
Morphologic Variation within the Bivalve *Odontogryphaea thirsae* (Gabb, 1861) and Late Paleocene Wilcox Correlation in the Northern Gulf Coastal Province, USA

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ABSTRACT

Recognition of morphologic variation in the oyster *Odontogryphaea thirsae* (Gabb, 1861) permits Late Paleocene marker-fossil correlation of *O. thirsae* beds in the Nanafalia Formation of Mississippi-Alabama-Georgia, Marthaville Formation of Louisiana, and certain subsurface lower Wilcox units of the northern Gulf Coastal Province. Major variations in *O. thirsae* are attributed to morphologic differences between shell exterior and interior, opposite valves, and three ontogenetic growth stages. (1) Larval stage is represented by prodissoconch valves which average ~0.4 mm (~0.016 in) in height, exhibit fine growth lines, and have narrow, ridge-like beaks that point posteriorly. (2) Juvenile stage is expressed by dissoconch valves that are up to 19 mm (0.75 in) in height with indistinct growth lines; left valve has flat growth band 1-2 mm (0.04-0.08 in) in width surrounding the beak. (3) Adult stage is represented by dissoconch valves that are >19 mm (>0.75 in) in height with prominent growth lines; left valve displays irregular (scaly) growth lines and keel-like terebratuloid fold; in contrast, right valve exhibits regular growth lines and medial sulcus.

The *Odontogryphaea thirsae* beds in subsurface central Louisiana occur near the A-1–Big Shale contact. These oyster beds are expressed on electric logs by a high resistivity response in conjunction with a high density sonic-log peak. The *O. thirsae* beds are Late Paleocene in age (~57 Ma), and they represent a normal-marine, inner shelf paleoenvironment.