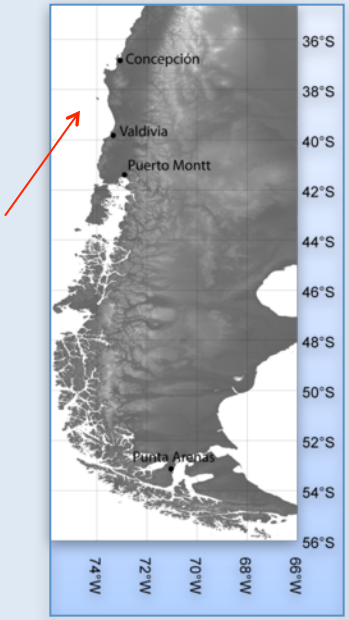
Research on Cenozoic Molluscs

A Jump over the Pacific

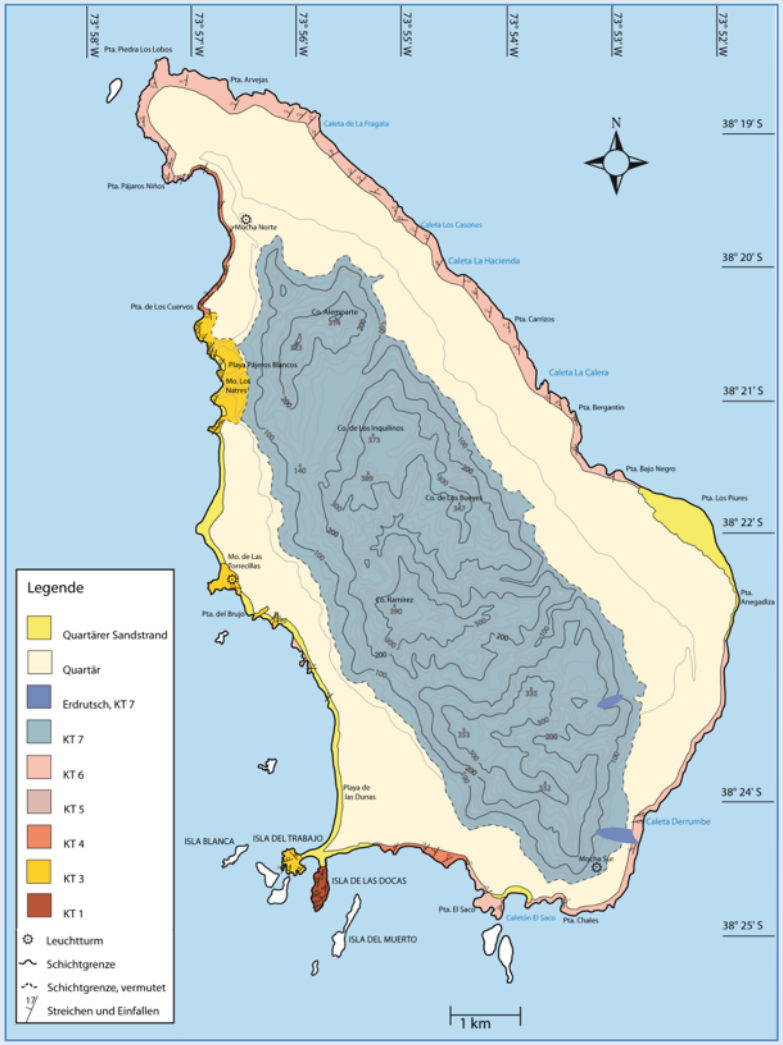
by Sonja Reich

THROUGHFLOW

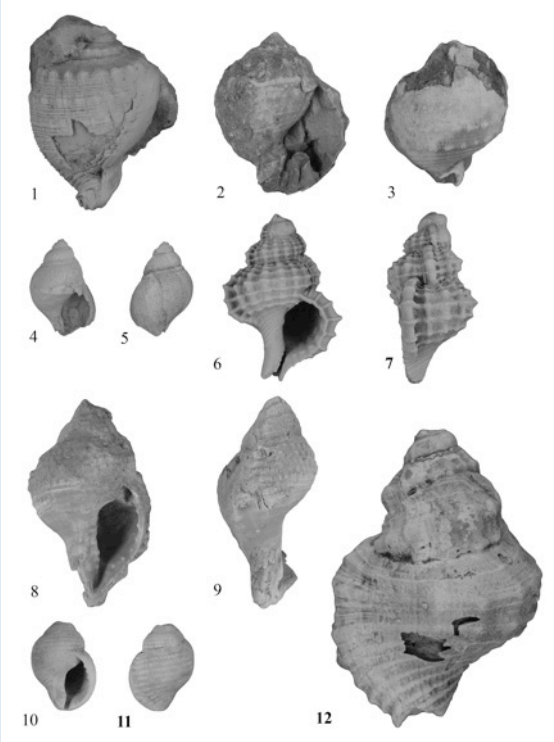
Former work: Stratigraphy, bathymetrie and molluscan fauna of the marine Neogene sediments of Mocha Island, south-central Chile



