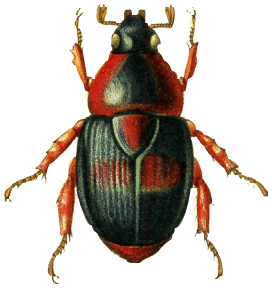
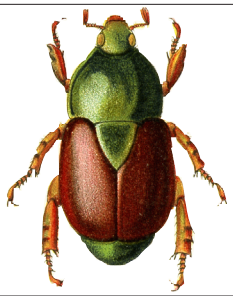


SCARABS



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Melanistic *Mitracephala humboldti* Thomson (Coleoptera: Scarabaeidae: Dynastinae). A Tale from the Dark Side

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Many scarabs have melanistic color forms, whereby some specimens are black or nearly so relative to normally lighter colored individuals. We have seen this, for example, in species of *Lichnanthe* (Glaphyridae), *Hoplia* and *Dichelonyx* (Melolonthinae), *Cyclocephala* and *Mitracephala* (Dynastinae), and *Gymnetis*, *Hoplopyga*, *Guatemalica*, and *Euphoria* (Cetoniinae). The peppered moth, *Biston betularia* (L.) (Geometridae), in the United Kingdom is probably the best known example of industrial melanism, whereby darker colored individuals that blended better with a dark (polluted) substrate were better adapted for escaping bird predation than the normally colored white individuals that contrasted strongly with their background. In scarabs, however, we do not know why melanistic forms exist other than to attribute it to random genetic variation. No one to date has been able to correlate melanism in scarabs with habitat or climate.

Mitracephala humboldti Thomson, 1859 is one of the larger species of Agaocephalini in the scarab subfamily Dynastinae. It is known from Peru, Bolivia and Ecuador (Endrödi 1970, 1985). Nothing is known of its life history, and the immature stages remain undescribed. Most specimens in research collections have light yellowish-brown elytra with a dark brown pronotum. A few, relatively uncommon specimens are completely dark brown, which prompted Endrödi (1970) to name a dark Peruvian specimen as a new variety: *Mitracephala humboldti* var. *nero*. The name *nero* is infrasubspecific (Article 45.6.3, International Commission on Zoological Nomeclature 1999)

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and is thereby unavailable (Article 45.5). In other words, don't use it in formal nomenclature because it is meaningless.

We report here the range of color variation in *M. humboldti* specimens recently collected (1982-2009) in Peru. We are confident that these dark specimens (Plates 1, 6-7) are natural in their color and not dark as a result of a killing agent or preservative. Plate 1 illustrates the total range of color variation in both males (length range 34.0-44.0 mm) and females (length range 36.0-40.0 mm) from four widely spaced areas in Peru (Plates 2-5). Plate 6 details dark males, and Plate 7 details dark females. We examined dark specimens to see if they might be a different species than *M. humboldti*, but they were all conspecific.

Plate 3 (top) shows that specimens from Pucallpa (two males collected in December) have the normal elytral color that we customarily associate with this species. Plate 3 (bottom) shows that there is a range of color in specimens from Carpish (three males, one female, all collected in January). Plate 4 shows the color of specimens from Chachapoyas (on the road to Leymebamba). There are eight males and three females. The two lighter males were collected in December. The six dark males and two dark females were collected in April, while one dark female was collected in January. The total range of color is present, but specimens from here are even darker than those from other locales. The color of the females shown in Plates 3-4 are all darker, but this probably reflects a smaller sample size that did not include normally colored specimens. Plate 5 illustrates the color of specimens from Puerto Maldonado (two males, one female, all collected in November), and the color of the elytra is generally lighter. The take-home message here, as exemplified in Plates 3 (bottom) and 4 especially, is that both light and dark colored forms have been taken at the same location, and that they are not taxonomically different from one another. Some specimens are simply melanistic... and we do not know why. There is no correlation for dark elytra associated with locality or month of collection.

Variations of this nature are often significant for fully delineating the appearance of a species, but they still fall within the bounds of intraspecific variation as

= 10 mm

PERU

Pucallpa (Ucayali)

Carpish (Huanuco)

Chachapoyas, Leymebamba (Amazonas)

Puerto Maldonado (Madre de Dios)

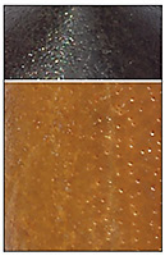
Plate 1.


COLOMBIA
ECUADOR
PERU
BRAZIL
Lima
BOLIVIA
Pucallpa (Ucayali)
Carpish (Huanuco)
Chachapoyas, Leymebamba (Amazonas)
Puerto Maldonado (Madre de Dios)

Plate 2.

