

## The taxonomic status of *Casuarius bennetti papuanus* and *C. b. westermanni*

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**SUMMARY.**—Because of confusion in depictions by J. G. Keulemans, Walter Rothschild's monograph on cassowaries wrongly illustrated and described *Casuarius papuanus*. The description and sketch referred in fact to *C. westermanni* and this has led to over a century of incorrect nomenclature in scientific and other publications. A revision is proposed here.

Taxonomy of the cassowaries has long been confused. Forty-eight taxa have been described, of which Peters (1931) recognised 30 that he grouped into six species, two of them he listed as 'range unknown'. In his revision of this work, c.50 years later, Mayr (1979: 7) commented that 'Nothing is certain about the classification of the cassowaries except the fact that there are 3 species', namely Double-wattled Cassowary *Casuarius casuarius*, Dwarf Cassowary *C. bennetti* and Single-wattled Cassowary *C. unappendiculatus*. Based on then-current knowledge, he declined to recognise any subspecies, but pointed out available names should subspecific nomenclature be required. Not everyone agreed with Mayr, for instance Wolters (1982) and Howard & Moore (1984) listed several subspecies, but subsequently Folch (1992), Dickinson (2003) and Clements (2008) followed Mayr's approach, and an adequate revision setting out a defensible subspecific taxonomy has still not been produced.

Despite this, it seems important to point out an apparent misapplication of subspecific nomenclature within the species *Casuarius bennetti* Gould, 1857. The nominate form was described from New Britain specimens, and subsequently an array of other subspecies was described from New Guinea. *C. bennetti* is a montane species found in forest to 3,300 m (Coates 1985, Beehler *et al.* 1986) with an estimated range of c.258,000 km<sup>2</sup> (BirdLife International 2010) and is known from virtually every mountain range in New Guinea (pers. obs.).

Among New Guinea taxa, birds from the relatively isolated Vogelkop (the Bird's Head Peninsula) in north-west New Guinea have been recognised as being particularly distinctive, notably in the broad white occipital region, such that some authorities (e.g., Davies 2002) accord them species status as *Casuarius papuanus* Schlegel, 1871.

Rothschild (1900: 139) described *Casuarius papuanus* Schlegel, 1871, as 'Adult...Face behind eye, and head white' and illustrated it accordingly (Fig. 1). Subsequently, museum specimens, live zoo examples and in the literature, birds with these features were identified as *C. papuanus*.

Schlegel's (1871) description of the *C. papuanus* holotype, however, makes no mention of a white occipital patch. Likewise, the drawing of this specimen in Rosenberg (1875) also exhibits no white (Fig. 4). In 2007 I photographed the type specimen, 87001, in Naturalis, Leiden, and confirmed that there is indeed no occipital white area (Fig. 5). The first bird to be described with this feature was *Casuarius westermanni* P. L. Sclater, 1874, obtained in Manokwari, Vogelkop, illustrated by Keulemans in Sclater (1872) under the erroneous name *kaupi* (as the latter name was found to pertain to a young *C. unappendiculatus*). The

type of *C. westermanni* is now in the Natural History Museum (NHM), Tring, and, although the skin has not aged well (Fig. 2), Keulemans' watercolour compares well with it (Fig. 3).

Rothschild (1931) subsequently recognised his erroneous attribution of these birds with white occipital areas to *papuanus* and suggested they should be designated *westermanni*. Warren (1956) noted both Rothschild's (1931) comments and that the type specimen of *papuanus* had no white patch, but made no further recommendations. Birds with a white occipital patch have therefore continued to be referred to as *papuanus*, although one recent German article (Gedeon & Kleinstäuber 2003) used *westermanni* in referring to a bird in the Vogelkop.

Although *Casuarius (bennetti) papuanus* remains perfectly valid for Schlegel's type specimen, its use should be restricted to birds matching the description. Quite where Schlegel's holotype should be aligned is still uncertain, but certainly not with birds possessing a predominantly white occipital region. Similarity with *Casuarius claudii*, Ogilvie-Grant, 1911, is the subject of ongoing research.

