



TAXONOMY OF SALT MARSH SNAIL, OVATELLA
MYOSOTIS, IN CENTRAL CALIFORNIA

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Early in the course of an investigation of the ecology of the ellobiid, *Ovatella myosotis*, in central California salt marshes, it became apparent that a number of different names are in current usage for this species. Most commonly applied is *Phytia setifer* Cooper, 1872, but also to be found are *Phytia myosotis*, *Alexia setifer* and *Alexia myosotis*. The following is an attempt to clarify this situation.

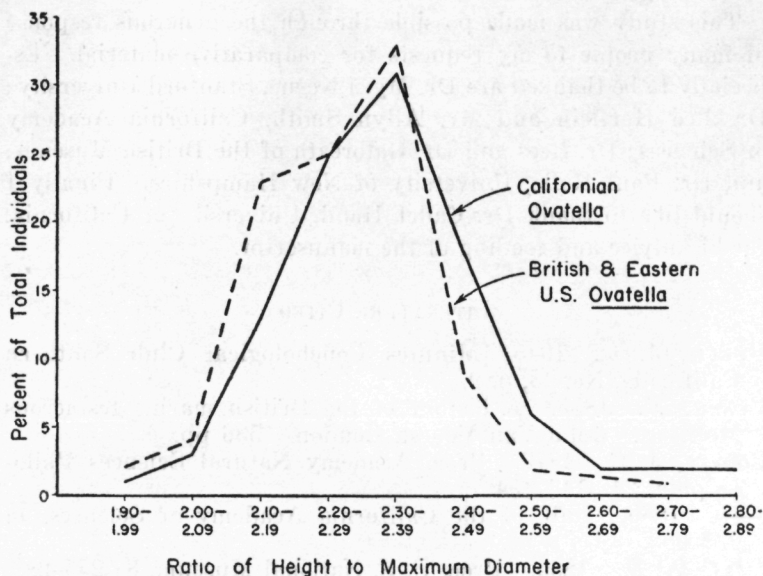
The history of the genus *Phytia* Gray 1821 has been recently reviewed by Watson (1943). In confirming the observations of several previous workers, particularly those of Woodward (1903), he made the following points: (1) The generic name *Alexia* Leach is clearly unavailable for this group since it had been used by Stephens for a genus of Coleoptera before its first publication by Gray in 1847, and (2) the name *Phytia* originated through Gray's unintentional misspelling of *Pythia* and hence must be dropped under article 19 of the International Rules. While his first point must be considered definitely established, some doubt has been expressed of his interpretation of the mode of origin of *Phytia* (see Burch, 1945). Although direct proof of Gray's original intent appears lacking, seemingly the indirect evidence on this point, as amassed by Watson, is quite conclusive. Particularly pertinent is the fact that Gray, himself, twice corrected his error by listing *Pythia* Gray, 1821 (not *Phytia*) in the synonymy of this genus (in 1847, *Pythia* for *Alexia* and in 1857 for *Conovulus*). In place of *Phytia*, Watson proposed *Ovatella* Bivona Bernardi, 1832, as the oldest available name for this genus, in so doing accepting *Ovatella punctata* Bivona Bernardi, 1832 (= *Auricula firmini* Pyaredeu, 1826) as the type of this originally typeless and heterogeneous assemblage. Watson's suggestion, however, has not met with universal adoption, and thus some, such as Harry (1947) and Morton (1955), follow him in the use of *Ovatella* while others, including Burch (1945) and Morrison (1951), retain *Phytia*. Watson is followed here in the application of the name *Ovatella*, not only because such a change has been shown to be technically necessary, but also

because, as pointed out by Morton (1955), this eliminates the frequent source of confusion inherent in the retention of two such similar names as *Phytia* and *Pythia* in the Ellobiidae.