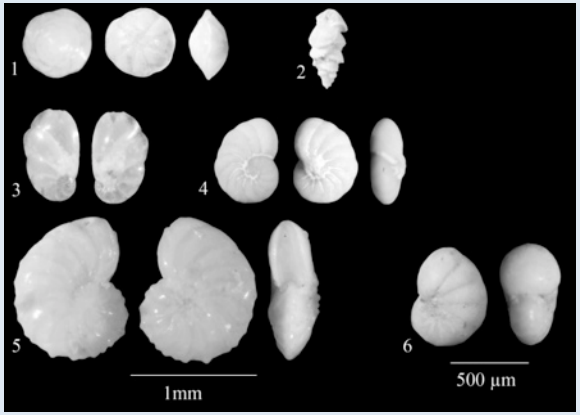
Work on Mocha Island: mapping of sedimentary units, documentation of sedimentary structures, trace fossils and macromolluscs, collection of fossil and bulk samples



Mocha Island: Faunal documentation



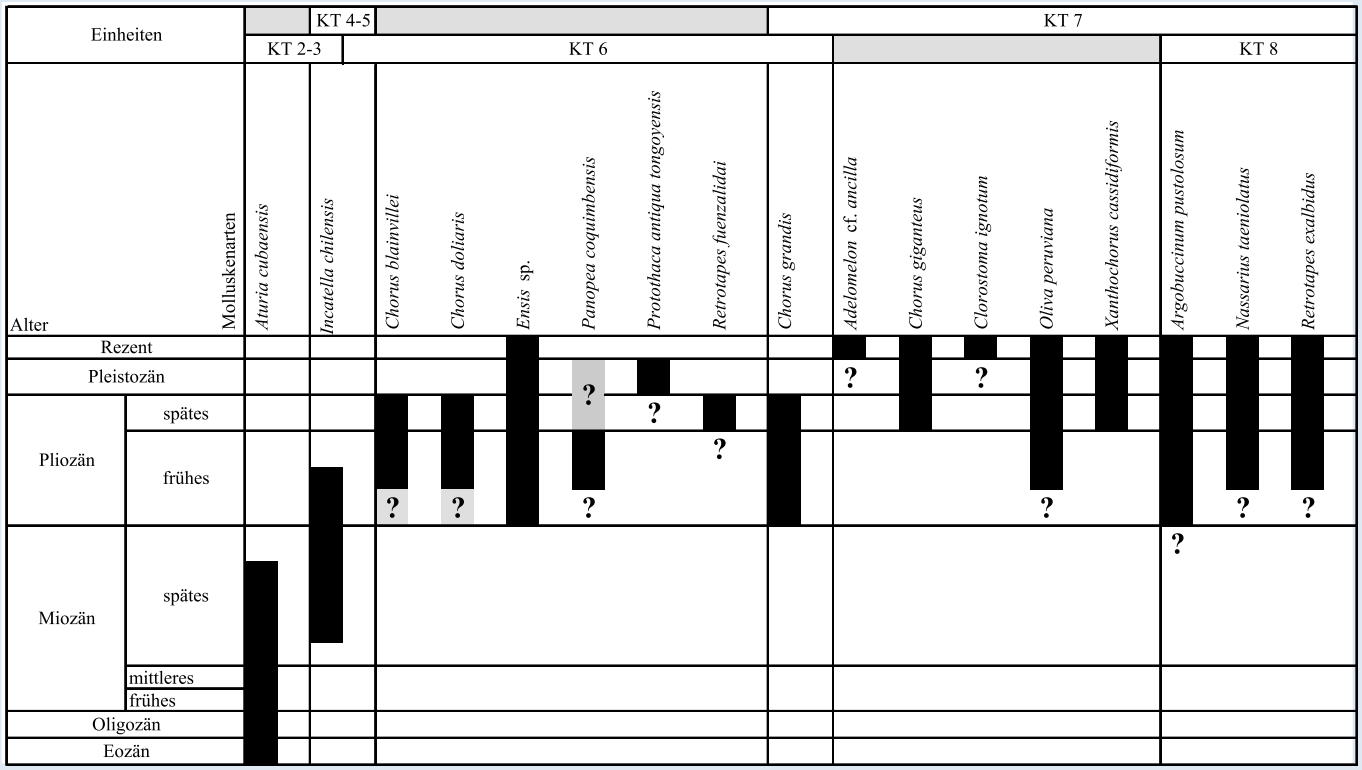
Cassiodea. 1 *Echinophoria* cf. *monilifera*, size: 38 mm. 2-3 *Echinophoria hupeana* sp. nov. 2 size: 33 mm. 3 size: 30 mm. 4-5 *Dalium* sp., size: 21 mm. 6-7 *Ranella olearium*, size: 34 mm. 8-11 *Argobuccinum pustulosom*. 8-9 size: 44 mm. 10-11 juveniles Exemplar, size: 28 mm. 12 *Distorsio* cf. *ringens*, size: 60 mm.



