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Four New Species of the Freshwater Fishes from Thailand

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ABSTRACT

The four new species of the freshwater fishes from Thailand in this article are classified into two major groups. The first one comprises of the two new species of Thai freshwater barbs belongs to the genus *Cyclocheilichthys* which is one of the perplexing cyprinine fishes, they are *C. furcatus* and *C. lagleri.* The first species is described from the fish of the Mekong River while the second one of the Chao Phya River. *Cyclocheilichthys furcatus* has two pairs of well-developed barbels; circumpeduncular scales 16; circumferential scales 11/2/11; total number of vertebrae 34; total number of gill rakers 12-14; lateral-line scales 33 or 34, with multifid tubes in adults. The second species, *C. laglari,* has no barbel; circumpedun-cular scales usually 20; circumferential scales 13/2/15; total number of vertebrae 35 (rarely 36); total number of gill rakers 8-12; lateral-line scales 34-36, always with simple tubes. The second group is two new species of *Tetraodon; T.baileyi* and *T. suvattii,* they were found only in the Mekong River. The first species lacks of neither spines nor spinules, but the body covers with several finger-like tentacles on the upper part of head and other parts of the body. The second species has spinules and the head is flattened, its snout is rather long and sides of head with one oblique line from below eyes downward not beyond head area and one or two obscure lines.

INTRODUCTION

In the present paper, four new species of freshwater fishes from Thailand are described. The first two species belongs to the genus *Cyclocheilichthys;* family Cyprinidae, they are the new freshwater cyprinine fish from Thailand; ever described from the Mekong and the Chao Phya Rivers. The genus *Cyclocheilichthys* is one of the most perplexing groups of the cyprinine fish, and it also comprises of two new species; *C. furcatus* and *C. lagleri,* which were never been described before 1976. The third and the fourth species belong to the genus *Tetraodon* of the family Tetraodontidae. They are *T. baileyi* and *T. suvattii,* two new species of freshwater puffer fishes found in the Mekong River basin.

Eventhough, these two genera belong to the different groups of fish, their phylogenies are not only different from each other but also from different phylogenetic lines. They are however, should be written together because all of them are new to most of scientists in Thailand and abroad.

The publications relevant to taxonomic informations for this study are as follows: Bardach (1959), Chevey (1932) & (1934), Fowler (1934, 1935 & 1937), Günther (1964), Inger and Kong (1962), Pellegrin and Chevey (1937 & 1940), Smith (1945), Taki (1968 & 1970) and Weber and de Beaufort (1961).

MATERIALS AND METHODS

Fifteen specimens of *Cyclocheilichthys furcatus,* 176 specimens of *C. lagleri,* 7 specimens of *Tetraodon baileyi* and 95 specimens of *T. suvattii* are described in details. In addition

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to these, a number of specimens used for comparative study with four new species described in this article are largely those in the collections of the University of Michigan Museum of Zoology, the Academy of Natural Sciences of Philadelphia, the U.S. National Museum of Natural History, Kasetsart University Museum of Fisheries and the National Inland Fisheries Institution. Most of the data are original counts and measurements of scales, fin rays, vertebrae, gill rakers, body proportions, osteology, and other morphological features; supplemented where necessary from the literatures. Cleared and stained specimens and radiographs were prepared and studied.

Measurements were taken in millimeters. Proportions are expressed in term of per millage in standard lenght (SL) which is in thousandths of the standard length unless otherwise stated. Counts and morphometric characters were made following the methods recommended by Hubbs and Lagler (1958). Explanation of technical terms, abbreviations and others used in this article are as follows:

Anal fin rays. Number of branched rays of anal fin.

Barbels. Length from base to distal end of either maxillary or rostral barbels.

Body depth. The maximum depth of body, generally from origin of dorsal fin to slightly ahead of insertion of pelvic fin.

Circumferential scales. Number of scale rows crossing a line around the body three scales in advance to the origin of dorsal fin.

Circumpeduncular scales. Number of scale rows counted around the narrowest part of caudal peduncle.

Diameter of orbit. Greatest diameter between free orbital rims.

