

10. Valenciennes's description of *liza* was short and some fin ray counts were inaccurate; for example, I find D2 to be 9, not I,8; P is I,15-17? (usually I,16), not 14. More complete descriptions were given by various other authors; see, for example, Jordan & Swain (1884), Thomson (1977), and Menezes (1983) who provided a detailed and accurate illustration (fig. 7) of the species.

### Acknowledgements

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### Comments on a proposed neotype for *Coelophysis bauri* (Cope, 1887) (Reptilia, Saurischia)

(Case 2840; see BZN 49: 276-279)

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If this application is approved by the Commission the names of *Coelophysis bauri* and *Rioarribasaurus colberti* will be objective synonyms; as these are the type species of the nominal genera, *Coelophysis* and *Rioarribasaurus* will also be synonymous (para. 11 of the application). The mention of *Coelurus* instead of *Coelophysis* as the synonym of *Rioarribasaurus* in the last sentence of para. 10 was a typographical error in this office.

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1. We oppose the attempt by Colbert et al. to suppress the binomen *Rioarribasaurus colberti* by establishing a neotype for *Coelophysis bauri*.

2. Colbert (1947) assigned complete skeletons of Late Triassic dinosaurs from the Ghost Ranch dinosaur quarry in Rio Arriba County, New Mexico to the nominal

species *Coelophysis bauri* (Cope, 1887). This assignment has never been adequately justified, and recent studies (Padian, 1986; Hunt & Lucas, 1991) indicate that the original specimens of *C. bauri* (including the lectotype, specimen AMNH 2722) are not diagnostic. Colbert et al. provide no arguments to the contrary except to state (para. 8) that the synonymy is 'obvious'. The purpose of their application is simply to perpetuate Colbert's (1947) error by making one of the Ghost Ranch specimens the neotype of *C. bauri*, even though this specimen is the validly defined holotype of another nominal taxon, *Rioarribasaurus colberti*. Their application, which seeks to designate a neotype, is not in the context of revisory work as mandated by Article 75b of the Code; indeed, it asks the Commission to undertake revisory work.

3. Original specimens and a valid lectotype of *Coelophysis bauri* are extant (Huene, 1915; Colbert, 1989), so that the proposed neotype is contrary to Recommendation 75A of the Code; contrary to Article 75d(5), Colbert et al. choose a specimen collected 60 years after the lectotype from a locality and stratigraphic horizon different from the type locality.

4. With regard to the type locality of *C. bauri*, we note that David Baldwin, who collected the syntypes, gave very imprecise information and indicated that the specimens came from two separate localities (Colbert, 1989; Hunt & Lucas, 1991). One of these localities was 'Arroyo Seco', a tributary of the Rio Chama, which traverses 14.4 km of Triassic strata (Colbert, 1989). Colbert et al. (para. 1) state that this locality of Baldwin's was near the confluence of Arroyo Seco and Rio Chama; this has not been suggested before, notably not by Colbert (1989, pp. 4-6) who studied Baldwin's locality information in detail. If this suggestion is correct it places the type locality of *C. bauri* several km from the Ghost Ranch dinosaur quarry (Hunt & Lucas, 1991, fig. 1). The different preservation of the *C. bauri* bones and those from the Ghost Ranch quarry has been noted by Padian (1986) and Hunt & Lucas (1991), and suggests that the material came from different localities.

5. The contention of Colbert et al. (paras. 4 and 8) that the Ghost Ranch quarry and the type locality of *C. bauri* are in the same geological formation is based on an unpublished paper by Schwartz & Gillette. We have conducted detailed geologic studies of the Upper Triassic strata of the Chama basin and have measured a stratigraphic section through the Ghost Ranch quarry which we correlated with others in surrounding areas (Hunt & Lucas, 1989; Lucas & Hunt, 1992). We are confident that there is strong circumstantial evidence that Cope's specimens did not come from the same geological formation as the Ghost Ranch skeletons: (a) the Ghost Ranch quarry is in a stratigraphic unit (Rock Point Formation) distinct from underlying fossiliferous strata (Stewart, Poole & Wilson, 1972; O'Sullivan, 1974; Dubiel, 1989; Lucas & Hunt, 1992); (b) in the Chama basin there is only one fossiliferous locality in the Rock Point Formation, and this is the Ghost Ranch quarry; (c) the Rock Point Formation has been removed by erosion from the Gallina area, where some of the *Coelophysis* syntypes were collected (Colbert, 1989; Hunt & Lucas, 1991; Lucas & Hunt, 1992); (d) the Rock Point Formation is more silty than underlying strata and in most areas forms precipitous slopes which are impossible to prospect for fossils; (e) the majority of fossiliferous strata in the area belong to the Petrified Forest Formation; and (f) the preservation of the *Coelophysis* specimens is distinct from that of *Rioarribasaurus*, as noted above. It appears very unlikely that Cope's specimens came from the Rock Point Formation: they most probably derive