♂

Color



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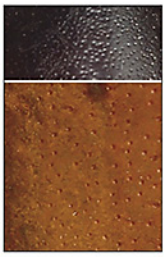


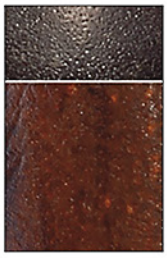
3

Pucallpa (Ucayali)

♂

Color

6



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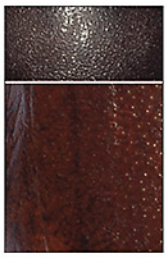
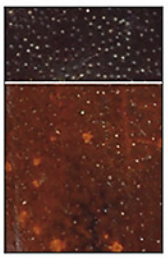


9

♀

Color



17

Carpish (Huanuco)

Chachapoyas, Leymebamba (Amazonas)

♂ Color

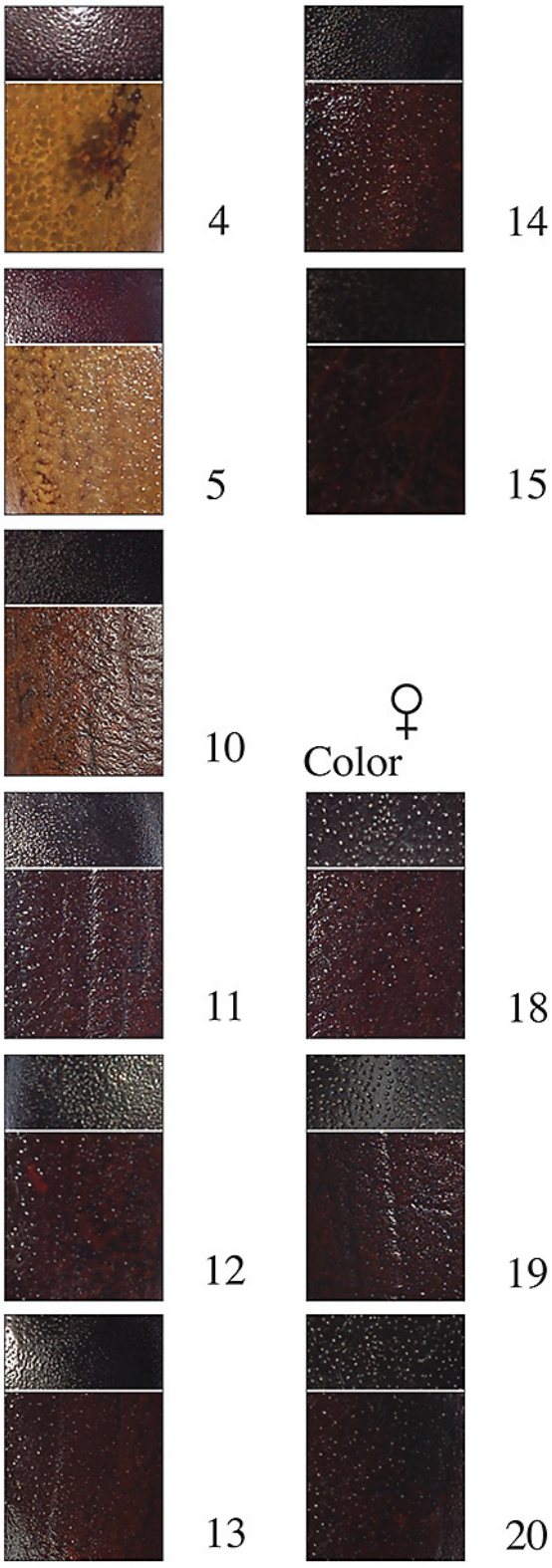


Plate 4.

exemplified by the Phylogenetic Species Concept as outlined by Wheeler and Platnick (2000). This concept defines species as the smallest aggregation of populations diagnosable by a unique combination of character states. Individual scarab species vary in their color and patterns on the pronotum and/or elytra, development of male secondary sex characters (horns, tubercles, claw size, leg length), and body size. *Mitracephala humboldti* is a good example of color variation, melanism in this case, within a single species of Dynastinae. Until we are able to ascertain the precise genetic basis for this, it has no special taxonomic significance other than demonstrating a range of color in this species.