Selected benthic foraminifers with an upper depth limit on the inner shelf. 1 *Bucella* sp. 2 *Bulimina denudata* 3 *Cancris auriculus* 4 *Nonionella miocenica* 5 *Zeaflorilus parri 6 Pseudononion papillatum*

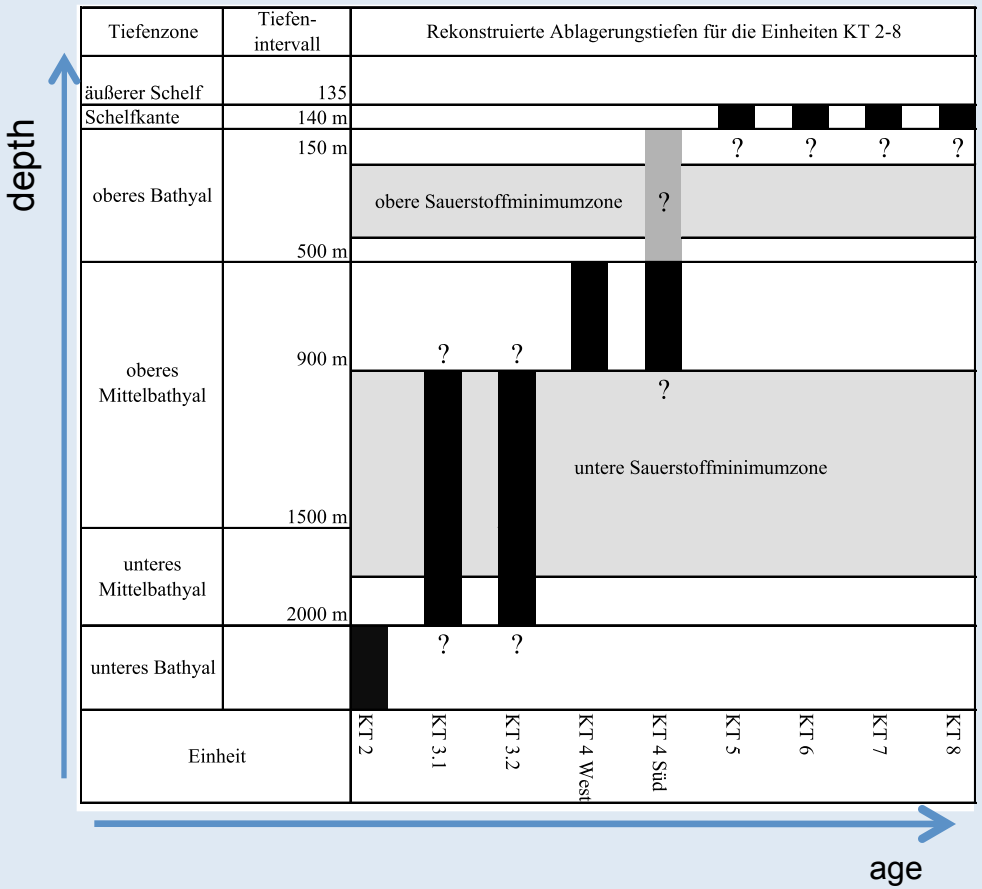
Documentation of the mollusk fauna
Documentation of foraminifers with stratigraphic or bathymetric relevance