from the underlying Petrified Forest Formation (Hunt & Lucas, 1991; Lucas & Hunt, 1992). Colbert et al. do not demonstrate that the Ghost Ranch quarry is in the same stratigraphic formation as the type locality of *C. bauri* and only cite unpublished literature to contest our carefully argued claim that the two fossiliferous localities are in different stratigraphic units which are superposed and thus of different ages.

6. Colbert et al. say (para. 10) that in their opinion the lectotype of *Coelophysis bauri* is 'undoubtedly conspecific' with the holotype of *Rioarribasaurus colberti*. They do not say why this 'synonymy' is 'undoubted' and do not comment on the morphological arguments to the contrary by Padian (1986) and Hunt & Lucas (1991). It is clear that primitive ceratosaurian dinosaurs are very similar morphologically. We note that Colbert (1989, p. 125), in describing the Ghost Ranch skeletons, stressed the close osteological similarities between the New Mexico specimens and *Syntarsus* and stated that 'these two dinosaurs are so similar in many of their anatomical characters that more often than not the description of any particular feature of the one applies equally to the other'. We note further that several ceratosaurian dinosaurs were present in the Late Triassic (Hunt, 1991). At least one specimen of *Coelophysis* has an important morphological feature not found in *Rioarribasaurus*. Specimen AMNH 2724 (Huene, 1915, fig. 61; Colbert, 1989, fig. 18.61) is a pubic fragment displaying the dorsal margin of an obturator foramen. No obturator foramen is present in any specimen of *Rioarribasaurus* (cf. Colbert, 1989, fig. 77), and the presence or absence of one is a generic-level distinction in all dinosaurs. We are confident that Colbert et al. cannot demonstrate the 'synonymy' of *Coelophysis bauri* and *Rioarribasaurus colberti* because (a) all the specimens of *C. bauri* except AMNH 2724 lack diagnostic features; (b) most of the elements of *Rioarribasaurus* are (as noted by Colbert, 1989) similar to those of other Late Triassic primitive ceratosaurians; (c) specimen AMNH 2724 of *Coelophysis* has a character not seen in *Rioarribasaurus*. If the identity of these two taxa cannot be demonstrated it is clear that a neotype of *C. bauri* should not be proposed from among the specimens of *R. colberti*.

7. Colbert et al. comment on the wide use of the generic name *Coelophysis*. This usage, however, is only entrenched in a technical literature of specialists in dinosaur studies and, moreover, it is based on Colbert's (1947) unsupportable assignment of the nomen dubium *Coelophysis bauri* to the skeletons from Ghost Ranch. The fact that one recent paper (Rowe & Gauthier, 1990; see para. 7 of the application) perpetuates this error is irrelevant. It is also irrelevant that the Ghost Ranch dinosaur (not named as *Coelophysis*) is part of the logo of the New Mexico Museum of Natural History and Science. Even if this dinosaur were named in the logo, does the fact that *Brontosaurus*, the junior synonym of *Apatosaurus*, appeared on a U.S. postage stamp argue for usage of that invalid name? Similarly, the fact that *Coelophysis bauri* is the state fossil of New Mexico is irrelevant. The reason that some dinosaur literature from 1947 uses the name *Coelophysis* for the Ghost Ranch specimens and that this taxonomic assignment has not been questioned until recently is because the description of the specimens was delayed until Colbert (1989).

