

## ECOLOGY OF DIATOMS FROM THE KAREWA BEDS OF THE BALTAL AREA, KASHMIR, INDIA

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### Abstract

About 60% of the samples collected from the Karewa Beds of the Baltal area of Kashmir, India showed the presence of diatoms which belong to both centric as well as pennate types. The diatom assemblages identified are indicative of a cold climate and a fresh water lacustrine condition of deposition of the Karewas of the Baltal area.

### Introduction

The valley of Kashmir has a unique sediment profile going down to about 3 km, according to some estimates. This, thus, provides one of the deepest sediment records in a terrestrial condition to enable one to build up a palaeoclimatic sequence. Today all these sediments are exposed in the form of Karewas and available for sampling. The multiple manifestations of the palaeoclimatic changes as recorded in the Karewa profile could be unraveled through only a multidisciplinary approach. Here we have used diatoms as a parameter to elucidate the palaeoecological and palaeoclimatic conditions prevailing during their deposition.

### Previous Work

In 1939 De Terra and Paterson reported 3 entities of *Cyclotella*. Iyengar and Subrahmanyam (1943) systematically described 17 fossil diatoms from Karewa deposits. Conger (in De Terra and Paterson, 1939) listed 16 genera of diatoms from Handwor. Rao and Awasthi (1962) reported 10 centric diatoms and described 4 new varieties and 1 new species. About 1000 samples systematically collected from 32 measured sections were examined for fossil diatoms by Roy (1975). More recently studies on fossil diatoms from different localities of Karewa beds have been carried out by Gupta & Khandalwal (1982), Gandhi & Mohan (1983), and Gandhi *et al.* (1983).

### Present Work

Baltal is a village near Romu on the Romushi valley (Fig 1). The Romushi is flowing west to east cutting through and exposing a thick pile of the Karewas along its course till it meets the Jhelum. The main exposures are on the left bank of the Romushi.



Fig. 1. Map showing location of Baltal in Kashmir valley.

It is a new locality and the diatoms are being recorded for the first time. The assemblage is a mixture of both centric and pennate types. Of the diatoms recognised from the Baltal samples, those listed in Table 1 are indicative of a fresh water lacustrine condition while those in Table 2 point to a cold climatic condition. Thus, the diatom flora indicates a cold climate and fresh water lacustrine conditions of

deposition of the Karewas of the Baltal area. The taxa listed here range in age from Oligocene to Recent.

Table 1 :

1. *Caloneis schumanniana* (Grun) Cl var *biconstricta* (Grun)
2. *Cyclotella iris* Brun and its varieties
3. *C. kutzingiana* Thw.
4. *Cymbella aspera* (Ehr) Cl
5. *C. ehrenberghii* Kutz.
6. *C. lata* (Grun)
7. *C. cistula* (Hemp) Grun.
8. *Gyrosigma attenuatum* (Kutz) Rabh.
9. *Pinnularia dairiana* A.S.
10. *Fragilaria construens* (Ehr) Grun.
11. *F. pinnata* Ehr.

Table 2 :

1. *Cyclotella iris* Brun and its varieties
2. *Cymbella aspera* (Ehr) Cl.
3. *C. ehrenberghii*
4. *C. lata*
5. *Gomphonema grovei* M.S. and its varieties
6. *Navicula renharti*
7. *N. scutelloides* W. Sm.
8. *Opephora martyi*
9. *Pinnularia dairiana* A.S.
10. *P. viridis* (Kutz) Ehr.
11. *Tetracyclus imaginata*
12. *T. lacustris*

We have analysed a large number of samples from the different sections of the Karewas of Kashmir with a view to build up both biostratigraphic and climatostratigraphic sequences of the Karewas of the Kashmir valley.

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