♀) adult</b>							
Face pattern	Pale rufous eyering, rufous wash above bill base	Pale rufous eyering, rufous wash above bill base sometimes lacking	Buffy-white eyering and above bill base	Buffy-white eyering and above bill base	Buffy-white eyering and above bill base	Eyering and above bill base dull brownish-rufous, scarcely different than head sides	Bold white supercilium, large white spot below eye, slight dark malar streak with pale scaling above it
Color of side of head	Medium gray-brown	Slightly browner (usually) than m	Slightly warmer than w	Medium gray	Medium gray	Much darker warm brown	Dark olive-brown
Mantle color compared to crown	Same	Slightly warmer olive-brown	Slightly paler brown	Slightly paler gray	Slightly paler gray	Distinctly paler warmer brown	Distinctly more olive-brown and paler
Uppertail coverts	Rich chestnut	Rich chestnut	Rich chestnut	Grayer brown than m, w, ca, le	Grayer brown than m, w, ca, le	Warm dark brown (as tail color)	Rich chestnut
Upper tail surface	Rufescent brown at base grading to more olive at tip	Rufescent brown at base grading to more olive at tip	Rufescent brown at base grading to more olive at tip	Darker brown with more chestnut-tinged base	Darker brown with more chestnut-tinged base	Distinctly darker brown with only chestnut tinge to basal half	Distinctly richer, brighter chestnut on entire tail

Table 4 continued

Taxon Character	<i>magnirostris</i> (m)	<i>whitei</i> (w)	<i>caerullifrons</i> (ca)	<i>banyumas</i> (b)	<i>ligus</i> (li)	<i>coeruleatus</i> (co)	<i>lemprieri</i> (le)
Wing edgings	Pale olive	Pale olive	Warmer	Pale olive	Pale olive	Dark olive brown	Warmer
Breast color	Breast paler rufous than in other taxa	Breast rich rufous	Breast rich rufous	Breast rich rufous	Breast rich rufous	Breast rich rufous	Breast rich rufous
Throat color	Throat usually distinctly paler than breast	Throat slightly paler than breast	Throat not paler than breast	Throat not paler than breast	Throat not paler than breast	Throat not paler than breast	Throat distinctly paler than breast
Underparts color	Mostly whitish, flanks fulvous-washed	Often more extensively rufous-washed than in m	As m but flanks brighter	Much more evenly rufous-washed than m, w; paler area on center of belly only	Much more evenly rufous-washed than m, w; paler area on center of belly only	Richer and more evenly rufous below than in b, li	White below with sharply contrasting rufous breast, flanks olive-washed
Leg color	Very pale	Distinctly darker than m	Distinctly darker than m	Distinctly darker than m	Distinctly darker than m	Much darker than others	Much darker than others
Juveniles	Heavily but rather indistinctly rufous-brown spotted head and upper mantle	Not available	Lacks spotting on warm buff crown, has distinct rufous-buff spotting on mantle; heavily brown streaked on breast, more lightly scaled brown below, with whitish lower throat and belly	Distinct pale buff spotting overall above, fine buff streaking on crown; similar to <i>coeruleatus</i> but distinctly paler, buffier below	Not available	Not available	Distinct, large buff spots on head and upper mantle.
Both sexes (ad.)							
Rectrix distal ends	Compact	Compact	Compact	Looser, more decomposed	Looser, more decomposed	Looser, more decomposed	Compact
Bill shape	Distinctly large, deep, laterally swollen	Moderate dimensions	Moderate dimensions	Moderate dimensions	Moderate dimensions	Moderate dimensions	Distinctly long and deep, not laterally swollen

