Nonmarine Mollusks of Rongelap Atoll, Marshall Islands

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It has long been realized that the coral atolls and low islands of the Pacific possess a meager, limited, and characteristic snail fauna which are of little zoogeographical value (Pilsbry; 1900, 1916, Cooke; 1926). Cooke (1934) has described the terrestrial molluscan fauna of one of the typical lower islands; and recently Solem (1959) has listed the major molluscan elements of the atoll fauna.

In recent years the Marshall Islands served as a center for United States atomic testing. This large operation brought about many changes in the life of certain islands, including mass shiftings of human populations. In view of the possible influence of population movements and of testing on the fauna of an area, it might be helpful to record the available distribution records, not only to learn what is happening to the mollusks in the course of the nuclear tests but also to obtain a better knowledge of the fauna in this area.

Published records of nonmarine mollusks in the Marshall Islands are very scarce. Although this group is composed of 32 islands and 867 reefs (Robson, 1946), the nonmarine mollusks of only 2 of the islands have been reported. The Marshalls are a homogenous series of islands, with the highest elevation about 33 ft (Osborn, 1944). Consequently, these islands lack the more interesting and diverse land snails which are found on the higher islands, and it is not surprising that little has been written about this vast area.

Pease (1860) described six new species from Ebon which have since been reduced to two (see Cooke and Kondo, 1960: 180–191; H. B. Baker, 1940: 190; Pilsbry, 1917: 151–152). Schnee (1904) listed three land snails and one oncidiid slug from Jaluit. His paper was concerned primarily with vertebrates and only a few mollusks were collected. Since the paper of Pease from which most of the published Marshall Island records have been derived contains only descriptions of new species, and the Schnee records are only incidental, it is apparent that these records are incomplete. Recently Omphalotropis fragilis Pease has been recorded on two of the atolls (Marshall, 1950); and Abbott (1958) described a new subspecies from Eniwetok and also recorded it from two neighboring atolls, including Rongelap. Cooke and Kondo (1960), in their revision of the Tornatellinidae and Achatinellidae, supplied additional records for the area. Several records from the "Marshall Islands" which really refer to Nauru, stem from a paper by O. Boettger (1904). Prior to 1914 this island was part of the German Marshall Islands Protectorate, but is not generally considered geographically a part of the Marshall Islands.

Rongelap Atoll, also known under the names of Rimski-Korsakoff I., Rongelab, Rongorappu To, and Pescador I., is located in the northeastern portion of the Marshall Islands at 11° 20' N, 166° 50' E (Fig. 1). A general description and more complete maps of Rongelap and neighboring atolls, of Bikini, Eniwetok, and Rongerik, were published by Taylor (1950).

The land snail fauna of Rongelap is typical of a Pacific atoll. As one would suspect, all of the species have a wide range of distribution in the Pacific. The only exception is one subspecies, thus far recorded only from the Marshall Islands (Abbott, 1958). The various species recorded were unequally distributed on the islands. Of the 10 species mentioned here, 6 represent new records for the Marshall Islands.

MATERIAL STUDIED

This study was based upon a collection made in September 1959 by Dr. I. Eugene Wallen, aquatic biologist with the Atomic Energy Commission. Collections were made on five islands in the atoll, and most were made within 150 ft from shore. Of the 450 specimens collected,
two-thirds were found alive. This collection was presented to Dr. Henry van der Schalie, who was working on Eniwetok at that time. The Rongelap collection was later given to the author for study. In addition one lot of shells containing two species was collected by Dr. van der Schalie on the island of Japan, Eniwetok Atoll. Four lots of Marshall Island nonmarine snails were contained in the University of Michigan Museum of Zoology collection. One of these is a new locality record.

The material examined has been deposited in the University of Michigan Museum of Zoology, and representative Truncatellidae were placed with the Museum of Comparative Zoology, Harvard University.

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SYSTEMATIC LIST

The nonmarine snail fauna collected by Dr. Wallen on Rongelap Atoll comprised the following species:

Family Ellobiidae

Melampus lutus Quoy and Gaimard
Marshall Islands records: none.
Distribution on Rongelap: Mellu; only 2 living specimens.

Melampus fasciatus Deshayes
Marshall Island records: none.
Distribution on Rongelap: Mellu; 18 living specimens.
Family Pupillidæ

_Gastrocopta_ (Sinalbinula) _pediculus_  
(Schuttleworth)

Marshall Island records: Ebon (Pease, 1860).  
Distribution on Rongelap: Arbar, Gogan,  
Burok, and Mellu.

