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CAPTURE OF A MATURE FEMALE MEGAMOUTH SHARK, *MEGACHASMA PELAGIOS*, FROM MIE, JAPAN

by

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ABSTRACT. - A mature female megamouth shark, *Megachasma pelagios*, was collected by purse seining 12 nautical miles south from Mikizaki, Owase City (33°46'N, 136°16'E) at 11:40 P.M., 30 April, 1997. The specimen was caught between the surface and 150 m. This is the tenth record of a megamouth shark and the largest specimen of this species yet recorded. The total length is 5.44 m and the weight is 1,040 kg. The external morphology and measurements as well as the anatomy of selected viscera are described. The pharyngeal region has processes, 10-20 mm in length, covered with tridentate dermal denticles. The processes of the region are described for the first time from the present specimen. The total number of tooth rows are 55 in the upper jaw and 75 in the lower jaw. The vertebral numbers are 151 in total, 64 in precaudal, and 87 in caudal. The ileum has a ring-type spiral valve with 23 turns. The stomach contained a dark-red chyme with many fragments of carapaces, eyes, and eye stalks of euphausiids. Mating scars were observed on the trunk, head, and first dorsal fin. The right ovary possessed a large number of whitish yellow oocytes, about 5-10 mm in diameter. The expanded uteri measured 260 mm in width. The specimen was mature.

RÉSUMÉ. - Capture d'une femelle mature de requin grande gueule, *Megachasma pelagios*, au large de Mie, Japon.

Le 30 avril 1997, à 23h40, une femelle mature de requin grande gueule a été capturée à 12 milles nautiques au sud de Mikizaki, Owase (33°46'N, 136°16'E) à une profondeur comprise entre la surface et 150 m. Sa longueur totale était de 5,44 m pour un poids de 1 040 kg; ce spécimen est le 10ème et le plus grand des requins grande gueule signalés à ce jour. Sa morphologie externe est décrite, ainsi que l'anatomie de certains organes internes. Sa région pharyngienne porte des papilles d'une longueur de 10 à 20 mm, et est recouverte de denticules cutanés tricuspidés. Ces papilles sont décrites ici pour la première fois. La mâchoire supérieure porte 55 rangées de dents et l'inférieure 75. Le nombre total de vertèbres est de 151, dont 64 précaudales et 87 caudales. La valvule spirale, annulaire, compte 23 spires. Le contenu stomacal était constitué d'une bouillie rouge foncé contenant de nombreux fragments de carapaces, des yeux et des pédoncules oculaires d'euphausiacés. Ce spécimen présentait des cicatrices d'accouplement sur le tronc, la tête et sur la première nageoire dorsale. L'ovaire droit contenait un grand nombre d'ovocytes jaunâtres d'un diamètre de 5 à 10 mm. La largeur de l'utérus dilaté atteignait 260 mm.

Key-words. - *Megachasma pelagios*, Megamouth shark, INW, Japan, Mikizaki, Morphology, Mature female, Mating scar, Record.

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The first megamouth shark was a 4.46 m TL male captured on 15 November 1976 from 42 km northeast of Oahu, Hawaii by naval research vessel AFB-14 (Taylor *et al.*, 1983). The second specimen, 4.49 m TL mature male, was captured off California in November 1984 (Lavenberg and Seigel, 1985). The third specimen, 5.15 m TL mature male, was recorded in August 1988 from western Australia (Berra and Hutchins, 1990). The fourth megamouth shark, ca. 4 m TL mature male, was stranded on a beach in Hamamatsu, Japan in January 1989 (Nakaya, 1989). The fifth specimen, ca. 4.9 m TL, was caught off Yaizu, Japan in June 1989 (Miya *et al.*, 1992). The sixth specimen, 4.9 m TL mature male, was caught off California in October 1990 and was released alive for a telemetric study (Nelson *et al.*, 1997). The seventh specimen, 4.71 m TL, was stranded on a tidal flat near Gannosu, Fukuoka, Japan in November, 1994 and it was the first female of the species examined by scientists (Takada *et al.*, 1997b). The eighth specimen, ca. 1.8 m TL immature male, was captured off Senegal on May 1995 (Séret, 1995). The ninth specimen, 1.9 m TL immature male, was caught in Brazilian waters in September 1995 (Amorim *et al.*, 1995) (Fig. 1).

