

**SILLAGO INTERMEDIUS, A NEW SPECIES OF SAND WHITING
FROM THE GULF OF THAILAND (PISCES : SILLAGINIDAE)**

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Abstract

A new species of sand whiting, *Sillago intermedius*, is described from the east coast of the Gulf of Thailand. In coloration, it is similar to *S. maculata*, but it is more closely allied to *S. sihama*, *S. parvisquamis* and *S. megacephala* according to the nature of its swimbladder.

Introduction

While preparing a review of the sand whittings of Thailand (family Sillaginidae) five specimens of an undescribed species ranging from 81-101 mm standard length were found on 21 and 26 February 1975 at the Bangkok Fish Market. They were amongst other members of the same family and were said to come from the east coast of the Gulf of Thailand. On the advice of Dr. R.J. McKay of the Queensland Museum and because my revision of the Thai Sillaginidae has been delayed, I have decided to describe the new species separately.

During the last ten years, the sillaginid fishes have become one of the best commercial groups of sea fishes in Thailand. Due to their similarity in colour pattern and morphology as well as the small size of the fishery in earlier years, only *Sillago sihama* and *S. maculata* have been recorded from Thailand (JOHNSTONE, 1903; HORA, 1924; WEBER and DE BEAUFORT, 1931; FOWLER, 1935, 1937, 1939; SUVATTI, 1936, 1950). Upon the request of Dr. R.J. McKay several representatives of each species were sent to him. Listed here are all the Thai species including those new species which will be described by McKay: *Sillaginopsis panijus*, *Sillago chondropus*, *S. japonica*, *S. maculata*, *S. sihama*, two new species of the genus *Sillago* and the present new species. *S. ciliata*,

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which was reported for Thailand by BANASOPIT and WONGRATANA (1967), is recognised as one of the new species to be described by McKay.

Species of Sillaginidae in Thailand are usually found shoaling in great numbers over muddy sand or sand bottoms. They are apparently found within shallow waters of the coastal area, and are more common in the near shore waters, estuaries and brackish waters where the bottom is as stated above. Only *Sillago maculata* and *S. sihama* are found on otterboard trawling grounds (depth 15-60M) in the Gulf of Thailand (WONGRATANA, 1968). Sometimes they are found where the water is of low salinity, i.e. fish ponds or shrimp farms, and occasionally in places where it is almost fresh. The Thai vernacular name "Pla Son Sai", meaning fish that submerge in sand, is applied to all members of this family. This name is also alludes to the sandy coloration and to the way they shove their snouts into the sand to disturb it when searching for food. Similarly, the English name is "Sand Borer".

Sillaginids are abundant in Thailand throughout the year and the peak of the fishery is in the rainy season. I have been told that the fishermen at Ban Phe, Rayong Province, on the east coast of the Gulf of Thailand illegally catch this fish by explosives; however, they are chiefly caught in large quantities by different kinds of trawls. They are regarded at the present time as one of the best food fishes. Most of the catch is sold fresh or frozen for export to Japan. In very recent years part of the catch is sliced and dried and called "Pla Kao" (referring to its transparency). This product commands a rather high price and is well known in local markets along the inner Gulf of Thailand.

In life the greater part of the head and body are moderately translucent in all species and in almost all there is a more or less well developed silvery stripe along the side.

Specimens of this new species have been deposited in the collections of the Marine Fisheries Laboratory, Department of Fisheries, Bangkok (MFLB); British Museum (Natural History), London (BMNH) and Queensland Museum, Australia (QM).

***Sillago intermedius* sp. nov.**

(Pl. IX, X; Table 1)

Holotype : MFLB. 1975-8-4-1, from east coast of the Gulf of Thailand via Bangkok Fish Market, on 25 February 1975, 91.0 mm SL.

Paratype : BMNH. 1976-11-17-1, 21 February 1975, 101.0 mm SL; BMNH. 1976-11-17-2, 26 February 1975, 81.0 mm SL; MFLB. 1975-8-4-2, 26 February 1975, 84.0 mm SL; and QM I. 13606, 26 February 1975, 86.0 mm SL. All with the same locality as the holotype.

