

TABLE I.—COMPARISON OF RATIOS OF LENGTH OF PECTORAL FIN TO LENGTH FROM ITS ORIGIN TO ORIGIN OF VENTRAL-RATIO EXPRESSED AS A QUOTIENT ($\times 100$).

| Sex | Number of Specimens | Range | Mean | Standard deviation |
|---------|---------------------|-------|-----------------|--------------------|
| females | 74 | 44-64 | 55.93 \pm .56 | 4.83 \pm .33 |
| males | 70 | 67-86 | 76.93 \pm .63 | 5.27 \pm .45 |

TABLE II.—COMPARISON OF RATIOS OF LENGTH OF VENTRAL FIN TO LENGTH FROM ITS ORIGIN TO ORIGIN OF ANAL FIN.

| Sex | Number of Specimens | Range | Mean | Standard deviation |
|---------|---------------------|-------|-----------------|--------------------|
| females | 74 | 37-50 | 42.40 \pm .35 | 4.04 \pm .21 |
| males | 70 | 53-71 | 60.30 \pm .49 | 4.14 \pm .35 |

The differences in the averages of males and females are extremely significant and do not require testing.

In both the ratios given above, Stokell's range lies within that observed for Rangitata males. He described a "form" from the mouth of the Waimakariri River, concerning which he stated (1941, p. 372), ". . . differs from the above species in having . . . shorter paired fins (pectoral .53–.60, ventral .42–.47), a less muscular pectoral base . . ." These ranges lie well within those given above for females of the species.

Besides the presence of tubercles in males and the differences between the sexes in the relative sizes of the paired fins, other differences were noted. Males are light brown in colour dorsally and a pale straw colour ventrally, whereas females are steely-blue dorsally and silvery-white ventrally. Both sexes have lateral silvery bands. The musculature of the dorsal region and the body wall is much stronger in males than in females, the abdominal cavity of which is correspondingly larger than that of males.

The sexual dimorphism of *R. anisodon* is similar to that which occurs in many species of true smelts of the Northern Hemisphere (Hart and McHugh, 1944).

LIFE HISTORY

The spawning season of *R. anisodon* was observed to extend from September to April. Large migrations began in November and continued sporadically throughout December, January and February. Spawning begins immediately the shoals reach the stretches of river entering the lagoon. Favourite sites are silt-bottomed reaches of subsidiary streams where the current is slight. Large numbers of spent or partly spent fish were netted in the spawning grounds while eggs and newly-hatched larvae were also collected by net after disturbing the silt bed of the stream.

Freshly-stripped eggs of *R. anisodon* immediately absorb water with the subsequent formation of a perivitelline space and the assumption of a spherical form. The eggs measure from 0.7 to 0.8 mm in diameter and are translucent, although the yolk mass, which contains numerous oil globules, is tinted a pale straw colour. The eggs are demersal and have strongly adhesive outer membranes.