A mature female megamouth shark, *Megachasma pelagios*, was captured from Mikizaki, Mie, Japan. This is the tenth record of a megamouth shark. This study describes the capture and its external morphology, viscera, and the stomach and intestinal contents.

MATERIAL AND METHODS

The specimen was a mature female collected by purse seining (ring net) from Mikizaki, Owase City, on 30 April, 1997. The fishing vessel (Seiyo Maru n°1) was 135 tons and 37 m in length. The purse seine net (knotless net) was 255 m in height, 1,200 m in circumference, and about 382 m in diameter when encircles the fish with netting gear. The material of the net was polyester (Tetron) with about 1.4 cm in mesh size.

The specimen was carried by conveyance vessel (Seiyo Maru n°38, 260 tons, 43 m) to the Nayaura Port and it arrived early morning of 1 May, 1997. The freshly dead specimen was carried into the freezing warehouse and the freezing process was started immediately at -30°C. The specimen was frozen from 1 May to 1 June, 1997. The body was covered with plastic sheets to protect it from direct contact with the chilling air.

Thawing required 11 days, from 12:00 P.M., 1 June to 7:00 A.M., 12 June at the refrigerator warehouse. The temperature of the refrigerator was about 3 to 5°C (Fig. 2). The body temperature (musculature 20 cm under the skin) of the specimen was measured at the trunk below the 1st dorsal fin base that recorded at least 2 times per day (morning and afternoon) (Fig. 2). On 1 June, the body temperature was -28.7°C. From 2 to 12 June, the body temperature increased by about 1°C daily for three days and 0.1-0.5°C for the other days. The body temperature was held at about -3 to -5°C until dissection of the shark. During the thawing process, little wrinkles appeared on the body surface due to dehydration, but no other substantial effect has been observed. It was confirmed that the internal organ and muscles were thawed uniformly and with a high degree of freshness.

Takada *et al.* (1997a) reported that thawing of the megamouth shark n°7 from Fukuoka required nine days. Their frozen specimen was suspended on a stretcher in the half-strength sea water tank during thawing. The Fukuoka megamouth shark thawing method and our thawing method seemed to be successful.

The external morphology and measurements as well as the anatomy of selected viscera and the contents of the stomach and intestine were examined. Measurements follow Yano and Musick (1992), with addition of the some measurements of Compagno (1984).

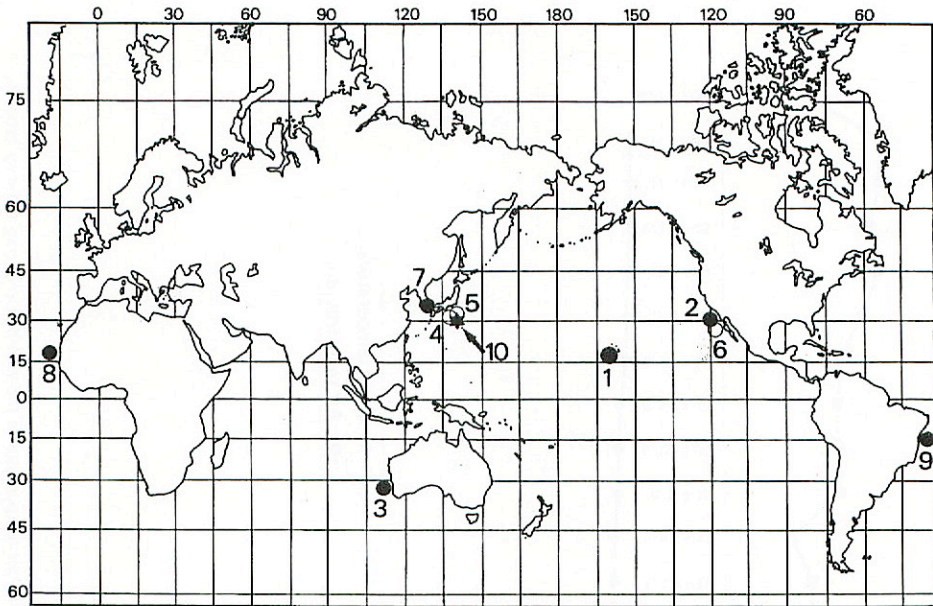


Fig. 1. - Records of the *Megachasma pelagios* (n°1-10) from the world. ★: Present specimen; ●: Specimens were collected; ○: Specimens were released or only photographed.

