

*LEIOGNATHUS PAN*, A NEW PONYFISH  
(PISCES: LEIOGNATHIDAE) FROM THAILAND,  
WITH COMMENTS ON THAI LEIOGNATHIDS

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*Abstract.*—*Leiognathus pan*, n. sp., is described from ten specimens from the Gulf of Thailand and the Andaman Sea. It is chiefly distinguishable from its congeners in having: scaly breast, a dark blotch on nape, four series of broken longitudinal lines on sides dorsally (vs. vertical zig-zag lines or vermiculations), upper half of spinous dorsal fin between second and sixth spines with a prominent dark patch. Leiognathids are important in the fisheries of Thailand; seventeen species are known in the fauna.

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Fishes of the genus *Leiognathus* Lacepède are widely distributed in the Indo-Pacific from Australia to Japan through the Malay Peninsula to the east coast of Africa and to the Red Sea, as well as the Persian Gulf (Tiews & Caces-Borya 1965; Kühlmorgen-Hille 1974; James 1978, 1984). They are a dominant element of the coastal fish fauna of Thai waters.

In the 1970's, I discovered an apparently undescribed species of *Leiognathus* in the Bangkok Wholesale Fish Market. Six specimens from the Gulf of Thailand purchased in 1973 and four specimens from Ranong Province on the Andaman Sea, collected in 1975, provide the basis for the following description. Two specimens, not treated herein, were collected from the Andaman Sea in 1984 by Mr. Hiroshi Senou and are housed in the Department of Marine Sciences, University of Ryukyus, Japan.

Type specimens of the new species have been deposited in the British Museum (Natural History), London (BMNH); the Center for Thai National Reference Collection, Bangkok (CTNRC); the Chulalongkorn University Museum of Zoology, Bangkok (CUMZ); the Kasetsart University Museum of Fisheries, Bangkok (KUMF) and the National Museum of Natural History, Smith-

sonian Institution, Washington, D.C. (USNM).

In describing this new species, data presented in parentheses refer to paratypes (when different from the holotype). Additional measurements and counts are given in Table 1.

*Leiognathus pan*, new species  
Table 1, Figs. 1, 2

*Holotype.*—CUMZ 2528.2.9.1, 65.0 mm standard length (SL), trawled from the Gulf of Thailand, via Bangkok Wholesale Fish Market, 15 Apr 1973; T. Wongratana.

*Paratypes.*—Eight specimens, BMNH 1974.11.20.1, (1, 52.8), CTNRC 2621, (1, 62.0), CUMZ 2528.2.9.2, (1, 54.2), KUMF 2750, (1, 64.5), and USNM 276536, (1, 53.0), same data as for holotype. CUMZ 2528.2.9.3, (1, 50.0), Ranong Province, Andaman Sea, via Bangkok Wholesale Fish Market, 26 Feb 1975; T. Wongratana. USNM 276537, (2, 54.0-59.0), same data as preceding specimen, 31 Mar and 30 Apr 1975; T. Wongratana.

*Non-type.*—BMNH (uncat.), (1, 58.0 cleared and stained), Ranong Province, Andaman Sea, via Bangkok Wholesale Fish Market, 26 Feb 1975; T. Wongratana. Badly damaged when collected.

