Comments 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)

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In their proposal of the new binomen *Rioarribasaurus colberti*, Hunt & Lucas (1991) declared that *Coelophysis bauri* (Cope, 1887) is a nomen dubium on the grounds that none of the syntypes are diagnostic. In the same publication (which was entitled '*Rioarribasaurus*, a new name for a late Triassic dinosaur from New Mexico') they stated: 'We believe an effort to petition the International Commission on Zoological Nomenclature to conserve the name *Coelophysis bauri*, by designating a neotype, would be met with rejection ...'. This statement indicates that the new binomen was intended to replace *C. bauri*, rather than to denote a different taxon, as they have subsequently elaborated (BZN **50**: 147–150). The purpose of the application in Case 2840 is to establish a neotype for *C. bauri*.

Despite the claims of Hunt & Lucas (1991 and BZN **50**: 147–150), Lucas & Hunt (1992) and Sullivan (BZN **50**: 150–151), the type locality of the original *Coelophysis* material collected by David Baldwin somewhere in the vicinity of modern Ghost Ranch cannot be proven to be *not* the same locality that Colbert discovered in 1947. No records exist that precisely identify Baldwin's locality. The locality cited by him as 'Arroyo Seco' is the major extant drainage for all of the northern half of Ghost Ranch, including the subsidiary tributary of Arroyo Yeso which drains the Ghost Ranch dinosaur quarry. This drainage system has been eroding Triassic bedrock at Ghost Ranch since the Pleistocene. Although we do not know where in this drainage Baldwin collected, it is not unreasonable to assume that the skeletal material he collected from Arroyo Seco could have been from the present Ghost Ranch quarry. Differences in preservation between originally collected material and the present Ghost Ranch quarry specimens may be due to differential subaerial exposure. Baldwin's material was from surface or near-surface material, whereas specimens collected since Colbert's discovery in 1947 have been deeply buried and hitherto unexposed bones.

The assignment of stratigraphic position of the Ghost Ranch quarry to the Rock Point Formation of the Chinle Group as argued by Hunt & Lucas (1991, 1992 and BZN **50**: 147–150) follows their revisionary stratigraphic nomenclature (Hunt & Lucas, 1992), which has not been tested. Therefore, nomenclatural disputes related to differences in stratigraphic opinion are inappropriate in this case. According to Hunt & Lucas (BZN **50**: 148, para. 5) '... there is only one fossil locality in the Rock Point Formation, and this is the Ghost Ranch quarry' and 'the majority of fossiliferous strata in the area belong to the Petrified Forest Formation'. Whether there are fewer

or more fossils found from higher or lower in these Triassic strata may be only a reflection of ease in prospecting and has little if any bearing on arguments regarding the stratigraphic position of either the original (Baldwin) type locality of *Coelophysis* or the Ghost Ranch quarry. Contrary to their claim that it is 'very unlikely that Cope's specimens came from' the Ghost Ranch quarry locality and 'most probably derive from' a lower stratigraphic position, we argue that it is indeed quite possible that the original materials and the Ghost Ranch quarry fossils are from the same site or from nearby in the same horizon.

Hunt & Lucas (1991) correctly remarked on the fact that 'the name *Coelophysis* [is] well entrenched in the scientific literature ...' but now contradict that statement by saying (BZN **50**: 149, para. 7): 'This usage [the generic name *Coelophysis*] is only entrenched in a technical literature of specialists in dinosaur studies ...'. Moreover, their claim that it is '... irrelevant that the Ghost Ranch dinosaur (not named as *Coelophysis*) is part of the logo of the New Mexico Museum of Natural History ...' contradicts their earlier statement (Hunt & Lucas, 1991) that '... the name *Coelophysis* ... is the well publicized name of the official state fossil of the state of New Mexico'. The name is widely used in college level textbooks, and has been used repeatedly in television documentaries about dinosaurs. It is very extensively used in both technical and popular literature, including field guides and encyclopedias.

Hunt & Lucas (BZN **50**: 149, para. 6) say that the obturator foramen is present in one *C. bauri* specimen (AMNH 2724) figured by Huene (1915) but is absent in all the material from the Ghost Ranch quarry. However, some of the recently prepared Ghost Ranch fossils do indicate an obturator foramen (as mentioned by Sullivan in BZN **50**: 151, para. 2). The presence or absence of the obturator foramen may have been an ontogenetic character, indicating individual variation in this trait, similar to the variability in the structure of the mesotarsal joint and in co-ossification of bones in the hind foot described by Colbert (1989, pp. 108–110). The argument presented by Hunt & Lucas (BZN **50**: 149, para. 6) that the presence or absence of the obturator foramen is a generic level distinction in all dinosaurs is contradicted by the observation that this feature is variable in the single population represented by the dinosaurs in the Ghost Ranch quarry. Thus, the argument that the presence or absence of the obturator foramen can be used to distinguish between the material collected by Baldwin and the Ghost Ranch quarry dinosaurs is insupportable.

Hunt & Lucas claim (BZN **50**: 149, para. 8) that the establishment of a neotype for *Coelophysis bauri* would be a 'recipe for taxonomic anarchy'. In view of the wide use of the name *Coelophysis*, we think just the opposite: the neotype should be established as a move towards stability.

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I support the application of E.H. Colbert and others to set aside all previous type fixations for *Coelophysis bauri* and to designate the skeleton AMNH 7224 as neotype. Such an action is consistent with the basic goal of the Code, i.e. to provide the maximum continuity and universality in the use of scientific names for animals.

