

**FORAMINIFERANS AS FOOD FOR CEPHALASPIDEANS  
(GASTROPODA: OPISTHOBRANCHIA), WITH NOTES ON  
SECONDARY TESTS AROUND CALCAREOUS  
FORAMINIFERANS**

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**ABSTRACT**

The food of four species of Cephalaspidea (*Philine aperta*, *Philine denticulata*, *Philine scabra* and *Cylichna cylindracea*) was studied in animals collected on silty clay bottoms at 20-35 m depth on the west coast of Sweden. The specimens were dissected. Only calcareous foraminiferans were found in the gizzard. Very small amounts of foreign particles were ingested. The foraminiferans were crushed in the gizzard and dissolved during their passage through the intestine and no remains of them could be identified in the fecal pellets. The three dominant foraminiferans in the habitat were one calcareous species, *Ammonia batavus* and two agglutinating species, *Ammoscalaria pseudospiralis* and *Ammotium cassis*. The test (shell) material of the latter two species was sand grains (quartz). It was inferred that the gastropods avoid agglutinating foraminiferans as food. Many calcareous but not agglutinating foraminiferans surround themselves with a "secondary test", a cyst or covering of foreign particles around the test. This structure has earlier been called a "reproductive cyst" or "feeding cyst" in some species. "Secondary tests" are primarily connected with feeding, but might also be a preadaptation for other purposes. It might, in species like *Ammonia batavus*, have become a kind of antipredatory device or mimicry. A predator might conceive such a species as an agglutinating species and neglect it. The secondary test is a delicate structure in most species and is easily destroyed by the rough sampling and handling methods conventionally used. This structure is therefore not very well known.