RESULTS AND DISCUSSION

Locality and depth preference

The specimen collected by commercial purse seining of mackerel at 12 nautical miles south from Mikizaki (33°46'N, 136°16'E), Owase City, Mie, Japan (Fig. 3). The megamouth shark was captured by fishing vessel at night, 11:40 P.M., of 30 April, 1997 with five tons of mackerel (*Scomber japonicus*). This finding suggests that megamouth sharks swim with *S. japonicus* and feed on the same prey animals (i.e., euphausiid shrimps). The net was set from the surface to 150 m where the sea was more than 1,500 m deep. Sea condition was calm and the surface water temperature was 18.1°C. The current was 0.5 knot to the north.

The first specimen of megamouth shark entangled two large parachutes as sea anchors at a depth of about 165 m in water with a bottom depth of approximately 4,600 m (Taylor *et al.*, 1983). The second specimen was collected by a commercial drift net operating off the Californian coast at a depth of 38 m (Lavenberg and Seigel, 1985). The fifth megamouth shark was captured by set net between surface and 40 m depth in Suruga Bay, Japan (Miya *et al.*, 1992). Miya *et al.* (1992) reported that nearly every morning the fishermen hauled the trap net to examine their catches. The megamouth shark was found in their catches along with coastal fishes (*Engraulis japonicus*, *Trachurus japonicus* and *Scomber japonicus*). The sixth specimen was captured by drift nets just past midnight off Dana Point in the California, and it was entangled the nets at a depth of about 23 m (Lävenberg, 1991). The eighth specimen was caught by French tuna purse seine off Senegal (Séret, 1995). The ninth specimens was caught by tuna longlines (Amorim *et al.*, 1995). The setting depth of tuna longlines is usually shallower than about 200 m (Yano

