

The features described above are adaptations to the deep-burrowing mode of life already described for these lamellibranchs. They are also present in some degree in *Panopea*, which has united mantle margins but gapes widely at both ends and does not require the rocking motion of the valves. It seems likely that *Zenatiinae* burrow to a depth of about a foot, but I have no information on this.

*Resania* has a very unusual morphology for a Mactrid, resembling the Solenid *Siliqua*, with the anterior end longer than the posterior and with a short pallial sinus. This leads to the supposition that it occupies an unusual ecological niche. The Recent *R. lanceolata* is uncommon at most localities, and is found only on moderately exposed to oceanic sand beaches. The only beaches where the species seems to be common are Ohope Beach, Whakatane, and New Brighton Beach, Christchurch. These are two of the flattest ocean beaches in New Zealand, and are exposed to an almost constant surf. All fossil specimens are in sandstone or conglomerate.

Dall (1899:85) describes the foot of *R. lanceolata* as being "compressed, sharp-edged, pointed, large and muscular, with no obvious byssal groove, and of a lanceolate outline". The slender naked siphons are comparatively short, as may be inferred from the short pallial sinus, and can probably be retracted completely within the shell. The posterior dorsal gape and direction of the pallial sinus towards this gape indicate that the siphons are protruded a little upwards, at an angle of about 12 degrees to the long axis of the shell. From this it may be inferred that the animal lives with its long axis parallel to the surface of the sand, rather than normal to it as in *Zenatia* and *Lutraria*. From the large foot, separate mantle margins and short retractable siphons I conclude that *Resania* is a very active lamellibranch, burrowing to very shallow depths only. Also, the narrow lanceolate shape is obviously better adapted to passage through sand than is that of most Mactrids. The valves rock a small amount as described above for *Mya*, *Lutraria* and *Zenatia*, and as there is a gape to allow for the siphons it seems likely that this rocking is to accommodate the foot.

From this it seems likely that *Resania* is adapted to life in the wave zone of exposed sand beaches, ploughing actively through the sand about an inch below the surface. Probably the animal has to burrow quickly when exposed by waves, to avoid being washed away.

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