

## A Maastrichtian ostracode assemblage (Lameta Formation) from Jabalpur Cantonment, Madhya Pradesh, India

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We report the occurrence of a rich assemblage of ostracodes from the classic localities of Lameta Formation (Maastrichtian) at Chui Hill and at Bara Simla Hills, Jabalpur. The assemblage, comprising several thousand specimens, mostly represented by internal moulds, was recovered by using bulk washing and screening techniques.

THIS work was initiated during IGCP 245 project (1990) on Nonmarine Cretaceous Correlation. The occurrence of a rich assemblage of ostracodes from the classic localities of Lameta Formation (Maastrichtian) at Chui Hill and at Bara Simla Hills, Jabalpur<sup>1</sup>, Madhya Pradesh (Figure 1), is reported here. Although ostracodes had been reported from these sections<sup>2</sup>, they had never been described in detail. The present assemblage consists of nine taxa of ostracodes (Families: Cyprididae, Candonidae, of order Podocopida). A special feature of the assemblage is the occurrence of unusually large-sized species (up to 4.8 mm in length) comparable to *Mongolocypris gigantea* from Late Cretaceous Yunnan, China<sup>3</sup>. The present ostracode taxa show distinct similarities with Maastrichtian ostracodes described from Nemegt Basin of Mongolia<sup>4</sup>, China<sup>3</sup> and from the Deccan intertrappean beds of Central India<sup>5,6</sup>. A check list of the ostracode assemblage, and comparison of Jabalpur infratrappean biotas with other localities and with Mongolia and China is given in Table 1. Brief taxonomic features and comments on various recorded species are also given.

### *Taxonomic features and other comments*

*Mongolocypris* cf. *M. gigantea* (Figures 2 a-d). This large-sized species (length varies from 2 mm to 4.8 mm) is represented by both dimorphic generations and is comparable to *Mongolocypris gigantea* reported from

