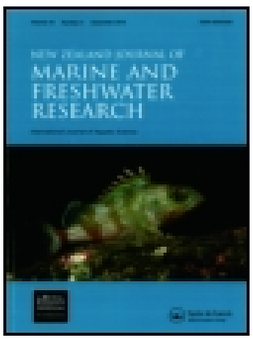

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JUVENILE FORM OF THE NEW ZEALAND TURBOT *COLISTIUM NUDIPINNIS* (WAITE) (PISCES: HETEROSOMATA: RHOMBOSOLEINAE) (NOTE)

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ABSTRACT

A juvenile (26 mm) specimen of the New Zealand turbot *Colistium nudipinnis* (Waite) is figured and described. Differences between the juvenile and adult forms, and characters distinguishing juvenile *C. nudipinnis* from the young of other New Zealand species of flatfish, are noted.

INTRODUCTION

During development from the egg to adulthood fishes, and particularly flatfishes (order Heterosomata), undergo profound changes in size and body form. It is therefore desirable that post-larvae and juveniles, particularly of species in which these young stages differ greatly from the adult, should be described.

Almost nothing is known of the biology of the New Zealand turbot *Colistium nudipinnis* (Waite). The egg was described by Thomson & Anderton (1921) and the adult by Waite (1911) and Norman (1926), but no information has been published on the intervening stages of the life history of this species. This paper describes a juvenile specimen of *C. nudipinnis* which differs from the adult in certain respects.

OBSERVATIONS

On 3 October 1974 three small flatfishes, all identical in appearance and of similar size, were taken by dragnet at Paraparaumu Beach, about 50 km north of Wellington. They were placed in a tank at the Fisheries Research Laboratories in Wellington, but two died within a few days, and the third died about 2 weeks afterwards. One of these fish, 26 mm in total length, was recovered in good condition and is described below.

The fish was identified by its meristic characters. The fin rays were counted on all fins, and the numbers of gill rakers, vertebrae, and tentacles on the lower jaw were determined (Table 1). The fin ray counts, together with the dextral eyes and the developing rostral hook (see Fig. 1) were sufficient to identify the fish either as *Colistium nudipinnis* or *Ammotretis rostratus* Günther. The large number of gill

TABLE 1—Meristic characters of the juvenile specimen of *Colistium nudipinnis* compared with those of adults

	JUVENILE	ADULT		
	This study	Waite (1911)	Norman (1934)	Author's unpub. data
No. examined	1	1	1	6
Fin rays				
Dorsal	80	85	80	75–82
Anal	59	60	58	55–60
Caudal	18	18	18	18
Pelvic (Ocular side)	7	7	7	7
(Blind side)	4	4	4	4
Pectoral (Ocular)	12	11	12	No data
(Blind)	10	12	No data	No data
Vertebrae	32	No data	No data	32 (1 fish only)
Gill rakers (on lower part of anterior arch)	20+	No data	32	No data
Tentacles on lower jaw	10	No data	12	No data

rakers (20+), even though these were not fully developed, showed that the specimen was *C. nudipinnis*, and not *A. rostratus*, which has only 10–12 gill rakers on the lower part of the anterior arch (Norman 1934) and which is, in any case, only known from Australian waters.

Between this young specimen and the adult form there were a number of differences in general appearance and in body proportions, mainly of the type outlined by Norman (1934, p. 33). Some of the body dimensions were measured and the proportions compared with those of adult *C. nudipinnis* (Table 2), data for adults being obtained from Norman (1934) and Waite (1911).

The rostral hook was not fully developed, although it was already a conspicuous feature of the fish. The body depth, in proportion to the standard length, was less than in the adult, and the greatest body depth

TABLE 2—Some body proportions of juvenile and adult *Colistium nudipinnis*

	JUVENILE	ADULT	
		Waite (1911)	Norman (1934)
Number examined	1	1	1
Body Depth/Standard Length	0.43	0.59	0.50
Head Length/Standard Length	0.29	0.28	0.27
Eye Diam./Head Length	0.27	0.11	0.09
Lower Jaw/Head Length	0.38	No data	0.31
Pect. Fin/Head Length	0.15	0.48	0.43
Longest Dorsal Fin Rays/Head Length	0.56	0.33	0.40