Diagnosis : a small species of *Sillago* somewhat similar to *S. maculata* in having a series of dark spots on sides and dorsal fins, but without a dark mark at the pectoral base. More positively it is separated from *S. maculata* in having two posterior extensions to the swimbladder (a single extension in *S. maculata*) and significantly higher dorsal and anal fin ray counts (D_2 1, 20-22; A_2 , 21-22 against D_2 1, 17-19; A_2 , 18-20). Other species which have two posterior extensions to the swimbladder are easily separated from the new species by the absence of series of dark spots on sides.

Description : Measurements first given for the holotype with ranges of those of the paratypes in parenthesis. These and other proportional measurements are also expressed as percent of standard length in Table 1.

In standard length : head 3.33 (3.20–3.30); depth at first dorsal fin origin 5.65 (5.37–6.28); greatest width of head at preoperculum 7.84 (8.08–8.80).

In head length : snout 2.53 (2.53–2.69); horizontal eye diameter 3.41 (3.56–3.78); postorbital length 2.81 (2.78–3.03); interorbital width 5.57 (5.53–5.88); maxillary length 4.47 (4.33–4.93); least depth of caudal peduncle 4.33 (4.13–4.52); height of longest (2nd) spine of first dorsal fin 2.08 (1.90–2.11); height of longest ray of second dorsal fin 2.73 (2.71–2.84); height of longest anal finray 3.25 (3.12–3.78); pectoral fin length 1.94 (1.91–1.98); pelvic fin length 1.96 (1.88–2.09); caudal fin length 1.44 (1.54–1.61).

Body slender and slightly compressed. Snout pointed. Mouth small, terminal and moderately oblique. Teeth caniniform in a band in both jaws, broader anteriorly; vomerine teeth villiform forming a crescentic transverse patch. Interorbital almost flat with a median longitudinal shallow groove. Hind edge of preoperculum serrated; operculum with a small spine dorso-posteriorly. Gill rakers small, the

Table 1. Proportional measurements and counts of type specimens of *Sillago intermedius* sp. nov.
All measurements are expressed as a percentage of standard length.

Characters	Holotype MFLB 1975-8-4-1	Paratypes				Means \bar{x}
		BMNH 1976-11-17-1	QM I. 13606	MFLB 1975-8-4-2	BMNH 1976-11-17-2	
Standard length, mm	91.0	101.0	86.0	84.0	81.0	
Fork length	112.088	111.881	112.791	111.905	111.111	111.955
Total length	117.582	117.822	117.442	116.667	116.049	117.112
Depth of body	17.692	17.921	18.605	17.857	15.926	17.600
Depth of caudal-peduncle	6.923	7.327	7.209	7.262	6.914	7.127
Width of preoperculum	12.747	12.376	12.093	11.548	11.358	12.024
Head length	30.000	30.297	31.279	30.952	31.235	30.753
Snout length	11.868	11.980	11.628	11.905	11.728	11.822
Horizontal eye diameter	8.791	8.020	8.488	8.690	8.765	8.551
Postorbital length	10.659	10.000	10.698	10.833	11.235	10.685
Interorbital width	5.385	5.149	5.581	5.595	5.556	5.453
Upper jaw length	6.703	6.139	6.977	7.143	6.914	6.775
Predorsal length	36.593	36.634	36.860	36.071	36.173	36.466
Preanal length	58.242	58.119	59.419	58.333	59.876	58.798
Prepectoral length	30.879	31.683	32.209	31.905	32.222	31.779
Prepelvic length	31.319	32.574	32.674	31.786	32.346	32.140
1st & 2nd dorsal fin base lengths (together)	55.055	56.535	53.837	53.690	54.444	54.712
Anal fin base length	31.978	31.683	31.628	32.184	30.000	31.495
Longest dorsal fin spine	14.396	14.851	15.349	16.310	14.815	15.144
Longest dorsal fin ray	10.989	10.891	11.512	11.429	10.988	11.162
Longest anal fin ray	9.231	9.703	9.651	9.048	8.272	9.181
Pectoral fin length	15.494	15.347	16.395	15.833	15.804	15.775
Pelvic fin length	15.275	16.139	16.279	15.238	14.938	15.573
Caudal fin length	20.769	18.812	20.233	20.119	19.877	19.962
Dorsal	XI; 1,22	XI; 1,21	XI; 1,22	XI; 1,21	XI; 2,20	—
Anal	2,22	2,21	2,21	2,22	2,22	—
Pectoral R/L	17/17	18/17	17/17	18/18	17/17	—
Branched caudal fin ray	8+7	8+7	8+7	8+7	8+7	—
Longitudinal scale rows	68	69	67	69	70	—
Transverse scales rows	6+1+9	6+1+9	7+1+8	7+1+9	7+1+8	—
Predorsal scale rows	16	15	14	14	16	—
Circumpeduncular-scales	18	18	18	20	20	—
Pseudobranch filaments	17	—	14	—	14	—
Gill rakers	3+10	2+10	2+10	3+9	3+10	—

