

COMMENTS ON SUBFAMILIAL RELATIONSHIPS IN TWO AMPHI-AMERICAN
MURICID GENERA – *ACANTHOTROPHON* AND *ATTILIOSA*

GEORGE E. RADWIN and ANTHONY D'ATTILIO
NATURAL HISTORY MUSEUM
SAN DIEGO, CALIFORNIA

Vokes (1976) has treated the Recent and fossil species of the genus *Attiliosa* extensively, especially as they occur in the western Atlantic. A reading of that paper has caused us to reassess the subfamilial assignments of two of the Recent western Atlantic species and their relationships to two or more eastern Pacific species.

Generic and subfamilial assignments have long had a problematical status in the family Muricidae. This is almost certainly due to the extensive degree of apparent shell-morphological convergence found in the family as a whole and, in particular, among certain groups. One of these groups is the Trophoninae, although our use of this name should not be taken as an acceptance of the validity of such as a cohesive subfamily group. As has been noted by several authors (Radwin and D'Attilio, 1976; Vokes, 1976; Radwin, 1977), groups cited under this name in the literature are virtually all polyphyletic. Vokes (*Op. Cit.*, p. 118, 120) has persuasively expressed the view that the type species of *Trophon* (*Buccinum geversianum* Pallas) and its close relatives are phylogenetically distinct from northern hemisphere "Trophoninae," which she believes are derived from a *Poirieria*-like ancestor. This latter group may itself be polyphyletic, containing within it (according to Vokes and others) such diverse genera as *Acanthotrophon* Hertlein and Strong, 1951; *Ergalatax* Iredale, 1931; *Lataxienna* Joussemae, 1883; *Nipponotrophon* Kuroda and Habe, 1971; *Paziella* Joussemae, 1880; *Pazinotus*

E. H. Vokes, 1970; and *Poirieria* Joussemae, 1880, as well as seemingly more typical trophonoid genera such as *Boreotrophon* Fischer, 1884; *Trophonopsis* Bucquoy and Dautzenberg, 1882; *Pagodula* Monterosato, 1884; and *Actinotrophon* Dall, 1902.

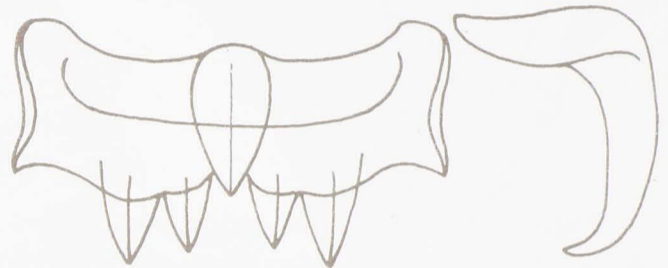


Figure 3a. *Acanthotrophon sentus* Berry; Sonora, Mexico.

In our recently published book on the Muricidae (Radwin and D'Attilio, 1976), a specimen we figured (pl. 3, fig. 10) as *Attiliosa philippiana* (Dall, 1889) is not that species. The type lot of *A. philippiana* contains two specimens and, as Vokes points out, the two represent distinct species. She figured the appropriate lectotype (1976, pl. 8, fig. 12) as seen in the original illustration (Dall, 1902, pl. 29, fig. 5). The other syntype represents one of a large number of forms of "*Muricidea*" *striata* Gabb, 1873 (figs. 1, 2), based on a fossil from the Mio-

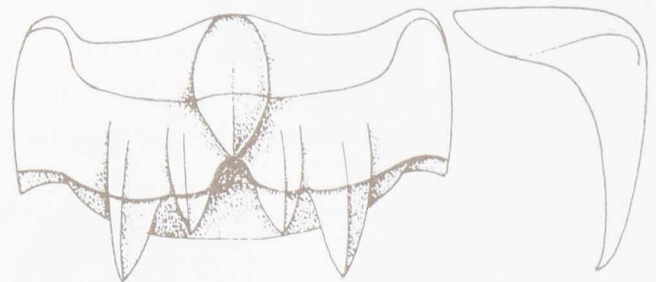


Figure 4a. *Acanthotrophon carduus* (Broderip); Sta. Cruz, Galápagos Islands.

