Senckenbergiana lethaea	81	(2)	339 – 341	1 Text-fig.	Frankfurt am Main, 28.12.2001

Comments on the systematic position of the putative Lower Eocene parrot *Pulchrapollia gracilis*

With 1 Text-figure

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Abstract

The systematic position of the putative Lower Eocene parrot *Pulchrapollia gracilis* DYKE & COOPER 2000 is revised. It is shown that this bird has been incorrectly assigned to the Psittaciformes and instead represents a taxon of the Pseudasturidae MAYR 1998. Except for a referred coracoid, all bones of *P. gracilis* are almost identical with those of another unnamed pseudasturid bird from the same locality, Walton-on-the-Naze, England. The tarsometatarsus of the latter shares with that of *P. gracilis* a very large medial foramen vasculare proximale and a crista medianoplantaris which is bordered by distinct fossae parahypotarsales. Both features are absent in fossil and Recent parrots. The coracoid which was referred to the other bones of the type of *Pulchrapollia gracilis* probably does not belong to this species.

Key words: Eocene birds, *Pulchrapollia gracilis*, parrots, Pseudasturidae.

Kurzfassung

[Bemerkungen zur systematischen Stellung des mutmaßlichen untereozänen Papageis *Pulchrapollia gracilis*.] — Die systematische Stellung des mutmaßlichen untereozänen Papageis *Pulchrapollia gracilis* DYKE & COOPER 2000 wird revidiert. Es wird gezeigt, daß dieser Vogel fälschlicherweise den Psittaciformes zugeordnet wurde, und statt dessen ein Taxon der Pseudasturidae MAYR 1998 repräsentiert. Abgesehen von einem Coracoid, sind alle Knochen von *P. gracilis* nahezu identisch mit denen eines anderen unbenannten pseudasturiden Vogels von derselben Fundstelle, Walton-on-the-Naze, England. Der Tarsometatarsus von letzterem teilt mit dem von *P. gracilis* ein sehr großes mediales Foramen vasculare proximale, sowie eine von zwei deutlichen Fossa parahypotarsales begrenzte Crista medianoplantaris. Beide Merkmale sind in fossilen und rezenten Papageien nicht vorhanden. Das Coracoid, welches den anderen Knochen von *Pulchrapollia gracilis* zugeordnet wurde, gehört vermutlich nicht zu dieser Art.

Introduction

Today only three avian taxa exhibit a fully zygodactyl foot in which the fourth (outer) toe is completely retroverted: cuckoos (Cuculiformes), parrots (Psittaciformes), and woodpeckers and allies (Piciformes). Only psittaciform and piciform birds are known from Eocene deposits, but in the early Tertiary also other fully zygodactyl birds existed which represent extinct taxa. Of these especially the extinct family Pseudasturidae MAYR 1998 might easily be confused with Eocene parrots. Unfortunately this happened in the case of the putative parrot *Pulchrapollia gracilis* which was recently described by DYKE & COOPER (2000).

In the following I will show that *Pulchrapollia gracilis*, which is known from several isolated bones from the Lower Eocene London Clay of Walton-on-the-Naze, presents derived

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characters of the Pseudasturidae that are absent in all Psittaciformes. The osteological nomenclature used in this study follows BAUMEL & WITMER (1993).

