การศึกษาชนิดของปลากะเบนในทะเลสาบสงขลา

Taxonomic Study on the Rays of Songkhla Lake

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บทคัดย่อ

การสำรวจชนิดพันธุ์สัตว์น้ำในทะเลสาบสงขลาตั้งแต่ปี 2525 ถึง 2539 พบสัตว์น้ำจำนวนประมาณ 500 ชนิด โดยมีปลากะเบน 5 ชนิด รวมอยู่ด้วย ปลากะเบนไฟฟ้าหรือปลาเสียว (*Temera hardwickii*) และกะเบนทอง (*Taeniura lymma*) พบเฉพาะบริเวณชายฝั่งทะเลและบริเวณปากทะเลสาบสงขลา ปลากะเบนตุ๊กตาหรือกะบาง (*Dasyatis imbricatus*) อาศัยอยู่ตั้งแต่บริเวณชายฝั่งทะเล จนถึงทะเลสาบสงขลาตอนใน โดยพบชุกชุมบริเวณทะเลสาบสงขลาตอนนอก ส่วนปลากะเบนหางยาว (*Himantura bleekeri*) และกะเบนธง (*Pastinachus sephen*) พบในทะเลสาบสงขลาตอนใน

ABSTRACT

Study on aquatic fauna of Songkhla Lake was conducted during 1982-1996, approximatly 500 species of fisfes were found including 4 species of sting rays and one species of electric ray. The electric ray (*Temera hardwickii*) and a species of fantail ray (*Taeniura lymma*) were restricted to the mouth of Songkhla Lake and coastal areas of Songkhla Province. The dwarf scaly sting ray (*Dasyatis imbricatus*) was widely distributed from the coastal areas of Songkhla up to the lower inner part of the lake (Thale Luang).However,it was abundantly found in the outer part of Songkhla Lake (Thale Sap Songkhla). The whiptail sting ray (*Himantura bleekeri*) and cowtail ray (*Pastinachus sephen*) were also found in the inner part of the lake.

INTRODUCTION

Songkhla lake is a largest lagoon in Thailand. It is situated in Southern part of the country, approximatly 1,200 kilometers far from Bangkok. This body of water surrounded by three provinces, Songkhla, Pattalung and Nakornsrithammaraj. Songkhla Lake is located at Lat. 7 08' N to 7 50' N and Long. 100 07' E. to 100 37' E., total surface areas is about 98,680 hectars. The lake is subclassified into three areas: Thale Noi which has 2,800 hectars, Thale Luang (Inner lake) has 78,280 hectars and Thale Sap Songkhla (Outer lake) has 17,600 hectars. These three areas are interconnected by narrow channals. The lowest of Thale Sap Songkhla is the mouth of the lake that opens into the Gulf of Thailand (Tookwinas and Sirimontaporn 1988). Study on stingrays of Songkhla lake is a part of the report of the Fishes of Songkhla Lake that has been conducted since 1984.

MATERIALS AND METHODS

The fish speciemens caught by many kinds of fishing gears. Electric ray was caugth by set bag and coastal trawl, fantail ray by hook, dwarf ray by trap, set bag and 3-5 centrimeters mesh size gill net. The last two rays, whiptail and cowtail ray were caught by hook,which 5-7 centrimeters in size and 20-30 centrimeters mesh size gill net. Photographs of fishes were taken in fresh condition. Numbering was applied to each sample. Fish samples were preserved in 20% formalin for 20 days and then transferred samples to 10% formalin and kept in the National Institute of Coastal Aquaculture Museum for further study. Standard measurement and counts were followed Monkolprasit (1984) and Taniuchi (1991).

