

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 KUHLI*)

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**ABSTRACT.**—The Black-faced Hawk (*Leucopternis melanops*) and White-browed Hawk (*L. kuhli*) are forest-based, Amazonian raptors whose distributions have been considered to be mutually exclusive north and south of the Amazon River, respectively. The occurrence of *L. melanops* south of the river was first indicated by a specimen collected by A. M. Olalla on the lower Tapajós River >70 years ago. The provenience of this specimen has been contested by diverse authors but both species were recently captured at localities along the lower Tapajós, corroborating the coexistence of *L. melanops* and *L. kuhli* in this region. We present four new specimen localities for *L. melanops* in southern Amazonia, greatly amplifying its known distribution. We also describe the immature plumage of *L. kuhli* based on three specimens that had been identified as *L. melanops*. Received 20 March 2006. Accepted 11 November 2006.

The genus *Leucopternis* comprises 10 forest hawk species distributed from southern Mexico to northern Argentina and Uruguay. Six occur in Brazil: White Hawk (*L. albicollis*), Slate-colored Hawk (*L. schistaceus*), White-browed Hawk (*L. kuhli*), and Black-faced Hawk (*L. melanops*) in Amazonia, and the Mantled Hawk (*L. polionotus*) and the endemic White-necked Hawk (*L. lacermulatus*) in the Atlantic forest (Thiollay 1994). Despite the widespread distribution of these species, the ranges of some remain poorly known and the majority of the scarce available data on natural history is anecdotal (Bierregard 1995, Martuscelli 1996). A molecular systematics study including all recognized species of *Leucopternis* indicates the genus is polyphyletic (Amaral et al. 2006) and actually represents at least three independent lineages.

*Leucopternis melanops* and its sister species

*L. kuhli* (Amaral et al. 2006) are the smallest members of the genus (total length ~40 cm) and were considered conspecific by Pinto (1978). Their adult plumages are similar with white belly, dark back, and dark tail with a single subterminal white band. The adult plumage of *L. melanops* can be diagnosed by the white head with black streaks, a wide black mask and several white spots in the back. Adult *L. kuhli* are distinguished from *L. melanops* by the much darker head (crown almost solidly dark) with a white supercilium and absence of white spots in the back (Brown and Amadon 1968, Thiollay 1994). Immature *L. melanops* have thinner streaks on the head, two white bands in the tail, and inconspicuous brown tips on the feathers of the back and wings (Brown and Amadon 1968, Thiollay 1994, Fergusson-Lees and Christie 2001). The immature plumage of *L. kuhli* has not been fully described. Fergusson-Lees and Christie (2001:621) stated that it is similar to the adult but, apparently, with two or three thin white tail-bands.

The range limits usually accepted for *L. melanops* are northeastern Ecuador and lowland Peru north of the Amazon through southern Colombia and Venezuela, the Guyanas, and Brazil north of the Amazon (Hellmayr and Conover 1949, Amadon 1964, Meyer de Schauensee 1966, Brown and Amadon 1968, Haffer 1987, Sick 1997). *L. kuhli* occurs from lowland eastern Peru south of the Amazon and

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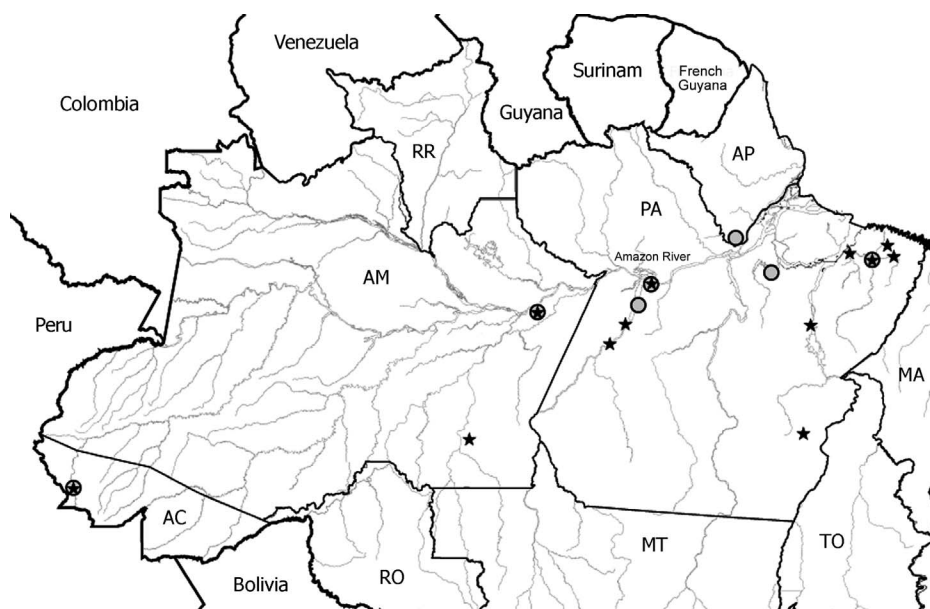


