Synonymy and actual affinities of the putative Middle Eocene “New World vulture” *Eocathartes* LAMBRECHT, 1935 and “hornbill” *Geiseloceros* LAMBRECHT, 1935 (Aves, Ameghinornithidae)

GERALD MAYR, Frankfurt/Main

with 2 figures and 1 table

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**Introduction**

In 1935, the Hungarian palaeornithologist Kálmán LAMBRECHT described two avian species from the Middle Eocene of the Geisel Valley (Geiseltal) in Germany as *Eocathartes robustus* and *Geiseloceros robustus*. *E. robustus* was based on a pelvis and associated hindlimb bones and considered to be the earliest fossil representative of the New World vultures (Cathartidae; LAMBRECHT 1935; CRACRAFT & RICH 1974). The holotype of *G. robustus* consists of elements of the wing skeleton and the pectoral girdle and, according to LAMBRECHT (1935: 362), was found only two meters away from the bones of *E. robustus*. LAMBRECHT (1935: 365) noted that “these remains are the most difficult problem in the newer collection of bird specimens. The preserved bones, which besides the forelimbs also constitute parts of the shoulder girdle, exhibit such a peculiar morphology that it was not even possible to determine their family-level affiliation on the basis of the comparative osteological collection at my disposal” [my translation]. Although LAMBRECHT (1935) refrained from an explicit phylogenetic assignment of *Geiseloceros*, he made only comparisons with extant hornbills (Bucerotidae), for...
Tab 1. Length measurements (maximum length in mm) of major limb elements of different species of Strigogyps in comparison; measurements of Strigogyps robustus after LAMBERCH (1935) in brackets.

<table>
<thead>
<tr>
<th>Species</th>
<th>humerus</th>
<th>ulna</th>
<th>carpometacarpus</th>
<th>tibiotarsus</th>
<th>tarsometatarsus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strigogyps sapea (holotype)</td>
<td>~87</td>
<td>75</td>
<td>~38</td>
<td>~150</td>
<td>~83</td>
</tr>
<tr>
<td>Strigogyps sp. (SMF-ME 11094)</td>
<td>71.8</td>
<td>56.6</td>
<td>37.7</td>
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</tr>
<tr>
<td>Strigogyps dubius (holotype of “Ameghinornis minor”)</td>
<td>120.3</td>
<td>--</td>
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</tr>
</tbody>
</table>

1 LAMBERCH (1935: 363)  
2 LAMBERCH (1935: 365)  
3 after MOURER-CHAUVIRE (1981)

which reason BRODKORB (1971) classified the fossil into the Bucerotidae.

It was first assumed by P. Houde (in OLSON 1985: 136) that the remains of Eocathartes robustus and Geiseloceros robustus are from a single individual, and OLSON (1985) questioned their correct identification. Because of similar proportions of the wing bones, I tentatively assigned Geiseloceros robustus to the Idiornithidae in an earlier revision of part of the avian material from the Geisel Valley (MAYR 2002, see also MAYR 2005a). Idiornithids are extinct representatives of the Cariamae, the clade including extant Cariamidae (seriomas). These birds have a more elongate and proportionally longer tarsometatarsus than Eocathartes robustus, and I thus regarded the phylogenetic affinities of the latter uncertain (MAYR 2002).

However, here I present evidence that the two partial skeletons assigned to Eocathartes and Geiseloceros are indeed from a single individual, which does not belong to the Idiornithidae. Instead, and except for its larger size (Tab. 1), it perfectly matches Strigogyps (“Aenigmavis”) sapea (PETERS, 1987) from the Middle Eocene German fossil site Messel. S. sapea has originally been considered an Old World representative of the Phorusrhacidae, a further taxon of the Cariamae (PETERS 1987), but this classification has meanwhile been disproved (ALVARENGA & HÖFLING 2003; MAYR 2005b). The Geisel Valley specimens provide new information on the poorly known osteology of Strigogyps, and further corroborate the great similarity between the avifauna of the Geisel Valley and the more comprehensive and better studied one of Messel (MAYR 2002).

Material and methods

Osteological terminology follows BAUMEL & WITMER (1993), measurements are in millimeters.  
Institutional abbreviations: GMH – Geiseltalmuseum Halle, Halle/Saale, Germany; SMF – Forschungsinstitut Senckenberg, Frankfurt am Main, Germany.

Systematic paleontology

Aves LINNAEUS, 1758
Ameghinornithidae MOURER-CHAUVIRE, 1981

Strigogyps Gaillard, 1908

1935 Eocathartes LAMBERCH: 362, pl. 1.
1935 Geiseloceros LAMBERCH: 365, pl. 2.
1983 Ameghinornis MOURER-CHAUVIRE: 127, pl. 5.
1987 Aenigmavis PETERS: 72, figs. 1–11.
2007 Aenigmavis PETERS: 25, figs. 1, 2.

Strigogyps robustus (LAMBERCH, 1935) n. comb.

* 1935 Geiseloceros robustus LAMBERCH: 362, pl. 1.
1935 Eocathartes robustus LAMBERCH: 365, pl. 2.

Holotype: GMH 5884 (holotype of “Geiseloceros robustus”, Fig. 1A)
Referred specimen: GMH 5883 (holotype of “Eocathartes robustus”, Fig. 1B); although I consider this specimen to be from the same individual as the holotype GMH 5884, it is listed as a “referred specimen” to avoid future taxonomic confusion.

Type locality and horizon: “Grube Cecilie” opencast brown coal pit of the Geisel Valley (Geiseltal) near Halle, Sachsen-Anhalt, Germany; Middle Eocene (MP 13, i.e., about 44 ma; MLIKOVSKÝ & HESSE 1996; LEGENDRE & LEVÊQUE 1997).

Description and comparison: The right coracoid is visible in ventral view, of the left one only the extremitas sternalis is preserved (Fig. 2D). In its proportions the bone resembles the coracoid of a specimen of Strigogyps sp. from Messel (SMF-ME 11094; compare Figs. 2A and 2D). It is much stouter than the corresponding bone of the Idiornithidae, Phorusrhacidae, and Cariamidae, and more closely matches the coracid of the Cathartidae in proportions. The large extremitas omalis measures more than one third of the entire length of the bone. The processus lateralis is well developed, whereas this process is very short in the Phorusrhacidae and Cariamidae (no complete coracid of the Idiornithidae has been figured by MOURER-CHAUVIRE 1983 who, how-