Systematic paleontology

Order incertae sedis
Family Pseudasturidae MAYR 1998

Genus ***Pulchrapollia*** DYKE & COOPER 2000

Pulchrapollia gracilis DYKE & COOPER 2000

Comments on the holotype: Most of the characters listed by DYKE & COOPER (2000: 277) in order to distinguish *Pulchrapollia* from the Pseudasturidae concern the referred coracoid. Yet, this bone is not only distinguished from the coracoid of the Pseudasturidae (which is preserved in articulated skeletons from Messel, Germany) but also from that of the Lower Eocene parrots described by MAYR & DANIELS (1998) and all recent parrots (text-figs 1A-C). DYKE & COOPER (2000: 273) considered the coracoid of *P. gracilis* to be "a relatively long and slender element", but I cannot duplicate this statement since this bone in fact is rather stout. Specimens from the London Clay of Walton-on-the-Naze might represent isolated bones of single individuals, but in many cases bones of more than one individual are assembled together (DYKE & COOPER showed this for the type specimen of *Palaeopsittacus georgei* HARRISON 1982). Having seen the original specimen, I find the referred coracoid of *P. gracilis* to be much brighter than the other bones of the type specimen, and I am convinced that it does not belong to this species. In the collections of The Natural History Museum (London) there is another yet undescribed bird from Walton-on-the-Naze (BMNH A 6206) which has a very similar coracoid, and which probably represents some caprimulgiform or swift-like species.

Comparison with Psittaciformes and Pseudasturidae: DYKE & COOPER (2000: 278) listed two characters in order to support an assignment of *Pulchrapollia* to the Psittaciformes: the trochlea metatarsi III bearing a tubercle on its lateral side, and the trochlea metatarsi IV being completely retroverted. Yet, apart from the fact that the trochlea metatarsi IV is not preserved in the type specimen of *P. gracilis*, both features are also present in the Pseudasturidae.

Apart from the coracoid (see above), all bones of the type specimen of *Pulchrapollia gracilis* are almost identical with the corresponding elements of an unnamed pseudasturid bird from Walton-on-the-Naze which have been figured by MAYR & DANIELS (1998: pl. 5 fig. 17) and MAYR (1998: text-fig. 12). The tarsometatarsus of *Pulchrapollia gracilis* especially agrees with the corresponding bone of the specimen from Walton-on-the-Naze in the following two features:

(1) the medial foramen vasculare proximale is much larger than the lateral foramen vasculare proximale (text-fig. 1E) – this derived feature is found in only few other avian taxa (due to preservation, its presence is uncertain for the pseudasturid birds from Messel).
(2) a crista medianoplantaris is present which is bordered by distinct fossae parahypotarsales (text-fig. 1E) – this feature is absent in all, fossil and recent, parrots and is also visible in the pseudasturid birds from Messel.

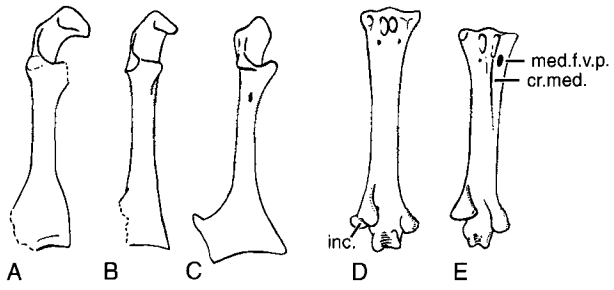
The distal humerus of *Pulchrapollia gracilis* differs from that of the Lower Eocene parrots and agrees with the Pseudasturidae in that the processus supracondylaris dorsalis is less distinct, and does not proceed into a low tuberosity on the cranial side of the bone (MAYR & DANIELS 1998: text-fig. 5E).

The proximal carpometacarpus differs from that of Lower Eocene parrots and agrees with the Pseudasturidae in that the fossa infratrochlearis is not a marked depression (MAYR & DANIELS 1998: text-figs 5C, D).

The differences between *Pulchrapollia* and the known Pseudasturidae which have been listed by DYKE & COOPER and which do not refer to the coracoid ("a distal vascular foramen of the tarsometatarsus that joins the shaft proximally via a steep incised furrow, and a narrow trochlea for metarsal [sic] III") can easily be interpreted as interspecific, respectively generic differences.

