



## A new genus and thirteen new species of sea stars (Asteroidea: Echinasteridae) from the Aleutian Island Archipelago

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## Abstract

A new genus and thirteen new species of echinasterid sea stars are described from nearshore waters of the Aleutian Islands. The new genus *Aleuthenricia* is distinguished from *Henricia* by the morphology and arrangement of the skeletal ossicles. *Henricia beringiana* D'yakonov, 1950 is designated as the type species. The new species described include *Aleuthenricia federi*, *Henricia lineata*, *H. uluudax*, *H. iodinea*, *H. rhytisma*, *H. gemma*, *H. echinata*, *H. vermillion*, *H. elachys*, *H. insignis*, *Odontohenricia aurantia*, *O. ahearnae*, and *O. violacea*. In addition to the descriptions, associations between echinasterids and sponges are briefly discussed. A key to the shallow water (<20 m) Echinasteridae of the Aleutian Islands is provided.

**Key words:** *Henricia*, *Aleuthenricia*, *Odontohenricia*, AKMAP, Alaska

## Introduction

From the Alaska Peninsula, the Aleutian Islands extend westward from Unimak Island to Attu Island over a distance of more than 2,000 km. Over 200 Aleutian Islands form an arc that separates the North Pacific Ocean from the Bering Sea. The southern edge the Aleutian Islands is bounded by the strong Alaska Current flowing in a westerly direction, with the easterly flowing Aleutian North Slope Current to the north of the Islands. Significant flow from the Alaska Current occurs through 14 passes, providing relatively warm subsurface waters to the Bering Sea (Stabeno *et al.* 1999). The greater Aleutian chain (Fig. 1) extends from the Shumagin Islands, south of the western tip of the Alaska Peninsula (270 km SE of Unimak Island) to the Commander Islands, Siberia, Russia (250 km west of Attu Island) (Campbell & Rennick 1980).

A unique aspect of the Aleutian Archipelago is the ubiquitous encrusting flora and fauna (Chenelot *et al.* in review) that supports a diverse assemblage of benthic invertebrates, including numerous sea stars. Most of the echinasterid sea stars are directly associated with the huge encrusting sponge fauna.

Walter K. Fisher (1911, 1928 and 1930) monographed the sea stars of the North Pacific Ocean, including the Aleutian Islands, based primarily on specimens dredged between 1888 and 1897, by the United States Fisheries Steamer *Albatross*. Little taxonomic research on sea stars in the Aleutians has been published since Fisher's monograph. Fisher recognized five species of the genus *Henricia* Gray, 1840, *Henricia sanguinolenta* (O.F. Müller, 1776), *H. leviuscula* (Stimpson, 1857), *H. aspera* Fisher, 1906, *H. asthenactis* Fisher, 1910 and *H. longispina* Fisher, 1910, along with numerous subspecies and varieties. Verrill (1914) recognized these same species, with the exception of *H. asthenactis*, and added *H. tumida* Verrill, 1909, and introduced some new varieties as well. D'yakonov (1950) recognized five of the six previous species (the exception being *H. sanguinolenta*) along with *H. spiculifera* (H.L. Clark, 1901), *H. dyscrita* Fisher, 1911 (described as a subspecies of *H. leviuscula*), *Henricia arctica* Verrill, 1914, and described *H. orientalis* D'yakonov, 1950, *H. beringiana* D'yakonov, 1950 and *H. derjugini* D'yakonov, 1950 (from the Bering Sea). To the 10 to 12 species previously recognized from this region we add a new genus and 13 new species, and raise another, *Henricia multispina* Fisher, 1910 (described as a subspecies of *H. leviuscula*) to full species level, removing it from the synonymy of *Henricia spiculifera* (H.L. Clark, 1901) proposed by Fisher, (1930) and followed by Lambert (2000). These new species bring the total number of echinasterid species in the Aleutians to more than twenty.

A recent genetic study by Eernisse & Strathmann (2008) has shown that *Henricia leviuscula*, reported by Fisher and others from the Aleutian Islands and by D'yakonov from NE Asian waters, to have a much narrower geographic range, with center of distribution at Puget Sound, Washington, and extending into southeastern Alaska. Eernisse and Strathmann also demonstrate that *H. leviuscula* is part of a large complex of at least ten morphologically very similar species (mostly undescribed) extending from British Columbia south into northern Baja California.

This large radiation of species is present in the Aleutians as well, and is not limited to Echinasteridae (20+ spp.), but also occurs in Asteriidae (15+ spp.), particularly the genus *Leptasterias* Verrill, 1866 (Fisher, 1911; Verrill, 1914) (10+ spp.), Solasteridae Perrier, 1834 (Gale *et al.* 2008) (18+ spp.) and Pterasteridae Müller & Troschel, 1842 (R.N. Clark, *in prep.*) (12+ spp.). Additionally, several families and genera of mollusks in the