Dorsal fin rays. Count in number of branched rays, the last double at base is counted as one.

Gill rakers. Total number of gill rakers on anterior face of first gill arch; included are rakers of the upper arm, at angle, and the lower arm.

Head length. From the tip of snout to posterior fleshy margin of gill cover.

Interorbital width. The bony width between orbits.

Lateral-line scales. Number of pored scales on body from anterior scale in contact with shoulder girdle to structural base of the caudal fin.

Pored scales on caudal base. Number pored scales from caudal peduncle counted backward onto caudal fin.

ANSP = The academy of Natural Sciences of Philadelphia.

KUMF = The Kasetsart University Musem of Fisheries.

NIFI = The National Inland Fisheries, Department of Fisheries.

UMMZ = The University of Michigan, Museum of Zoology.

USNM = The U.S. National Museum.

The numerical number after the above abbreviations mentioned in the text is the catalogued number.

The numerical number in parenthesis after the catalogued one is the number of the specimens used in this study; i.e. KUMF 10096(2) means this catalogued number has two specimens.

RESULTS AND DISCUSSION

The results as well as discussion are as follows:

Cyclocheilichthys furcatus n.sp.

Diagnosis:

Cyclocheilichthys furcatus has two pairs of well-developed barbels; circumpeduncular scales 16; circumferential scales 11/2/11 = 24; total vertebrae 34; total number of gill rakers 12-14; lateral-line scales 33 or 34, with multifid tubes in adults (becoming bifid at about 78 mm SL, usually further divided at greater size).

The presence of two pairs of barbels and 16 circumpeduncular scales is shared with *C. enoplos* and *C. armatus*. *C. enoplos* has a higher

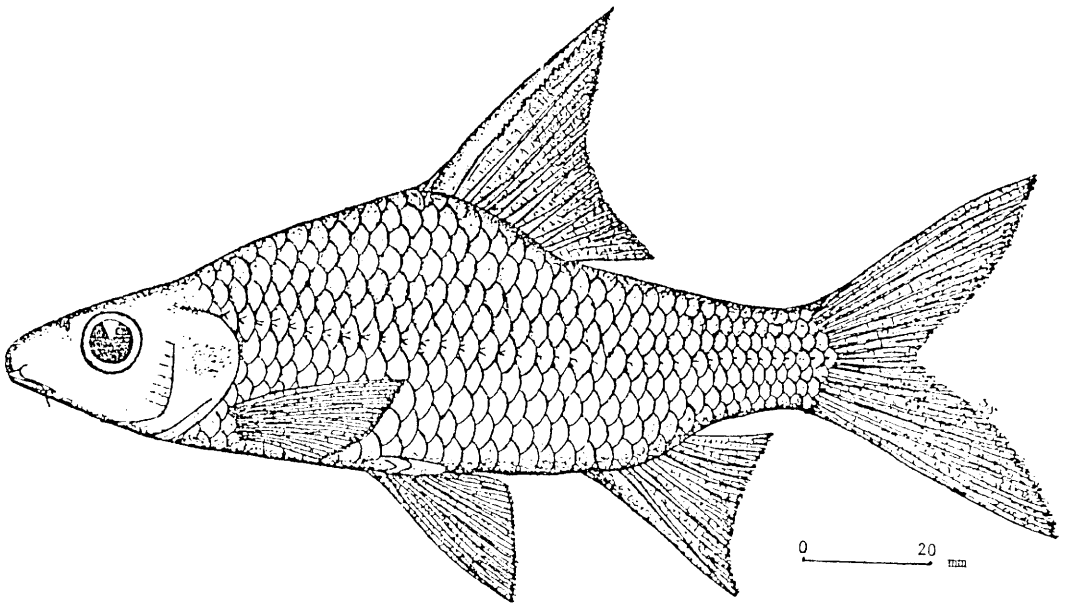

Figure 1 *Cyclocheilichthys furcatus* **n.sp. (Holotype: 950 mm. SL)**

number of total gill rakers on the first arch; higher number of vertebrae, lateral-line scales, and circumferential scales; and also a more slender body than *C. furcatus*. *C. armatus* usually has fewer gill rakers (7-10), simple tubes on lateral-line scales at all ages, and usually has 26-28 circumferential scales.

