

FIRST NESTING RECORD OF THE WHITE-BROWED HAWK (*LEUCOPTERNIS KUHLI*) FROM THE MADEIRA-PURUS INTERFLUVIUM, BRAZILIAN AMAZONIA, WITH SOME REMARKS ON PLUMAGE VARIATION

Guy M. Kirwan

74 Waddington Street, Norwich NR2 4JS, UK. *E-mail*: GMKirwan@aol.com

Primer registro de nidificación de Gavilán de Ceja Blanca (*Leucopternis kuhli*), del interfluvio Madeira-Purus de la Amazonia brasileña y algunas notas sobre la variación del plumaje.

Key words: White-browed Hawk, *Leucopternis kuhli*, nesting, Brazilian Amazonia, plumage variation.

The exclusively Neotropical genus *Leucopternis* Kaup, 1847, comprises ten species of Accipitridae principally distributed over Middle America and the northern half of South America, although two species are restricted to the Atlantic Forest region of southeast South America (Bierregaard 1994, Ferguson-Lees & Christie 2001). It is a generally poorly known and apparently polyphyletic collection of raptors (Amaral *et al.* 2006); three of the genus were deemed to be high research priority by Parker *et al.* (1996), and, of the rest, five were stated to be of medium priority by the same authors. BirdLife International (2008) currently treats one species as Endangered, another as Vulnerable, and two as Near Threatened. Furthermore, breeding data for the entire genus are notoriously few. In their general surveys, Bierregaard (1994) and Ferguson-Lees & Christie (2001) were able to list nesting information for just four species, and even the available data for the best known

and most widespread of these, the White Hawk (*Leucopternis albicollis*), are comparatively few compared to any raptor breeding in temperate regions. The only detailed observations on any member of the genus are those by Draheim & Aguirre (1992) and Draheim (1993), who reported on six nests of *L. albicollis* that they discovered in Guatemala, and Gelis & Greeney (2007), who described a nesting record of Barred Hawk (*L. princeps*) in northeast Ecuador. To date, nothing is known concerning the breeding of the Slate-colored Hawk (*Leucopternis schistaceus*) of Amazonia, the Plumbeous Hawk (*L. plumbeus*) of eastern Panama to northwest Peru, the Black-faced Hawk (*L. melanops*) of the Guianan Shield and eastern Amazonia, the White-browed Hawk (*L. kuhli*) of Amazonia, the White-necked Hawk (*L. lacernulatus*) of eastern Brazil, and the Mantled Hawk (*L. polionotus*) of the Atlantic Forest region. Here I present the first breeding data for *L. kuhli*, which species is

generally considered to range from lowland eastern Peru south of the Amazon and extreme northern Bolivia through north-central Brazil south of the Amazon to eastern Pará (Ferguson-Lees & Christie 2001).

STUDY AREA

During 17 to 23 December 2007, I conducted ornithological fieldwork at Tupana Lodge, in the Madeira–Purus interfluvium, Amazonas state, Brazil (04°04'S, 50°40'W). Tupana lies c. 150 km south of Manaus on the BR-319 highway to Porto Velho, the capital of Rondônia state. Particularly to the east of the road, the lodge clearing is surrounded by relatively low, closed-canopy, *terra firme* forest on rather sandy soils with some low-lying and poorly drained areas that are seasonally flooded, and a canopy height of c. 20 m, though taller emergents reach c. 30 m. Large, natural tree-fall gaps, some of them > 0.5 ha, are common. The understory is dominated by large areas of dense c. 2 m-tall palms and in places there are small, less than 2 m-wide, streams.

RESULTS AND DISCUSSION

The White-browed Hawk was seen on most days, usually from the lodge itself, where an 'upper observation' deck that is almost at the same height as the surrounding canopy permits privileged views of the surrounding area. One bird, apparently always the same based on bare-parts coloration (see below), was regularly seen perched, sometimes for quite long periods of up to 45 minutes, in a particularly tall emergent during the first two hours of daylight. Such behaviour is typical of most *Leucopternis*, including *L. kublí* (pers. observ. at Alta Floresta, Mato Grosso, Brazil). The bird was never heard to vocalise, although both this species and *L. melanops* frequently do so when apparently advertising their territories (A. Whittaker pers. com. 2008).

Nest. In the late afternoon of 18 December I discovered an inconspicuous nest just 75 m from the lodge (and c. 50 m from the favoured tree), and directly above a narrow foot trail. In fact I had walked the same trail without observing the nest on the previous afternoon. Indeed, the nest was only discovered through the chance discovery of an adult *L. kublí* perched c. 10 m up on the near-vertical trunk, in the upper midstory, of a canopy height tree. After I had watched the bird for over 10 minutes the bird flew 5 m to, and landed on, the previously unseen nest, whereupon it settled as if incubating, or less likely brooding (no young was audible or visible in the nest), at which point the adult was only just visible above the nest's rim.