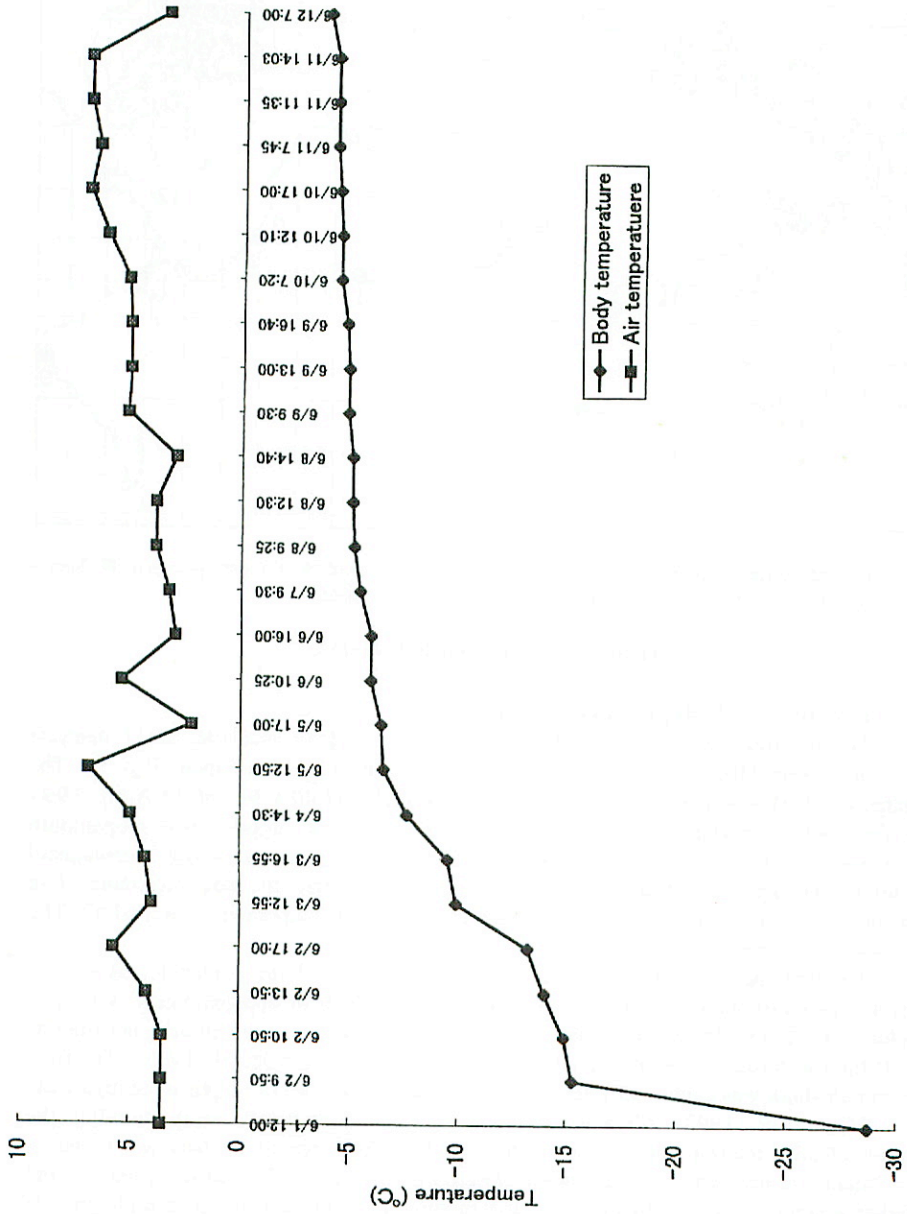


Fig. 2. - Variation of the body temperature of the *Megachasma pelagios* and the air temperature of the warehouse during thawing process.

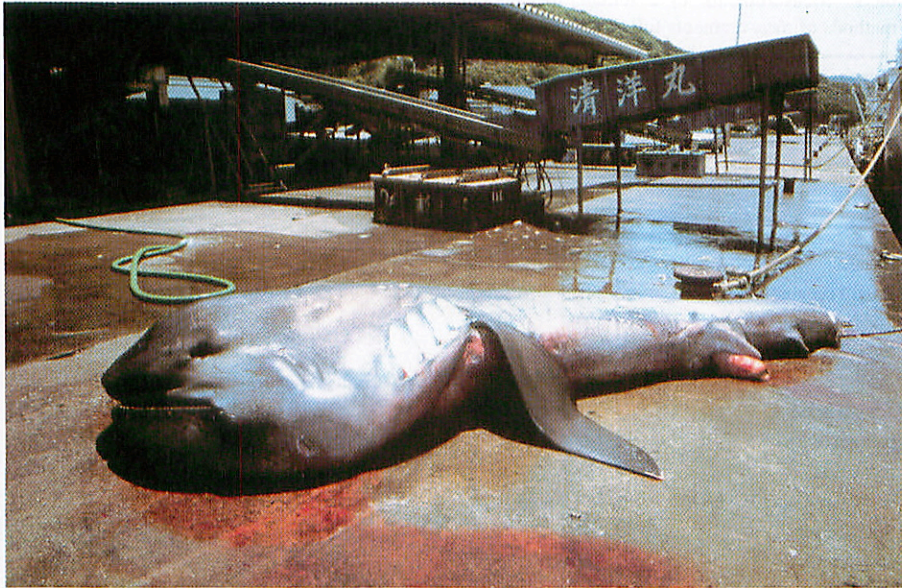


Fig. 3. - The megamouth shark, *Megachasma pelagios*, collected by commercial purse seine at 12 miles south from Mikizaki, Mie, Japan.

and Abe, 1998). The capture depths of all these megamouth sharks are recorded from the surface to 200 m. In the ultrasonic telemetry of the sixth specimen, the shark had spent the daylight hours at a depth of 120-166 m ($\bar{x} = 149$ m), and at dusk had ascended to around 12-25 m ($\bar{x} = 17$) below the surface where it remained throughout the night (Nelson *et al.*, 1997). The capture depths and swimming depths recorded by telemetry have suggested that the megamouth shark usually swims near the surface at nighttime and in mid-water (shallower than 200 m) at daytime. Hutchins (1992) stated that this vertical migration is obviously triggered by light changes, but may also be a response to the movement of the planktonic animals on which it feeds. Nelson *et al.* (1997) reported that the four twilight depth-change events were distinct and always spanned the times of sunset or sunrise. They suggested that the depth chosen by the megamouth sharks was to a large degree determined by light levels.

Measurements and morphology

Measurements of the specimen are given in table I. The total length is 5.44 m and the body weight is 1,040 kg. Body is tadpole-like with larger head and tapering trunk and tail. Snout is short and broadly rounded in dorsal view. Mouth is terminal and large. Body is blackish brown dorsally, gradually becoming paler ventrally, abruptly white below the level of the pectoral and pelvic fins. The mouth roof is silvery on the dorsal and lateral parts, oral membrane silvery. The "tongue" (hyoid) is purplish brown with slight silvery tint dorsally and ventrally. A narrow transverse bright white band is present just above the black area of the upper jaw between the right and left nostrils. The distal webs of upper surfaces of pectoral and pelvic fins have conspicuous dark wavy lines, often parallel, which are channels of bare skin between areas of denticulate skin.