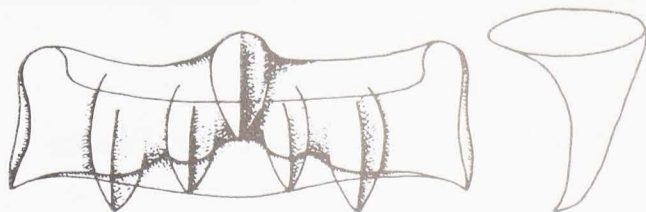


Figure 1a. *Acanthotrophon striatus* (Gabb); Naples, Florida.

cene of the Dominican Republic, which is living today in the western Atlantic. Studying the varying shell forms of this species, as illustrated by Vokes, we were struck with the fact that only very few of these could be

easily confused with *A. philippiana* (fig. 6) and that the latter species, although known from only a small number of specimens, seems to be conservative in shell morphology. Coincidentally, a cognate species, similar in most respects to *A. philippiana* occurs in the eastern Pacific. This is *Attiliosa nodulosa* (A. Adams, 1855)* (fig. 5), the type of the genus.

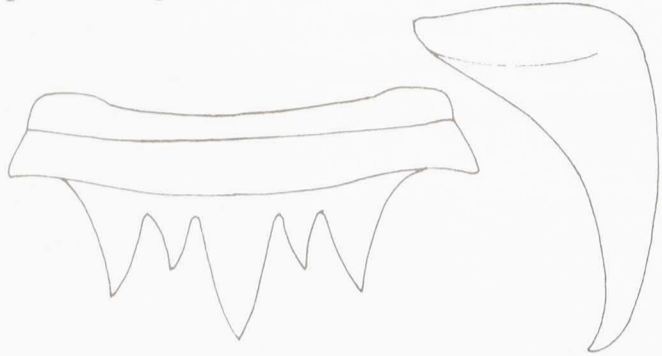


Figure 5a. *Attiliosa nodulosa* (Adams); Angel de la Guardia, Mexico.

As Vokes noted, the eastern Pacific also has a complex of forms (or species) that is comparable to the "*Attiliosa*" *striata* complex of the western Atlantic. These generally have been assigned to the genus *Acanthotrophon* Hertlein and Strong, 1951. Names applied to members of this complex include *Acanthotrophon carduus* (Broderip, 1833) (fig. 4), *A. sentus* Berry, 1969 (fig. 3) and *A. sorenseni* Hertlein and Strong, 1951, the type of the genus. Whether these are each distinct species or, as in the case of the *A. striata* complex, all forms of a variable species, these Panamic forms are remarkably similar to several examples of *A. striata* that are illustrated by Vokes.

Although we have long believed that in the Muricidae congeneric species cannot be distinguished from each other on the basis of

their radular dentitions, our radular studies have indicated a considerably discrepancy between the radular dentitions of *Acanthotrophon* species and those generally assigned

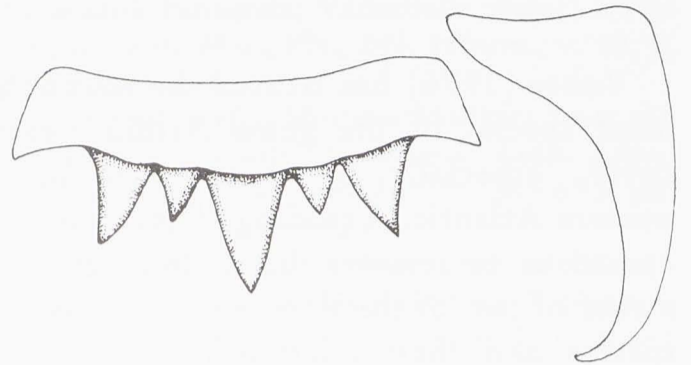


Figure 6a. *Attiliosa philippiana* (Dall); Cabo Catoche, Mexico.

