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Age of the Showy Snailfish, *Liparis pulchellus*

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The showy snailfish, *Liparis pulchellus* Ayres occurs from California to the Bering Sea at depths of about 7–50 fathoms (Clemens and Wilby, 1961). Some aspects of biology of this species were reported by Johnson (1969). This paper deals with the age of the showy snailfish from northern California waters.

Specimens (220) of *L. pulchellus* were collected at depths of 12–25 m, 0.8 km W of Samoa, adjacent to Humboldt Bay, Humboldt County, California, with a 18 m Gulf of Mexico shrimp trawl (Schaefers and Johnson, 1957; Alverson et al., 1960) operated aboard the R/V Seagull. For a detailed description of the habitat and associated fauna see Johnson (1969). Fishing time on the bottom was approximately 10 min. per haul. Collections were made at 2–3 week intervals, weather permitting, from 1962 through 1968. Upon capture, individuals were immediately preserved in 10% formalin and then transported to the laboratory where each specimen was measured (total length in mm).

The sagittae were treated and read according to methods described by Watson (1964). The otoliths were dissected from 99 fish and were placed in serially marked vials to correspond with the fish numbers and lengths. The otoliths were prepared for examination by placing the distal surface upward in a depression of a black culture slide and covering them completely with distilled water. A few minutes of immersion brought out the zoned appearance for examination under a low power (10× to 30×) dissecting scope. Summer zones (opaque) were counted on the

Table 1. Length distributions of some age groups of *Liparis pulchellus* (N=99).

Length cms.	I+	II+	III+	IV+	V+
3.0					
4.0					
5.0	7				
6.0	10	1			
7.0	10	11			
8.0		2			
9.0		2			
10.0			4		
11.0			2	5	
12.0				6	
13.0				10	
14.0				9	
15.0				7	
16.0				4	
17.0				2	
18.0				1	3
19.0					2
20.0					1
Total	27	16	6	44	6
$\bar{x}$	6.11	7.31	10.33	13.72	18.66

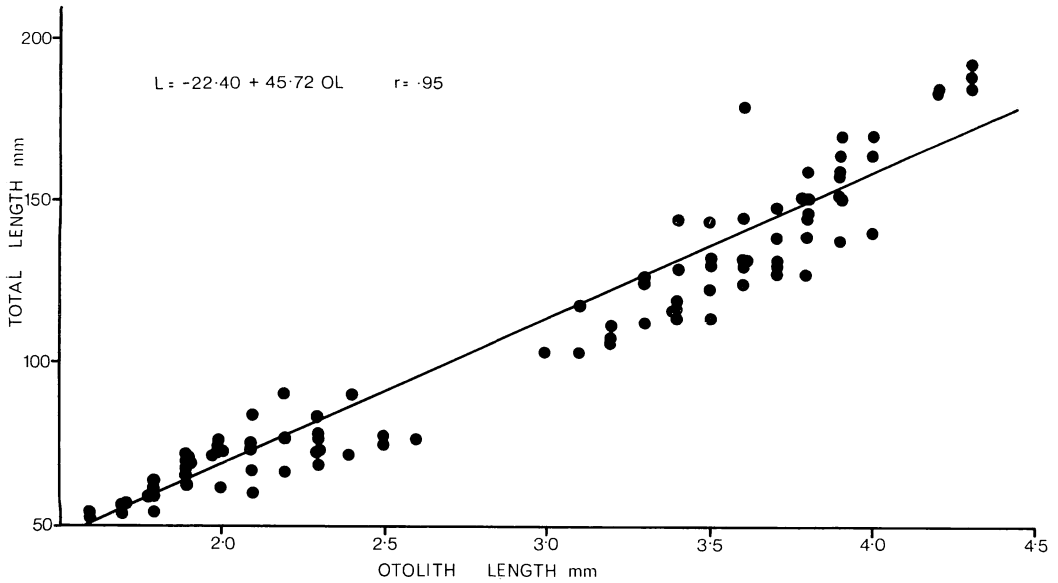

Fig. 1. Otolith length-total length relationship, for 99 *Liparis pulchellus*.

dorsal portion of the otolith. Otoliths were measured on the same dissecting scope equipped with a ocular micrometer. The body-otolith length relationship was investigated by plotting a scatter diagram with the otoliths lengths on the X axis and the total fish lengths on the Y axis. The data were computed on an Olivetti-Underwood Programma 101.

The age of *Liparis pulchellus* was determined by examination of otoliths. Translucent and opaque areas occurred sequentially within the otolith. Otoliths examined in March and May showed that the hyaline (translucent) areas had completed their growth and the opaque or summer rings had started growth.

Attempts to age *L. pulchellus* by interpretation of length-frequency tables proved unsuccessful because of the small samples obtained at any one period. Table 1 gives length distributions of some age groups of *Liparis pulchellus*. The majority of the fish taken in the trawl were in the IV+ age group.

The correlation between otolith and body length was .95 (Fig. 1). Data for adult and juvenile fish are represented by the regression $L=-22.40+45.72$ OL. Due to gear limitations on collection of specimens smaller than 50 mm it is possible that the regression might not represent *Liparis pulchelus* properly. No attempt at back-calculation of length was made.

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カザリクサウオ(新称) *Liparis pulchellus* の年齢

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カリフォルニア州フンボルト湾近くの 12—25 m の海域からエビ底曳網で漁獲されるクサウオ類の1種, *Liparis pulchellus* を 2—3 週間隔で 1962—'68 の7年間に亘り連続採集した標本の耳石によって年齢査定を行ない，有効な結果をえた．漁獲物はほとんど4才をこえ，5 才未満とみられる．稚魚期から成魚期にかけての全長 (L, cm) と耳石長 (OL, mm) との関係は L＝−22.40＋45.72 OL に回帰する．漁具の選択性の影響については今後検討すべきである．本種の場合，体長組成は年齢査定に有効であるとはいえない．

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