Many *Casuarius* specimens, both in museums and in zoos, are of uncertain provenance, having been assigned to a given species either on the basis of morphology or sometimes on the locality from where it was assumed to have been acquired. In respect to the 13 birds with a white occipital patch in European museums, the provenance of seven is the Vogelkop (Table 1, Fig. 6). The two from Geelvink Bay may be presumed to also have come from the Vogelkop. The single specimen listed as from the Rawlinson Mountains is perhaps mislabelled because it has been re-designated twice to subspecies which have no physical relationship to it. That presumed to have been obtained on Jobi (Yapen), or alternatively from the Huon Peninsula, may have been traded, but since there was a landbridge between the Vogelkop and Jobi during the last ice age a population there cannot be discounted, despite the lack of verified modern records. Given morphological variability in cassowaries, the custom of native trade in New Guinea, reliable accounts of other Dwarf Cassowary distributions, collections listed in Table 1 and recent sightings in the Arfak Mountains

TABLE 1

Specimens in museums or live birds in zoos of *Casuarius (bennetti) papuanus* or other taxa displaying a white occipital patch, and therefore best assigned to *C. (b.) westermanni* (see text).

Catalogue number		Named	Purported provenance according to label
BMNH 1876.4.24.1	Type	<i>C. westermanni</i>	Bird's Head Peninsula, north-west New Guinea
BMNH 1939.12.9.918	Type	<i>C. goodfellowi</i>	Jobi Island, Huon Peninsula
BMNH 1939.12.9.914	Type	<i>C. papuanus rogersi</i>	Geelvink Bay
BMNH 1939.12.9.901		<i>C. papuanus edwardsi</i>	Geelvink Bay
BMNH 1939.12.9.992		<i>C. edwardsi</i>	Andai, Bird's Head Peninsula, New Guinea
BMNH 1939.12.9.939		<i>C. bennetti papuanus</i>	Unknown
BMNH 1939.12.9.937		<i>C. bennetti papuanus</i>	Arfak
BMNH 1916.4.26.1		<i>C. bennetti hecki</i>	Rawlinson Mountains, north-east New Guinea
BMNH Gallery 2b		<i>C. bennetti papuanus</i>	Unknown
Paris 1877.2017	Type	<i>C. edwardsi</i>	North-west New Guinea, Doré
Leiden 103604		<i>C. papuanus</i>	North-west New Guinea
Leiden 103605		<i>C. papuanus</i>	North-west New Guinea
Leiden 103603		<i>C. edwardsi</i>	Arfak, Hattam
Veldhoven1	Live	<i>C. papuanus</i>	Unknown
Veldhoven2	Live	<i>C. papuanus</i>	Unknown

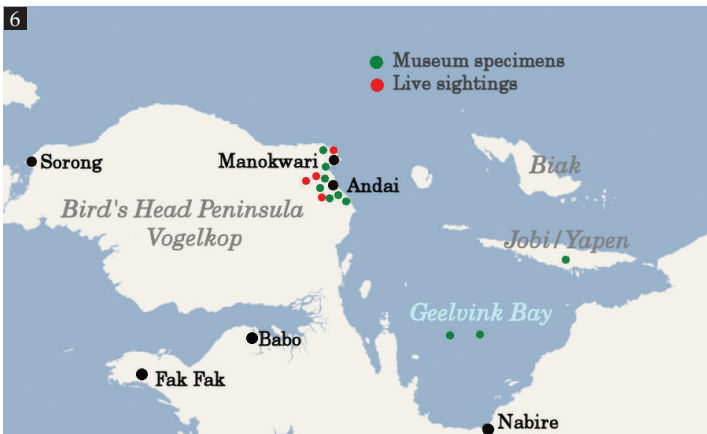
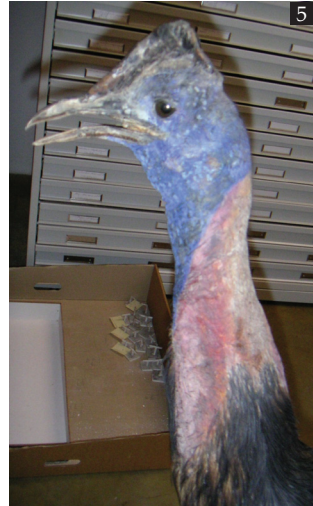