This snail was the most abundant on the  
atoll and comprised nearly 50% of the shells  
collected. Live specimens were taken at each of  
the stations listed. It was found commonly on  
and around dead coconut leaves. One specimen  
was collected by Dr. van der Schalie on the  
island of Japta, Eniwetuok Atoll.

Family Tornatiellidæ

_Lamellidea pusilla_ (Gould)

Marshall Island records: Ebon (Pease, 1860;  
Distribution on Rongelap: Arbar, Gogan, and  
Mellu.

Although _Lamellidea_ was not abundant at any  
of the stations, the series (including a number  
of juveniles) was large enough to make a satisfac-  
tory determination. Pease’s _Tornatellina nitida_  
and _Lamellidea serrata_ belong with this species  
(Cooke and Kondo, 1960:190).

Family Helicarionidæ

_Liardetia_ (Liardetia) _samoensis_ (Mousson)  
(=_striolata_ Pease)

Marshall Island records: Ebon (Pease, 1860).  
Distribution on Rongelap: Gogan; only 10  
dead specimens were found.

Family Subulinidæ

_Lamellaxis_ (Allopeas) _gracilis_ (Hutton)

Marshall Island records: none.  
Distribution on Rongelap: Arbar, Gogan,  
Burok, and Mellu.

Although this widely distributed snail was  
found on four of the five islands, visited, it was  
not abundant on any of the islands and represen-  
ted only 6% of the whole collection. Living  
specimens were taken from Gogan and Mellu.  
Dr. van der Schalie also collected a series of live  
_L. gracilis_ on the island of Japta, Eniwetuok  
Atoll.

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Family Truncatellidæ

_Truncatella_ (Truncatella) _guerinii_ A. and J. B.  
Villa (=_valida_ Pfeiffer)

Marshall Island records: none.  
Distribution on Rongelap: Mellu and Keishi-  
echi.

_T. guerinii_ was very commonly collected on  
two of the islands and comprised one quarter  
of the collection. It was found living at both  
stations.

_Truncatella_ (Truncatella) _granum_ Garrett

Marshall Island records: none.  
Distribution on Rongelap: Arbar; 5 speci-  
mens, 2 living, were found.

Family Assimineidæ

_Assiminea nitida marshallensis_ Abbott

Marshall Island records: Bikini, Eniwetok,  
Distribution on Rongelap: Enybarbar, Aru-  
baru, Mellu, Aruboru (Abbott, 1958),  
Arbar.

This species was collected commonly on  
Arbar. Of the 56 specimens examined only 1  
had attained the maximum growth that is char-  
acteristic of this subspecies.

_Assiminea cf. hidalgoi_ Gassies

Marshall Island records: none.  
Distribution on Rongelap: Arbar.

Eight specimens of _Assiminea_, which closely  
resemble New Caledonian specimens of _A.  
bidalgoi_, were found with _A. nitida marshallen-  
sis_. _A. hidalgoi_ is a part of a widespread but,  
as yet, unclarified complex of species (Abbott,  
1960). Since the systematics of the species  
outside the Philippines are in a confused state,  
it seems best not to assign a definite identifica-  
tion to the species in question. The radula for-  
mula observed in these specimens is: centrals  
4–1–4  
0–0  
5–1–5  
0–0  
; laterals 6–1–7; inner mar-  
ginals 9–10; outer marginals 15+.

ADDITIONAL RECORDS

The following nine species have been re-  
ported from the Marshall group but were not
collected on Rongelap. Some of these records may not be valid.

Oncidium "(verruculatum Cuvier?)" Jaluit (Schnee, 1904). This record probably refers to *O. peronii* Cuvier, a species Hoffman (1929) mapped as occurring in the Marshall Islands, while he excluded the former species.

*Pupinula complanata* (Pease). Ebon (Pease, 1860).


*Subulina octona* (Bruguiere). Jaluit (Schnee, 1904).

*Omphalotropis fragileis* Pease. Ebon (Pease, 1860), Likiep and Arno (Marshall, 1950). There are also three specimens from Jaluit in the Museum of Zoology, University of Michigan collection.

*Tornatellides simplex* Pease. Ebon. This isolated record outside of the general distribution is discussed by Cooke and Kondo (1960:26).

*Tornatellinopsis* sp. Included in a map by Cooke and Kondo (1960, Figs. 6 and 78).

*Elasmias* "(apertum Pease)." Arno and Majuro (Cooke and Kondo, 1915-16). *Elasmias manilense* (Dohrn). Jaluit (Schnee, 1904). The specific identity of the Marshall Island *Elasmias* is apparently not yet definitely established; hence this record is questionable.

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