Table I. - Measurements of a female megamouth shark, *Megachasma pelagios*, from Mie, Japan.
*: methods of measurements follow Compagno (1984).

Measurements	(cm)	% of TL	Measurements	(cm)	% of TL
Total length	544		Eye: horizontal diameter	6	1.10
Snout tip to:			vertical diameter	5.5	1.01
outer nostrils	26	4.78	Interorbital width	63	11.58
eye	46	8.46	1st dorsal fin: overall length	55	10.11
spiracle	70	12.87	length base	45	8.27
mouth			length ant. margin*	46	8.46
1st gill opening	113	20.77	length post. margin	32	5.88
2nd gill opening	123	22.61	length inner margin*	9	1.65
3rd gill opening	136	25.00	height	27	4.96
4th gill opening	147	27.02	2nd dorsal fin: overall length	37.5	6.89
5th gill opening	156	28.68	length base	30	5.51
pectoral origin	157	28.86	length ant. margin*	27	4.96
pectoral axilla	183	33.64	length post. margin	16	2.94
pectoral end when laid back	263	48.35	length inner margin*	8.5	1.56
pelvic origin	304	55.88	height	14	2.57
pelvic axilla	317	58.27	Anal fin: overall length	21	3.86
cloaca	306	56.25	length base	14	2.57
1st dorsal origin	186	34.19	length post. margin	11	2.02
1st dorsal axilla	239	43.93	height	10	1.84
2nd dorsal origin	297	54.60	Pectoral fin: length base	37	6.80
2nd dorsal axilla	326	59.93	length ant. margin	106	19.49
anal fin origin	342	62.87	length distal margin	24	4.41
anal fin axilla	358	65.81	length post. margin	79	14.52
upper caudal origin	382	70.22	height*	94	17.28
lower caudal origin	383	70.40	Pelvic fin: overall length	38	6.99
Distance between bases:			length base	26	4.78
1st and 2nd dorsal	58	10.66	length ant. margin	37	6.80
2nd dorsal and caudal	54	9.93	length post. margin*	29	5.33
pectoral and pelvic	122	22.43	length distal margin	10	1.84
pelvic and anal	30	5.51	Caudal fin: length dorsal lobe	166	30.51
anal and caudal	25	4.60	length ventral lobe	78	14.34
Distance between insertions:			dorsal tip to notch	13	2.39
pectoral and pelvic	148	27.21	depth notch	7	1.29
Nostrils:			length terminal dorsal lobe*	17	3.13
distance between inner corners	45	8.27	length upper postventral caudal margin*	120	22.06
Prenarial length*	34	6.25	length lower postventral caudal margin*	45	8.27
Mouth: width	70	12.87	caudal fork length*	60	11.03
length	64	11.76	caudal fork width*	55	10.11
Gill opening lengths: 1st	25	4.60	Head height*	84	15.44
2nd	25	4.60	Trunk height*	82	15.07
3rd	27	4.96	Abdomen height*	70	12.87
4th	24	4.41	Tail height*	48	8.82
5th	20	3.68	Caudal peduncle height*	29	5.33
Spiracle	2	0.37			