The trivial name *setifer* has had a rather confusing history. In his original description of *Alexia setifer* Cooper (1872) stated, "Shell very similar to *A. myosotis* (of the northern Atlantic states) but the young provided with short deciduous bristles arranged in a spiral line just in front of the suture." Such bristles, however, had long been known in the better preserved specimens of *Ovatella myosotis* (see Clarke, 1855). Dall (1885), after comparing the shells of the two forms, decided that they were identical and listed *Alexia setifer* as a synonym of *Alexia myosotis*. In 1894, Cooper, apparently accepting Dall's observations, listed this form as *Alexia myosotis*, var. *setifer* Cooper, 1872. With the question apparently settled then, Dall (1921) inexplicably resurrected *Phytia setifer* as a distinct species. In this he has been followed by most later workers such as Oldroyd (1927), Keen (1937), and Morrison (1950). Hanna (1939), however, included *Phytia myosotis* in his list of "Exotic Mollusca in California" with the statement that no recent published record of a careful comparison of shells could be found. Burch (1945) recently has discussed this problem, and while retaining *Phytia setifer* as a distinct species, he expressed the need of a comparative study to settle this question.

Such a study was undertaken by the author. Forty specimens of *Ovatella myosotis* from Europe and 12 specimens from the east coast of the United States were compared with over 300 California specimens collected from San Francisco Bay, Bodega Bay and Elkhorn Slough. In making this comparison, specimens of height greater than 6.8 mm., possessing a thickened outer lip, were arbitrarily considered to be mature. The possession of a thickened outer lip was not invariably an adequate indication of maturity. In the first place, a thin outer lip was not found to be a certain indication of sexual immaturity since such individuals were frequently found copulating. Furthermore, the resumption of growth in individuals with a thickened outer lip, with apparent resorption of the thickening, was found not to be uncommon.

Comparison of the two forms revealed complete uniformity with respect to the following characters:



Color: Hyaline through brown and purple, with complete intergradation between. Apex: Asymmetrical, exhibiting reduced heterostrophy. Sculpture: Apical bulb smooth, toward end of first whorl acquiring spiral punctuations which in the third and later whorls are obscured by faint longitudinal striations. Bristles present below the suture. Apertural teeth: Inner lip (columella) 2-4. Outer lip 0-3.¹

In addition the ratio of height to maximum diameter was computed for all specimens. The results are plotted in figure 1, which compares on a percent basis the British and eastern U. S. samples with the California specimens.

From the foregoing, it can be seen that there is sufficient uniformity and/or overlap in all critical characters examined to demand the decision that the two forms are conspecific. Therefore, I suggest that the form previously known as *Phytia setifer* Cooper, 1872 should be designated as *Ovatella myosotis* Draparnaud.

¹ In Europe two subspecies of *Ovatella myosotis* have been recognized on the basis of the number of teeth on the outer lip. *Ovatella myosotis myosotis* possesses 0-3 teeth and *Ovatella myosotis denticulatus* has 3-6 teeth on the outer lip. There is no evidence that such a distinction can be made in Californian material, and all specimens examined must be referred to *Ovatella myosotis myosotis*.

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LITERATURE CITED

- BURCH, J. Q. 1945. Minutes Conchological Club Southern California, No. 48, p. 9.
- CLARK, W. 1855. A history of the British marine testaceous Mollusca. John Van Voorst, London. 536 pp.
- COOPER, J. G. 1872. Proc. Academy Natural Sciences Philadelphia, 24: 143-154.
- . 1886. Bull. of the California Academy of Sciences, 1: 235-255.
- DALL, W. H. 1885. Proc. U. S. National Museum, 8: 255-289.
- . 1921. Bull. 112, U. S. National Museum.
- GRAY, J. E. 1821. London Medical Repository, 15: 299-239.
- . 1857. in W. D. Turton's Manual of the land and fresh water shells of the British Isles. Longman, Brown et al., London. 335 pp.
- HANNA, D. G. 1939. Bull. Dept. of Agriculture, State of California, 28: 298-321.
- HARRY, H. W. 1951. Proc. California Zoological Club, 2: 7-14.
- KEEN, A. M. 1937. An abridged checklist and bibliography of west American marine Mollusca. Stanford Univ. Press. 84 pp.
- MORRISON, J. P. E. 1950. News bull. and annual report of the American Malac. Union.
- MORTON, J. E. 1955. Phil. trans. of the Royal Society of London. Series B, 239: 89-160.
- OLDROYD, I. S. 1927. The marine shells of the west coast of North America. Vol. 2, part 1, 297 pp., Stanford Univ. Press.
- WATSON, H. 1943. J. Conchology, 22: 13-22.
- WOODWARD, B. B. 1903. J. Conchology, 10: 352-367.