Description :

Proportional measurements and counts are given in Table 1.

Body oblong and compressed; depth 324-372. Dorsal profile ascending from tip of snout to origin of dorsal fin. Ventral profile less arched than the upper one. Head 249-313, shorter than body depth; eye 50-91, about equal to snout 77 - 100, moderately rounded; interorbital space 71-105, equal to or slightly shorter than snout; post-orbital part of head 118-145, loger than snout. Mouth slightly oblique, subinferior. Two pairs of well developed barbels, but more slender than those of *C. enoplos;* maxillary barbel less than half of eye diameter; and rostral barbel longer than half of the maxillary one. Predorsal length 503-538; origin of dorsal fin opposite 10th or 11th scale of lateral line slightly closer to base of caudal fin than tip of snout. Dorsal fin concave, its fourth spine osseous, with 23-31 dentations on its posterior edge, as long as or slightly longer than head. Number of scales from posterior base of dorsal fin to vertical from anal-fin origin varies from 3 to 4.5, Predorsal scales 11-12. Tip of pectoral fin short of, reaching or surpassing pelvic-fin insertion, fin length slightly shorter than or equal to pelvic fin. Prepelvic length 480-507; pelvic-fin insertion opposite (9th) 10th scale of lateral line, suprapelvic scales 3.5; tip of pelvic fin short of, reaching to, or surpassing anus. Preanal length 719-781; anal fin concave, its third simple ray strong; anal-fin length equal to or slightly longer than head without snout; anal-fin origin opposite 21st or 22nd scale of lateral line. Caudal fin deeply forked, its lobes pointed. Least height of caudal peduncle about equal to postorbital part of head, and surrounded by 16 scales.

Proportional measurements and counts of the holotype are as follows: Two pairs of well-developed barbels; circumpeduncular scales 16; circumferential scales 11/2/11 - 24; total vertebrae 34; total number of gill rakers 13; lateral-line scales 34, with 4 pored scales on caudal base, with 12 bifid tubes on the right side and 9 bifid tubes on the left side of the lateral-line scales; predorsal scales 11; branched pectoral-fin rays 16; fourth dorsal spine with 24 dentations on its posterior edge; depth 354 (per millage in standard length); head 302; eye 83; snout 78; interorbital space 73; and postorbital part of head 135; predorsal length 536; prepelvic length 490; and preanal length 745.

Preserved specimens are pale brown, darker on the upper half and back; incomplete reticulations may be present about and slightly below lateral line. Dorsal and caudal fins dusky with darker margins posteriorly, other fins hyaline. A dark, diffuse blotch at caudal base, a dark bar behind upper part of gill-opening, and a dark diffuse blotch on the upper part of opercle may be present in some specimens. The largest specimen examined is 162 mm in standard length. These large fish have completely divided lateral-line tubules and are much deeper bodied and more grayish (instead of silvery) than *enoplos* seen at the same time.

Geographic Distribution :

Cyclocheilichthys furcatus is known from the area around Khong Chiam, at the Mun River confluence with the Mekong River. Uhon Ratchathani Province, northeast Thailand; and Mekong River at Ban Tha Kai, 21 kilometers downstream from Mukdahan province, Thailand. This species may occur in the Mekong River in Laos and Cambodia; in the past it may have been misidentified as *C. enoploides,* which is in fact a synonym of *C. enoplos.*

Etymology :

The adjectival name *furcatus* refers to bifid or multiple lateral line tubes in half grown and adult fish, a character shared in *Cyclocheilichthys* only with *enoplos.*

Materials Examined (15 specimens, 69 to 295 mm in standard length):

Holotype, UMMZ 198969 (1), 95 mm in standard length, and paratopotypes UMMZ 198970 (3), 78, 87.5, and 131 mm; type locality: 8 km north of Huey Mak, khong Chiam, Ubon Ratchathani Province, Thailand, collected by E.D. Buskirk in October 7, 1975.