The nest was sited at approximately 15 m above ground, i.e. within the subcanopy of a canopy height tree, in an area of the forest with a particularly dense understory and some palms. Two branches within a major horizontal fork of the tree supported the hawk's nest, which was an untidy, near-hexagonal structure constructed of sticks and some smaller twigs, and 'adorned' with a handful of dead leaves on its outer walls. From ground level it was impossible to evaluate whether the nest contained any lining, as has been described for *L. albicollis* (Draheim & Aguirre 1992, Ferguson-Lees & Christie 2001). Some sticks were up to 0.5 m long, protruding from the main walls, and c. 6 cm in circumference, and the main mass of the nest (i.e. not including parts of those twigs that protruded significantly from the whole) was estimated to have a width of 40 cm at the widest point, and a depth of c. 20 cm. These estimated dimensions are smaller than the measured sizes of *L. albicollis* nests in Guatemala (Draheim & Aguirre 1992, Draheim 1993), which is unsurprising given that the latter is a somewhat larger species (wing length of female *L. albicollis ghiesbreghtii* 362–388 mm vs. female *L. kublí* 214–237 mm: Ferguson-Lees & Christie 2001), but larger than

those of *L. princeps* in Ecuador (Gelis & Greeney 2007). The nest was lower off the ground than any of the six nests of *L. albicollis* found by Draheim & Aguirre (1992), which might reflect the different hunting strategy postulated for *L. kubli* (Ferguson-Lees & Christie 2001) but could equally be reflective of the overall stature of the different forests. In late August 2008, A. Whittaker (pers. com. 2008) found an Ornate Hawk-Eagle's (*Spizæetus ornatus*) nest with a fully-grown young in the same general area. The presence of this species, and the sympatric and larger White Hawk, might have forced the *L. kubli* to be more secretive than usual in choosing its nest site. I deliberately refrained from visiting the vicinity of the nest again in order to minimize any disturbance, especially as there were no other visitors at the lodge.

Comparison with previous data. Unlike those nests of *L. albicollis* reported from Costa Rica and Trinidad (Stiles and Skutch 1989, French 1991), the nest of *L. kubli* was not constructed on or close to any bromeliads or other epiphytes, but it was nonetheless distinctly inconspicuous, even after it had been located. Stiles & Skutch (1989) considered the same to be true of nests of *L. albicollis*. A. Whittaker (pers. com. 2008) mentioned a nest (stage unknown) found north of Manaus, Brazil, on 21 February 1987, sited c. 35 m up in an emergent tree's fork, 5 m from the top, at the edge of a 100-ha reserve. At least one nest of *L. princeps* had been 'concealed' by epiphytes (Stiles & Skutch 1989). Greeney & Nunnery (2006) observed an adult *L. princeps* repeatedly carrying food, at a site in northwest Ecuador, but were unable to discover a nest, despite searching, but subsequently Gelis & Greeney (2007) reported on a complete breeding event for this species, and the unpublished observations of others for *L. princeps*, which (together with the data of Muela & Valdez 2003 from Panama) suggest

that the species can be quite catholic in its choice of nesting sites, including on a rock ledge beside a waterfall. Draheim (1993) considered that the young at a nest of *L. albicollis* in Guatemala would have fledged at the start of the wet season, and young were being fed at a nest in northeast Ecuador during the wet season (Gelis & Greeney 2007). It is impossible to know the state and development of the *L. kubli* nest I observed, but December is already about two months into the wet season in central Amazonia, and there were regular, heavy and prolonged rain showers every day, usually in the early afternoon, during my stay at Tupana. The globally threatened Grey-backed Hawk (*L. occidentalis*), of western Ecuador and extreme northwest Peru, is also assumed to breed in the wet season, although there have been no published observations of a nest to date (Ferguson-Lees & Christie 2001), except in the grey literature (Vargas 1995).

Plumage variation. Amaral *et al.* (2007) discussed and clarified the immature plumage of *L. kubli*, but my observations at Tupana of two birds suggest either more complex age-related or, previously unidentified, sex-related variation. The bird attending the nest had very bright bare-parts colorations, with the orange cere and tarsi having an almost pinkish cast, and a single centrally positioned white tail band, whilst the other bird had three paler, less bright white, and narrower tail bands, and much paler, plain yellow bare-parts coloration, as well as apparently overall browner, but not white-spotted upperparts, unlike the immature specimens reported by Amaral *et al.* (2007) and the presumed immature observed by T. A. Parker and K. J. Zimmer at Alta Floresta, Mato Grosso (Zimmer *et al.* 1997). Both birds displayed the chief identification characters associated with *L. kubli*, namely the dark crown and short white, but distinct, superciliary, as well as narrowly but distinctly dark-

streaked upper breast and neck sides, which features separate the species from the similar *L. melanops*. The latter species has recently been found to occur syntopically with *L. kubli* (Barlow *et al.* 2002, Amaral *et al.* 2007, Wallace & Petermann 2007). Sexual dimorphism has not been reported in any species of *Leucopternis* (Ferguson-Lees & Christie 2001), making it more likely that the variation I observed is indicative of more complex plumage maturation than had been envisaged to date. Draheim & Aguirre (1992) reported an immature White Hawk apparently remaining in the territory of its parents for at least ten months beyond fledging.