RESULTS AND DISCUSSION

Temera hardwickii is well distingished by the absent of dorsal fin,dorsal surface is light brown and the electric organ is distingished on the ventral side as described by Monkolprasit (1984).This species seem to be rarely founded and distributed along the coastal sea of Southest Asia (Monkolprasit,1984) *Taeniura lymma* is commonly founded in tropical sea from Southy Africa (Smith,1965) to Australia (Grant,1982). Fish has round disc, brown to light brown with white blue spots about equal to eye,scatter on dorsal surface and two parallel blue lines along sides of caudal fin as described by Smith (1965) , Grant (1982) and Monkolprasit(1984). *Dasyatis imbricatus* is the most common and abundant ray in Songkhla Lake and coastal areas .It has widely distributed from Red Sea, Southeast Asia to China (Smith,1945), (Monkolprasit,1984). It is the smallest ray found in the lake. The dwarf scaly stingray has the disc length, 63-111 mm. with a point snout, short tail, whip like, about one and one half of disc length. *Himantura bleekeri* and *Pastinachus sephen ,* the big rays which have the approximate weigth of 15 -16 kilograms, were found in the inner lake (Choonhaparn,1995). The large size that has been caught was 53 kilograms (Choonhaparn,1995). Between these two species, *H. bleekeri* is quite commonly found in the lake but *P. sephen* is very rare. Annandale(1916), Hora(1924) and Smith(1945) reported the presence of these two species in the lake, unfortunately, there was no data available on the number of the fishes that had been caught at that time. In 1991, 3,000 kilograms of these two rays had been caught and other 5,000 kilograms more in 1992 (Choonhaparn,1995). Although there is increasing in the number of the rays had been caught in 1992, however, only one *P. sephen* was found (Choonhaparn,1995). Even though,the time has passed for 80 years, these two rays still survive in the Songkhla Lake, this may indicate there is no change on their ecological habitat.

SPECIES ACCOUNTS

1. *Dasyatis imbricatus* (Bloch and Schneider, 1801)..... Family Dasyatidae

Dwarf ray ปลากะเบนตุ๊กตา, กะบาง (Pla ka ben tuk ta ,ka bang)

Material examined: NICA 1058, 1 specimen, disc length 76.9 mm. Songkhla fishmarket, 20 Apr. 1987; NICA 1857, 1857-1 to 3, 4 specimen, disc length 63.3-111.9 mm., Tale Sap Songkhla, Trap, 10 Mar. 1992 .(Plate I).

Diagnosis : Disc subrhomboid, snout pointed, its length approximately twice in interobital space. Spiracle about equals to eye. Tail whip-like one and one half time of disc length, without cutaneous fold. Spines on anterior part of tail, 1-2 serrated spines. Uniform brown on dorsal surface, ventral surface white.

Description : Proportion measurement on Table1.

Disc subrhomboid, disc width 91.7% of disc lenth. Eye and spiracle about equal in length, 6.8% and 5.9% of disc width, respectively. Mouth width 12.8% of disc width. Floor of mouth with 2 buccal precesses, nasal flap entrie. Tail 1.2-1.5 times of disc width, without fold. Some short flat spines, none to 4 spines on base of tail, 1-2 long serrated spines on anterior part of tail.

2. *Himantura bleekeri* (Blyth, 1860)..... Family Dasyatidae

Whip tail sting ray กะเบนขาว กะเบนน้ำจืด (Pla ka ben kao,ka ben nam jued)

Material examined: NICA 1875, 1876, 2 specimens, disc length 526 mm. (male) and 538 mm. (female) respectively. Ko Yai, inner part of Songkhla Lake, 4 Nov. 1994., by hook. (PlateI).

