

Kalyan Halder

Professor of Geology

Education

2003 | **Ph. D.** Jadavpur University, Kolkata
Dissertation: Jurassic Nautiloids of Kutch, Wwestern India: A Study on Their Systematics, Palaeoecology and Evolution

Research interest

I was initially interested in nautiloids (Mollusca) and earned my Ph. D. from Jadavpur University, Kolkata in 2003. In my dissertation, a comprehensive taxonomy of the Jurassic nautiloids from Kutch, Gujarat and their evolutionary palaeobiological aspects had been studied.

Later, I have broadened my horizon by including other molluscs (classes Bivalvia and Gastropoda) from other times (Cenozoic) and other basins (such as Himachal Pradesh, Gujarat (Cambay, Saurashtra), Manipur, Kerala). More recent studies have concentrated on the mollusc faunas from the Cenozoic of Kutch and Cambay basins. Modern taxonomic treatment of these faunas, especially from the early Paleogene, is in progress. I am also working on the early Paleogene global climatic events and response of molluscs to those events. I am exploring the palaeobiogeography of molluscs based on global distribution pattern and factors governing it.

Teaching experience

1998–2006	Lecturer/Assistant Professor Durgapur Government College, West Bengal
2006–2013	Assistant Professor/Associate Professor Presidency College
2013–Present	Professor Presidency University

For the last about twenty five years I have been engaged in imparting state-of-the-art knowledge on “Invertebrate Palaeontology” and “Principles of Palaeontology” to undergraduate and post-graduate students. I have also dealt occasionally with courses on “Vertebrate Palaeontology”, “Micropalaeontology”, “Palaeobotany”, “Phanerozoic Stratigraphy of India” and “Principles of Stratigraphy”. As a part of the regular PG course I have supervised numerous M. Sc. dissertations. Two research students have completed their Ph. D. study under my supervision. Two students will submit their Ph. D. thesis soon. I mentored a National Post-Doctoral Fellow (NPDF).

Publications

Journal articles and book chapters

- 2022 **Mitra, A., Dutta, R. and Halder, K.**
A study on benthic molluscs and stable isotopes from Kutch, western India reveals early Eocene hyperthermals and pronounced transgression during ETM2 and H2 events. *Swiss Journal of Palaeontology*, 141:13. Doi: 10.1186/s13358-022-00255-1
- 2021 **Halder, K. and Mitra, A.**
Facultative monogamy in an early Eocene brooding oyster and its evolutionary implications. *Acta Palaeontologica Polonica*, 66(3): 647-662. Doi: 10.4202/app.00863.2020
- 2021 **Halder, K.**
Nautiloid Biostratigraphy of the Jurassic of Kutch, India: An Exploration of Bio and Chrono-stratigraphic Potential of Nautiloids. p. 291-309 *in*: S. Banerjee and S. Sarkar (eds.) *Mesozoic Stratigraphy of India: A Multi-proxy Approach*. Society of Earth Scientists Series, Springer Nature Switzerland AG. Doi: 10.1007/978-3-030-71370-6_10.
- 2021 **Bhattacharya, B., Halder, K., Jha, S., Mondal, P. and Ray, R.**
Stratigraphy, Sedimentology and Paleontology of Late Cretaceous Bagh Beds, Narmada Valley, Central India: A Review. p. 623-657 *in*: S. Banerjee and S. Sarkar (eds.) *Mesozoic Stratigraphy of India: A Multi-proxy Approach*. Society of Earth Scientists Series, Springer Nature Switzerland AG. Doi: 10.1007/978-3-030-71370-6_21.
- 2019 **Halder, K. and Paira, S.**
First record of sexual size dimorphism in fossil Strombidae (Mollusca, Gastropoda) from the Miocene of Kutch, western India and its evolutionary implications. *Royal Society Open Science*, 6: 181320. Doi: 10.1098/rsos.181320.
- 2019 **Halder, K. and Das, S.**
New subfamily Indovolutinae and other volutids (Volutidae, Gastropoda) from the Eocene of Kutch, western India and their paleobiogeographic implications. *Journal of Paleontology*, 93(5): 899-915. Doi: 10.1017/jpa.2019.34.
- 2019 **Banerjee, S., Das, S., Halder, K. and Chakrabarti, N.**
Palaeoecological Analysis of Benthic Molluscs from the Eocene of Kutch, Gujarat Reveals an Event of Storm Induced Concentration of Shells in a Quiet Marginal Marine Environment. *Journal Geological Society of India*, 94: 162-170. Doi: 10.1007/s12594-019-1285-7.
- 2018 **Das, S. and Halder, K.**
Control of climate and Tethyan legacy on distribution of Paleocene–Eocene gastropods and establishment of the Northern Tropical Realm. *Journal of Earth*

