



Taxonomic review of the *Sebastes pachycephalus* complex (Scorpaeniformes: Scorpaenidae)

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Abstract

A taxonomic review of the *Sebastes pachycephalus* complex established the existence of two valid species, *S. pachycephalus* and *S. nudus*. Similarities between them include: cranium armed dorsally with robust preocular, supraocular, postocular, and parietal spines; interorbital space concave; lower jaw lacking scales, shorter than upper jaw; thickened rays in ventral half of pectoral fin; dorsal fin usually with 13 spines and 12 soft-rays; pored lateral line scales 27–35 (usually 29–33). However, *S. pachycephalus* is distinguishable from the latter in having minute scales below the entire dorsal-fin spine base (vs. lacking minute scales below first to fifth or variously to the posteriormost spine in the latter), dark spots scattered on the dorsal, anal and caudal fins (vs. no distinct dark spots), and lacking distinct colored markings on the dorsum (vs. yellow or reddish-brown markings present). Although both species occur off the southern Korean Peninsula and in the Bohai and Yellow Seas, in Japanese waters, the former is distributed from northern Honshu Is. southward to southern Kyushu Is., whereas the latter extends from southern Hokkaido southward along the Pacific coast of Japan to Kanagawa, and along the Sea of Japan coast to northern Kyushu Is., including the Seto Inland Sea. *Sebastes nigricaus*, *S. nigricans*, and *S. latus* are confirmed as junior synonyms of *S. pachycephalus*, and *S. chalcogrammus* as junior synonym of *S. nudus*, based on the examination of type specimens.

Key words: *Sebastes nudus*, *S. nigricaus*, *S. nigricans*, *S. latus*, *S. chalcogrammus*, redescription

Introduction

The rockfish genus *Sebastes* Cuvier 1829 is the most speciose genus in the family Scorpaenidae (Teleostei: Scorpaeniformes) with approximately 110 species worldwide (Nelson 2006), most being subjected to substantial commercial and recreational fisheries. They exhibit great morphological and ecological diversity, exploiting coastal habitats ranging from shallow rocky areas to depths of ca. 1000m (Love *et al.* 2002; Nakabo 2002a). However, some species groups exhibit few or only minute morphological differences due to their recent speciation (Kai *et al.* 2002; Hyde & Vetter 2007), resulting in some areas of taxonomic confusion. As a result, a considerable amount of effort has been spent in recent years investigating the evolutionary relationships of such species groups by way of molecular markers, resulting in gradual clarification (eg. Kai & Nakabo 2008; Orr & Hawkins 2008).

Sebastes pachycephalus Temminck & Schlegel 1843 is a common inhabitant of shallow coastal waters of the western North Pacific, extending from the coast of southern Hokkaido southward to Kyushu, and off the southern coast of the Korean Peninsula (Nakabo 2002a). Because of variations in coloration and other morphological characters, its taxonomy has been confused. Since Jordan & Starks (1904) first reported color variations in their *S. pachycephalus*, several authors have recognized distinct forms or subspecies within *S. pachycephalus* (eg., Matsubara 1943; Nakabo 1993, 2000, 2002a), whereas others considered such variations to be taxonomically insignificant (eg., Amaoka 1984; Amaoka *et al.* 2011). Recently, Kai *et al.* (2011) demonstrated that *S. pachycephalus* included two distinct species, on the basis of comprehensive morphological and genetic analyses, and also suggested a low level of hybridization between them. In that paper, the two species were referred to as