to *Attiliosa*. We had indicated previously a muricine placement for *Acanthotrophon*, but now, on the basis of new studies of the radulae of *Acanthotrophon* species from the eastern Pacific (figs. 3a, 4a) and of *Acanthotrophon striatus* (fig. 1a), for this we believe to be its correct generic placement, we feel that this genus must be reassigned to the muricid subfamily Muricopsinae. The radular dentition of the true *Attiliosa* species (figs. 5a, 6a, 7) are so typically muricine that, in this case, we can separate species by distinguishing between genera that are, in turn, assignable to different muricid subfamilies.

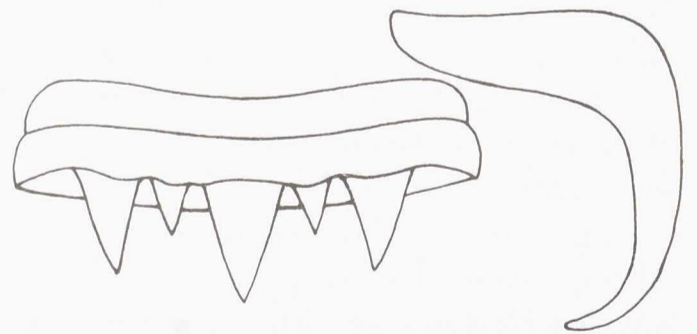
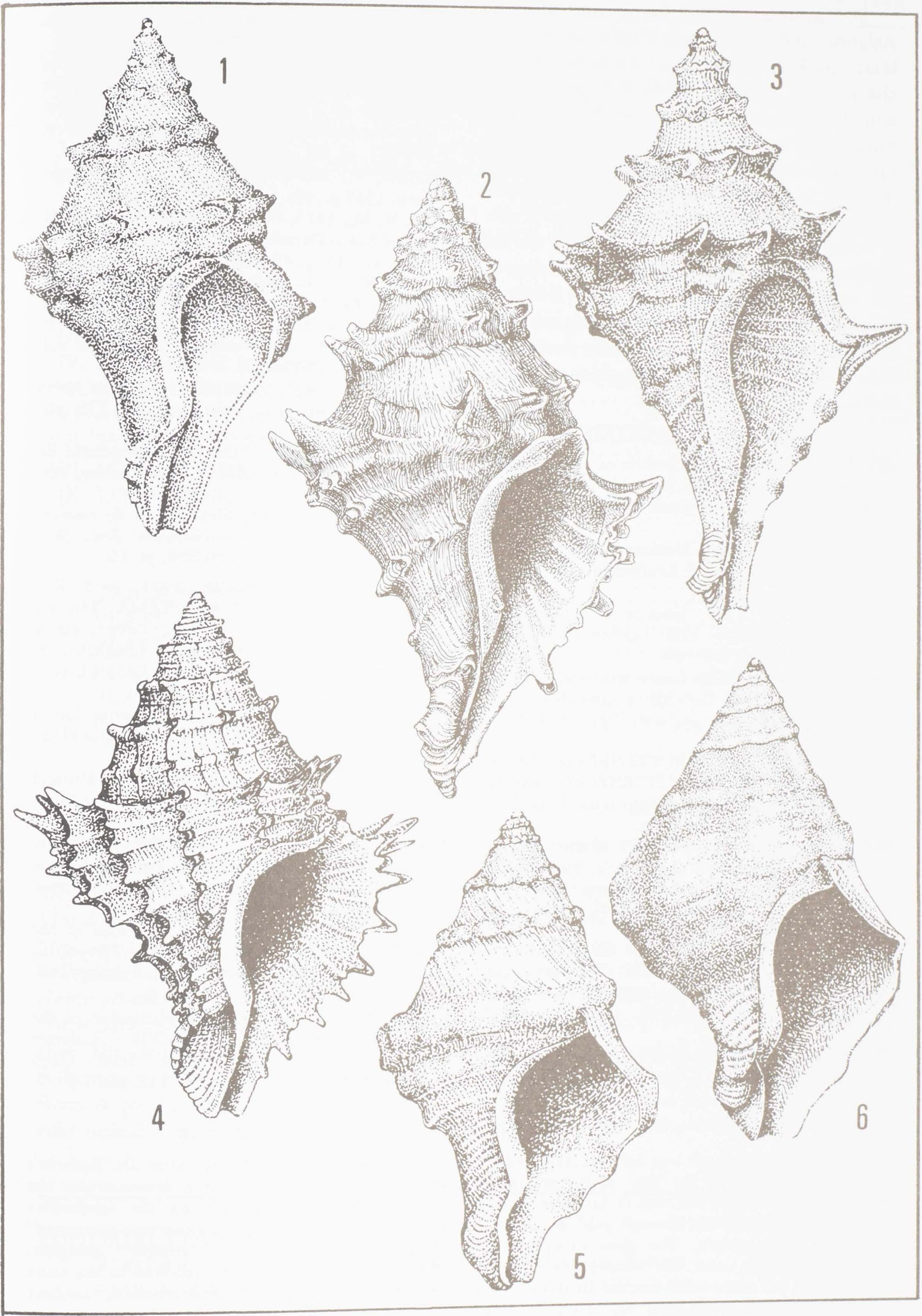