longest about half length of corresponding longest gill filament but only two fifths of filament in the smallest paratype; gill rakers decreasing in length anteriorly and with one or two rudiments (also included in the count in Table 1). Branchiostegal rays 6.

Cheek with two rows of large cycloid scales, preoperculum and interoperculum with only one row; body, nape, upper parts of operculum and preoperculum and continuing onto area between posterior part of eyes and also at base of isthmus covered with ctenoid scales; lower parts of operculum, preoperculum, suboperculum, postorbital, suborbital and between anterior part of eyes replaced by cyclid scales, the rest of head naked. Spines of all fins slender, caudal distinctively forked.

Swimbladder large with two median anterior short tubes which lead to inner ears on each side; two other tubes emerging antero-laterally from the main bladder, each of which has two branches, the anterior branch short, the posterior branch simple (c.f. fringed in *Sillago sihama*) and leading backwards close to the main bladder. Posterior part of bladder with paired post-coelomic extensions which terminate above base of fifth or sixth anal rays; another short tube ventrally connecting the posterior part of the main bladder and anus.

Colour when fresh (from field notes of holotype and paratypes): pale silver but darker on back, top of snout blackish; middle of opercle with a diffuse dark spot; bright silvery patches on preoperculum, preorbital and around nostrils and also at base of pectoral fin. Supracleithral region distinctly marked with a short black streak. Sides of body just below lateral line with a longitudinal row of dusky black spots, the first two or sometimes three spots below first dorsal fin, the following four to five spots (which are sometimes underlaid by a pale silvery stripe) below second dorsal fin and the last one on middle of lower peduncle. Back with a series of saddle-like dusky black spots, the first two spots on nape just below first dorsal fin, the third and fourth under the same fin, the fifth to ninth spots under second dorsal fin, and the last one on upper base of caudal fin. First dorsal fin greyish, second dorsal generally translucent with a series of two to four opaque spots on membranes; a black spot at base of each dorsal rays. Caudal fin dusky, upper and