Additional paratypes:

Thailand: KUMF 2847 (2), Mekong River at Khong Chiam, Ubon Ratchathani UMMZ 198971 (4), 198972 (1), Mun River, 3 km upstream from Mekong River at Khong Chiam, Ubon Ratchathani UMMZ 198973 (3), Mekong River at Ban Tha Kai, 21 km downstream from Mukdahan Province; USMM-T29 (1), Ubon Ratchathani Province.

Remarks :

The data obtained suggest that small fish have larger eyes, a more slender body, and a more pointed snout than do larger ones.

Cyclocheilichthys lagleri n.sp.

Diagnosts :

A species of *Cyclocheilichthys* that lacks barbels; circumpedumcular scales usually 20; circumferential scales usually 13/2/15 = 30; total vertebrae 35 (rarely 36); total number of gill rakers 8 - 12; lateral-line scales 34-36, with simple tubes; and no oculo-caudal stripe along lateral line.

The absence of the barbels is shared only by *C. apogon* which has 16 circumpeduncular scales, 28 circumferential scales, and 32 or 33 vertebrae.

Description :

Proportional measurements and counts are given in Table 1.

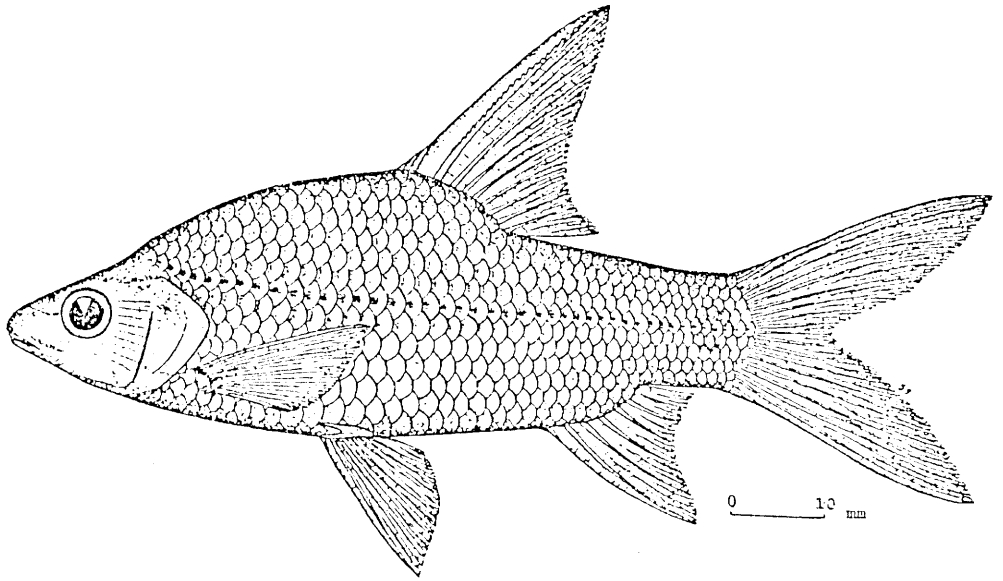

Figure 2 *Cyclocheilichthys lagleri* **n.sp. (Holotype: 725 mm. SL)**

Table 1 Meristic Counts and Morphometric Measurements (in term of permillage in standard length) of *Cyclocheilichthys furcatus* and *Cyclocheilichthys lagleri.* Based on total number of specimens examined.

Character	*C.furcatus*		*C.lagleri*	
	Meristic count	Morphometric measurement	Meristic count	Morphometric measurement
Vertebral count	34	-	35-36	-
Circumferential scale	24	-	28-32	-
Lateral-line scale	32-34	-	34-36	-
Branched pectoral fin ray	15-17	-	14-16	-
Predorsal-scale	11-12	-	14-17	-
Circumpeduncular scale	16	-	(18)20	-
Gill-raker	11-14	-	8-12	-
-	-	-	-	-
Depth	-	306-396	-	306-395
Head length	-	246-325	-	246-365
Snout length	-	71-100	-	61-100
Postorbital length	-	105-149	-	105-179
Interorbital space	-	66-105	-	76-115
Orbit diameter	-	51-100	-	61-100
Predorsal length	-	501-540	-	521-600
Preanal length	-	706-795	-	676-795
Prepelvic length	-	461-510	-	411-485