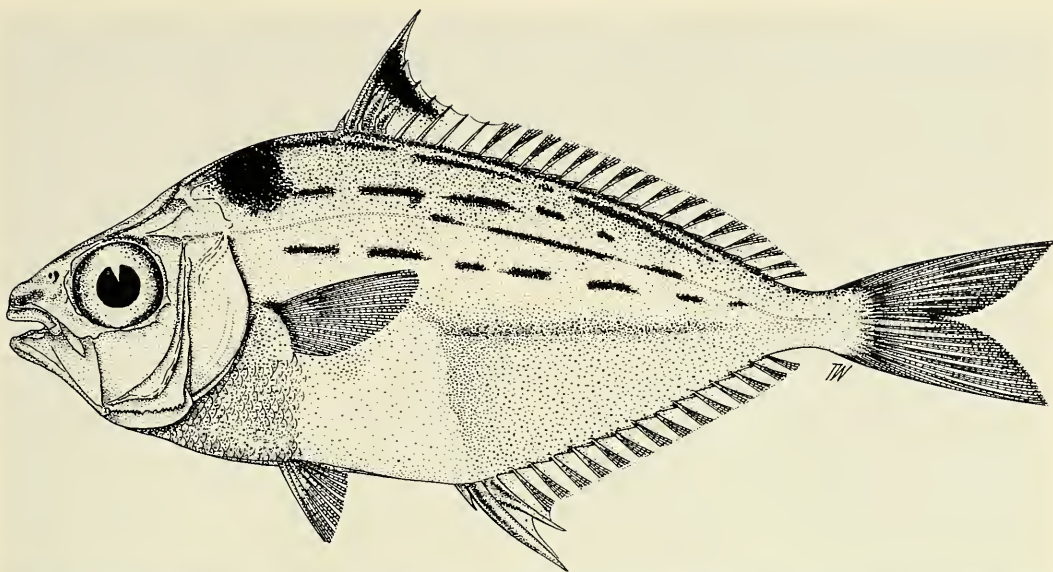


Fig. 1. *Leiognathus pan*, holotype, CUMZ 2528.2.9.1, 65.0 mm SL, Gulf of Thailand, collected at the Bangkok Wholesale Fish Market, on 15 Apr 1973. Scales on breast are shown, those on body omitted.

**Diagnosis.**—A species of *Leiognathus*, with oblong body, chiefly differing from congeners (see also “Remarks”) in having in combination: scaly breast, dark blotches on nape, 4 series of broken longitudinal lines on sides of body dorsally (vs. vertical zig-zag lines or vermiculations in most known species), and upper half of spinous dorsal fin between second and sixth dorsal spines with a prominent dark patch.

**Description.**—Meristics and morphometrics are presented in Table 1. Body slightly elongate and moderately compressed, depth at dorsal-fin origin 39.2 (34.2–42.6)% SL, dorsal and ventral profiles evenly curved, tapering slightly to caudal peduncle. Snout pointed, followed by indistinct supraorbital depression and slightly convex curvature to dorsal-fin origin. Eye relatively large, horizontal diameter 9.5 (8.8–10.9)% SL, scarcely nearer to snout tip than to posterior opercular margin. Supraorbital ridges smooth, converging posteriorly to form triangular space. Nuchal spine with distinct median keel, tip reaching just over half distance from occipital to dorsal-fin origin. One or two prominent, curved postnasal spines on lat-

eral ethmoid (number varies among specimens and between sides of a single specimen). Mouth small, terminal, horizontal when closed, and level with lower edge of eye; posterior tip of maxilla reaching to vertical at anterior orbital margin. Mouth, when protuded, directed obliquely downwards. Mandible very slightly concave and ascending at an angle of 36 (35–38) degrees. Teeth fine, villiform, in a single series in each jaw. Lower preopercular margin with about 27 (22–32) serrations.

Scales small, absent only on head and in pectoral area. Lateral line co-arching with dorsal profile and terminating just anterior to caudal-fin base; tubed scales 50 (48–54). Gill rakers spinescent, 5 on upper arch and 15 (15–17) on lower arch, longest raker half or little more than half length of corresponding gill filament.

First dorsal-fin spine minute, second longest, 16.1 (18.1–20.6)% SL and slightly longer than second anal-fin spine; last dorsal-fin spine slightly shorter than first dorsal segmented ray. Anal fin similar to but shorter than dorsal fin, inserted under seventh or eighth dorsal spine. Pelvic fins short, only

