

Mitochondrial DNA and morphological identification of a new cupped oyster species



Though *Crassostrea* oysters have been distributed and cultured worldwide, their taxonomy is still difficult and often inaccurately determined because of the high level of phenotypic plasticity of the shell morphology. With the help of mitochondrial DNA, two novel species of *Crassostrea* oysters (*C. hongkongensis* and *C. zhanjiangensis*) were recently recognized, which suggests that the species diversity of Indo-Pacific oysters could be underestimated. Utilizing a combination of shell characteristics, a molecular marker (mitochondrial *cox1* gene) and phylogenetic analysis, we identified a mangrove-distributed novel *Crassostrea* oyster species, *C. dianbaiensis*. The shell morphology of the new species is phenoplastic, as seen in other congeneric oysters. The left valve of this oyster is usually deeply cupped, and the right valve is usually slightly concave. The body size is classified as medium and is approximately 5–10 cm in height (estimated from 20 individuals). One distinctive feature of *C. dianbaiensis* is that the adductor muscle scars vary in color from dark purple to white in the right valve, but always appear white in the left valve. Based on the *cox1*

phylogenetic tree, *C. dianbaiensis* is inferred to be a new member of the Southeast Asia tropical oysters and is believed to be the northernmost distributed species among the tropical oysters. This study provided basal information for future studies, which are necessary to better understand the faunal characteristics, population and roles of this oyster in nearshore ecosystems.

Auteurs du document : Jianjun Xia, Xiangyun Wu, Shu Xiao, Ziniu Yu

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