

## Taxonomy and palaeobiogeography of the Cenozoic Euro-Mediterranean rissoid gastropod *Galeodinopsis* and its relationship with close genera

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The investigation of the Late Paleogene to Late Neogene species of rissoid gastropod *Galeodinopsis* in the Euro-Mediterranean area has supported the hypothesis that this genus is an intermediate form between two well-known rissoids, *Alvinia* and *Manzonina*. We recognized four species of *Galeodinopsis*: *G. biangulata*, *G. germanica* sp. nov., *G. semperi* (new name for *Rissoa duboisii*), and *G. tiberiana*. The oldest (very Late Eocene/Oligocene) representatives of *Galeodinopsis*, *G. biangulata* and *G. semperi*, share similar shell shape and microsculpture with *Alvinia*. This suggests that *Galeodinopsis* originated from some Eocene species related to *Alvinia*. The new species represents the first occurrence within *Galeodinopsis* of a combination of characters very close to those of *Manzonina*, above all the typical pitted microsculpture. We hypothesize that *Manzonina* evolved from *Galeodinopsis* rather than from the genera *Alvinia* or *Alvinia*, as previously supposed. *Galeodinopsis* originated during the very Late Eocene/Oligocene in the North Sea Basin. Afterwards it underwent a strong southward shift to the mid-high east Atlantic and the Mediterranean area, during the Mio-Pliocene, and to the Recent tropical eastern Atlantic coasts, where the type species *G. tiberiana* still lives. The shift likely was due to a combination of climate cooling and palaeogeographical changes. The distribution of *G. biangulata* suggests that connections between the North Sea Basin and the Atlantic domain opened through the Channel area at least during the Early Oligocene, earlier than indicated previously. The distribution of *Manzonina moulinsi* supports the idea of a southern connection to the Atlantic Aquitaine Basin via the Rhine Graben during the Late Oligocene. From a palaeoecological point of view, *Galeodinopsis* includes warm species with planktotrophic larval development that are typical of the shelf environment in fully marine conditions.

**Key words:** Gastropoda, Rissoidae, taxonomy, palaeogeography, biogeography, Cenozoic, North Sea, Atlantic connection, Europe.

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