



The spotted flounder, *Azygopus flemingi* Nielsen 1961 (Pisces: Pleuronectiformes: Rhombosoleidae), from deep waters off New Zealand: a second valid species of *Azygopus* Norman 1926, with notes on distribution, size, maturity, and ecology

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Abstract

Since its description, *Azygopus* Norman, 1926 was considered by subsequent authors to be a monotypic genus in the Order Pleuronectiformes comprised only of *A. pinnifasciatus* Norman, 1926, known from deep waters (90–900 m, usually 200–600 m) off the southern and southeastern coasts of Australia. In 1961, a subspecies, *A. pinnifasciatus flemingi* Nielsen, was described based on three specimens collected at 610 m in the Tasman Sea off the South Island, New Zealand. From its description to contemporary literature evaluating its status, recognition of *A. p. flemingi* as a distinct taxon has been rejected by all but two studies reporting on *Azygopus* from New Zealand waters. Until the late 20th century, specimens of *Azygopus* had been rarely collected off New Zealand and little was known about these fishes. Over the past 25 years, collecting by scientific expeditions and expanding deep-sea fisheries have captured over 195 specimens of *Azygopus* from a variety of deep-sea locations around New Zealand. Recently-captured specimens of *Azygopus* collected around New Zealand and deposited in fish collections have been identified as either *A. pinnifasciatus* Norman or *A. flemingi* Nielsen, suggesting the possibility that two species of *Azygopus* occur in New Zealand waters. This study examined the holotype, a paratype, and 25 non-type specimens of *A. pinnifasciatus* collected off Australia, and the most comprehensive series of specimens of *Azygopus* collected from New Zealand waters. These specimens included the holotype and two paratypes of *A. p. flemingi* and 191 other specimens collected from throughout the entire depth range (153–942 m) and representing wide coverage of geographic areas around New Zealand where *Azygopus* have been collected. Comparisons of these specimens indicate that a second species, *A. flemingi* Nielsen, should be recognized in the genus *Azygopus*, and that this species is the only member of this genus occurring in New Zealand waters. *Azygopus flemingi* is readily distinguished from *A. pinnifasciatus* by conspicuous differences in ocular- and blind-side color patterns, in numbers of ocular-side pelvic-fin rays, total vertebrae, lateral-line scales, and gillrakers on the first gill arch, morphology of blind-side scales and squamation patterns, length of blind-side pectoral fins, presence/absence of scales between upper jaw and ventral margin of lower eye, and pigment patterns on dorsal and anal fins of adults. Adult *A. flemingi* and *A. pinnifasciatus* are sexually dimorphic in several features. Data on maximum size and size at maturity, and depth of occurrence are summarized for *A. flemingi*.

Key words: rhombosoleid flatfish; taxonomy; New Zealand endemic fishes; deep-sea flatfish; species re-description; squamation; scale morphology; *Azygopus pinnifasciatus*; sexual dimorphism

Introduction

Azygopus Norman, 1926 has been considered by most subsequent authors (Norman 1934; Sakamoto 1984; Evseenko 2004; Gomon 2008; Eschmeyer & Fricke 2012) to be a monotypic genus in the Order Pleuronectiformes comprising only *A. pinnifasciatus* Norman, 1926. *Azygopus pinnifasciatus* had been reported only from deep-water locations (90–900 m, usually 200–600 m) off the southern and southeastern coasts of Australia (Norman, 1926; Norman 1934) until Moreland's (1957) report of deepwater flatfishes, identified as *A. pinnifasciatus*, taken in 1954 off the Chatham Islands, New Zealand. Though Moreland's report (based on an unknown number of specimens) represents the first published record for specimens of *Azygopus* from New Zealand waters, these were not the first representatives of this genus collected from this region.