Body oblong and compressed; depth 311-387.. Dorsal profile ascending from tip of snout to origin of dorsal fin. Ventral profile less ascending than the dorsal one. Head 262-347, shorter than body depth; eye 63-96, about equal to snout; snout 68-98, moderately blunt; interorbital space 83-113; postorbital part of head 110-175, usually longer than interorbital space. Mouth slightly oblique, small. Predorsal lenght 535-583; dorsal-fin origin opposite 11th or 12th scale of lateral line, and slightly closer to caudal base than to tip of snout. Dorsal fin emarginate; its fourth spine strong, more or less longer than head or about equal to body depth; with 15 to 23 dentations on its posterior edge. Number of scales from posterior base of dorsal fin to vertical from anal-fin origin varies from 3 to 5. Tip of pectoral fin surpassing pelvic-fin insertion; fin length subequal to pelvic fin. Prepelvic length 414-484; its tip slightly short of or reaching anus; its insertion opposite 8th to 10th scale of lateral line, usually opposite 8th scale. Preanal length 682-787, anal-fin origin opposite 22nd or 23 rd (rarely 24th) scale of lateral line, its third simple ray strong and about equal to head without snout. Least height of caudal peduncle equal to postorbital part of head, and surrounded by 20 scales (occasionally 18, 19, 21, or 22 scales).

Proportional measurements and counts of the holotype are as follows: Depth 365; head 281; eye 74; snout 74; interorbital space 108; postorbital part of head 128. Predorsal length 568; prepelvic length 432; and preanal length 740. No barbels; circumpeduncular scales 20; circumferential scales 30; total vertebrae 35; total number of gill rakers 11; lateral-line scales 36, with 2 pored scales on caudal base, and with simple tubes; predorsal scales 14, and fourth dorsal spine with 21 dentations on its posterior edge branched pectoral-fin rays 15.

Fresh specimens plain silvery on side, darker on the upper half. Longitudinal rows of small dark spots along side may or may not be present, if present in one to nine rows; one row always present below lateral line. These rows usually number from 5-9 in Thai specimens, with 10 to 11 rows of more distinct spots in Vietnamese fish. A dark triangular or round caudal spot and a dark blotch or bar behind gill opening are present in most specimens. A dark vertical line lies between lower part of opercle and preopercle, and a dark diffused blotch may be present on upper part of opercle. Dorsal-fin membrane dark on its upper two-thirds. Dorsal and caudal fins dusky, with their posterior margins darker. Other fins slightly dusky or hyaline. The largest fish used in this study is 92 mm in standard length.

Geographic Distribution (Figure 6):

Cyclocheilichthys lagleri has a restricted range, presently known from five localities. It has been found in Bangkok, Ayutthaya, Nakhon Sawan in Thailand; Kompong Cuhnang in Cambodia; and Chao Doc, in South Vietnam. This species may inhabit other localities where it has been misidentified as *C. apogon,* as was done by Fowler (1937).

Etymology :

The specific name of this species is given in honor of Professor Karl F. Lagler for his intensive collection of Thai fishes and toward the advancement of ichthyology in Thailand. This species was first recognized by the author as a new species from specimens in the Acadamy of Natural Sciences of Philadelphia; it had been identified as *C. apogon* by Fowler in 1937.

Materials Examined (176 specimens, 38-92 in standard length):

Holotype, UMMZ 198968 (1), 72.5 mm in standard length, and paratopotypes, UMMZ 198367 (140); 38-92 mm; type locality: Chao Phya River floodwater, vicinity of Ampur Maharaj, Ayutthaya Province, Thailand; collected by Mr. Sanit Mekbahn in December 27, 1964.

Additional specimens :

Thailand: ANSP 61783-61784(2), 131701 (8), Bangkok, 131684(1), Bangkok; these 11 specimens at ANSP were misidentified as *Cyclocheilichthys apogon* by Fowler, 1937. UMMZ 195295(1), 195393(1), Klong Kapi, Bangkok; UMMZ-R75-8(1), highway 32,39 km south of Nakhon Sawan.