(see also Rasmussen and Anderton 2005). Baker (1933) also claimed that *magnirostris* occurs in “eastern Assam” in winter, and that it breeds in the hills south of the Brahmaputra, but this claim must be evaluated in light of considerable evidence casting doubt on many of Baker’s records (Rasmussen and Anderton 2005), and misidentification is another possibility (see below). All genuine specimen evidence shows that *magnirostris* is present in the Himalayas only during the breeding season, and winters in Tenasserim and Peninsular Thailand. Hence, migratory status of *magnirostris* was suggested by Robinson and Kinnear (1928), considered established by Stresemann and Meyer de Schauensee (1936), and followed by, e.g., Riley (1938), but obscured largely by Meinertzhagen’s frauds in more recent works (Ali and Ripley 1968, 1983; Ali 1974; Grimmett et al. 1999; Kazmierczak 2000). The highly migratory habit of *magnirostris* therefore contrasts strikingly with the nearly or entirely resident status of *whitei* (see next paragraph).

We located two long-overlooked specimens of *whitei* collected in December 1901 from Margherita, Assam, northeastern India (Table 3). These specimens had previously been correctly listed (Robinson and Kinnear 1928) and mapped (Stresemann and Meyer de Schauensee 1936) as *whitei*, but were erroneously omitted from later influential regional literature: while Ripley (1961, p. 432) listed *Muscicapa banyumas magnirostris*, he did not mention *whitei*. The re-location of the Margherita *whitei* specimens suggested the possibility that *whitei* and *magnirostris* might be sympatric, but this could not be confirmed, as no breeding specimens of *magnirostris* were known from so far east in Assam. Subsequently, we have located another certain and two probable Indian specimens of *whitei*. While *whitei* is generally considered non-migratory (e.g., Robson 2000), and we consider this view to be probably correct, the basis for this assumption is unclear (see above). Despite clarifying the migratory and taxonomic status of *magnirostris*, Rasmussen and Anderton (2005) mistakenly mapped the species for Bhutan, although it had not yet been definitely recorded there. A recent sight and photographic record from Bhutan (Bishop 2006) is inconclusive, as the photograph cannot be located (K.D. Bishop, in litt. 30 November 2006). Another recent record (Farrow 2008) from April 2008, however, seems plausible, being accompanied by confirmatory identification details.

Baker’s (1933) report of *magnirostris* wintering in Assam probably refers to *whitei*, because there are no dated winter specimens of the former from the region, while we now know of three definite (Margherita and Lushai Hills) and two further probable (Sadiya and Tenga Pani, Manbun, near Sadiya; definitely not *magnirostris*) *whitei* specimens from north-eastern India, all from December to February. The fact that all are from winter does not prove

the taxon only occurs in India at that time, because most specimen collection in the region has taken place during winter months when the climate is far more pleasant. Although Baker (1933) mentions collecting nests of *magnirostris* in Margherita, Assam, with H.N. Coltart, Coltart’s specimens from Assam (AMNH 450724, AMNH 450725) are *whitei*, not *magnirostris*. While this does not prove that Coltart only collected *whitei*, it does suggest that Baker may have been confusing the two taxa. Despite the fact that several egg sets in the BMNH labeled as *magnirostris* exist from the hills south of the Brahmaputra, their specific identity cannot be validated using currently available methods, since they are externally indistinguishable from *whitei* and *rubeculoides*, and possibly other species. DNA techniques that may allow specific identification of small eggs are in development (R. P. Prys-Jones, personal communication, July 2007). The fact that there are three Cachar specimens of *magnirostris* may be taken as evidence that the species breeds there (as indeed may be the case), but one is undated, and the other two are from dates consistent with birds taken in migration (25 April and 3 May). If *magnirostris* does indeed breed in Cachar and in the Khasi Hills, as contended by Baker, it is surprising that Koelz, who collected extensively there in the summer months (June–August), did not collect any. As with Baker’s other nesting records and non-voucher-based observations (some of which seem extremely improbable), independent corroboration is needed before they can be taken at face value (see Rasmussen and Anderton 2005).