Diagnosis : Disc subrhomboid, snout pointed ; tail long, about 2.7-2.8 times longer than disc length; cutaneous fold absent on tail. Dorsal surface rough, a pearl like tubercle on middle part of disc. Uniform dark brown on dorsal surface. Ventral surface white

Description : Proportion measurement on Table 1

Disc subrhomboid, snout pointed, tail long, 2.7-2.8 times loger than disc length. Disc length 96.0% of disc width. Eye ball 1.2% of disc width and 37.1% of spiracle length; spiracle moderate, 49.6% of interorbital space. Distance from snout tip to mouth 34.3% of disc width. Tail whip like without cutaneous fold. Serrated spine on anterior of tail. Dorsal surface rough with a pearl like tubercle at center and surrounded by small ones that occupied about half areas of the disc; tail rough, covered by small tubercles. Teeth on upper jaw 18 rows, on lower jaw 24-29 rows. Pelvic radial 23-28 rays

3. *Pastinachus sephen* (Forsskal, 1755)..... Family Dasyatidae.

Cowtail ray ปลากะเบนธง (Pla ka ben tong)

Material examined : NICA 1932, 1 specimen(female), disc length 407 mm.; Lampum, Pattalung province, inner part of Songkhla Lake, 15 Sep. 1995, by hook. (Plate I).

Diagnosis : Disc subrhomboid, snout obtusely pointed; tail with ventral cutaneous fold, Uniform dark brown on back and tail, cutaneous fold black ,ventral side white.

Description : Proportional measurement on Table 1

Disc subrhomboid, snout obtusely pointed; tail long, 2.6 times of dise length. Cutaneous fold present on ventral surface of the tail, it's length at base 44.3% of tail length and 96.5% of disc width. Disc length 83.5% of disc width. Eye ball 2.0% of disc width and 31.7% of spiracle length. Spiracles moderate 40.1% of interorbital space; distance from snout tip to mouth 23.2% of disc width. Tail whip-like, cutaneous fold present on ventral side. Two serrated spines on anterior part of tail. Back with two pearl like tubercles,surrounded by small ones covered about half area of dorsal surface.Snout surface spiny . Three buccal processes on floor of mouth. Teeth on upper jaw 12 rows, on lower jaw 17 rows. Pelvic radials 28-30 rays.

4. *Taeniura lymma* (Forsskal, 1775) .....Family Dasyatidae

Blue-spotted Fantail Ray ปลากะเบนทอง (Pla ka ben thong)

Material examined: NICA 1933, 1 specimen. (male) disc length 222 mm., Coastal area of Songkhla, 20 Aug. 1991, by coastal trawl. NICA 1934, 1 specimen (male), disc length 194 mm., Ko Nu, mouth of Songkhla Lake, 10 Aug. 1983, by hook. (Plate I).

Diagnosis : Disc oval, snout rounded. Eye and spiracle moderately large, eye prominent from dorsal surface. Nasal flap fringe. Caudal fin with ventral fold. Yellowish-brown on dorsal surface, disc and pelvic fin covered with bright blue spots of different size, tail with long blue stripes lateraly. Ventral surface uniform white.

Description : Proportional measurement on Table 1

Disc oval, snout rounded, tail moderatly long, 1.6 times of disc length; disc length about equal to disc width. Eye and spiracle large 6.99% and 9.53% of disc width. Mouth small 12.9% of disc width. Two papillae on floor of mout, nasal flap fringed. Tail rather broad, base depressed, posterior compressed, ventral fold present. Serrated spines located on the posterior part of tail.

5. *Temera hardwickii* Gray, 1831.....Family Torpedinidae

Electric Ray, Numbfish. กะเบนไฟฟ้า,เสียว (Pla ka ben fi far, sew)

Material examine : NICA 1846, 1 specimen(female), dise length 56.9 mm., Ko Nu, mouth areas of Songkhla Lake, 20 Jan. 1994, by coastal trawl. NICA 0149, 0149-1, 2 specimens(male and female), dise length 52.9 and 68.7 mm., mouth of Songkhla Lake, 14 Sep. 1984, by Set Bag. (Plate I).

Diagnosis. Disc Round, depressed, snout obtusly round; dorsal fin absent, caudal slightly rounded to truncate end. Electric organ distinct on ventral surface, large. Uniform light brown on dorsal surface, ventral side white.