- system Science*, 127: 58. Doi: 10.1007/s12040-018-0959-7.
- 2018 **Sinha, P. and Halder, K.**
The Oligocene corals had circumtropical distribution. p. 293-308 *in*: S. Bajpai, S.C. Tripathi and V. Prasad (eds.) The Indian Paleogene. Society of Earth Scientists Series, Springer International Publishing AG. Doi: 10.1007/978-3-319-77443-5_12.
- 2015 **Halder, K. and Bano, S.**
Cenozoic Corbulidae (Bivalvia, Mollusca) from the Indian subcontinent—palaeobiogeography and revision of three species from Kutch, India. *Arabian Journal of Geosciences*, 8(4): 2019-2034. Doi: 10.1007/s12517-014-1362-6.
- 2014 **Halder, K. and Sinha, P.**
Some Eocene Cerithioids (Gastropoda, Mollusca) from Kutch, Western India, and Their Bearing on Palaeobiogeography of the Indian Subcontinent. *Palaeontology Journal*, 2014: 673469 (11pages). Doi: 10.1155/2014/673469.
- 2012 **Halder, K.**
Cenozoic fossil nautiloids (Cephalopoda) from Kutch, western India. *Palaeoworld*, 21:116-130. Doi: 10.1016/j.palwor.2012.05.004.
- 2011 **Sengupta, S., Syed, R., Sarkar, S. and Halder, K.**
Nummulites Lamarck (foraminifera) as substrate for other benthonic taxa: A case study from the Middle Eocene of western Kutch, Gujarat. *Indian Journal of Geosciences*, 65(4): 265-274.
- 2005 **Jana, S.K., Bardhan, S. and Halder, K.**
Eucycloceratin ammonites from the Callovian Chari Formation, Kutch, India. *Palaeontology*, 48(4): 883-924.
- 2000 **Halder, K.**
Diversity and biogeographic distribution of Jurassic nautiloids of Kutch, India, during the fragmentation of Gondwana. *Journal of African Earth Sciences*, 31(1): 175-185.
- 2000 **Bardhan, S. and Halder, K.**
Sudden origin of ribbing in Jurassic *Paracenoceras* (Nautiloidea) and its bearing on the evolution of ribbing in post-Triassic nautiloids. *Historical Biology*, 14: 153-168.
- 1998 **Halder, K., Jana, S.K. and Bardhan, S.**
Ornamental polymorphism in *Paracenoceras probexagonum* (Nautiloidea) from the Jurassic Chari sequence, Kutch, Gujarat. *Indian Minerals*, 52(1&2): 89-94.
- 1997 **Halder, K. and Bardhan, S.**
On some new Late Bathonian paraceoceratids (Nautiloidea) from Kutch, India and their evolutionary and biostratigraphic implications. *Neues Jahrbuch für Geologie und Paläontologie Monatshefte*, 1997: 543-561.