FIG. 1. Distribution of *Leucopternis kuhli* (stars) and *L. melanops* (circles) in Brazilian Amazon, based on plumage patterns of specimens examined by the authors. Localities where the species were sympatric are marked with both symbols. Brazilian states and neighboring South American countries are also indicated.

extreme northern Bolivia through north central Brazil south of the Amazon to eastern Pará (Ferguson-Lees and Christie 2001). Amadon (1964) reported one *L. melanops* collected by A. M. Olalla at Tauarí, lower Tapajós River in 1931 (AMNH 285285). This constituted the first evidence of co-occurrence of *L. melanops* and *L. kuhli* south of the Amazon River. Amadon (1964:9) also referenced a second specimen collected by the Olalla's on the Tapajós River. These records have been considered controversial (e.g., Amadon 1964, Brown and Amadon 1968, Haffer 1987, Thiollay 1994) because of the supposed impossibility of sympatry of such similar species (e.g., Brown and Amadon 1968), or the need for caution due to potential labeling mistakes concerning specimens collected by the Olalla family (e.g., Amadon 1964). Barlow et al. (2002) recently mist-netted and photographed individuals of *L. melanops* and *L. kuhli* on the lower Tapajós River (Fig. 1 in Barlow et al. [2002]), just 6 km apart, documenting sympatry of these species south of the Amazon River.

#### SPECIMEN EXAMINATION

Examination of plumage patterns of specimens in the collections of the Museu de Zool-

ogia da Universidade de São Paulo (MZUSP), Museu Paraense Emílio Goeldi (MPEG), and American Museum of Natural History (AMNH) revealed four immature specimens of *L. melanops*, originally identified as *L. kuhli*, collected in at least three different localities south of the Amazon River (Appendix). Two new southern localities are based on Olalla specimens; one an immature male (MZUSP 20360) collected in 1939 at Lago do Batista (= Lago do Baptista), Amazonas, at the same locality where two months later an adult female *L. kuhli* (MZUSP 20359) was collected. The second specimen of *L. melanops* was of unknown gender (MZUSP 46240) collected in 1961 at Santarém, Pará (this could be the second record cited by Amadon [1964], although he did not cite the collection or specimen number of that record). The two remaining specimens were obtained by independent collectors. A male *L. melanops* was collected by Emílio Dente at Capim in 1959 (MZUSP 43863), one month after he collected an adult male *L. kuhli* (MZUSP 43862) at the same locality. The most surprising new southern locality of *L. melanops* is represented by an immature male at MPEG (52705), collected by D. Oren and collaborators in 1996 in the headwaters of the

