

Life history of *Ammonia* "beccarii" forma 1 on hard substrates in the Ohashi River, southwestern Japan

Hiroyuki Takata^{1*}, Koji SETO¹, Kengo KURATA¹, Jun'ichi HIRATSUKA²,
David L. DETTMAN³, Boo-Keun KHIM⁴

¹ReCCLE, Shimane Univ., ²Shimane Research Group of Wildlife, ³Geosciences Department, Univ. Arizona,
⁴MRI, Pusan National Univ.

The genus *Ammonia* (Foraminifera) is a common and cosmopolitan taxon in shallow marine and brackish water environments. *Ammonia* spp. commonly occupy shallow infaunal habitats, but some forms are also found among algae or attached macrobenthos on hard substrates. We reported the occurrence of *Ammonia* "beccarii" forma 1 in attached macrobenthos colonies on the hard substrate of a bridge pier in a Japanese tidal river and suggested that they have an almost free-living life style within attached macrobenthos colonies and, thus, might be derived from the surface sediment population. However, knowledge of the population level and life history of bridge pier *A.* "beccarii" forma 1 is still limited. We investigated the life history of *A.* "beccarii" forma 1 inhabiting a bridge pier and surface sediments in the Ohashi River in southwestern Japan based on seasonal changes in the standing crop and body size distribution.

Seasonal changes in both the standing crop and body size distribution of *A.* "beccarii" forma 1 were generally different between the bridge pier and surface sediments. There was no statistical correlation between the standing crop of bridge pier *A.* "beccarii" forma 1 and the abundance of attached macrobenthos on the bridge pier, based on Spearman's rank coefficient. This finding suggests that bridge pier foraminifera do not simply depend on the abundance of attached macrobenthos on a hard substrate. The presence of small bridge pier individuals indicated that major reproduction occurred in spring and fall during the study period. *A.* "beccarii" forma 1 from the bridge pier can likely breed in the macrobenthos colonies on hard substrates (i.e., in-situ) and therefore are probably able to rapidly rebuild a population, even when it has been diminished by physical disturbance (e.g., freshening event). Thus, these characteristics of *A.* "beccarii" forma 1 on the bridge pier likely enable the population to persist in an ephemeral habitat within macrobenthos colonies and an unstable brackish-water environment.

The geochemical signature of these foraminiferal tests (e.g., carbon and oxygen isotope ratios) can be used in reconstructing the water-column chemistry of brackish water (Takata et al., 2009 [JFR]). Stable isotope ratios correlate well with variation in modern salinities, and can be used to investigate paleosalinity.