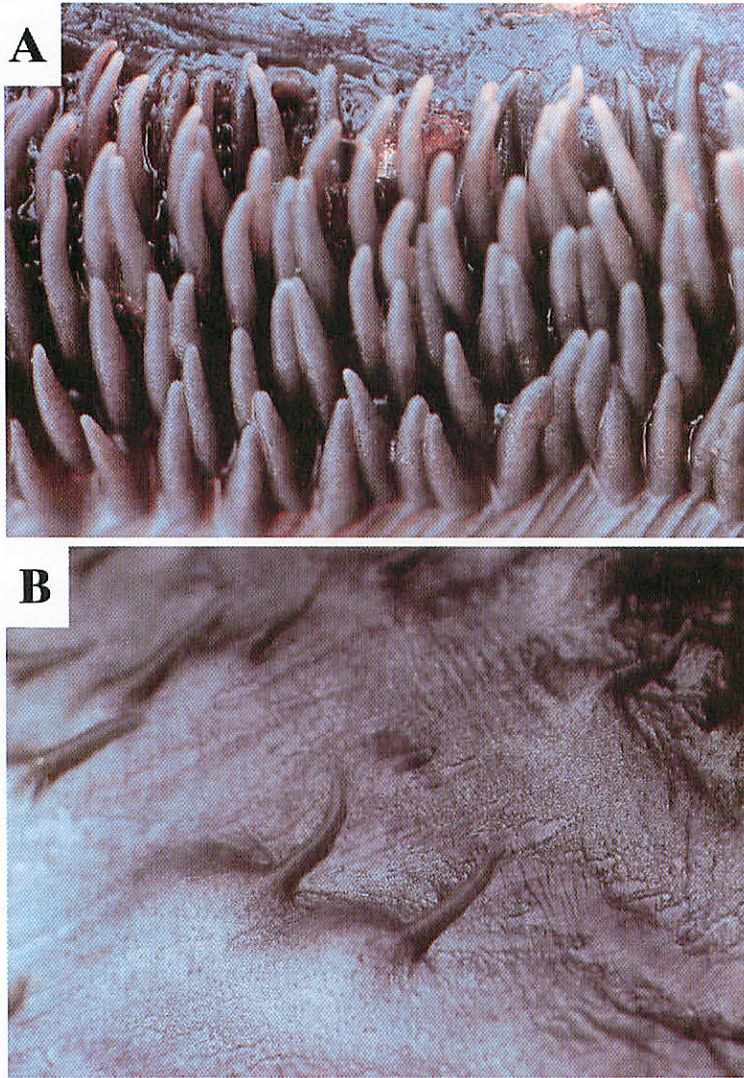


Fig. 4. - Gill raker papillae (A) and pharyngeal processes (B) of the megamouth shark, *Megachasma pelagios*.

The external morphology and coloration of this specimen are similar to other specimens described in detail by Taylor *et al.* (1983) and Nakaya *et al.* (1997). A circular crater-like wound was found on the abdomen between the pectoral and pelvic fins. The size of the wound was 52.4 mm x 32.1 mm. This wound could have been caused by a cookie-cutter shark, *Isistius brasiliensis*. Among the other specimens of the megamouth shark, similar wounds by cookie-cutter shark were reported on the specimen n°1 from Hawaii (Taylor *et al.*, 1983), specimen n°3 from Western Australia (Berra and Huchins, 1990, 1991) and specimen n°7 from Fukuoka, Japan (Yamaguchi and Nakaya, 1997).

Teeth are small (about 5 mm in height) and numerous. The lower teeth are larger than the upper ones. The shape of the teeth of this specimen is similar to the shape of the megamouth n°7 teeth described by Yabumoto *et al.* (1997). There are 27 rows in the right upper jaw, 28 rows in the left upper jaw, 37 rows in the right lower jaw and 38 rows in the left lower jaw. The total number of tooth rows is 55 in the upper jaw and 75 in the lower jaw. There are four functional teeth on each jaw. Average width between teeth of the right upper jaw is 11.43 mm (8.00-19.30 mm, SD = 2.684) and the right lower jaw is 11.14 mm (7.30-18.30 mm, SD = 2.720). The symphyseal toothless spaces are 190 mm in the upper jaw and 70 mm in lower jaw. The number of tooth rows in the mature female specimen are fewer than those in the male and the immature female. The male holotype has 108 tooth rows in the upper jaw and 128 in the lower jaw (Taylor *et al.*, 1983), and the immature female from Fukuoka has 83 tooth rows in the upper jaw and 97 in the lower jaw (Yabumoto *et al.*, 1997).

Dermal denticles on the trunk, abdomen, head, and fin regions are small (about 0.5 mm in crown length) and flattened, giving the skin a smooth texture. Mucous denticles on the rear and center of the palate are loosely spaced, not closely imbricated. The shapes of the dermal and mucous denticles of this specimen are similar to the shape of the megamouth n°7 described by Yano *et al.* (1997a).