Cambodia: UMMZ 196817(1), Kampong Cuhnang.

South Vietnam: UMMZ 197535(16), Chao Doc fish market, Chao Doc Province; UMMZ 197539(4), rice field, 10 km southwest of Hoa Binh Than, Chao Doc Province.

Tetraodon baileyi n.sp.

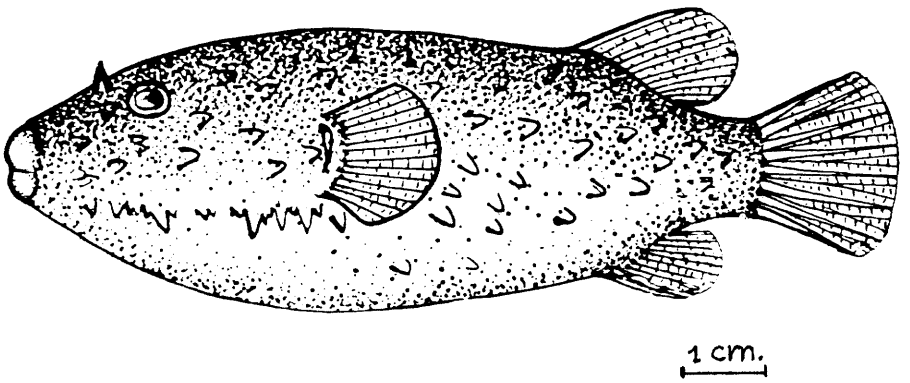

Figure 3 *Tetraodon baileyi* **n.sp. (Holotype: 68 mm. SL)**

Diagnosis :

A species of *Tetraodon* that has small finger-like tentacles and/or palm-like with finger-like ones on its end, mostly on chin, lower half of the head, and also scatter along the upper part of the body; head, body and abdomen smooth, without prickles or spinules; most characters of the group shared with those that has two thick tentacle-nasal organ; and this species lacks of spots or stripes neither dark nor white ones as other species in this group.

Description :

Proportional measurements and counts are given in Table 2.

Body oblong but slightly depressed, except the tail part; depth 306-471. Dorsal profile slightly ascending from tip of snout to interorpital space, then rather straight to origin of dorsal fin. Ventral profile more arched from mouth to the chin, then slightly curved to caudal fin. Head 306-620; depending on the size of the specimens, longer than body depth. Eye 82-111; on the posterior half of head, snout 188-278; moderately rounded, interorbital space 140-206; flattened and shorter than snout, postorbital part of head 143-206; more or less shorter than snout. Mouth terminal; without barbels. Nasal organ with two thick tentacles; united basally. Predorsal length 753-833; origin of dorsal fin on the posterior half of the body and next to caudal base or on the last one fourth of the body. Dorsal fin convex; without osseous spine and less than half of head. Body without scales; smooth and without spinules

Table 2 Meristic Counts and Morphometric Measurements (in term of permillage in standard-length) of *Tetraodon baileyi* and *T. suvattii*. Based on total number of specimens examined.

Character	*T.baileyi*		*T.suvattii*	
	Meristic count	Morphometric measurement	Meristic count	Morphometric measurement
Pectoral-fin rays	i, 17-18	-	i, 21-22	-
Depth	-	306-571	-	259-386
Head length	-	306-620	-	426-516
Snout length*	-	188-278	-	352-534
Postorbital length*	-	143-206	-	350-525
Interorbital space*	-	140-206	-	326-505
Orbit diameter*	-	82-11	-	104-168
Predorsal length	-	753-833	-	710-850
Preanal length	-	800-889	-	760-910
Prepelvic length	-	-	-	-
Dorsal-fin rays	i, 10-11	-	i, 13-14	-
Caudal-fin rays	i, 6-7	-	i, 7-8	-
Anal-fin rays	i, 7-8	-	i, 10	-

* per millage in head length

or small prickles; but with small finger-like tentacles and/or palm-like plus finger-like ones on its end. These tentacles found mostly on chin, lower half of head, also scattered along the upper part of the body. Pectoral fin fan like; about as long as dorsal and/or anal fins; next to its small gill opening; its base and length about the same length as those of dorsal and anal ones, prepectoral length 306-620; about the same as head length; depending on the size of the fish and/or also its preserved condition. Preanal length 827-840; anal fin convex as well as dorsal and pectoral fins, its length more or less the same as doral and pectoral ones; its origin slightly behind that of dorsal. Least heigth of caudal peduncle about equal to ½ head depth.