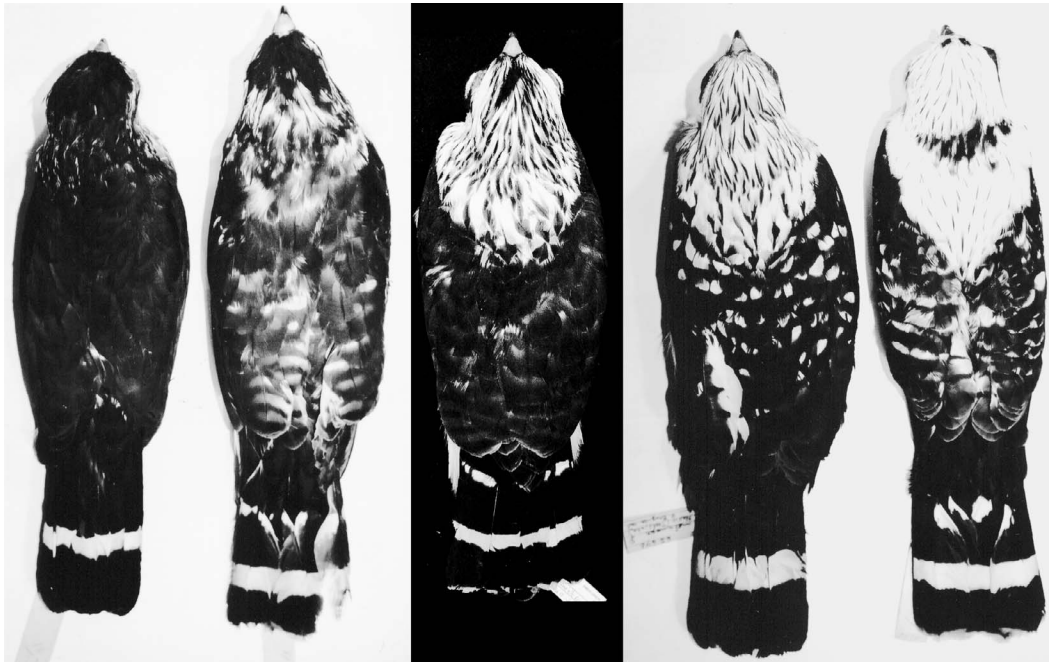


FIG. 2. From left to right: (A) *Leucopternis kuhli*, adult male (MZUSP 43862), immature male (MZUSP 62345); (B) *Leucopternis melanops*, immature male (MPEG 52705, from Acre), adult female (MZUSP 62646), and immature male (MZUSP 43863). Specimens not shown to scale.

Moa River in northwestern Acre, about 1,700 km west of the southernmost record of *L. melanops* (Fig. 1). These new records demonstrate that *L. melanops* occurs in sympatry with *L. kuhli* in the Tapajós River region as well as some other distant localities in southern Amazonia.

The Olalla family collected thousands of birds in South America during the twentieth century. This material is a critically important contribution to Neotropical ornithology not only because of the large number of specimens, but also due to the biogeographic importance of specimens from localities where habitats are currently threatened or have already been destroyed. Critical examination of species distributions based on Olalla material have been generally avoided. The *L. melanops* specimens from Capim and the Moa River, and the observations of Barlow et al. (2002) suggest a concordant pattern of distribution with the specimen from Tauari and the two other Olalla specimens from southern localities. The aggregation of these independent records, together with the congruence of patterns suggested by Olalla's reptile (P. E. Vanzolini,

pers. comm.) and mammal (Mário de Vivo, pers. comm.) collections indicate no evidence of labeling errors in the case of *Leucopternis* hawks.

We found three individuals (MZUSP 10868, 62345, and 72973) among the specimens examined that presented diagnostic characters of *L. kuhli* with the anterior half of the crown almost entirely black, fine black streaks on the sides of the neck, and a white supercilium. These differ considerably from the adult plumage of *L. kuhli* by the presence of numerous white blotches in the back (Fig. 2A), some amount of white in the head and, in the latter two specimens, an inconspicuous second (proximal) white band in the tail. This last character is well documented in the immature plumage of *L. melanops* and *L. semiplumbeus* (Brown and Amadon 1968), two taxa closely allied to *L. kuhli* (Amaral et al. 2006). To our knowledge, this constitutes the only character considered to be indicative of juvenal plumage of *L. kuhli* (Fergusson Lees and Christie 2001). All plumage stages of *L. melanops* have considerably more white in the back, especially the mantle, than any of the

three specimens in question (Fig. 2B). We conclude these individuals represent immature *L. kuhli* based only on plumage patterns.

#### DISCUSSION

Despite recent evidence showing a sister relationship between *L. melanops* and *L. kuhli* (Amaral et al. 2006), population level studies including both species are lacking. It is not possible to assume lack of ongoing gene flow between both species, as well as exclude the possibility of hybrid individuals that could fit the plumage patterns presented here (Fig. 2). Thus, it is necessary to assume (1) there is reciprocal monophyly between *L. melanops* and *L. kuhli*, (2) they represent individual evolutionary units, and (3) the plumage characters used here reflect the independent evolutionary history of both taxa. Furthermore it is possible that even if the species are proven to be independent units, polymorphisms, gender or age linked characters, aberrant plumages or even shared traits may mislead species level identification based only on plumage patterns. Thus, genetic studies at population levels are desirable to test hypotheses of reciprocal monophyly and of possible occurrence of gene flow between the two species, but also to provide further tools to help in identification of specimens. We strongly recommend that tissue samples be saved from all specimens collected and deposited in collections along with voucher specimens to make such studies possible.