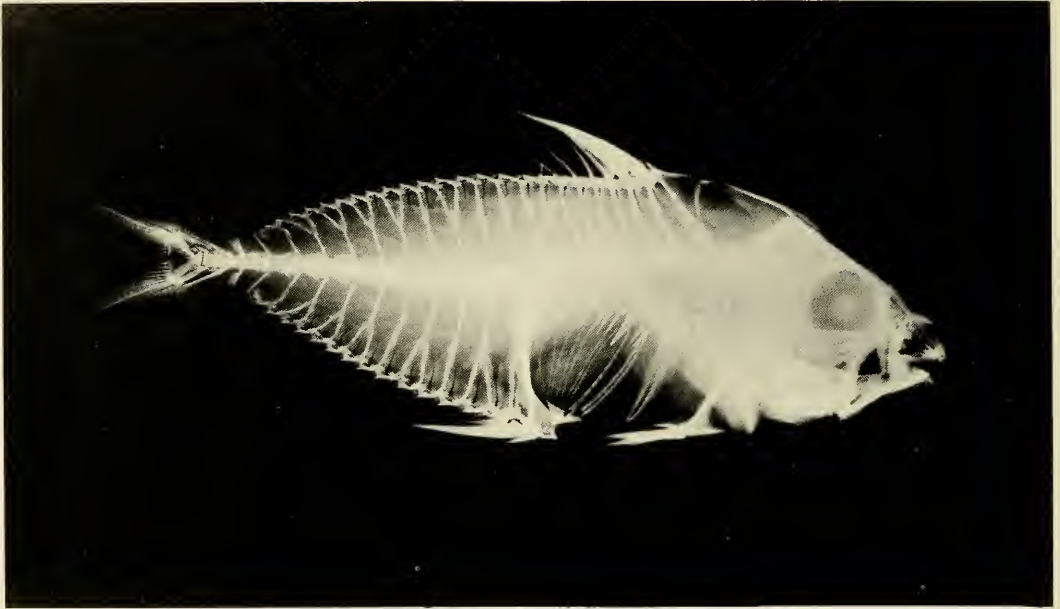


Fig. 2. Negative print made from radiograph of *Leiognathus pan*, paratype, USNM 276536, 53.0 mm SL, same data as for Fig. 1.

slightly larger than horizontal eye diameter. Pectoral fins somewhat pointed, reaching below base of sixth or seventh dorsal-fin spine. Caudal forked, with 8 (upper)+7 (lower) branched fin rays.

Fresh specimens with head and body iridescent blue-green dorsally, silvery laterally, brilliant silvery white, washed with very pale orange ventrally from pectorals to above middle of anal-fin base. Snout with dense melanophores. Iris of eye white, dusky dorsally. Upper half of body with four longitudinal rows of elongate, greenish blue spots, third row on lateral line, fourth below. Body contour along dorsal-fin base with black line. Prominent greenish-blue blotch across nape. Inner surface of gill cover largely white with scattered melanophores. All fins hyaline. Spinous dorsal fin with large black blotch on upper half from second to sixth spines; caudal washed with very pale orange near inner edge of fin; pectoral-fin base darkish posteriorly.

Preserved specimens light brown on body

and head; markings on back and sides obscure, blotch on nape diffuse. Snout and pectoral-fin axil dusky. Inner surface of opercle dotted with dark. Breast dusky; lower sides conspicuously paler below pectoral fins, dusky posteriorly. Black blotch on spinous dorsal fin distinct.

*Etymology.*—The specific epithet, *pan*, is derived from the Thai word for a small, flat, platelike, more or less shining object, and is the Thai vernacular name commonly used for all leiognathids.

*Remarks.*—*Leiognathus pan* has a prominent dark blotch on the nape, which is also present on four congeners: *L. argentea* Houttuyn from China and Japan, *L. blochii* (Valenciennes) and *L. brevirostris* (Valenciennes) from India to the western central Pacific and Australia, and *L. nuchalis* (Temminck & Schlegel) from Japan, China and Queensland. However, *L. argentea*, *L. brevirostris*, and *L. nuchalis* are readily distinguishable from the new species by lacking scales on the breast. *Leiognathus blochii* and

Table 1.—Measurements and counts of the types of *Leiognathus pan*, standard length in mm; all other measurements expressed as percentage of standard length. Abbreviations: tb, tip broken; nc, not counted.