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Puerto Maldonado
(Madre de Dios)

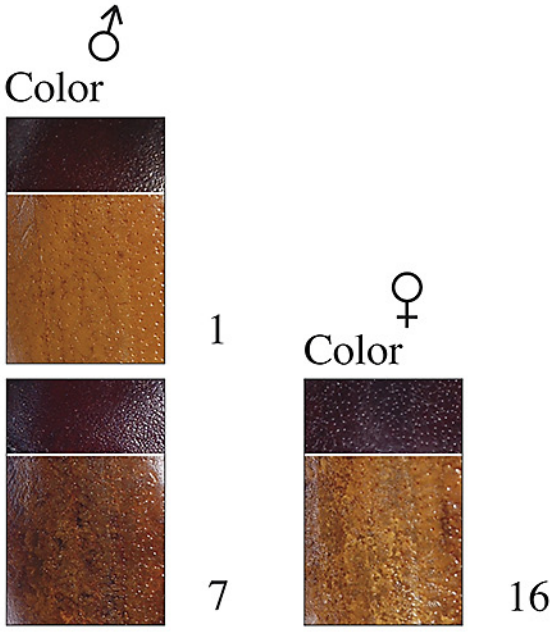

Plate 5.

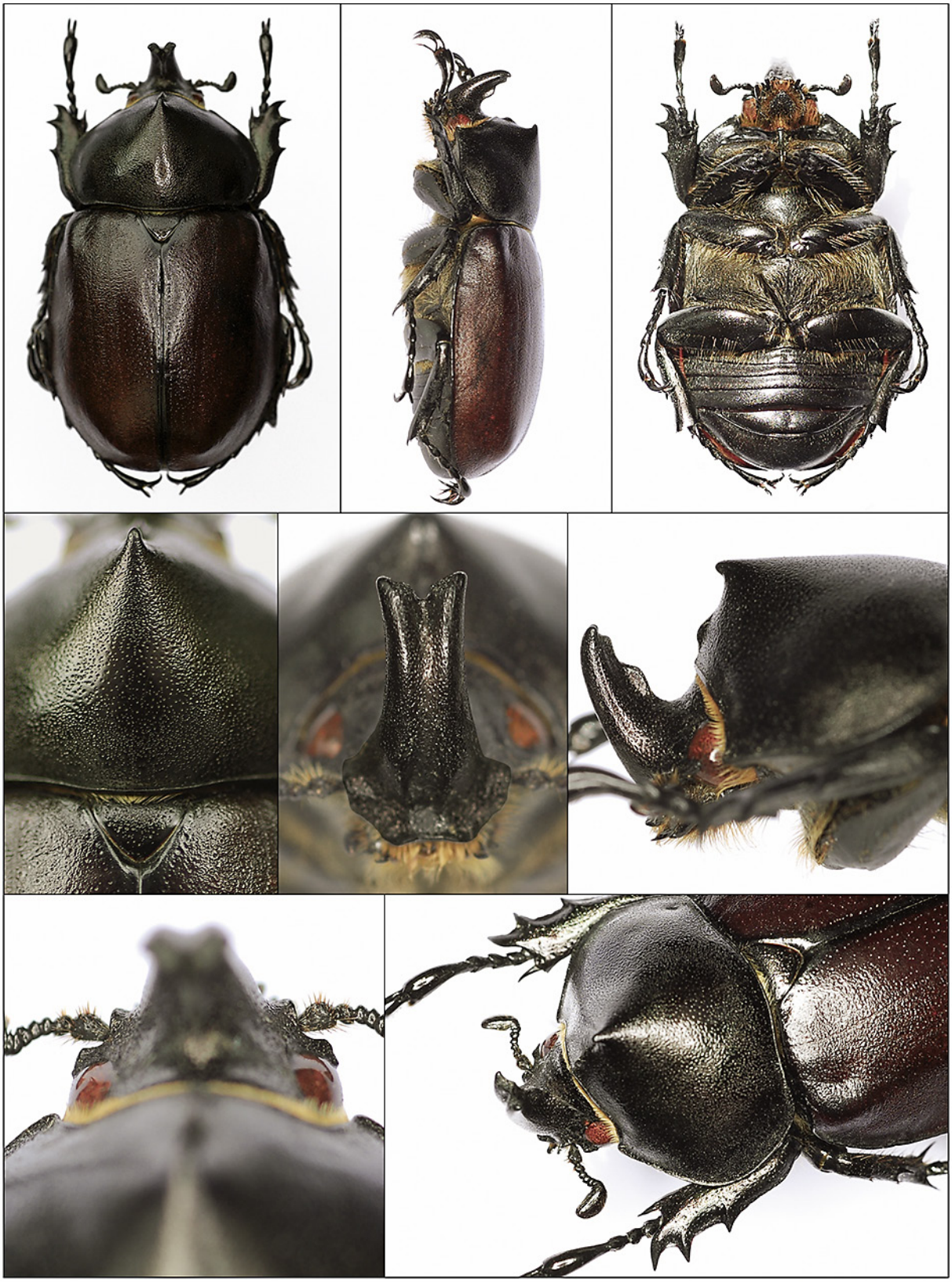

Plate 6.

Plate 7.