The region in which Tupana Lodge is situated, between the lower Rio Purus and Rio Madeira, was identified as an area of extreme importance for birds in an overall survey of the biodiversity of Brazilian Amazonia (Oren 2001). Tupana itself makes an excellent base for further research into the avifauna of this poorly known area of Amazonia, especially given its relative proximity to the city of Manaus.

ACKNOWLEDGMENTS

Foremost, I thank A. Whittaker, for arranging my visit to Tupana and sharing information concerning its avifauna, and Hadoram Shirihai, for organising and financing the fieldwork. Whittaker and an anonymous referee, as well as the editor, A. Weller, contributed to the final text. J. Ribamar and his staff made me a welcome guest at Tupana. D. Calderón and T. Rosenberry kindly assisted with some literature.

REFERENCES

- Amaral, F. R. S., M. J. Miller, L. F. Silveira, E. Bermingham, & A. Wajntal. 2006. Polyphyly of the hawk genera *Leucopternis* and *Buteogallus* (Aves, Accipitridae): multiple habitat shifts during the Neotropical buteonine diversification. *BMC Evol. Biol.* 6: 10.
- Amaral, F. R. S., L. F. Silveira, & B. M. Whitney. 2007. New localities for the Black-faced Hawk (*Leucopternis melanops*) south of the Amazon River and description of the immature plumage of the White-browed Hawk (*Leucopternis kubli*). *Wilson J. Ornithol.* 119: 450–454.
- Barlow, J., T. Haugaasen, & C. A. Peres. 2002. Sympatry of Black-faced Hawk *Leucopternis melanops* and White-browed hawk *L. kubli* along the lower rio Tapajós, Pará, Brazil. *Cotinga* 18: 77–79.
- Bierregaard, R. O. 1994. Family Accipitridae (hawks and eagles): Neotropical species accounts. Pp. 106–205 *in* del Hoyo, J., A. Elliott, & J. Sargatal (eds.). *Handbook of the birds of the world. Volume 2: New World vultures to guineafowl*. Lynx Edicions, Barcelona, Spain.
- BirdLife International. 2008. *Threatened birds of the world 2008*. BirdLife International, Cambridge, UK.
- Draheim, G. 1993. Breeding biology of the White Hawk in Guatemala. *J. Raptor Res.* 27: 68.
- Draheim, G. S., & O. A. Aguirre B. 1992. Breeding biology of the White Hawk. Pp. 153–162 *in* Whitacre, D. F., & R. K. Thorstrom (eds.). *Maya Project: use of raptors and other fauna as environmental indicators for design, management, and monitoring of protected areas and for building local capacity for conservation in Latin America*. The Peregrine Fund, Boise, Idaho.
- Ferguson-Lees, J., & D. A. Christie. 2001. *Raptors of the world*. Christopher Helm, London, UK.
- French, R. 1991. *A guide to the birds of Trinidad and Tobago*. 2nd ed. Cornell Univ. Press, Ithaca, New York.
- Gelis, R. A., & H. F. Greeney. 2007. Nesting of Barred Hawk (*Leucopternis princeps*) in northeast Ecuador. *Ornitol. Neotrop.* 18: 607–612.
- Greeney, H. F., & T. Nunnery. 2006. Notes on the breeding of north-west Ecuadorian birds. *Bull. Br. Ornithol. Club* 126: 38–45.
- Muela, A., & U. Valdez. 2003. First report of the nest of the Barred Hawk (*Leucopternis princeps*) in Panama. *Ornitol. Neotrop.* 14: 267–268.
- Oren, D. C. 2001. *Biogeografia e conservação de*

- aves na região amazônica. Pp. 97–109, 456–465 in Capobianco, J. P. R., A. Veríssimo, A. Moreira, D. Sawyer, I. Santos, & L. P. Pinto (eds.). Biodiversidade na Amazônia Brasileira: avaliação e ações prioritárias para a conservação, uso sustentável e repartição de benefícios. Instituto Socioambiental, São Paulo, Brazil.
- Parker, T. A. III, D. F. Stotz, & J. W. Fitzpatrick. 1996. Ecological and distributional databases for Neotropical birds. Pp. 131–436 in Stotz, D. F., J. W. Fitzpatrick, T. A. Parker III, & D. K. Moskovits (eds.). Neotropical birds: ecology and conservation. Univ. of Chicago Press, Chicago, Illinois.
- Stiles, F. G., & A. Skutch. 1989. A guide to the birds of Costa Rica. Christopher Helm, London, UK.
- Vargas, H. 1995. Food habits, breeding biology and status of Gray-backed Hawk (*Leucopternis occidentalis*). M.Sc. thesis, Boise State Univ., Boise, Idaho.
- Wallace, G., & P. Petermann. 2007. A photographic record of Black-faced Hawk *Leucopternis melanops* in southern Amazonia. *Cotinga* 27: 83–84.
- Zimmer, K. J., T. A. Parker III, M. L. Isler, & P. R. Isler. 1997. Survey of a southern Amazonian avifauna: the Alta Floresta region, Mato Grosso, Brazil. *Ornithol. Monogr.* 48887–918.

Accepted 23 January 2009.