Character	Holotype			Paratypes					
	CUMZ 2528.2.9.1	BMNH 1974.11.20.1	CTNRC 2621	CUMZ 2528.2.9.2	CUMZ 2528.2.9.3	KUMF 2750	USNM 276536	USNM 276537	
Standard length, mm	65.0	52.8	62.0	54.2	50.0	64.5	53.0	54.0	
Body depth	39.2	40.7	39.5	50.2	39.2	36.3	42.6	38.9	
Greatest width at pectoral region	14.3	15.1	12.1	14.8	15.8	12.1	13.3	—	
Least depth of caudal peduncle	6.1	6.6	6.9	6.8	6.8	6.0	7.1	7.0	
Length of head	28.3	27.6	27.1	27.3	29.5	28.7	32.4	29.4	
Length of snout	8.5	8.7	8.1	9.2	9.3	9.3	9.4	9.2	
Horizontal diameter of eye	9.5	9.3	8.9	8.8	9.5	9.4	10.9	9.4	
Length of postorbital	10.0	9.8	10.5	10.1	10.3	10.5	10.4	10.7	
Interorbital breadth	10.1	9.3	10.0	8.7	10.7	9.6	10.9	10.0	
Predorsal length	44.6	42.4	42.7	42.6	42.5	43.4	43.4	42.6	
Preanal length	56.1	52.5	54.2	53.5	53.2	53.9	43.2	55.4	
Prepelvic length	36.1	35.6	36.6	34.9	35.8	35.6	36.2	39.1	
Prepectoral length	30.5	29.9	29.8	30.4	31.0	31.0	32.1	32.0	
Dorsal base length	53.1	55.1	51.3	54.8	52.5	52.2	56.0	53.7	
Anal base length	40.0	43.6	40.3	42.6	43.7	41.1	45.1	42.0	
Length of longest (2nd) dorsal spine	16.1	19.5	18.1	20.5	18.3	20.1	20.4	20.6	
Length of longest (2nd) anal spine	14.5	16.1	15.8	16.4	14.9	15.5	17.0	18.3	
Length of 3rd anal spine	11.5	tb	tb	tb	tb	tb	tb	1.5	
Length of pelvic fin	11.1	12.3	11.3	12.9	12.5	11.6	13.2	12.8	
Length of pectoral fin	17.1	21.0	19.8	19.4	19.0	18.6	22.6	20.4	
Dorsal-fin rays	VIII,16	VIII,16	VIII,16	VIII,16	VIII,16	VIII,16	VIII,16	VIII,16	
Anal-fin rays	III,14	III,14	III,14	III,14	III,14	III,14	III,14	III,14	
Pelvic-fin rays	I,5	I,5	I,5	I,5	I,5	I,5	I,5	I,5	
Pectoral-fin rays	16	16	16	17	17	16	16	17	
Branched caudal-fin rays	15	15	15	15	15	15	15	15	
Truncated scales on lateral lines	50	54	49	51	51	49	48	51	
Gillrakers	5+15	nc	5+16	nc	nc	5+16	nc	5+17	
Precaudal and caudal vertebrae	10+14	nc	nc	10+14	10+14	nc	10+14	10+14	

*L. spilotus*, doubtfully distinct from each other (Weber & De Beaufort 1931, James 1978), have scaly breasts and are separable from *L. pan* by not having interrupted dorso-lateral streaks.

The holotype (ANSP 27529) of *L. (Eubleekeria) spilotus* is a small specimen, 26 mm SL. It was illustrated by Fowler (1904), who noted that it has "several rows of brownish blotches, two or three blotches to a row, and line of demarcation distinct." Fowler's illustration has a body depth of 48.2% SL, where my measurement of the holotype indicates the depth is 43.5% SL. No markings are now evident. James (1978) and Böhlke (1984) referred *L. spilotus* to the synonymy of *L. blochii* and I concur with their actions. The fact that the young of most leiognathid fishes normally have several dark blotches on the flanks and a relatively deeper body than adults is further evidence that the holotype of *L. spilotus* is a juvenile. Many specimens of *L. blochii* (in ANSP, USNM and also the California Academy of Sciences, San Francisco) of a size equivalent to that of specimens of *L. pan* also show the irregular vertical lines on sides. Absence of these markings in the latter specimens confirms that they do not represent the young of *L. blochii* or other species.

#### Comments on Thai Leiognathids

In Thailand, Leiognathidae, including members of the genera *Gazza* Rüppell, *Leiognathus* Lacepède, and *Secutor* Gistel, are of economic importance, mainly the bottom trawl fishery (Tiews 1965, Wongratana 1968); and smaller quantities are caught by a variety of other inshore methods, e.g., set-bag nets, bamboo-stake traps, push-nets, beach seines and dip-nets. Some species are commonly found also in coastal shrimp or fish ponds. At present, the numbers and average size available to the fishery are greatly diminishing, undoubtedly due to over fishing resulting from unenforced regulations.