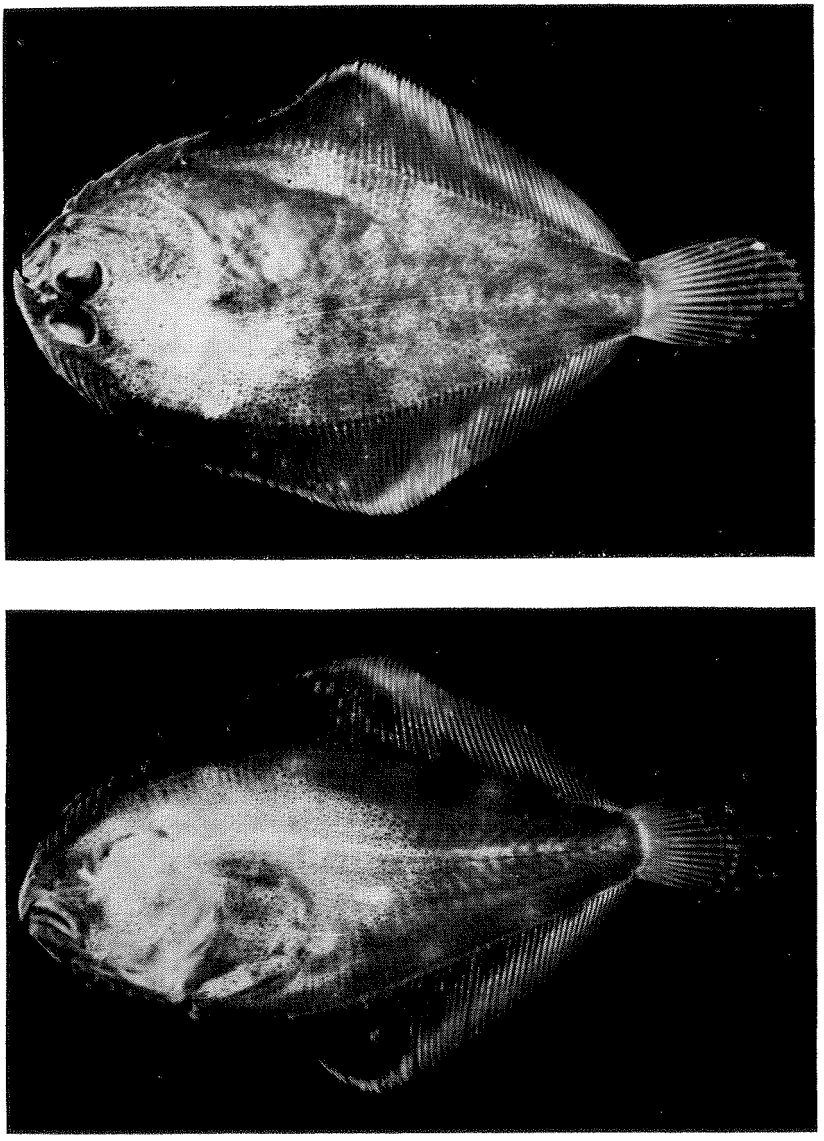

FIG. 1—Juvenile *Colistium nudipinnis*: ocular side (*upper*); and blind side (*lower*). Overall length 26 mm.

occurred further forward of the mid section of the fish. Consequently the dorso-posterior and ventro-posterior margins were almost straight, in contrast to the smoothly curved outline of the adult.

The eyes were large and positioned well forward in the juvenile, so that the angle of the jaw was below the front edge of the eye. In the adult the eyes are small and placed well behind the angle of the jaw. Other points of difference were the proportionately longer dorsal fin rays and the much smaller pectoral fins in the juvenile.

When first seen, all three fish were almost black on the ocular side and dark grey on the blind side. When placed on sand, however, the fish altered their colour, in a matter of hours, to match the background.

Apart from the diagnostic fin ray counts, the developing rostral hook is sufficient to enable the young *C. nudipinnis* to be distinguished easily from the young of the lemon sole *Pelotretis flavilatus* Waite or any of the flounders, *Rhombosolea* spp. The stouter shape, and the mouth being easily visible from the ocular side, distinguishes it from any of the species of *Peltorhamphus*. The only species likely to be confused with it is its close relative, the New Zealand brill *C. guntheri* (Hutton), which can be identified by the larger numbers of fin rays in the dorsal, anal, and pelvic fins (86–103, 63–77, and 10–11 rays respectively, according to my unpublished records of 58 fish).

DISCUSSION

The size at which the New Zealand turbot metamorphoses is still unknown, as are details of the post-larval stages, but the fish described above establishes that metamorphosis is completed at less than 26 mm total length. The capture of these young turbot on Wellington's west coast is a little unexpected, as adults are rarely taken in these waters. However, turbot are quite common on the west coast of the South Island and possibly the eggs and larvae may be carried from there by the d'Urville Current. Heath (1969) estimated the speed of this current as about 0.75 knots (0.4 $m \cdot s^{-1}$). Assuming that the speed of the Westland Current is comparable, eggs and larvae could be carried from well down the west coast to the vicinity of the Wellington beaches in 4–5 weeks. However, the duration of the pelagic phase of the life history of the New Zealand turbot is not yet known.

ACKNOWLEDGMENTS

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