Discussion

In the Lower Eocene London Clay of Walton-on-the-Naze pseudasturid and psittaciform birds are fairly common, and both taxa are also known from complete articulated skeletons from the Middle Eocene deposits of Messel (Hessen, Germany). Concerning their osteology, pseudasturid and psittaciform birds thus certainly are among the best known of the small early Eocene birds (MAYR 1998; MAYR & DANIELS 1998). Nevertheless, the higher systematic position of the Pseudasturidae, which are listed as "cuckoo/owl mosaics" in FEDUCCIA



Text-fig. 1. Left coracoid in comparison: A) specimen referred to the holotype of *Pulchrapollia gracilis* (after DYKE & COOPER 2000), B) unnamed Lower Eocene psittaciform bird (species A of MAYR & DANIELS 1998), C) unnamed pseudasturid bird (drawn after figure 17 in MAYR & DANIELS 1998). – Left tarsometatarsus in comparison. E) unnamed Lower Eocene psittaciform bird (species A of MAYR & DANIELS 1998), F) unnamed pseudasturid bird (drawn after figure 17 in MAYR & DANIELS 1998). Not to scale. – Abbreviations: cr.med. = crista medianoplantaris; inc. = incision between Sehnenhalter and trochlea metatarsi IV; med.f.v.p. = medial foramen vasculare proximale.

(1996: 167), still is completely unknown. Apart from the zygodactyl foot no derived character convincingly supports their assignment to the Psittaciformes. The Pseudasturidae lack the distinct furrow which in parrots separates the Sehnenhalter from the trochlea metatarsi IV. This feature certainly is derived among neognathous birds and is present in the Lower Eocene parrots described by MAYR & DANIELS (1998).

Nevertheless, the cladistic analysis performed by DYKE & COOPER (2000) resulted in monophyly of *Pulchrapollia* and recent Psittacidae. The phylogeny of DYKE & COOPER further differs from that presented by MAYR & DANIELS (1998) in that the Quercypsittidae are closer to recent parrots than the genus *Psittacopes* (the Lower Eocene London Clay parrots described by MAYR & DANIELS, which are represented by much more complete material than *Pulchrapollia gracilis*, have not been considered in the study of DYKE & COOPER).

Unfortunately, the data matrix underlying the analysis of DYKE & COOPER contains several errors. Incorrectly coded are, for example:

- character 11 for Musophagidae and *Psittacopes* (both taxa exhibit four incisions in the caudal margin of the sternum),
- characters 13 and 14 for Cuculidae (the trochlea metatarsi III of the Cuculidae bears a tubercle on its lateral side, the trochlea metatarsi IV is completely retroverted),
- character 20 for *Psittacopes* and *Pulchrapollia* (a crista medianoplantaris is absent in *Psittacopes* but present in *Pulchrapollia*),
- character 23 for *Psittacopes* (which has very short claws), A cup-like facies articularis clavicularis of the coracoid (character 25) is probably primitive within neognathous birds since this feature is present in mesozoic birds (e. g. Hesperornithiformes), basal palaeognathous birds (e. g. Lithornithiformes, see HOUDE, 1988) and in several Early Tertiary representatives of recent taxa that lack a cup-like facies articularis clavicularis (e. g., PETERS 1983; MOURER-CHAUVIRÉ 1992).

Of the 32 characters used for the phylogenetic analysis no less than 12 are uninformative, since characters 21, 30, 31 are coded as primitive or unknown in all taxa, and characters 2-5, 7, 15, 23, 27, 28 have the derived state only in a single taxon.

All of the characters listed in the data matrix which are shared by *Pulchrapollia* and recent Psittacidae are either characteristic for zygodactyl birds in general (13, 14), or also present in many other birds (16, 32). Besides, all of these characters are present in the Pseudasturidae, too (see MAYR 1998). I do not understand the meaning of character 29, since neither the condylus ventralis (humerus) nor the cotyla ventralis (ulna) taper to a point in *Pulchrapollia*. Until a phylogenetic analysis including most other higher avian taxa has been undertaken, there is thus no convincing evidence for assigning the Pseudasturidae to the Psittaciformes.

Acknowledgements

I thank GARETH DYKE for making an examination of the type specimen of *P. gracilis* possible to me.

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Manuscript submitted: 2000-09-01; accepted: 2001-05-02.