Formerly, the best catches were obtained at depths of 20–40 m while catches on the deeper fishing grounds were normally very poor (Tiews 1965, Ritragasa et al. 1969, Ritragasa et al. 1970). The local economic value of leiognathids varies according to size of the fishes. Excess catches, as well as small fishes in great quantities, are utilized as animal food or fish meal whereas larger individuals of certain species, e.g., *L. equulus* (Forskål), *L. splendens* (Cuvier), *L. fasciatus* (Lacepède), *L. smithursti* (Ramsay & Ogilby), *L. blochii* (Valenciennes), *L. daura* (Cuvier) and *Gazza minuta* (Bloch) are consumed locally (Wongratana 1982). Despite their economic importance, several problems remain, including the validity of several nominal forms and their distributions.

Seventeen species of leiognathids are reported from Thai waters, including those reported by the following: Weber & De Beaufort 1931; Fowler 1934, 1935, 1937, 1939; Suvatti 1950; Rofen 1963; Banasopit & Wongratana 1967; Wongratana 1968, 1972, 1982; and Kühlmorgen-Hille 1968, 1974. Previously reported species confirmed by my collections are: *L. berbis* (Valenciennes), *L. bindus* (Valenciennes), *L. blochii* (Valenciennes), *L. brevirostris* (Valenciennes) (as *L. decorus* (De Vis) according to Sainsbury et al. 1985), *L. daura* (Cuvier), *L. elongatus* (Günther), *L. equulus* (Forskål), *L. fasciatus* (Lacepède), *L. leuciscus* (Günther), *L. lineolatus* (Valenciennes), *L. smithursti* (Ramsay & Ogilby), and *L. splendens* (Cuvier). Among these species, *L. equulus* is the largest member, attaining 170 mm SL (Rofen 1963). *Leiognathus berbis* and *L. lineolatus*, previously redescribed and figured from Thailand by Fowler (1935, 1937), seem to be very rare, and I have collected very few specimens during the past 20 years. Interestingly, *L. berbis* appears to be the first species of the Leiognathidae recorded from Thailand (Weber & De Beaufort 1931).

My recent examination of Fowler's (1939) Thai specimens of *L. dussumieri* (ANSP

76828; 118, 119 and 120 mm SL, from Krabi Province, Andaman Sea), for which he gave total lengths of 157–161 mm, revealed them to be specimens of *L. equulus* (Forskål). They have no scales on the breast, very deep body (1.6 vs. 2.0–2.3 in SL in *L. dussumieri*) and their length exceed the maximum size of *L. dussumieri* given by James (1984, 140 mm TL). No substantiated records of *L. dussumieri* exist for Thailand, although overall distribution suggests it may occur there.

Other leiognathid species recorded from Thai waters are *Secutor ruconius* (Hamilton-Buchanan), *S. insidiator* (Bloch) and *Gazza minuta* (Bloch). The name *G. equulaeformis* Rüppell which appeared in Fowler's (1935, 1937) reports from Sriracha, Paknam and Rayong, is evidently a junior synonym of *G. minuta* (Weber & De Beaufort 1931, Herre 1953). An additional species of *Secutor*, *S. indicus* was described by Mongkolprasit (1973) from the Gulf of Thailand. These fishes are very common throughout the year along the coasts of Thailand.

*Gazza achlamys* (Jordan & Starks), reported from the Philippines (Tiews & Caces-Borya 1965) and India (James 1978, 1984, 1985a, b), may eventually be found in Thai waters.

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#### Literature Cited

- Banasopit, T., & T. Wongratana. 1967. A check list of fishes in the Reference Collection maintained at the Marine Fisheries Laboratory.—Contribution of the Marine Fisheries Laboratory, Bangkok, No. 7:1–73.
- Böhlke, E. B. 1984. Catalog of type specimens in the ichthyological collection of the Academy of Natural Sciences of Philadelphia.—Academy of Natural Sciences of Philadelphia, Special Publication 14:1–246.
- Fowler, H. W. 1904. A collection of fishes from Sumatra.—Proceedings of the Academy of Natural Sciences of Philadelphia 12(2):497–560.
- . 1934. Zoological results of the third de Schauensee Siamese Expedition; Part 1, Fishes.—Proceedings of the Academy of Natural Sciences of Philadelphia 86:67–163.
- . 1935. Zoological results of the third de Schauensee Siamese Expedition; Part 6, Fishes obtained in 1934.—Proceedings of the Academy of Natural Sciences of Philadelphia 87:89–163.
- . 1937. Zoological results of the third de Schauensee Siamese Expedition; Part 8, Fishes obtained in 1936.—Proceedings of the Academy of Natural Sciences of Philadelphia 89:125–264.
- . 1939. Zoological results of the third de Schauensee Siamese Expedition; Part 9, Additional fishes obtained in 1936.—Proceedings of the Academy of Natural Sciences of Philadelphia 91:39–76.
- Herre, A. W. 1953. Check list of Philippine fishes.—