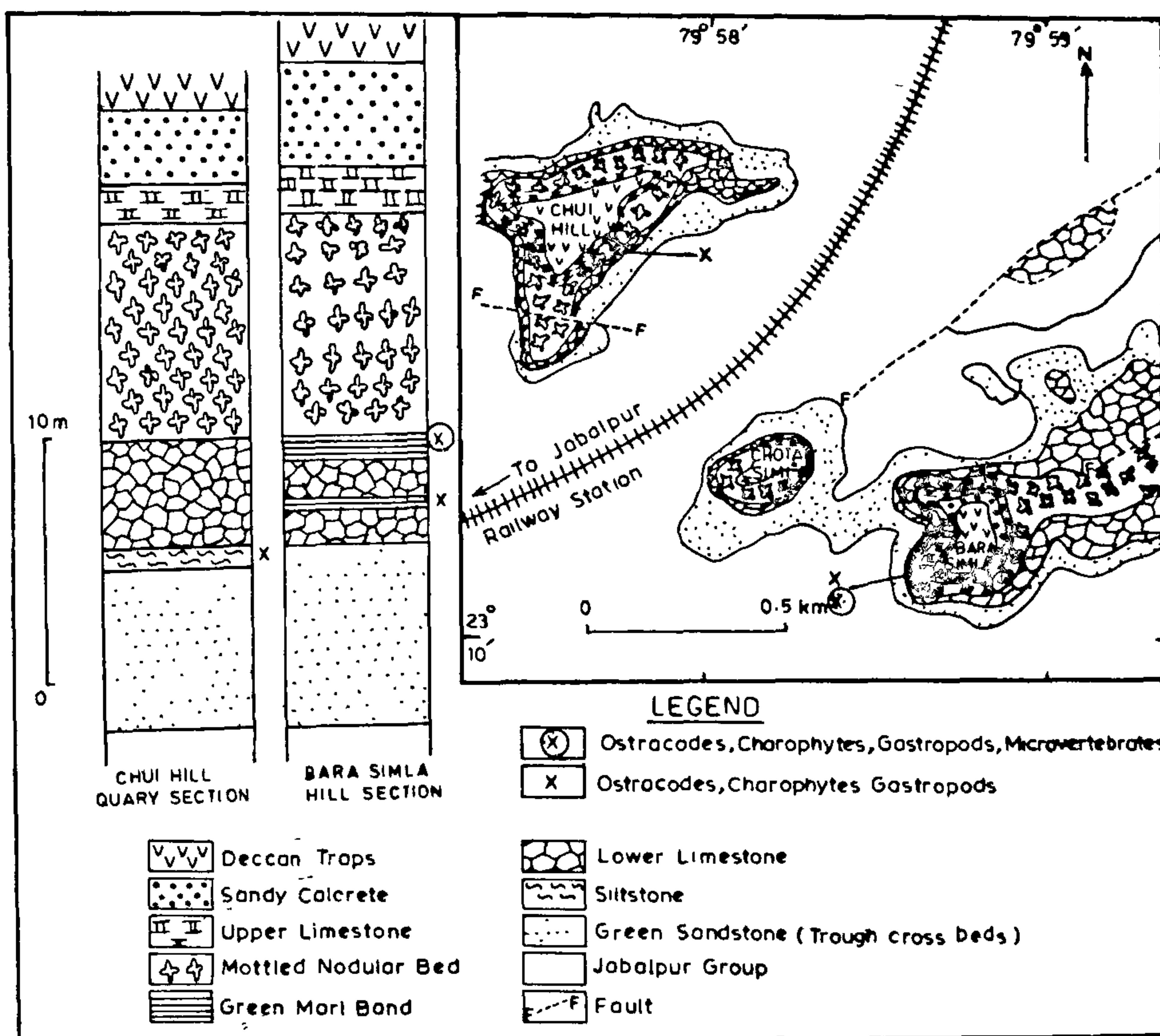


Figure 1. Geological map of the Jabalpur Cantonment Area and lithostratigraphic sections at the collecting locality (modified after Matley, 1921).

Table 1. Ostracode assemblage collected from Jabalpur

	Indian occurrences	Other occurrences
<i>Mongolocypris</i> cf. <i>M. gigantea</i> (Ye) VPL/AK 1001, L = 4.12 mm, H = 2.85 mm VPL/AK 1002, L = 2.85 mm, H = 1.78 mm		China <sup>3</sup>
<i>Paracandona jabalpurensis</i> VPL/AK 1003, L = 0.9 mm, H = 0.58 mm		
<i>Cypridea (Pseudocypridina)</i> sp VPL/AK 1004, L = 0.60 mm, H = 0.38 mm VPL/AK 1005, L = 0.56 mm, H = 0.30 mm		
<i>Cyclocypris transitoria</i> (Szczechurac) VPL/AK 1006, L = 0.60 mm, H = 0.44 mm		Mongolia <sup>4,7</sup>
? <i>Cypridopsis bugintsavicus</i> (Stankevitch) VPL/AK 1007, L = 0.88 mm, H = 0.64 mm	Takli <sup>5</sup>	Mongolia <sup>4</sup>
<i>Eucypris</i> sp VPL/AK 1008, L = 1.26 mm, H = 0.93 mm		
<i>Altanicypris</i> sp VPL/AK 1009, L = 1.73 mm, H = 1.11 mm		
<i>Mongolianella palmosa</i> (Mandelstam) VPL/AK 1010, L = 1.12 mm, H = 0.44 mm	Astifabad, Takli <sup>5</sup> and Mamont <sup>6</sup>	Mongolia <sup>4</sup>
<i>Candona altanulaensis</i> (Szczechura and Blaszyk) VPL/AK 1011, L = 0.56 mm, H = 0.35 mm	Takli <sup>5</sup>	Mongolia <sup>4</sup>

Maastrichtian of Yunnan, China<sup>3</sup>. The species also appears to be close to *Mongolocypris distributa* described from Nemegt Basin<sup>4</sup>, but because of the several mould stages present in our material we are inclined to compare the present species with *Mongolocypris gigantea*. The species shows prominent left over right overlap along the entire margin and there is a prominent antero-ventral beak in the better preserved specimen of the female carapace (Figure 2 d).

*Altanicypris* sp. (Figures 2 n, o, p). This species is closely related to forms described previously<sup>4</sup> and illustrated from intertrappean beds<sup>5</sup>. The most important character present in this species has a lip-like extension at the anterior end. However, a few specimens show faint pitting on the surface as against smooth shells described from Nemegt Formation<sup>4</sup>. It is likely that it is a new species; better preserved specimens are required to ascertain it.