Figure 7. *Attiliosa aldridgei* (Usticke); La Panguera, Puerto Rico.

*Formerly *A. incompta* Berry, 1960, see Bullock, 1976.

Figure

1. *Acanthotrophon striatus* (Gabb); Naples, Florida (X4)
2. *Acanthotrophon striatus* (Gabb); TU 1240, Mofn Formation. Pleistocene; Puerto Limon, Costa Rica (X4)
3. *Acanthotrophon sentus* Berry; Sonora, Mexico (X4)
4. *Acanthotrophon carduus* (Broderip); Mazatlan, Mexico (X3)
5. *Attiliosa nodulosa* (Adams); Angel de la Guardia, Mexico (X3)
6. *Attiliosa philippiana* (Dall); Cabo Catoche, Mexico (Lectotype) (X5)



To summarize: In both the western Atlantic and the eastern Pacific there is at least one Recent species of *Attiliosa* (in fact, the western Atlantic has two: *A. philippiana* and *A. aldridgei*). In each case the shell morphology is comparatively constant and the radular dentition indicates a firm placement in the Muricinae. In both the western Atlantic and the eastern Pacific there is also a complex series of subtly variable forms grading one into another, some convergent in shell morphology with the *Attiliosa* species. These complexes are assignable to *Acanthotrophon* and have radular dentitions that clearly show muricopsine characteristics.