In their reply to Colbert et al., Hunt & Lucas (BZN **50**: 147–150) object to the application on the grounds that *Coelophysis* 'is only used in a limited technical

literature'. However, the usage is precisely what has always been understood by nomenclatural stability ('a long-accepted name in its accustomed meaning' (Code, p. xiv)). The vast majority of names which have been conserved by the Commission are names with a long historical usage in 'a limited technical literature of specialists', be it entomology, ichthyology or vertebrate paleontology.

Hunt & Lucas express concern that accepting Colbert's petition will strike 'at the very heart of taxonomic stability'. But 'taxonomic stability' is *not* what the Code and Commission are intended to provide. As clearly explained in the Introduction to the Code (pp. xiii, xiv), nomenclatural rules are designed to provide the maximum stability in scientific names compatible with taxonomic freedom.

The conflict over the use of the name *Coelophysis* for the Ghost Ranch theropod must be judged as a nomenclatural rather than a taxonomic issue. Whether Cope's original type material is the same taxon as the Ghost Ranch theropod is the kind of taxonomic judgment from which the Commission refrains in principle. However, the Commission has been given plenary powers to act in the name of nomenclatural stability when a 'long-accepted name in its accustomed meaning' is affected by a taxonomic decision. The tool available to the Commission in the case of *Coelophysis* is the designation of a type specimen.

The 'accustomed meaning' of *Coelophysis* for the past 45 years has been the Ghost Ranch theropod, in both the technical and popular literature. Hunt & Lucas (1991, p. 195) recognized this usage but, through an apparent misunderstanding of the scope and nature of the Commission's plenary powers (Article 79a of the Code), decided that a petition to conserve the name by designating a neotype from the Ghost Ranch material would not be successful 'simply because [Cope's] type material is extant', although Recommendation 75E indicates that the Commission can set aside existing type material and designate a neotype to resolve a zoological problem. Hunt & Lucas declared *Coelophysis* a nomen dubium and proposed a new name for the Ghost Ranch theropod, citing the difficulties in diagnosing Cope's fragmentary type material. However, nothing in that material itself precludes the inclusion of the Ghost Ranch theropod in *Coelophysis* (Padian, 1986; Colbert, 1989), and the possible discrepancy between the geological horizon of Cope's Arroyo Seco site and the Ghost Ranch Quarry is currently disputed.

Hunt & Lucas assert that 'the proposed neotype is not demonstrably the same taxon as the lectotype of *C. bauri*'. In Article 61a the Code states that 'the name-bearing type provides the objective standard of reference by which the application of the name it bears is determined, no matter how the boundaries of the taxon may change'. Importantly, the Code itself sets no standards for determining the diagnosis of a taxon or subjective synonyms, nor does it favor one particular approach to taxonomy (morphological or cladistic). The boundaries imposed on a taxon, subjective synonymies, and the degree to which type material is considered diagnostic are taxonomic judgments which may differ based on both the training and the methodology of a particular zoologist. The different taxonomic judgments concerning *Coelophysis* made by Colbert and by Hunt & Lucas are not the decisive issue, but rather the historical usage of the name *Coelophysis*.

A complication peculiar to fossil animals is the often fragmentary nature of name-bearing type specimens. Requiring that the name-bearing type specimen itself must be rigorously diagnostic poses problems for many well established names. For

instance, the type material for *Iguanodon*, the first dinosaur named, consists of a few isolated teeth found in an unidentified spot in Tilgate Forest, England. Most authorities no longer consider ornithopod teeth alone to be diagnostic. In such cases, historical usage has based a taxon on later, more informative specimens. If a long-accepted name attached to such a taxon might be rendered invalid by the alleged doubtful status of the name-bearing type specimen, a more formal solution is possible, as suggested by Simpson (1945, p. 30), in which a specimen recognized as diagnostic is made a neotype. The alternative used by Hunt & Lucas — to reduce the name to a nomen dubium and to erect a new nominal genus for the later specimens — may be appropriate in cases in which the name associated with the type is obscure, but otherwise such a practice is likely to upset nomenclatural stability as it is both traditionally understood and defined by the provisions of the Code.

Coelophysis is a 'long-accepted name' with an 'accustomed meaning' (the Ghost Ranch theropod) and should be conserved as a valid name by designating a neotype as proposed by Colbert et al.

Additional reference

Simpson, G.G. 1945. The principles of classification and a classification of mammals. *Bulletin of the American Museum of Natural History*, no. 85. xvi, 350 pp. American Museum of Natural History, New York.

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I wish to support the argument of Colbert et al. on the grounds that the name *Coelophysis bauri* is thoroughly and unequivocally established in the technical and popular literature in the sense of the Ghost Ranch skeletons and that the proposed neotype comes from the same stratigraphic level as the material described by Cope.

(4) Support for the application has also been received from Dr Dale A. Russell (*Canadian Museum of Nature, P.O. Box 3443, Station D, Ottawa, Ontario K1P 6P4, Canada*).

Comment on the proposed conservation of the subspecific name of *Catharacta antarctica lonnbergi* Mathews, 1912 (currently *Catharacta skua lonnbergi*; Aves, Charadriiformes)

(Case 2816; see BZN **50**: 48–51)

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We agree with Voisin et al. that disturbance to the current nomenclature of the brown skua by the resurrection by Brooke (1978) of the name *Stercorarius antarcticus*