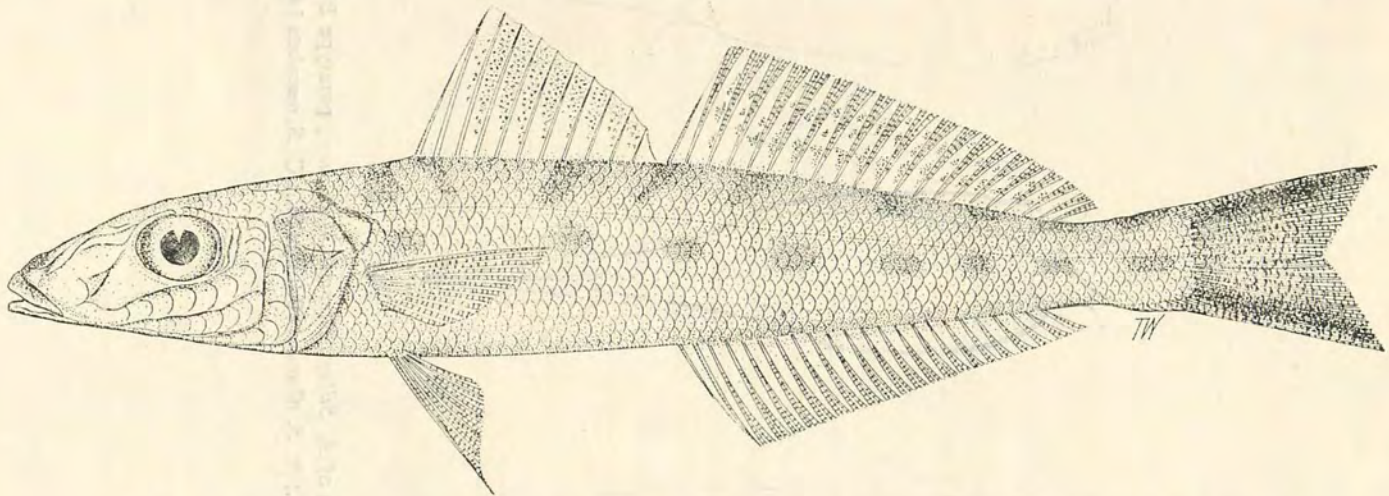
lower rays darker. Pectoral, anal and pelvic fins colourless. Inside of mouth without dark markings, inner surface of gill cover dusky black; each filament of pseudobranch with a very thin dark line longitudinally. Inner body wall milky white but with numerous dark dots overall. Main part of swimbladder dark, the remainder whitish.

Acknowledgements

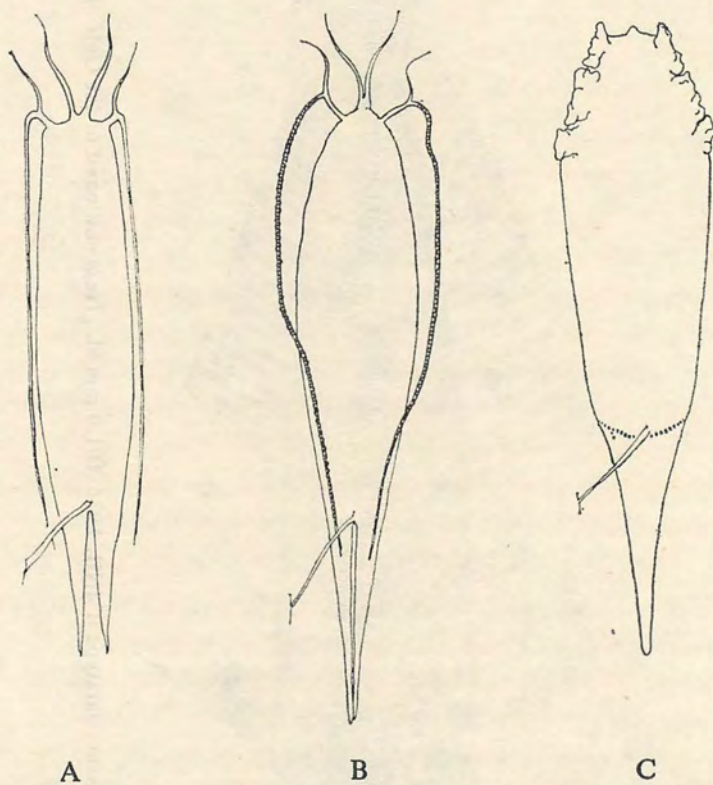
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Sillago intermedius sp. nov., paratype BMNH. 1976 101.0 mm SL., from east coast of the Gulf of Thailand.



Swimbladders of A. *Sillago intermedius* sp. nov., paratype BMNH. 1976 101.0 mm SL.; B. *S. sihama* 180.0 mm SL.; C. *S. maculata* 143.0 mm SL.