- 1996 **Halder, K. and Bardhan, S.**
The Oxfordian (Upper Jurassic) nautiloid fauna of Kutch, western India. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen*, 201(1): 17-32.
- 1996 **Halder, K. and Bardhan, S.**
The fleeting genus *Cymayonautilus* (Nautiloidea): new record from the Jurassic Chari Formation, Kutch, India. *Canadian Journal of Earth Sciences*, 33:1007-1010.
- 1996 **Gangopadhyay, T.K. and Halder, K.**
Significance of the first record of nautiloid from the Upper Cretaceous Bagh Group of rocks. *Current Science*, 70(6): 462-465.
- 1994 **Bardhan, S., Halder, K. and Jana, S.K.**
Earliest sexual dimorphism in Nautiloidea from the Jurassic of Kutch, India. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen*, 193(3): 287-309.

Conference presentations and abstracts

- 2021 **Mitra, A., Dutta, R. and Halder, K.**
Early Eocene hyperthermals and transgression from Kutch basin of western India — are they related? *Third Virtual palaeontological Congress*.
- 2021 **Banerjee, S. and Halder, K.**
Composition and diversity-abundance pattern of molluscs reveal heterogeneity in micro-habitats in a linear coastal setting from the lower eocene of western India. *Third Virtual palaeontological Congress*.
- 2020 **Halder, K., Ghosh, A. and Mitra, A.**
Stable isotope ratios from lower Paleogene Cambay Shale from Surat, Gujarat suggest causal link between hyperthermal and transgressive events. *International Geological Congress, New Delhi, India*.
- 2020 **Mitra, A. and Halder, K.**
Bivalves' response to the Paleocene-Eocene boundary events. *International Geological Congress, New Delhi, India*.
- 2020 **Banerjee, S., Halder, K. and Aich, S.**
Lower Eocene Cambay Shale from Vastan mines, Gujarat: product of a sheltered coastal environment as revealed from mixed facies gastropod assemblage and proliferation of opportunist taxa. *International Geological Congress, New Delhi, India*.
- 2019 **Banerjee, S., Halder, K. and Aich, S.**
Analysis of molluscan shell beds from lower Eocene deposits of Cambay basin, western India reveals proliferation of opportunist taxa in the coastal sheltered environment in response to transgressions. *Geological Society of America, Annual Meeting, Arizona, USA*.

- 2019 **Halder, K., Ghosh, A. and Mitra, A.**
 Facultative monogamy in *Ostrea* sp., a brooding oyster from the lower Eocene of Cambay basin, western India and its possible relation to global warming. Geological Society of America, Annual Meeting, Arizona, USA.
- 2019 **Mitra, A., Halder, K., Banerjee, Y., Sakthivel, T. and Ghosh, P.**
 Lower Eocene hyperthermal and transgressive events as revealed from stable isotopic analysis of lignite bearing coastal deposits from Kutch basin, western India. Geological Society of America, Annual Meeting, Arizona, USA.
- 2019 **Banerjee, Y., Ghosh, P. and Halder, K.**
 Intensification of Early Miocene monsoon detected using Cap 47 record from the seasonal growth bands in the well-preserved Gastropod shell from the Kachchh Basin, Western India. American Geophysical Union, Fall Meeting.
- 2018 **Mitra, A. and Halder, K.**
 Effects of climate change and other geological events on the evolution of palaeobiogeographic distribution pattern of paleogene bivalves. National Seminar on Effects of Paleo and Anthropogenic Events on Earth System & Annual General Meeting of Geological Society of India, Salem, India.
- 2018 **Banerjee, S., Das, S. and Halder, K.**
 Palaeoecological Analysis of Benthic Molluscs from the Eocene of Kutch, Gujarat Reveals an Event of Storm Induced Concentration of Shells in a Quiet Marginal Marine Environment. National Seminar on Effects of Paleo and Anthropogenic Events on Earth System & Annual General Meeting of Geological Society of India, Salem, India.
- 2018 **Banerjee, Y., Ghosh, P. and Halder, K.**
 Seasonality based on stable isotope record in the growth bands of Early Miocene Gastropod (*Turritella* sp.) from the Kachchh basin of Western India. Goldschmidt conference.
- 2017 **Chaudhuri, S., Halder, K. and Sarkar, S.**
 Similarity in Evolutionary Histories of Eocene Sediments from Subathu and Cambay Basins: Geochemical and Palaeontological Studies. American Geophysical Union, Fall Meeting.
- 2017 **Banerjee, Y., Ghosh, P., Haldar, K., Malarkodi, N. and Pathak, P.**
 Post Cretaceous cooling trend documented in the gastropods (*Turritella* Sp.) from the Cenozoic stratigraphic successions of India. American Geophysical Union, Fall Meeting.
- 2016 **Halder, K.**
 Why is sexual size dimorphism restricted to a single lineage of post-Triassic nautiloids? International Geological Congress, Cape Town, South Africa.
- 2016 **Halder, K. and Sinha, P.**