Description : Proportional measurement on Table1.

Disc round , little wider than long. Eyes small 2.5-3.5% of total length; spiracles smaller than eye and close behind. Mouth small 6.8-7.5% of total length, protractile. Five pairs of small gill slit. Dorsal fin absent. Tail short,about 77 % of disc width,caudal peduncle depressed Caudal fin truncate with round rim. Length of electric organ about 23-33% of disc width.

Table 1 Proportion measurement of sting rays of Songkhla Lake.

Charactor	***Dasyatis imbricatus***	***Himantura bleekeri***	***Pastinachus sephen***
Number of speciemen. (n)	5	2	1
Total length (mm)	211.0 (161.0- 258.0)	2002.5 (1930.0 - 2075.0)	1466.0
Disc length (mm)	87.9 (63.3 - 111.9)	532.0 (526.0 - 538.0)	407.0
Disc width (DW). (mm.)	91.7 (64.5 - 120.0)	553.5 (550.0 -557.0)	487.0
Measunement % in Disc Width			
Eye diameter	6.8 (5.9 - 7.7)	2.6 (2.6 - 2.6)	3.3
Interorbital length	12.0 (11.0 - 12.4)	14.1 (13.7 - 14.5)	15.7
Spiracle length	5.9 (4.6 - 7.9)	7.0 (6.8 - 7.3)	6.3
Interspiracular width	19.5 (17.0 - 21.2)	15.6 (15.6 - 15.7)	16.9
Nasal curtain length	7.0 (6.2 - 7.4)	6.1 (5.9 - 6.3)	7.1
Nostril	4.5 (3.5 - 5.4)	3.8 (3.8 - 3.9)	3.2
Internarial width	12.5 (11.4 - 13.3)	8.9 (8.9 - 8.9)	8.2
Mouth width	12.8 (11.7 - 13.7)	9.5 (9.1 - 9.9)	9.4
Mouth opening	9.4 (8.7 - 10.3)	7.9 (7.8 - 8.0)	8.7
First gill slit width	2.8 (2.4 - 3.1)	3.0 (2.9 -3.1)	3.2
First gill slit width	2.1 (1.5 - 2.5)	2.1 (2.0 - 2.3)	2.1
Width between first gill slit	23.7 (22.3 - 24.6)	21.0 (20.6 - 21.5)	22.2
Width between first gill slit	16.3 (15.0 - 18.2)	16.1 (15.8 - 16.4)	11.6
Snout tip to eye	28.2 (26.6 -29.8)	35.1 (34.9 -35.3)	24.0
Snout tip to nostril	23.4 (22.4 - 25.0)	28.7 (28.5 - 29.0)	16.2
Snout tip to mouth	30.3 (28.6 - 31.9)	34.3 (32.8 - 35.8)	23.2
Snout tip to first gill slit	42.0 (41.5 - 42.7)	48.3 (47.5 - 49.2)	30.9
Snout tip to fifth gill slit	56.0 (52.7 - 59.3)	60.3 (59.7 - 60.9)	45.5
Snout tip to pelvic fin base	90.8 (85.6 - 94.0)	97.9 (96.9 - 98.9)	81.7
Snout tip to vent. (anterior border)	90.4 (87.3 - 93.0)	95.2 (94.7 - 95.8)	83.1
Pelvic fin base	20.0 (18.8 - 21.8)	12.8 (12.6 - 13.1)	17.6
Tail base width	8.8 (7.8 - 9.9)	6.6 (6.4 - 6.8)	12.3
Tail base depth	5.0 (4.0 - 6.0)	4.3 (4.3 - 4.3)	5.9
Tail total length, times in DW	1.3 (1.2 - 1.5)	2.6 (2.4 - 2.4)	2.1
Oral papillae on floor of mouth	2	none	3

Table 1 (continued)

