

STRATIGRAPHY OF NONMARINE MOLLUSCA FROM THE K/T BOUNDARY INTERVAL ON THE DECCAN PLATEAU, INDIA

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Introduction. The record of nonmarine mollusks from the Deccan Plateau of peninsular India has received minimal attention since its initial study in the mid 1800s (e.g., Sowerby [1], Hislop [2]). Recent field and museum studies have documented the potential for infratrappean (below basalt) and intertrappean (between basalt) molluscan occurrences to be used in local and regional paleoenvironmental and biostratigraphic studies. The value of these results are in addition to the ongoing paleobiogeographic interpretation of the Deccan's unusual and apparently short-lived molluscan biota with an inception very near the end of the Cretaceous.

Activities. In January and February of 2006, snails and a few freshwater bivalves were collected from ten localities in the central Indian states of Maharashtra and Madhya Pradesh and four localities in the westernmost state of Gujarat. Of the 93 other documented molluscan localities 28 have been lithostratigraphically placed at or in infra- or intertrappean horizons or intervals. Of the 107 localities so far collected, documented from museum collections, noted from unpublished data, and from the literature, only two are considered to be Paleocene in age. Of importance, however, only 2 Ma may separate all of the infra- and intertrappean molluscan localities of the Deccan Plateau.

Results. In the Nand-Dongargoan Basin of Maharashtra south of Nagpur, fossil mollusks are now documented from the Lameta Formation (infratrappean) and from the first four intertrappean intervals. In Gujarat, in the Cutch District, two localities are documented as infratrappean and two from the fourth intertrappean interval. In the Nand-Dongargoan Basin, specimens and their enclosing matrix can be preserved as carbonates, cherts, and less commonly as both coarse and fine clastics. Lacustrine paleoenvironments predominate all sections, but these conditions are variable, with marlstone beds varying in both clastic and faunal content. Channel deposits are rare, but still fossiliferous. In the sections studied in central India, intertrappean sections average about 2 m, typically are fossil-bearing, but vary in their fossil content and preservation based on local environmental conditions of the time. Preliminary examination indicates a co-correlation between molluscan and ostracode occurrence. Thus future studies will permit us to interpret the change in lake history near the end of the Cretaceous by examining the fossil content, both in abundance and diversity, through time.

Implications. The good fortune of lithostratigraphically organizing molluscan taxa in central and western India provides what may be a unique (i.e., first) opportunity to correlate infra- and intertrappean beds from the west to the east side of the Deccan Plateau. Although the record of end-Cretaceous events covers only a short span of geologic time, the potential for using mollusks for this purpose seems favorable because of their high species diversity in comparable environment settings.

1. Sowerby, J.d.C., 1840, Organic remains collected by Mr. [John G.] Malcolmson, and described and engraved by Mr. James de Carle Sowerby: *Trans. Geol. Soc. (Lond.)*, ser. 2, v. 5, pl. XLVII (three unpaginated figure explanation pages for Figures 1–23).
2. Hislop, S., 1860, On the Tertiary deposits, in associated with trap-rock, in the East Indies. With descriptions of the fossil shells: *Quart. Jour. Geol. Soc. Lond.*, v. 16, p. 154–182, 188, 189, pls. V–IX.