Figure 1. *Casuarius papuanus* as illustrated (Pl. XXXIV) in Rothschild's (1900) monograph (reproduced with permission of © Natural History Museum; all rights reserved).

Figure 2. Natural History Museum type specimen (BMNH 1876.4.24.1) of *Casuarius bennetti westermanni* (Richard M. Perron / © Natural History Museum)

Figure 3. Original drawing by J. G. Keulemans of the type specimen (BMNH 1876.4.24.1) of *Casuarius bennetti westermanni*, when the bird was alive (© Natural History Museum)

Figure 4. Rosenberg (1875) sketch of *Casuarius papuanus* from *Reistochten naar de Geelvinkbaai op Nieuw-Guinea in de jaren 1869 en 1870* (© Natural History Museum)

Figure 5. Type specimen (Naturalis 87001) of *Casuarius papuanus* in Leiden (Richard M. Perron / © Naturalis, Leiden)

Figure 6. Approximate distribution of specimens listed in Table 1 and locations of recent live sightings.

(Gedeon & Kleinstäuber 2003; G. Cubitt *in litt.* 2005, M. Halaouate *in litt.* 2009), it appears certain that the Vogelkop is the provenance of all birds with a white occiput.

The type specimen of *Casuarius papuanus* was obtained by Rosenberg (1875: 84–85) in Andai, a village c.30 km south of Manokwari (a popular destination for foreign travellers),

where he remained for three months in 1870. According to Beccari (1876) and Wichmann (1910), Rosenberg never left the security of Andai during his stay, so he could not have personally caught the bird. The Dutch missionary W. H. Woelders (1877) lived in Andai and is known to have facilitated the acquisition of specimens for visitors, making it probable that the type of *C. papuanus* came via his auspices. Since Papuan and Malayan traders were, and still are, constantly plying the shores of New Guinea, it is not unreasonable to conjecture that the specimen's provenance could have been some distance from Andai and that it was not obtained in the Vogelkop. Indeed, Rosenberg was known for his unreliable information (Salvadori 1882: 210) and it is perfectly possible that he obtained the type somewhere else entirely. In this respect, it is worth mentioning that the type is a female and was sold to Leiden with a chick as a syntype—Rosenberg (and the museum) almost certainly did not know that chicks only accompany males. The type specimen of *C. b. papuanus* is the only known *C. bennetti* specimen without a white patch said to originate in the Vogelkop. The single sighting (B. M. Beehler *in litt.* 2010) in the Arfak Mountains of a bird without a white patch requires clarification, as it is hardly feasible that two forms inhabit the same habitat except via human introduction.

On balance, a re-labelling and descriptive revision of all birds with a white occipital region, previously designated *papuanus*, *goodfellowi*, *rogersi* or *edwardsi*, should be undertaken using the name *Casuarius bennetti westermanni* P. L. Sclater, 1874.

It is too early for any re-evaluation of the number of *Casuarius* species, but morphologically *C. b. westermanni* should be recognised as a valid subspecies under the 75% rule (Amadon 1949). Ongoing personal research reveals that the mtDNA of the two live specimens (ISIS 2009) of *C. b. westermanni* in Table 1 differs significantly from that of both *C. bennetti* (Genbank CBU76037) and *C. b. hecki* (ISIS 2009).

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