We predict that *L. melanops* will be found to occur widely but irregularly in southern Amazonia in *terra firme* forests on sands (tall *campinaranas*) and, perhaps, deeply weathered clays. The four known localities of occurrence are from forests on such soils. The paucity of *L. melanops* specimens from south of the Amazon River may be attributed to an almost complete lack of collecting in *terra firme* forests on sandy soils across that region, and to the close resemblance between this species and *L. kuhli*. Careful examination of specimens in other collections and close attention to the identification of these raptors in the field may increase the known range of *L. melanops* south of the Amazon River. All new records of *L. melanops* in southern Amazonia should be documented with specimens and tissue samples, and if collection is not possible,

recordings and photographs accompanied by careful descriptions of plumage. Unfortunately, the primary vocalizations of *L. melanops* and *L. kuhli* (piercing screams that lose amplitude rapidly, usually delivered at intervals of ~3–5 sec for several minutes early in the morning, occasionally given in series of ~4–10 screams at 1–2 sec intervals) are probably not distinguishable in the field. The screams of *L. melanops* tend to be somewhat lower or “heavier” (BMW, pers. obs.). All vocalizing birds should be recorded to help elucidate diagnostic differences with more detailed study in the future. The voice of *L. melanops* south of the Amazon River is presently unknown, but is likely the same as the voice north of the river.

#### ACKNOWLEDGMENTS

We thank D. M. Teixeira, J. B. Nacinovic (MN), M. F. Cunha Lima, Fabíola Polleto, Alexandre Aleixo (MPEG), C. C. Ribas, and Paul Sweet (AMNH) for helping to locate specimens under their care. Mario Cohn-Haft and two anonymous referees provided invaluable comments on earlier versions of the manuscript. Financial support was provided to FSRA by FAPESP, CNPq, and CAPES.

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- Instituto Evandro Chagas; Adult. MPEG 17251; unsexed; Amapá, Igarapé Novo; 27 October 1959; M. Moreira; Adult. MPEG 52705; ♂; Acre, alto do Rio Moa; 13 July 1996; D. Oren, B. Whitney, and D. C. Neto; Immature. AMNH 285285; ♀; Tauari, Rio Tapajós; 19 April 1931; Olalla; Adult.

#### *Leucopternis kuhli*

- MZUSP 43862; ♂; Pará, Capim, BR 14, km 93; September 1959; Dente; Adult. MZUSP 20359; ♀; Amazonas, Rio Amazonas, Lago do Baptista; 14 June 1939; Olalla; Adult. MZUSP 58120; ♂; Pará, Fordlândia; 11 July 1964; Olalla; Adult. MZUSP 62345; ♂; Amazonas, Margem Oeste do Rio Aripuanã; 22 September 1971; Silva-Filho; Immature. MZUSP 58121; ♀; Pará, Fordlândia; February 1965; Olalla; Adult. MZUSP 10868; ♀; Pará, Rio Tapajós; March 1921; Garbe; Immature. MZUSP 72973; unsexed; unknown locality. MPEG 15734; Pará, rodovia Belém-Brasília km 92; 15 May 1959; Hidas; Adult. MPEG 32383; unsexed; Pará, Ourém; 28 February 1978; Moreira; Adult. MPEG 32108; unsexed; Pará, Ourém; 10 December 1977; Moreira; Adult. MPEG 22508; unsexed; Pará, Belém (Instituto Agrônômico); July 1964; Moreira; Adult. MPEG 23210; unsexed; Pará, Estrada do Coqueiro, Belém; 14 January 1965; Moreira; Adult. MPEG 36684; ♂; Pará, Tucuruí, 10 December 1984; Dente; Adult. MPEG 47658; ♀; Pará, Itaituba; August 1972; Silva; Adult. MPEG 47657; ♀; Pará, Transamazonica, Tapacurazinho; March 1973; Silva; Adult. MPEG 5836; ♀; Pará, Peixe Boi, 29 May 1908; Martins; Adult. MPEG 28112; ♂; Acre, Rio Juruá; 17 July 1956; Moreira; Adult. MPEG 36856; ♂; Maranhão, Carutapera; 12 November 1984; Brigida and Rosemíro; Adult. MPEG 34716; ♀; Pará, Xinguara; 21 February 1983; Adult.

### APPENDIX

Specimens examined (museum number; sex; locality; date; collector; age)

#### *Leucopternis melanops*

- MZUSP 46240; unsexed; Pará, Santarém; 10 May 1961; Olalla; Immature. MZUSP 20360; ♂; Amazonas, Lago do Baptista; 19 April 1939; Olalla; Immature. MZUSP 43863; ♂; Pará, Capim, BR 14, km 93; 2 October 1959; Dente; Immature. MZUSP 62646; ♀; Amapá, Serra do Navio, Teresinha; 20 February 1965; Santa Brígida; Adult. MPEG 53428; unsexed; Amapá, Fazenda Itapoá; 18 April 1997; Adult. MPEG 47656; unsexed; Amapá, Serra do Navio; 19 October 1965;