Mocha Island: Results in stratigraphy and bathymetrie



Stratigraphy based on mollusks supported by planctonic foraminifers

Mocha Island: Results in stratigraphy and bathymetrie



Palaeobathymetrie based on sedimentology (incl. trace fossils) and benthic foraminifers

Actual work: Closing the gateway and the diversification of shallow marine mollusk faunas

Aims

- Assessment of the development of molluscan diversity in shallow water biotopes in the Miocene of Indonesia
- Understanding the timing and the depositional context of the origin of the highly diverse faunas occuring in the Indo-Pacific

Cardita sp.

Actual work: Closing the gateway and the diversification of shallow marine mollusk faunas

How to attain these aims?

- Documentation of mollusk assemblages in sea grass and macroalgae habitats in the Miocene of Indonesia
- Assession of the taphonomical character and sedimentological context of the fossil faunas
- Comparison to modern faunas

Cardita sp.

A fossil mollusc assemblage of Banjung Ante, Java

Outcrop Banjung Ante, 2006 (Fotos: W. Renema)

A fossil mollusc assemblage of Banjung Ante, Java

The Banjung-Ante sample: ~140 gastropod species of 39 different families(>3500 individuals)

Rissoina indrai Beets, 1941 (>1200 specimens)

Bittium sp. (540 specimens)

Collonista sp. (360 specimens)

A fossil mollusc assemblage of Banjung Ante, Java: Ecology

Ecological groups:

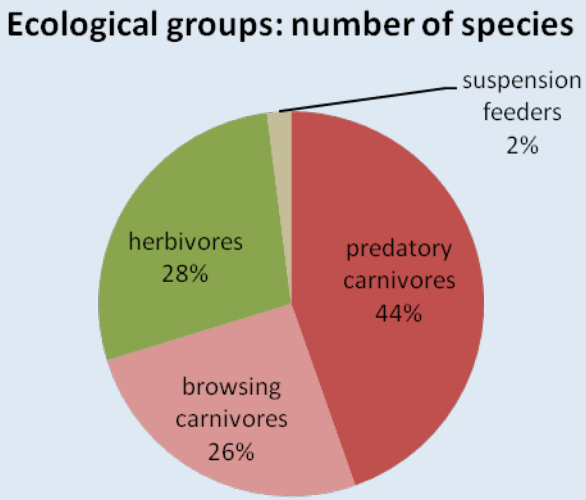
Browsing carnivores
Turbonilla (*Turbonilla*) sp.

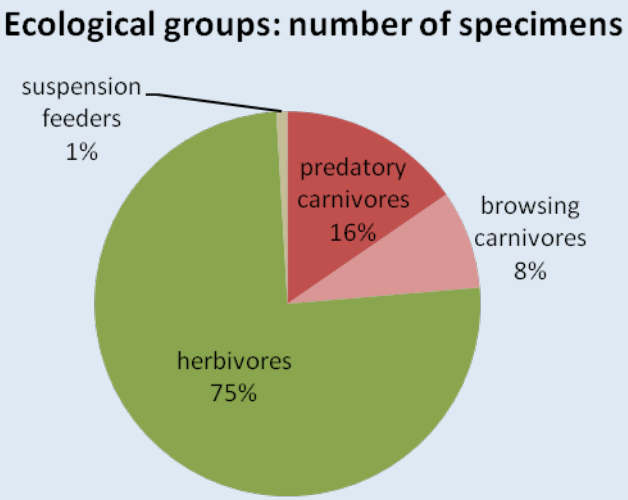
Herbivores
Bittium sp.

Predatory carnivores
Crassispira molengraaffi
Martin, 1916

Filter feeders
Archimediella spolongensis
Martin, 1916

A fossil mollusc assemblage of Banjung Ante, Java: Ecology





- a high number of carnivores species reflects a high diversity of prey species
- a low number of herbivores species combined with a high number of individuals possibly reflects a higher competition between herbivores resulting in fewer, but very abundant species

Thank you for your attention!

Lautoconus? *arntzenii* Martin, 1916