Publication Announcement

Conodonts from the Carnian-Norian boundary (Upper Triassic) of Black Bear Ridge, northeastern British Columbia, Canada by Michael J. Orchard. New Mexico Museum of Natural History and Science, Bulletin 64: 1-139. 2014.

This 139-page volume presents a comprehensive taxonomic and biostratigraphic analysis of the Late Triassic conodont record at one of the world's most important Carnian-Norian boundary sections. Extensively illustrated, the monograph names 71 new species and will be an essential reference to all further research on Late Triassic conodonts. If you are interested in ordering Bulletin 64, it costs $20 and you can contact Beth Ricker, Store Manager for the NMMNH&S, at beth@naturalhistoryfoundation.org to place orders.

Abstract—Conodonts from the Carnian-Norian Boundary (CNB) interval at the Global Stratigraphic Section and Point (GSSP) candidate section at Black Bear Ridge (BBR), British Columbia, Canada, include five previously introduced genera (*Acuminatella*, *Kraussodontus*, *Parapetella*, *Primatella*, *Quadralella*), 71 new species (plus nine previously named, and 13 more in open nomenclature), and 47 new morphotypes. These elements, and others previously known, display progressive morphogenesis through the strata of the Ludington and Pardonet formations, which represent a continuous Upper Triassic slope-basin succession at the western edge of Pangea.

Two conodont zones and nine subzones are defined for the interval, in ascending stratigraphic order: *Carnepigondolella samueli* Zone with the subzones of *C. eozoae-Kraussodontus ludingtonensis*, *C. zoae*, *C. medioconstricta*, and *C. spenceri*; the *Primatella primitia* Zone with the subzones of *Acuminatella sagittale-Parapetella beattyi*, *A. angusta-Metapolygnathus dylani*, *A. acuminata-Pa. prominens*, *M. parvus* (three subdivisions), and *Primatella asymmetrica-Norigondolella* sp. These strata are capped by the Early Norian *Epigondolella quadrata* Zone.

Conodont faunal turnovers are identified at the boundary between the samueli and primitia zones with the extinction of *Carnepigondolella*, and between the *primitia* and *quadrata* zones with the extinction of *Acuminatella* and *Primatella*. However, the most significant turnover is in the boundary interval of the *acuminata-prominens* and *parvus* subzones where, respectively, 16 and 46 taxa disappear, including all *Quadralella*, *Kraussodontus*, and most *Parapetella* species. This turnover falls within a 5 m boundary interval bracketed by diagnostic ammonoids of the Upper Carnian *Klamathites macrolobatus* Zone and those of the Lower Norian *Stikinoceras kerri* Zone. The undated boundary interval includes an organic carbon isotope minimum, and the first occurrences of the bivalve *Halobia austriaca*, and the ammonoid *Pterosirenites*. Conodonts from this boundary interval are also identified in association with *H. austriaca* and *Pterosirenites* at nearby Pardonet Hill east (PHE). Matrix from archival ammonoid collections of the *Macrolobatus* Zone has also yielded the boundary conodont faunas, implying that the entire boundary interval at BBR is equivalent to the *Macrolobatus* Zone.

Broad correlation with the GSSP candidate section at Pizzo Mondello (PM) in Sicily can be achieved at several levels around the *parvus* Subzone: at its base with the appearance of the name-giver; at levels within it based on the appearances of *Parapetella destinae*, *Parapetella irwini*, and *Primatella bifida*; and at its top where typical Carnian taxa disappear (equivalent to event T3 at PM). At BBR, the *parvus* Subzone documents the decline and extinction of Carnian conodont genera, the bloom of diminutive taxa, and the ascendency of the *Primatella* stock, precursor of *Epigondolella*. The *parvus* Subzone includes significant conodont, ammonoid, and bivalve appearances that could serve as indices or proxies for the CNB, but use of any of them would have the effect of assigning some *Macrolobatus* Zone collections to the Norian Stage.

The base of the *asymmetrica-Norigondolella* Subzone of the primitia Zone offers a CNB position that is most closely aligned with the traditional base of the Norian, i.e. at the base of the Kerri Zone, and only that position assigns all *Anatropites*-bearing collections to the Carnian. At BBR, this level is defined by the disappearance of *Metapolygnathus parvus* and its diminutive associates rather than by new appearances. Uncommon taxa that appear at that time may be endemics: *Acuminatella curvata* at BBR, and *Primatella*? *gulloae* at PM. The disappearance of *M. parvus* and its associates close the Carnian chapter in conodont evolution, and their extinction may be favored as a natural boundary. Such a position for the CNB does, however, remove *Halobia* species as definitive indices, and places the range of *Pterosirenites* on both sides of the Carnian-Norian Boundary. Subsequent floods of *Norigondolella*, initially *N. norica*, provide a strong and definitive Norian signal at BBR and nearby sections.

In addition to five new genera and nine new species previously introduced from BBR, the following new taxa are named: *Acuminatella binodosa*, *A. constricta*, *A. curvata*, *A. denticulata*, *A. longicarinata*, *A. sagittale*, *A. sinuosa*, *A.*? *extensa*, *A.*? *prima*, *Carnepigondolella anitae*, *C. gibsoni*, *C. milanae*, *C. postsamueli*, *C. spenceri*, *Kraussodontus ludingtonensis*, *K. margaretae*, *K. roberti*, *K. rosiae*, *K. urbanae*, *K. vancouverense*, *K. wendae*, *Metapolygnathus dylani*, *Norigondolella norica*, *Parapetella beattyi*, *P. broatchae*, *P. clareae*, *P. columbiense*, *P. cordillerense*, *P. destinae*, *P. elegantula*, *P. hillarae*, *P. irwini*, *P. johnpauli*, *P. lanei*, *P. posterolata*, *P. prominens angulare*, *P. p. circulare*, *P. pumilio*, *P. riteri*, *P. rubae*, *P. willifordi*, *Primatella bifida*, *P. circulare*, *P. elongata*, *P. mclearni*, *P. oblonga*, *P. ovale*, *P. posteroglobosa*, *P. rectangulare*, *P. rhomboidale*, *P. rotunda*, *P. stanleyi*, *P. subquadrata*, *P. triangulare*, *P. vanlierae*, *Quadralella deflecta*, *Q. karenae*, *Q. kathleenae*, *Q. mcrobertsi*, *Q. pardoneti*, *Q. posteroexpansa*, *Q. postlobata*, *Q. praecommunisti curvata*, *Q. p. ornata*, *Q. roysi*, *Q. sigmoidale*, and *Q. willistonense*.