LITERATURE CITED

- ADAMS, A., 1855, Descriptions of twenty-seven new species of shells from the collection of Hugh Cuming, Esq.: Zool. Soc. London, Proc. for 1854, p. 311-317.
- BERRY, S. S., 1960, Notices of new eastern Pacific Mollusca — IV: Leaflets in Malacol., vol. 1, no. 19, p. 115-122.
- BERRY, S. S., 1969, Notices of new eastern Pacific Mollusca — VIII: Leaflets in Malacol., vol. 1, no. 26, p. 159-166.
- BRODERIP, W. J., 1833, Characters of new species of Mollusca and Conchifera collected by H. Cuming: Zool. Soc. London, Proc. for 1832, p. 173-179.
- BUCQUOY, E., and P. DAUTZENBERG, 1882, in E. BUCQUOY, P. DAUTZENBERG, and G. DOLLFUS, Mollusques Marins du Roussillon. Bailliere, Paris, vol. 1, 540 p.
- BULLOCK, R. L., 1976, On the identity of two supposed fasciolariid gastropods, *Fusus mexicanus* Reeve, 1848, and *Peristernia nodulosa* A. Adams, 1855: Tulane Stud. Geol. Paleont., vol. 12, no. 3, p. 133-136, pl. 1.
- DALL, W. H., 1889, Report of the Mollusca. II, Gastropods, Report on the dredgings... by U.S. Coast Survey steamer "Blake": Mus. Comp. Zool. Harvard, Bull., vol. 18, p. 1-492, pls. 10-40.
- DALL, W. H., 1902, Illustrations and descriptions of new, unfigured or imperfectly known shells, chiefly American, in the U. S. National Museum: U.S. Nat. Mus., Proc., vol. 24, no. 1264, p. 499-566, pls. 27-40.
- EMERSON, W. K., 1968, Taxonomic placement of *Coralliophila incompta* Berry, 1960, with the proposal of a new genus, *Attiliosa* (Gastropoda: Muricacea): Veliger, vol. 7, no. 4, p. 379-381, pl. 53.
- FISCHER, P., 1884, Manuel de Conchyliologie. Paris, 1369 p., pls. 1-23.
- GABB, W. M., 1873, On the topography and geology of Santo Domingo: Amer. Phil. Soc., Trans., (N.S.) vol. 15, p. 49-259, 2 maps.
- HERTLEIN, L. G., and A. M. STRONG, 1951, Eastern Pacific expeditions of the N.Y. Zool. Soc., 43. Mollusks from the west coast of Mexico and Central America: Zoologica, vol. 36, no. 2, p. 67-120, pls. 1-11.
- IREDALE, T., 1931, Australian molluscan notes #1: Rec. Aust. Mus., vol. 18, p. 201-235, pls. 22-25.
- JOUSSEAUME, F., 1880, Division Méthodique de la famille des Purpuridés: Le Naturaliste, vol. 42, p. 335-336.
- JOUSSEAUME, F., 1883, Description de espèces et genre nouveaux de mollusques: Bull. Soc. Zool., Franc., vol. 8, p. 186-204, pl. 10.
- KURODA, T. and T. HABE, 1971, in T. KURODA, T. HABE, and K. OYAMA, The sea shells of Sagami Bay. Maruzen, Tokyo, xix & 741 p. (Japanese), and 489 p. (English); indexes, pp. 1-28 (Japanese), pp. 1-51 (Latin), pls. 1-121.
- MONTEROSATO, T. A., di, 1884, Nomenclatura generica e specifica di alcune Conchiglie Mediterranee. Palermo, 152 p.
- RADWIN, G. E., 1977, Trophoninae — Muricid subfamily or catch-all: Western Society of Malacologists, Annual Report, vol. 10, p. 12.
- RADWIN, G. E. and A. D'ATTILIO, 1976, Murex shells of the world; an illustrated guide to the Muricidae. Stanford University Press, Stanford, California, 284 p., pls. 1-32.
- VOKES, E. H., 1970, Cenozoic Muricidae of the western Atlantic region. Part V — *Pterynotus* and *Poirieria*: Tulane Stud. Geol. Paleont., vol. 8, no. 1, p. 1-50, pls. 1-7, 1 text fig.
- VOKES, E. H., 1976, Cenozoic Muricidae of the western Atlantic region. Part VII — *Calotrophon* and *Attiliosa*: Tulane Stud. Geol. Paleont., vol. 12, no. 3, p. 101-132, pls. 1-8.

EDITOR'S NOTE

The preceding paper was left uncompleted by George E. Radwin at the time of his premature death in September, 1977. Mr. D'Attilio requested that I see the manuscript through publication and I was happy to comply. The ideas expressed are those of Radwin and the illustrations are by D'Attilio. I am responsible for the final draft and any typographical errors that may have slipped by. The specimen from Moín, Costa Rica, shown in

figure 2, was collected by me after Dr. Radwin's death. It is included because it demonstrates the validity of his observations on the similarities between the Pacific "*carduus-sentus-sorenseni*" complex and the Atlantic "*striatus*" complex. They probably all should be referred to the same species for which *Acanthotrophon carduus* (Broderip) would be the oldest name.

Emily H. Vokes