



Three new angel sharks (Chondrichthyes: Squatinidae) from the Indo-Australian region

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Abstract

Four species of angel sharks (family Squatinidae) occur in temperate and subtropical Australian waters. Two of these, *Squatina albipunctata* **sp. nov.** and *S. pseudocellata* **sp. nov.**, which occur mainly off subtropical eastern and western Australia respectively, are formally described and illustrated. The new species differ from temperate Australian species, *S. australis* and *S. tergocellata*, in morphometrics, meristics, squamation, and coloration. Another new angel shark, *S. legnota* **sp. nov.** from eastern Indonesia, is compared to these species. Unlike Australian *Squatina*, it has unfringed (rather than fringed) barbels on its nasal flap.

Key words: *Squatina*, Squatinidae, angel sharks, new species, Australia, Indo-West Pacific

Introduction

Members of the monogeneric shark family Squatinidae, known as angel sharks, sand devils, ange de mer and angelotes, are primarily benthic in temperate and tropical parts of the Atlantic and Pacific Oceans (Compagno, 1984). *Squatina* species are absent from the Pacific Plate and most of the Indian Ocean. They occur along continental margins where they are demersal on the shelves and upper slopes from the coast to at least 1000 m depth (Bigelow and Schroeder, 1948). They are an ancient shark group with a fossil record dating back to the Upper Jurassic (Thies, 1983).

Angel sharks are ray-like, having dorsoventrally flattened bodies, extremely broad pectoral fins, and dorsally located eyes and spiracles. Unlike rays, however, the gill slits are located laterally on the head and forward of the pectoral-fin origins, although the pectoral fins extend forward of the gill slits as a lobe. Their terminal oro-nasal region is ornamented with nasal barbels and labial folds. They also have well-developed, posteriorly located dorsal fins without spines, a hypocercal caudal fin, and a long and depressed tail without an anal fin.

The phylogenetic placement of squatinids has been controversial (Shirai, 1992). They have been variously associated with squaloids, pristiophorids, heterodontids, orectolobids, hexanchoids, and rajiforms. Compagno (1984) placed them in a separate order Squatiniformes with sister groups being the Pristiophoriformes and Squaliformes. More recently, a cladistic study which compared *Squatina* with the above groups and *Chlamydoselachus*, concluded that they are the sister groups of the pristiophorids and rajiforms (Shirai, 1992). Shirai's placement has been corroborated by de Carvalho (1996) whereby three orders (Squatiniformes, Pristiophoriformes and Rajiformes) are recognised.