EMSIAN (LATE EARLY DEVONIAN) SPONGES FROM WEST-CENTRAL AND SOUTH-CENTRAL ALASKA

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INTRODUCTION

RELATIVELY COMMON specimens of the hypercalcified agelasid sponge Hormospongia labyrinthica Rigby and Blodgett, 1983 and specimens of associated species of Hormospongia have been previously reported from Emsian and Eifelian stratigraphic units at several localities in south-central and southeastern Alaska (Rigby and Blodgett, 1983). Those sponges were first described from the type section of the Eifelian Cheeneentuk Limestone in the McGrath A-5 quadrangle. Since then several additional specimens of Hormospongia labyrinthica have also been collected from a new locality in the Talkeetna C-6 quadrangle in south-central Alaska (Figs. 1, 2.1), and are documented here.

A few specimens of the new genus and species, Medfraspongia tubulara, a calcareously preserved, possibly victollitid, sponge are also documented here. This taxon is based on a few moderately complete specimens and numerous fragments collected from an unnamed Emsian limestone exposed on the south flank of Limestone Mountain in the Medfra B-4 quadrangle of west-central Alaska (Figs. 1, 2.2).

In both these occurrences, gastropods are the most common faunal element, along with abundant calcareous algae, that are indicative of shallow water in a possibly lagoonal, tropical paleoenvironmental setting. It seems highly likely that many of the archaeogastropods in these Paleozoic assemblages grazed on the sponges, much like modern pleurotomariid gastropods evidence spongivory (Harasewych et al., 1988).

Both described sponge localities are from the Farewell terrane of Decker et al. (1994). On the basis of the paleobiogeographic affinities of its Paleozoic fauna, the Farewell terrane appears to represent a continental margin sequence that had been rifted way from, or lay in close proximity to, the Siberian paleocontinent (Blodgett, 1998; Blodgett and Boucot, 1999; Dumoulin et al., 2002; García-Alcalde and Blodgett, 2001; Frýda and Blodgett, 2004, 2008).

LOCALITIES

Locality 1

Silicified calcareous sponges belonging to Hormospongia labyrinthica Rigby and Blodgett, 1983, were recovered as part of a fossil collection made at 17.1 m (56 ft) above the base of a stratigraphic section measured by Blodgett in late July, 1996 in the Shellabarger Pass area. This north-south trending section was measured along the east side of a small hillock situated near the center of the NE3/4, NW1/4, sec. 15, T28N, R18W, Talkeetna C-6 quadrangle, latitude 62°31′21″N, longitude 152°35′32″W. (Figs. 1, 2.1), at an elevation slightly above 2,300 feet (700 m). The section, consisting of 38.7 m (127 ft) of lime mudstone and wackestone, was measured in an unnamed late Emsian-age limestone unit (Figs. 1, 2.1). See Blodgett and Boucot (1999) for a description of the locality.

Fossils recovered from nearby beds indicate a latest Emsian age, based on the presence of conodonts identified by N. M. Savage as belonging to the Polygnathus serentinus Zone, as well as the taxonomic composition of the associated megafauna, including abundant brachiopods, rugose and tabulate corals, trilobites, and distinctive two-hole cirral ossicles, commonly ascribed to Gastrocomma? bicula Johnson and Lane (1969). Brachiopods have been previously described from this section by Blodgett and Boucot (1999), and García-Alcalde and Blodgett (2001).

The section is situated at or near fossil locality 17 (field number 75AR67 of B. Reed) of the geologic map of Reed and Nelson (1980), and its base is situated on the north side of the hilllock. This locality is situated in the Mystic terrane of Patton (1978), which was recognized by Decker et al. (1994) to be genetically related to the adjacent Dillinger and Nixon Fork terranes. All of these terranes were subsequently reduced in rank to subterranea of a larger terrane, termed the Farewell terrane by Decker et al. (1994).

Locality 2

Silicified specimens of the Devonian sponge, Medfraspongia tubulara n. gen. and sp., were recovered from this locality. It is the same as Blodgett’s 1983 field locality 83RB9, an unusual 1.5 m thick, richly fossiliferous, rubble zone bearing abundant silicified megafossils, in an unnamed Devonian limestone unit exposed on the south flank of Limestone Mountain. It is located at approximately SW1/4, NE1/4, sec. 6, T26S, R23E, in the Medfra B-4 quadrangle, in west-central Alaska, at latitude 63°16′01″N. and longitude 154°32′44″W. (Figs. 1, 2.2). This silicified horizon occurs 13.7–15.2 mm above the base of a carbonate sequence that is at least 100 m thick.

At least 40 species of gastropods are known from this horizon. The rich, diverse gastropod fauna from this locality has the largest number of gastropod species known from any locality, globally, in the Emsian, and a number of papers have recently appeared on this unusually rich gastropod fauna (i.e., Blodgett and Rohr, 1989; Frýda and Blodgett, 2004). In addition to gastropods, the other marine fauna known from this locality include numerous brachiopods, solitary rugose corals, tabulate corals, lamellar stromatoporoids, oostreaches, bivalves, scaphopods, orthocyclic cephalopods, tentaculitids, and small indeterminate juvenile ammonoids, as well as the new sponge, Medfraspongia tubulara, described here.

The overall aspect of the fauna is indicative of an undifferentiated Emsian (late Early Devonian) age. However, on the basis of regional stratigraphic correlation, the beds at Locality 83RB9 appear to be slightly younger that the earliest Emsian (Polygnathus delticens Zone) Soda Creek Limestone (Blodgett et al., 2002), the type section of which is situated to the east on the Medfra B-3 quadrangle. The highly diverse assemblage of gastropods, together with the abundance of the tubular stromatoporoid genus Amphipora in underlying and overlying strata indicate a relatively shallow-water, inner carbonate platform environment.

This locality is situated in the Nixon Fork terrane of Patton (1978), which was recognized by Decker et al. (1994), as mentioned above, to be genetically related to the adjacent Mystic and Dillinger terranes, ranked as subterranea of the Farewell Terrane by Decker et al. (1994).

SYSTEMATIC PALEONTOLOGY

We follow the classification of hypercalcified chambered fossil sponges used by Finks and Rigby (2004, p. 585–764) in the Treatise on Invertebrate Paleontology, Revised. However, as a result of the polyphyletic nature of these chambered sponges (Hooper...