8. Colbert et al. (para. 10) note that they wish to make the 'obvious' synonymy objective and to have a 'much more informative' type specimen of *C. bauri*. Thus, they suggest making the holotype of *R. colberti* the neotype of *C. bauri*. This is, quite simply, a recipe for taxonomic anarchy. Two issues are raised. The first is the

adoption of a neotype to make a synonymy objective. Is every worker now to erect neotypes to protect his favorite nomen dubium and to establish its synonymy with another valid name? This is clearly against the spirit and the letter of the Code and is a recipe for taxonomic chaos. The second issue is the suggestion that a neotype should be erected because a specimen displays more morphological features than an extant type. Is every new specimen of a taxon which displays more features than a holotype or lectotype now to be made a neotype? Again this is a very dangerous suggestion that strikes at the very heart of taxonomic stability.

9. Colbert et al. (para. 8) say that 'Hunt & Lucas (1991) did not dispute the synonymy of *C. bauri* (as always understood) and *R. colberti*'. However, we considered the name *Coelophysis bauri* to be a nomen dubium and thus obviously did not consider it to be a synonym of *R. colberti*.

10. In summary, we believe the application should be rejected because (a) a lectotype and other original specimens of *Coelophysis bauri* exist; (b) the proposed neotype is not from either the type locality or horizon of *C. bauri*; (c) the proposed neotype is not demonstrably the same taxon as the lectotype of *C. bauri*; and (d) the name *Coelophysis* is only used in a limited technical literature.

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The recent application by Colbert et al. to designate a neotype in lieu of the lectotype of *Coelophysis bauri* is indefensible and should be rejected based on the following points:

1. In the absence of shared-derived characters, the Ghost Ranch dinosaur specimens (including AMNH 7224, which is the holotype of *Rioarribasaurus colberti* and the would-be neotype of *Coelophysis bauri*) cannot be referred to the same taxon as the type (lectotype) material of *Coelophysis bauri* (see Padian, 1986; Hunt & Lucas, 1991).

2. Despite Colbert's description and illustrations of the pelves of Ghost Ranch specimens as lacking both obturator foramina and the pubic fenestrae these osteological landmarks are now known to occur on the pelves of some Ghost Ranch skeletons (Rowe & Gauthier, 1990, and personal observation). The lack of these features in the holotype of *Rioarribasaurus colberti* (AMNH 7224) may be real, or they may have been destroyed in preparation.

3. If the former is the case, the presence of the dorsal margin of an obturator foramen on a pubis fragment (AMNH 2724) from the syntypic series of *Coelophysis bauri* (see Colbert, 1989, p. 38, fig. 61a) is not distinctive (plesiomorphic), because reference to *Syntarus rhodesiensis* can also be made.

4. If the pubic fenestrae and obturator foramina were destroyed on the holotype of *R. colberti* in the course of preparation, and if it could be unequivocally determined that only one dinosaur taxon is present among the Ghost Ranch material, then *Coelophysis bauri* is a nomen dubium because of the undiagnostic nature of the type material.

5. The acceptance by Rowe & Gauthier (1990) of the name *C. bauri* for the Ghost Ranch specimens was done in the absence of any critical osteological analysis and merely out of convention, coupled with the assumption that only one saurischian taxon was present in the Late Triassic strata of New Mexico.

6. It is an established fact that the type (lectotype) material of *C. bauri* is not from the Whitaker (Ghost Ranch) quarry. Evidence (Hunt & Lucas, 1991) suggests that the specimens are from a different geographic locality, albeit nearby (within 2 km).

7. In the absence of diagnostic features, stratigraphic / biostratigraphic position and geographic proximity cannot be used as evidence in support of, or against, taxonomic identity of the proposed neotype and the original type material.

8. Therefore, Colbert et al.'s selection of AMNH 7224 as the neotype of *Coelophysis bauri* is inappropriate and contrary to Article 75d(5) and Recommendation 75A of the Code.

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I strongly support the application by Dr E.H. Colbert and his colleagues to set aside all previous fixations of type specimens for the nominal species *Coelurus bauri* Cope, 1887 and to designate the complete articulated skeleton AMNH 7224 in the collections of the American Museum of Natural History (New York) as the neotype. I also concur that *Rioarribasaurus* and *colberti* should be placed on the relevant Indexes of Rejected and Invalid Names in Zoology.

I urge the Commission to rule in favour of this important application. The original type specimens of many other fossil vertebrates pose comparable problems (a good example is *Archaeopteryx lithographica*), and we may expect a profusion of unnecessary names if this application is not accepted.