- Fish and Wildlife Service, Research Report 20, United States Government Printing Office, Washington, 977 pp.
- James, P. S. B. R. 1978. A systematic review of the fishes of the family Leiognathidae.—*Journal of Marine Biological Association of India* 17(1): 138–172.
- . 1984. Leiognathidae. *In* W. Fischer and G. Bianchi, eds., FAO species identification sheets for fisheries purposes, western Indian Ocean (fishing area 51), FAO, Rome, no pagination.
- . 1985a. Comparative osteology of the fishes of the family Leiognathidae, Part 1: Osteology.—*Indian Journal of Fisheries* 32(3):309–358.
- . 1985b. Comparative osteology of the fishes of the family Leiognathidae, Part 2: Relationships among the genera and the species.—*Indian Journal of Fisheries* 32(4):395–416.
- Kühlmorgan-Hille, G. 1968. An illustrated field key to the fish family Leiognathidae in the Gulf of Thailand.—*Contribution of the Marine Fisheries Laboratory, Bangkok* No. 12:1–7.
- . 1974. Leiognathidae. *In* W. Fischer and P. J. P. Whitehead, eds., FAO species identification sheets for fisheries purposes, eastern Indian Ocean and western central Pacific (fishing areas 57, 71), FAO, Rome, no pagination.
- Mongkolprasit, S. 1973. The fishes of the leiognathid genus *Secutor*, with the description of a new species from Thailand.—*Kasetsart University Fisheries Research Bulletin* No. 6:10–17.
- Ritragsa, S., et al. 1969. An analysis of demersal fish catches taken from otterboard trawling survey in the Gulf of Thailand, 1967.—*Contribution of the Marine Fisheries Laboratory, Bangkok* No. 15:1–70.
- . 1970. The analysis of demersal fish catches taken from the otterboard trawling survey in the Gulf of Thailand, 1968.—*Contributions of the Marine Fisheries Laboratory, Bangkok* No. 16: 1–61.
- Rofen, R. R. 1963. Handbook of the food fishes of the Gulf of Thailand. The George Vanderbilt Foundation and the University of California, Scripps Institution of Oceanography, S1R Reference No. 63-18:1–235.
- Sainsbury, K. J., et al. 1985. Continental shelf fishes northern and northwestern Australia. *Colorcraft, Hong Kong*, 375 pp.
- Suvatti, C. 1950. Fauna of Thailand. Department of Fisheries, Bangkok, 1100 pp.
- Tiews, K. 1965. Bottom fish resources investigation in the Gulf of Thailand and an outlook on further possibilities to develop the marine fisheries in southeast Asia.—*Archiv für Fischereiwissenschaft, Berlin* 16(1):67–108.
- , & P. Caces-Borya. 1965. On the availability of fish of the family Leiognathidae Lacepède in Manila Bay and San Miguel Bay and on their accessibility to controversial fishing gears.—*The Philippine Journal of Fisheries* 7(1):59–85.
- Weber, M., & L. F. De Beaufort. 1931. The fishes of the Indo-Australian archipelago, vol. VI. E. J. Brill Ltd., Leiden, 448 pp.
- Wongratana, T. 1968. A check list of fishes caught during the trawl surveys in the Gulf of Thailand and off the east coast of the Malay peninsula.—*Contribution of the Marine Fisheries Laboratory, Bangkok* No. 13:1–96.
- . 1972. Contributions to the sea fishes from Thailand in the Biologische Anstalt Helgoland, Zentrale, Hamburg, Germany. *In* The third symposium on the Marine Fisheries, Marine Fisheries Laboratory, Bangkok, 121 pp.
- . 1982. Economic fishes from the seas of Thailand.—*Journal of the Science Society, Bangkok* 36(2):93–102 (In Thai).

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