



Thesis

Title: Assimilation Efficiency, Gut Morphology and pH, and Digestive Enzyme Activity of *Atherinops affinis* (Teleostei: Atherinopsidae), a Stomachless Omnivore Feeding on Macro Algae

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ABSTRACT

ABSTRACT. *Atherinops affinis* (Atherinopsidae) lives in various coastal habitats in the eastern North Pacific. Its small, dorsally-positioned mouth seems suited for picking invertebrates but not for browsing on macro algae. *A. affinis* has a short, simple gut and no obvious stomach or physical mechanisms for breaking down algal cells. However, its diet in estuaries is mainly green macro algae. Investigating this seeming paradox by studying the digestive physiology of *A. affinis* and its capacity for herbivory. Results showed that *A. affinis* from an estuary had (1) assimilation efficiencies from a green algal diet of 89% (protein), 84% (nitrogen), 74% (carbon) 80% (energy), (2) an alkaline gut and no pepsin activity, and (3) relatively high amylase activity and low trypsin and lipase activities. Based on its digestive mechanisms, *A. affinis* appears to be capable of functional herbivory and to fit the Type III category in a classification of herbivorous fishes.

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