*Mongolianella palmosa* (Figures 2 q, r). This form is abundantly represented in the present collection and is comparable with *Mongolianella palmosa* described from Deccan intertrappean beds<sup>5, 6</sup>. This species shows considerable variation in length as well as in length-height ratio as observed earlier<sup>4</sup>. Our specimens come within the range of variation of the species.

*Eucypris* sp. (Figure 2 m). This indeterminate species of the genus *Eucypris* is rare in our material and more specimens are required for precise placement. However, it shows superficial similarity with *Eucypris bajshintsavica* described from Bayshingtoav region in south-eastern Mongolia<sup>7</sup> of Late Cretaceous age.

*Cypridea (Pseudocypridina)* sp. (Figures 2 g, h, i). This characteristic but indeterminate species of sub-genus *Pseudocypridina* is extremely rare in our material. Of the two specimens illustrated, one (Figure 2 g) was lost subsequent to being photographed. The surface of the specimen illustrated (Figure 2 h, i) shows faintly developed tubercles and straight ventral margin, a feature also seen in *Cypridea (Pseudocypridina) piedmonti* described from Lower Cretaceous of South Dakota and Wyoming<sup>8</sup>.

? *Cypridopsis bugintsavicus* (Figures 2 k, l). We have typical specimens of the species which has been questionably assigned<sup>4</sup> to *Cypridopsis bugintsavicus*

from Nemegt Formation of Mongolia. The specimens are highly inflated at the postero-dorsal end.

*Paracandona jabalpurensis* (n. sp.) (Figures 2 e, f). This new species (named after Jabalpur town) of genus *Paracandona* (Family, Candonidae, Holotype VPL/AK/1003) has a characteristic inflated carapace, elliptical outline in lateral view. The left valve overlaps the right along the entire margin. The dorsal margin is arched and ventral margin is straight. Maximum height is in the middle. Both the extremities are broadly rounded. The surface shows a strongly-pitted ornamentation. The species does not show resemblance to any other known Late Cretaceous species.

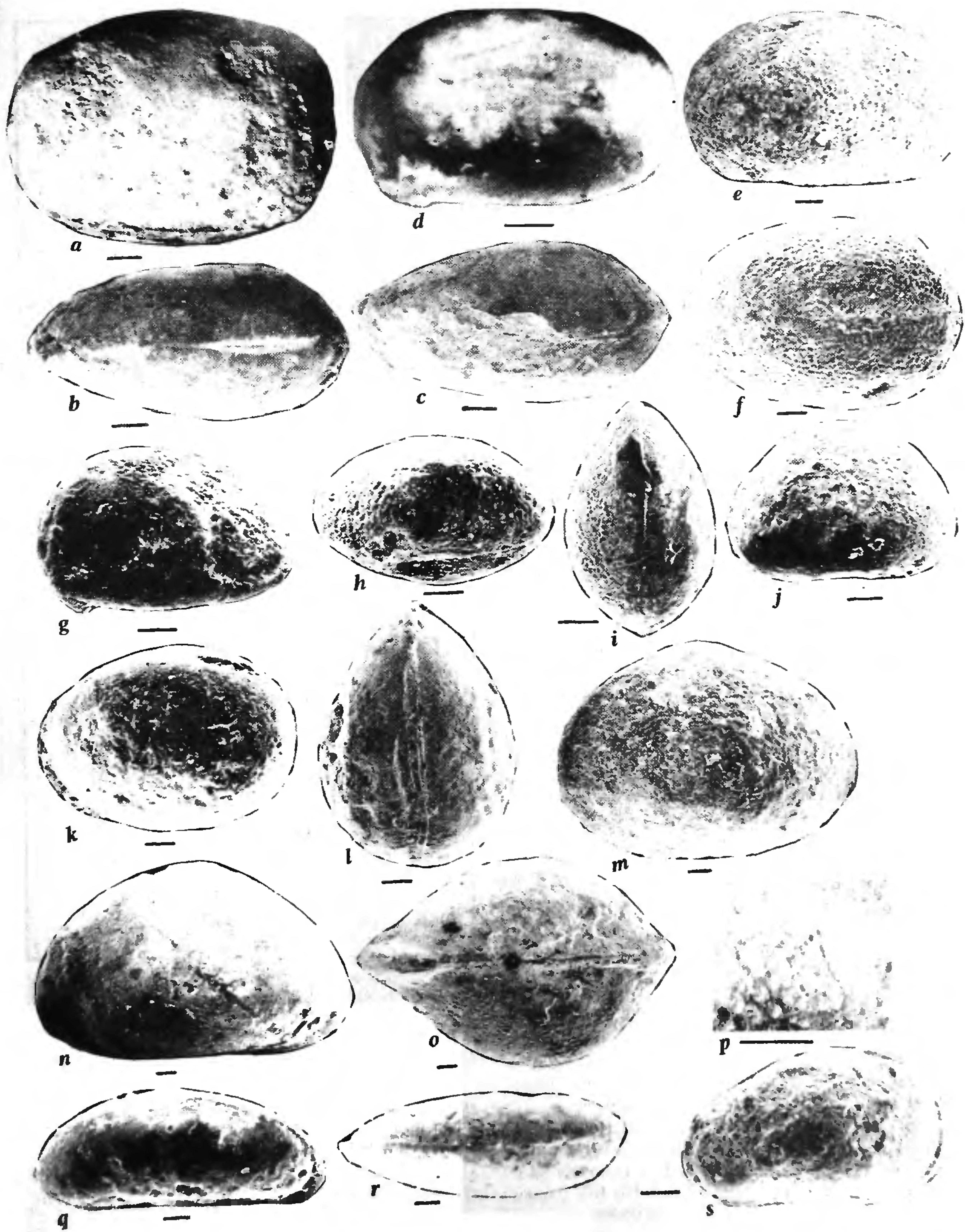
*Candona altanulaensis* (Figure 2 s). We have typical specimens of this species in our material which was first described from Upper Cretaceous of Nemegt Formation<sup>4</sup>. The species is also known from intertrappean beds<sup>5</sup>. Specimens had been earlier illustrated as *Eucandona*<sup>2</sup>, now those are considered synonymous to this species.