Proportional measurements and counts of the holotype are as follows:- Body smooth without spinules or prickles, but head and body covered with small finger-like tentacles and/or palm-like with finger-like ones; especially on lower part of (chin) and scattered along lower part of head, and also on upper part of the body. Dorsal fin rays i, 10; pectoral-fin rays i, 17; anal-fin rays ii, 8; and caudal-fin rays i, 7, i. Depth 471; head 471; eye 88; snout 191; interorbital space 206; postorbital part of head 206; predorsal length 809; prepectoral length 471; and preanal length 838. Its standard length is 68.0 mm., its total length 84.5 mm.

Preserved specimens are pale greyish brown, darker on the upper part of body and head; belly rather whitish. Fins hyaline, except caudal fin which is slightly darkish grey. There are seven specimens obtained for this study; the largest one is 84.5 mm. (8.45 cm.) in standard length.

Geographic Distribution :

Tetraodon baileyi is known from the area around Boondharik District, Ubol Ratchathani Province only. This species may occur in other places of the Mekong River in Laos and Cambodia.

Etymology:

The species adjectival name *baileyi* refers to Professor Dr. Reeve M. Bailey.

Materials Examined (7 Specimens, 18 to 845 mm. in standard length):

Holotype KUMF 3874(1) 68 mm. in standard length and paratopotypes, KUMF 1375(2) 50 - 70 mm; NIFI 001175(4) 18-84.5 mm; type locality; Mekong River; Boondharik District, Ubon Ratchathani Province, collected by Dr. Jaranthada Karnasuta in April, 1984.

Tetraodon suvattii n.sp.

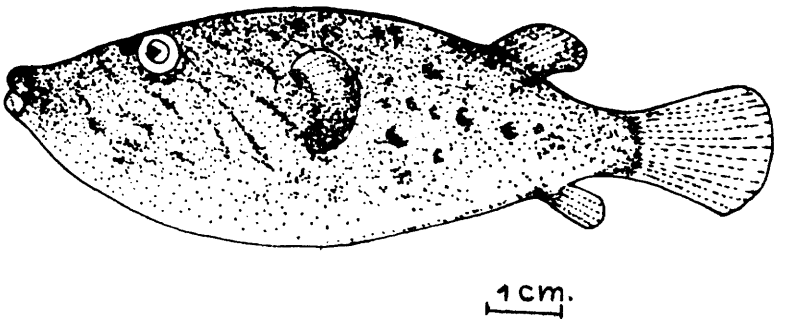

Figure 4 *Tetraodon suvattii* **n.sp. (Holotype: 82.2 mm. SL)**

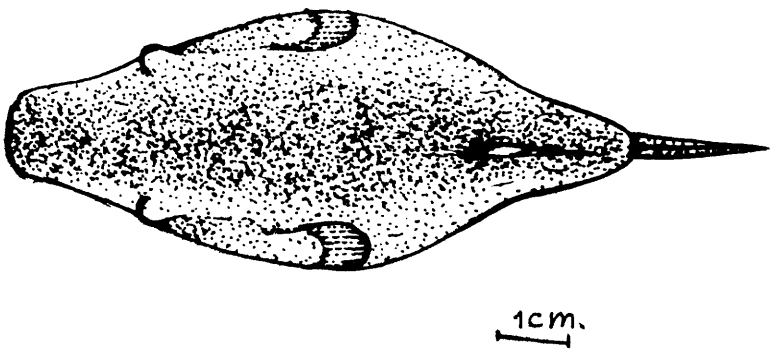

Figure 5 *Tetraodon suvattii* **(top view)**

Diagnosis :

A species of *Tetraodon,* related to the *leiurus* complex, has depressed head and body with thick lips and long snout somewhat longer than or equal to postorbital part of head; nasal organ with a single tube on its lower part and two evenly thick flap on its upper one-third end; anal fin fairly elongate and its origin opposite to hind part of dorsal-fin base; one dark stripe from eye to gill opening and another shorter stripe behind it, coloration are greatly varied. All characters mentioned above separate this species from other members of *leiurus* complex.