Character	*Dasyatis imbricatus*	*Himantura bleekeri*	*Pastinachus sephen*
Tooth row upper jaw	-	18 (18 - 18)	12
Tooth row lower jaw	13 (13 - 13)	26 (24 -29)	17
Origin of spine from caudal base	26.4 (22.8 - 32.9)	-	-
Short spines on base of tail	None to 4	none	none
Spines on tail	single, long, serrated	single ,serrated	single,serrated
Casper length	12.54 (11.33 - 13.34)	20.5 (n=1)	-
Base of cutaneous fold length	-	-	96.5
Electric organ length	-	-	-

Table 1 (continued)

Character	*Taeniura lymma*	*Temera hardwickii*
Number of speciemen. (n)	2	3
Total length (mm.)	514.0	106.0 (95.9 - 120.4)
Disc length (mm)	208.0 (194.0 - 222.0)	55.9 (55.1 – 75.50)
Disc width (DW). (mm.)	203.5 (183.0 -224.0)	55.6 (50.4 - 67.1)
Measunement % in Disc Width		
Eye diameter	9.2 (8.5 -10.0)	3.0 (2.5 - 3.5)
Interorbital length	9.2 (9.1 - 9.2)	8.1 (6.8 - 8.8)
Spiracle length	9.5 (9.2 - 9.8)	2.7 (2.1 - 3.4)
Interspiracular width	17.3 (16.7 - 17.9)	7.3 (6.5 - 7.9)
Nasal curtain length	7.6 (7.4 - 7.8)	4.0 (3.4 - 5.2)
Nostril	4.8 (4.6 - 5.1)	1.8 (1.1 - 2.2)
Internarial width	9.5 (8.9 - 10.0)	6.4 (6.1 - 6.7)
Mouth width	12.9 (12.5 - 13.3)	7.1 (6.8 - 7.5)
Mouth opening	10.9 (10.3 - 11.5)	-
First gill slit width	4.0 (4.0 - 4.1)	-
First gill slit width	3.1 (3.0 -3.2)	-
Width between first gill slit	20.6 (20.3 - 21.0)	12.4 (10.9 - 14.0)
Width between first gill slit	14.1 (14.0 - 14.2)	13.0 (11.9 - 15.3)
Snout tip to eye	26.2 (22.0 - 30.0)	10.3 (8.3 - 12.8)
Snout tip to nostril	15.0 (14.6 - 15.4)	7.6 (7.5 - 7.8)
Snout tip to mouth	21.1 (20.6 - 21.6)	10.7 (10.2 - 11.5)
Snout tip to first gill slit	36.7 (36.7 - 36.8)	19.5 (18.3 - 20.2)
Snout tip to fifth gill slit	54.6 (53.5 - 55.7)	30.7 (28.5 -32.3)
Snout tip to pelvic fin base	97.4 (96.4 - 98.4)	51.1 (47.8 - 54.8)

Table 1 (continued)

Character	*Taeniura lymma*	*Temera hardwickii*
Snout tip to vent. (anterior border)	100.7 (100.4 - 101.0)	55.2 (53.8 - 56.4)
Pelvic fin base	24.1 (23.9 - 24.2)	26.3 (21.3 - 29.4)
Tail base width	14.6 (14.2 - 15.0)	11.7 (11.5 - 12.0)
Tail base depth	8.8 (8.2 - 9.3)	6.2 (5.9 - 6.4)
Tail total length, times in DW	1.5	1.2 (1.1 - 1.5)
Oral papillae on floor of mouth	2	none
Tooth row upper jaw	7 (7 - 8)	8 (8 - 8)
Tooth row lower jaw	12.5 (10 - 15)	14 (14 - 14)
Origin of spine from caudal base	78.0	-
Short spines on base of tail	None	none
Spines on tail	two,serrated	none
Casper length	23.5 (17.8 - 29.2)	12.9 (-)
Base of cutaneous fold length	-	-
Electric organ length	-	27.9 (23.8 - 33.0)

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