- Turritelline dominated assemblages from the Miocene of Kutch, western India reveal depositional histories and the nursery ground of the species. *International Geological Congress, Cape Town, South Africa.*
- 2016 **Halder, K. and Das, S.**
Early Paleogene gastropod distribution had Tethyan influence and circum-tropical distribution. *Developments in Geosciences in the past decade - emerging trends for the future & impact on society, IIT Kharagpur, India.*
- 2015 **Mitra Das, S. and Halder, K.**
Study of bioerosion and encrustation from the middle Eocene of Kutch, Gujarat and its bearing on basin evolution. *National Conference on Paleogene of the Indian Subcontinent, Lucknow, India.*
- 2015 **Ghosh, I. and Halder, K.**
Biostratigraphical, Palaeoecological and Palaeobiogeographical significance of *Venericardia Lamarck 1801 sensu lato (Bivalvia, Carditidae)* from the Paleogene of western India. *National Conference on Paleogene of the Indian Subcontinent, Lucknow, India.*
- 2015 **Sinha, P. and Halder, K.**
The Oligocene corals had circumtropical distribution. *National Conference on Paleogene of the Indian Subcontinent, Lucknow, India.*
- 2006 **Halder, K.**
The story of nautiloid suture: a critical review. *Second International Palaeontological Congress, Beijing, China.*

Research projects

- 2019–2023 **Sequence stratigraphy of Bagh Group of rocks, Narmada rift valley, central India: its bearing on the Late Cretaceous paleogeography.** Co-PI, MoES. 26.23 lakhs.
- 2017–2020 **Basin evolution and diversity of Eocene molluscs from Vastan and adjoining areas of Surat, Gujarat.** PI, SERB-DST. 41.13 lakhs.
- 2013–2017 **Study of systematics, palaeoecology and palaeobiogeography of the Eocene molluscs from Kutch, Gujarat.** PI, DST. 22.44 lakhs.
- 2013–2015 **Study of the Sub-Himalayan lower Cenozoic succession with special reference to the reconstruction of tectono-sedimentary history of Subathu basin.** Co-PI, MoES, 8 lakhs.
- 2005–2009 **Taxonomy and Evolutionary Palaeobiology of the Tertiary Mollusca of Kutch, Gujarat with Special Emphasis on Bivalvia.** PI, DST-Fast Track. 5.21 lakhs.
- 2007–2009 **Palaeobiological and biostratigraphical studies on the Jurassic**

- 1999–2002 | **nautiloids of Kutch, Gujarat.** PI, UGC Minor. 0.9 lakhs.
- 1999–2002 | **Body size and macroevolution of the Jurassic (Bathonian – Oxfordian) fauna of Kutch, Gujarat with special emphasis on cephalopods.** Co-PI, DST, 7.2 lakhs.

Research supervision

- 2022 | **Shrestha Das.** Systematics, Palaeobiogeography and Palaeoecology of the Eocene Gastropoda (Mollusca) from Kutch, Gujarat. University of Calcutta, Kolkata
- 2023 | **Aniket Mitra.** Effects of Eocene global events on marine bivalves from Kutch and Cambay basins of Gujarat. Presidency University, Kolkata.

Mentorship of post-doctoral fellows

- 2018–2021 | **Dr. Rakhi Dutta.** Molluscs' response to the Early Paleogene hyperthermal and transgressive events: A case study from western India.