Description :

Proportional measurements and counts are shown in the latter part.

Body slightly oblong, head and body depressed or at least somewhat depressed on head and body, except caudal part; depth 259-386 (per millage in standard length). Dorsal profile slightly concave before nostrils and slightly ascending from nostrils to interorbital space, then rather straight to origin of dorsal fin. Ventral profile without concave part, the rest is the same as the dorsal one, then slightly curve to anal fin. Head 426-516; depending on the size of specimens, much longer than body depth. Eye 104-168; at the middle in between snout and gill opening. Snout 352-534; with thick and curved lips, interorbital space (to middle of eye ball) 326-505; flattened and much shorter than snout, postorbital part of head somewhat slightly more or less than snout. Mouth terminal; with double curvatures when looking from the top view, without barbels. Nasal organ with two evenly curved at posterior end of nasal flaps at the end of nasal tube in which unite basally. Predorsal length 710-850; origin of dorsal fin on the posterior part of the body and next to caudal base. Dorsal fin obtusely round, convex at its hind part much less than half of head length. Body without scales but with small prickles. Pectoral fin fan-like, about as long as the dorsal one; prepectoral length about the same length as the head one. Preanal length 760-910, anal fin convex; about the same length as dorsal one; but more slender in term of fin base, its origin opposite to hind end of dorsal base. Least height of caudal peduncle 126-148 in standard length.

Proportional measurements, and counts of the holotype (KUMF 2917(1)) is as follows:- Body covered with spinules. Dorsal-fin rays 13; pectoral-fin rays 21; anal-fin rays 10; and caudal-fin rays i, 7, i. Depth 47; head 578; eye 131; snout 485; interorbital space 453; postorbital part of head 515; predorsal length 754; prepectoral length 485; and preanal length 821, vertebrae 19 in number. Its standard length 82.20 mm. and its total length 98.06 mm.

Preserved specimens with great variation in coloration; from plain pale greyish to reddish brown with small dark dots on upper part of body and an regular spot on posterior half of side, without dark and/or white spots on body; upper part, sides, to lower part of body covered with both dark and white round spots. However, head may cover with dark stripe especially those two stripes; one from middle lower part of eye to gill opening and another shorter one behind it. Fins hyaline, except caudal fin which lightly darkish gray. There are altogether 94 specimens used in this study; the largest one is 113.46 mm. in total length or 90.60 mm. in standard length.

Geographic Distribution. (Figure 6):

Tetraodon suvattii is known mostly from Mekong River at Nong Khai Province. It may inhabit in other provinces of Thailand and also may be found in Mekong River and its tributaries in Laos and Cambodia.

Etymology :

The name *suvattii* refers to one of the former dean of the Faculty of Fisheries, Kasetsart University; Prof. Dr. Chote Suvatti who had contributed to the taxonomic work on fish of Thailand, used to work with Dr. Huge M. Smith and also one of the Thai-pioneer ichthyologists.

Materials Examined (95 specimens, 54.66 mm. to 113.46 mm. in standard length):

Holotype 2917(1) 82.20 mm. in standard length and paratopotypes, KUMF 2918(93) 54.66 mm. to 113.46 mm. NIFI 01418(1) 54.66 mm. from Nam Oon, Sakol Nakorn; type locality: Mekong River at Nong Khai Province, collected by the author.

Remarks :

Specimens from this study vary greatly in coloration and it may due to individual variation.

CONCLUSION:

The result from this study showed that there are still new species of fishes in Thai waters, especially freshwater areas. Some of them have not been named before but there are some that should be renamed and/or revised as synonymous because of errornous made by former researchers. Rivision of Thai freshwater fishes should be taken into consideration by authoritative personnels in order to have proper and/or correct scientific names.

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