Much of the confusion surrounding *C. magnirostris* can be directly attributed to the fact that very little ornithological fieldwork has been done during the summer months because of the unpleasant monsoon conditions and abundant leeches during this time, and thus this species has been overlooked on its breeding grounds. In fact, no definite records from the breeding grounds in the Indian subcontinent are known from the twentieth Century. However, the information that several specimens were taken by Mandelli’s collectors in Sikkim suggests that it is or was locally common there during the breeding season, as we have found to be the case at Nam Ti, Burma/Myanmar. We expect that further fieldwork at the appropriate elevations during the monsoon months will result in improved knowledge of this migratory species’ distribution in the eastern Himalayas, as well as resolving the issue of breeding sympatry with *whitei*.

Further taxonomic issues require re-evaluation in this group. The form occurring in Palawan and Balabac, *C. [banyumas] lemprieri*, is particularly distinctive in several respects and has at times been considered a full species, a treatment certainly justified. Of the other taxa recognized by Dickinson (2003) as conspecific, *banyumas* and *ligus* of Java as well as *coeruleatus* of Borneo, are

distinctive, and further study including of vocalizations and genetics may consider it as one or two separate species.

In conclusion, we recommend the treatment of *Cyornis magnirostris* as a full species, for which the English name Large Blue Flycatcher is appropriate. This name was used in Rasmussen and Anderton (2005) in lieu of the common name Large-billed Blue Flycatcher used earlier for *magnirostris* in the twentieth century, because the name Large-billed Blue Flycatcher is currently widely used as the common name of *Cyornis caeruleatus* (not *C. banyumas coeruleatus*) of Borneo and Sumatra (Dickinson 2003), even though *C. caeruleatus* has a smaller bill than does *C. magnirostris*. We also strongly recommend that the highly distinctive *C. lemprieri* once again be treated as specifically distinct, as was done in Dickinson et al. (1991), and that the established common name Palawan Blue Flycatcher again be used (Taylor 2006).

#### Conservation status of *C. magnirostris*

Evaluation of the threat status of *C. magnirostris* is needed, given that it is so little known and that very few recent records exist. Due to its apparent scarcity, Rasmussen (2005) suggested that *magnirostris* may qualify for treatment as an endangered species. Although our findings from the breeding season in northern Myanmar show that, at least in Nam Ti, it is very locally among the most common forest birds, this may not be the case elsewhere. Further breeding season surveys in similar areas are needed to establish the presence and status of this species.

#### Zusammenfassung

Brutnachweis von *Cyornis [banyumas] magnirostris* im Norden von Kachin State (Birma/Myanmar), mit taxonomischen Betrachtungen zu *Cyornis*

Das wenig bekannte Taxon *Cyornis [banyumas] magnirostris* wurde lange als Unterart des sehr weit verbreiteten *C. banyumas* behandelt und beide galten bislang während der Brutsaison als allopatrisch. *C. magnirostris* wird allerdings oft aufgrund der Morphologie als eigenständige Art betrachtet und galt bislang als endemischer Brutvogel im Nordosten Indiens. Unsere Feldarbeit im südöstlichen sub-Himalaja während der Zug- und Brutzeit (September 2005 und Juni-Juli 2006) lieferten die ersten Beobachtungen von *C. magnirostris* im Norden Birmas/Myanmars, so dass jetzt davon ausgegangen werden muss, dass die Brutgebiete beider Taxa sich deutlich überschneiden. Wir zeigen ferner, wie historische Ereignisse und Fehlerquellen inklusive Fälschungen sowie Fehlschlüsse aufgrund mangelnder Informationen die Artabgrenzung, Taxonomie und

den Schutz der Art und der ganzen *Cyornis*-Gruppe negativ beeinflusst haben. Abschließend diskutieren wir Unterschiede von *C. [banyumas] lemprieri* von *C. banyumas* und schlagen vor, diese Taxon ebenso als vollwertige Art zu behandeln.

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