*Cyclocypris transitoria* (Figure 2 j). Dozens of specimens have been collected and they show similar characters to those from the Late Cretaceous of Mongolia<sup>4, 7</sup>.

*Affinities of ostracode assemblage.* The present ostracode assemblage is found in association with charophytes (*Platychara*, *Microchara*, *Peckichara*); pulmonate gastropods (*Physa*, *Lymnaea*); micro-vertebrates and dinosaur eggshell fragments in the Bara Simla Hill locality<sup>2</sup>. The affinities of the Late Cretaceous freshwater ostracodes follow the same general trend of Lauriatic affinities documented on the basis of the other biotas<sup>9</sup>, except for distinct dinosaurian assemblages in the two regions. It is clear that ostracodes form a dominant component of the fluvial-lacustrine faunas and in general are consistent with a Maastrichtian age. Of the above described taxa none was hitherto known from Jabalpur, but *Mongolianella palmosa*, ? *Cypridopsis bugintsavicus* have been recorded from Asifabad in Andhra Pradesh, Takli in Maharashtra and Mamoni in Rajasthan<sup>5, 6</sup>.

*Repository.* The material is deposited in Vertebrate Palaeontology Laboratory, Department of Geology, Panjab University, Chandigarh.

Figure 2 a-d. *Mongolocypris* cf. *M. gigantea* (a, right lateral view, b, dorsal view, c, ventral view; VPL/AK 1001), (d, left, female lateral view, VPL/AK 1002), e, f, *Paracandona jabalpurensis* n. sp. (e, left lateral view, f, dorsal view, VPL/AK 1003), g, h, i, *Cypridea (Pseudocypridina)* sp. (g, left lateral view, VPL/AK 1004, h, latero-ventral view, i, dorsal view; VPL/AK 1005), j, *Cyclocypris transitoria* (j, left lateral view, VPL/AK 1006), k, l? *Cypridopsis bugintsavicus* (k, left lateral view; l, dorsal view, VPL/AK 1007); m, *Eucypris* sp. (m, left lateral view, VPL/AK 1008); n, o, p, *Altanicypris* sp. (n, left lateral view, o, ventral view; p, enlarged posterior part showing pitted ornamentation, VPL/AK 1009); q, r, *Mongolianella palmosa* (q, right lateral view, r, dorsal view; VPL/AK 1010), s, *Candona altanulaensis* (s, right lateral view; VPL/AK 1011). Bar equals 500  $\mu$ m for a-d and 100  $\mu$ m for e-s. Abbreviations: VPL, Vertebrate Palaeontology Laboratory, cf, close affinity, sp species; n sp, new species, CAS, Centre of Advanced Study, L, length, H, height.



