

**Comment on the proposed designation of a neotype for *Coelophysis bauri*  
(Cope, 1887) (Reptilia, Saurischia)**

(Case 2840; see BZN 49: 276–279; 50: 147–151, 236–239, 291–294; 51: 48–51, 156–158, 265–266)

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I wish to add to my previous comment (BZN 50: 150–151) on this case, particularly on the nature of Cope's original material and Colbert's (1989) interpretation of it, the alternative *Coelophysis bauri* (Cope, 1887) neotype suggested by Hunt & Lucas (1993), and Paul's (1993) placement of the Ghost Ranch specimens in *Syntarsus* Raath, 1969.

1. There has been some confusion regarding what constitutes the type material of *C. bauri*. Padian (1986, p. 46) listed those specimens which are the type series for the nominal species *Coelurus bauri* and *C. longicollis* Cope, 1887. These specimens include AMNH 2722 (the sacrum designated as *C. bauri* lectotype by Colbert, 1989). As mentioned by Colbert (1989), later in 1887 Cope described further material, transferred *C. bauri* and *C. longicollis* to *Tanystropheus*, and described a third species, *T. willistoni*. In 1889 all three were placed in the new genus *Coelophysis*, of which *C. bauri* was designated the type by Hay (1930).

2. Colbert (1989) synonymized *C. longicollis* and *C. willistoni* with *C. bauri*, although without justification. He wrongly regarded some of the specimens described only in Cope's second paper as part of the type series of *C. bauri*. Only a few of the Cope specimens share common elements, and the material is too fragmentary and incomplete to permit comparison, let alone establish synonymy. The names *C. bauri*, *C. longicollis* and *C. willistoni* are nomina dubia and can only be applied to their type material.

3. Hunt & Lucas (1993) designated AMNH 2724, a pubic fragment referred to *C. bauri* by Cope in his second 1887 paper and also by Colbert (1989), as the 'neotype' of the species, even though they acknowledged that it was not part of the originally described material. In any event the designation would be invalid since Colbert (1989) had already designated AMNH 2722 as lectotype. Hunt & Lucas noted that AMNH 2724 possessed a 'pubic foramen ... which could be a diagnostic

feature'. I have determined that this is actually the obturator foramen, a character which is present in the holotype of *Rioarribasaurus colberti* (AMNH 7224; personal observation), *Liliensternus liliensterni*, *Syntarsus rhodesiensis* (Raath, 1969, p. 15, fig. 4b), and also in *S. kayentakatae* to which a number of Ghost Ranch specimens can be tentatively referred (personal observation).

4. There is now strong evidence (Sullivan, 1994) that suggests that the type material of *C. bauri* did not come from the Ghost Ranch (Whitaker) quarry. Moreover, my preliminary study of the Ghost Ranch specimens strongly suggests that two closely related yet distinct taxa (*Rioarribasaurus* and *Syntarsus*) are represented there. Colbert's (1989) concept of *Coelophysis bauri* is most likely a composite of these; this would explain the unexpected morphological variation cited by him (1989, p. 132; 1990, p. 89) amongst the Ghost Ranch theropods. The original Cope material could belong to either.

5. Paul (1993, p. 400) recognized *C. bauri* as a nomen dubium. The characters he (or for that matter Colbert, 1989) used to recognize *Rioarribasaurus* (or *Coelophysis*) and *Syntarsus* are ambiguous, and Paul's synonymy of these taxa is unjustified. However, I believe *some* of the Ghost Ranch specimens can be referred to *Syntarsus*; I base this on my studies of the type material of *C. bauri*, the holotype of *R. colberti*, and other specimens in blocks at the American Museum of Natural History, Carnegie Museum of Natural History, Yale Peabody Museum of Natural History and The State Museum of Pennsylvania.

6. In conclusion, (i) the type material of *Coelophysis bauri* (and of *C. longicollis* and *C. willistoni*) is undiagnostic; (ii) the 'neotype designation' by Hunt & Lucas (1993) is doubly invalid; (iii) there are two distinct theropod taxa (*Rioarribasaurus* and *Syntarsus*) among the Ghost Ranch specimens, and the type material of *C. bauri* may belong to either.

#### Additional references

- Colbert, E.H. 1990. Variation in *Coelophysis bauri*. Pp. 81–90 in Carpenter, K. & Currie, P.J. (Eds.), *Dinosaur systematics: perspectives and approaches*. Cambridge University Press, Cambridge.
- Hunt, A.P. & Lucas, S.G. 1993. Triassic vertebrate paleontology and biochronology of New Mexico. Pp. 49–60 in Lucas, S.G. & Zidek, J. (Eds.), *Vertebrate paleontology in New Mexico*. Bulletin 2, New Mexico Museum of Natural History and Science, Albuquerque.
- Sullivan, R.M. 1994. Topotypic material of *Coelophysis bauri* (Cope) and the *Coelophysis-Rioarribasaurus-Syntarsus* problem. P. 48A in Abstracts of Papers, *Journal of Vertebrate Paleontology*, 14(3)(Supplement).