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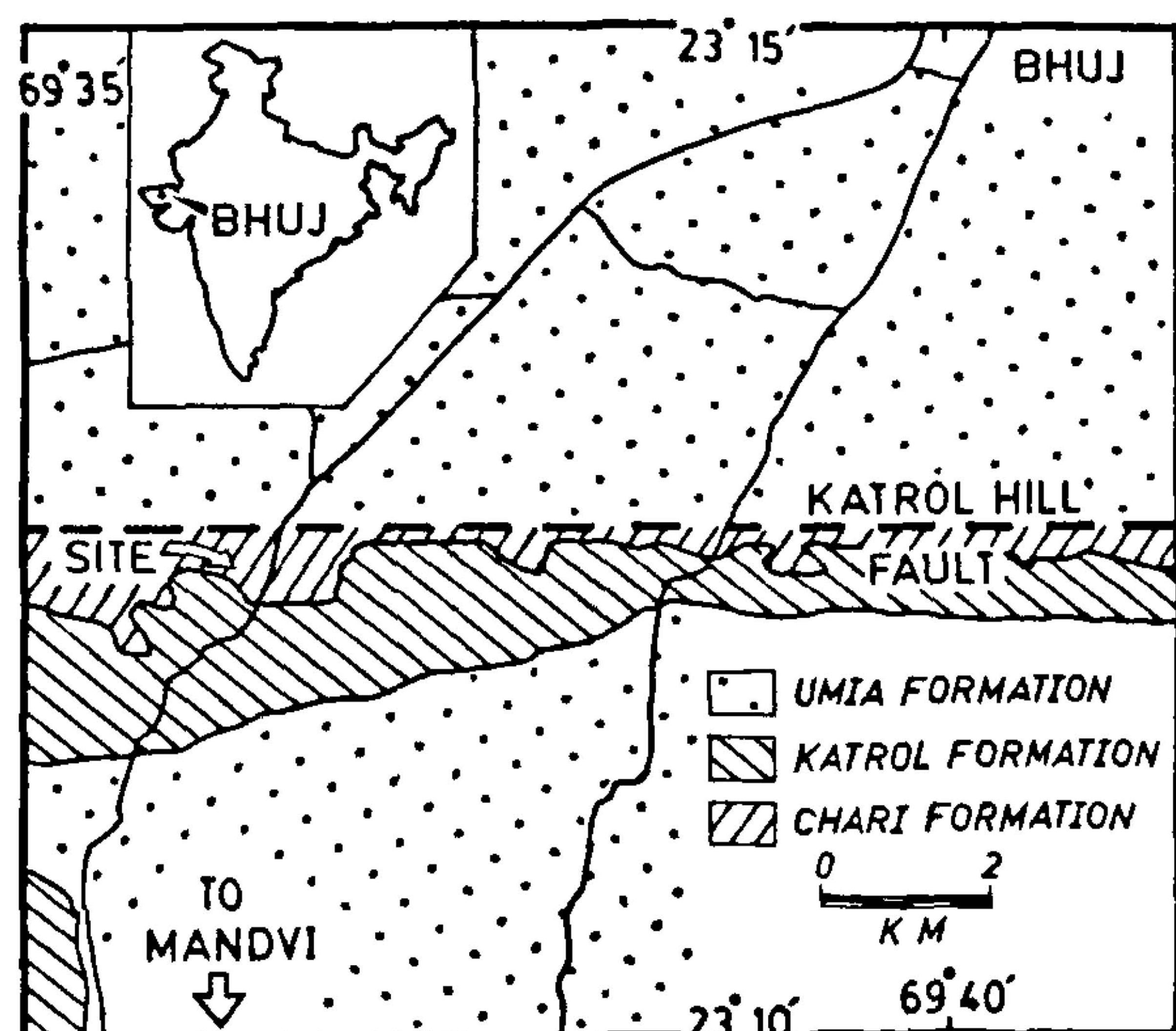


Figure 1. Geological map of the area showing the site where two skulls were found