Gill raker and pharyngeal process

Gill raker papillae are small, about 10-20 mm in length, densely packed, slender, and tapering to a blunt point (Fig. 4A). Dermal denticles of the gill rakers are closely imbricated, leaf-shaped and tridentate, with the tips of the denticles pointing toward to the buccal cavity. The shape of the gill raker of our specimen is the same as in the specimens n°1 and n°7 described by Taylor *et al.* (1983) and Yano *et al.* (1997a). The pharyngeal region has processes, 10-20 mm in length (Fig. 4B), covered with dermal denticles. The denticles are closely imbricated, leaf-shaped and tridentate, and their shape is similar to the denticles of the gill rakers. In the present report, the processes of the pharyngeal region are the first described for the megamouth shark. We think that these processes are used for the feeding in the same way as the gill rakers.

Table II. - Weight and percent of body weight (BW) for selected viscera of the megamouth shark, *Megachasma pelagios*, collected from Mie, Japan.

Viscera	Weight (g)	Percent of BW
Liver	26650	2.563
Gall bladder	1000	0.096
Stomach	6150	0.591
Intestine	8750	0.841
Spleen	1350	0.130
Pancreas	300	0.029
Rectal gland	150	0.014
Heart	1100	0.106
Ovary	2150	0.207
Epigonal organ	1350	0.096
Uterus (left)	7950	0.764
Uterus (right)	8150	0.784

Viscera and vertebral numbers

The weight of each organs and these percent of the body weight are given in table II. The shape and color patterns of the viscera of this specimen are similar to those of megamouth shark n°7 described in detail by Yano *et al.* (1997b). The liver is the largest organ and the ratio is 2.6% of the body weight. It is smaller than that (4.2% of body weight) of the immature female specimen from Fukuoka, Japan, reported by Yano *et al.* (1997). The ileum has a ring-type spiral valve with 23 turns. The number of turns of spiral valve is almost the same as the number of turns (24) of the Fukuoka megamouth (Yano *et al.*, 1997b).

The ovary is found on the right side at the anterior end of the body cavity (Fig. 5B). The epigonal organ is found on the left side at the anterior end of the body cavity. Both the ovary and the epigonal organ (1,350 g) are attached by the mesovarium to the body wall and ostium. The ovary is 410 mm long and 220 mm wide, and its weight is 2,150 g. On its dorsal surface there is a funnel-like fold (59.5 mm in diameter) which connects into the lumen of the ovary through several openings. The ovary possess a large number of whitish yellow oocytes containing yolk, about 5-10 mm in diameter (Fig. 5A). Castro *et al.* (1997) reported that the oocytes of the megamouth shark n°7 measured 1.1-2.7 mm. Tanaka and Yano (1997) observed histologically that a 600 μm oocyte contained a large number of very fine yolk granules. They suggested that this specimen was close to maturity. The type of ovary suggests that megamouth embryos are oophagous (Castro *et al.*, 1997; Tanaka and Yano, 1997).

The ostium is developed and measures 52 mm x 28 mm in size. The nidamental glands are developed and are 32 mm (width) x 75 mm (length) in left and 35 mm x 85 mm in right. The expanded uteri measure 260 mm (width) x 745 mm (length) in left and 260 x 790 mm in right (Fig. 5A). Castro *et al.* (1997) reported that the nidamental glands of megamouth shark n°7 were poorly developed, 22 mm in width, and the flaccid uteri measured 110 mm in width.

The reproductive organs of the specimen are mature. Because the ovary has whitish yellow oocytes containing yolk, developed nidamental glands, and expanded uteri. The basic structure and shape of the reproductive organs are similar to the organs of the immature specimen of the megamouth shark reported by Castro *et al.* (1997).

The vertebral numbers are 151 in total, 64 in precaudal, and 87 in caudal. Yano *et al.* (1997c) reported vertebral number of the megamouth shark observed by X-ray, and they could count 125 vertebrae from the tip of the dorsal lobe of the caudal fin to beyond the origin of the first dorsal fin with certainty. The caudal vertebral number was 82 in their report but they reported that there were difficulties to examine all vertebrae in large megamouth sharks via X-radiography. The total vertebral number of the megamouth shark in the present study is the first certain count for this species.

Stomach and intestinal contents

The stomach contents consisted of dark-red chyme containing many fragments of carapaces, eyes, and eye stalks of euphausiids. We could not identify the euphausiid contents to the species level. The stomach was relatively full of chyme and weighted 14,950 g (1.44% of body weight). The intestinal contents were reddish in color and weighted 1,450 g (0.14% of body weight).

Taylor *et al.* (1983) reported that the stomach contents of the first megamouth specimen were a thick, reddish soup containing the euphausiid shrimp, *Thysanopoda*

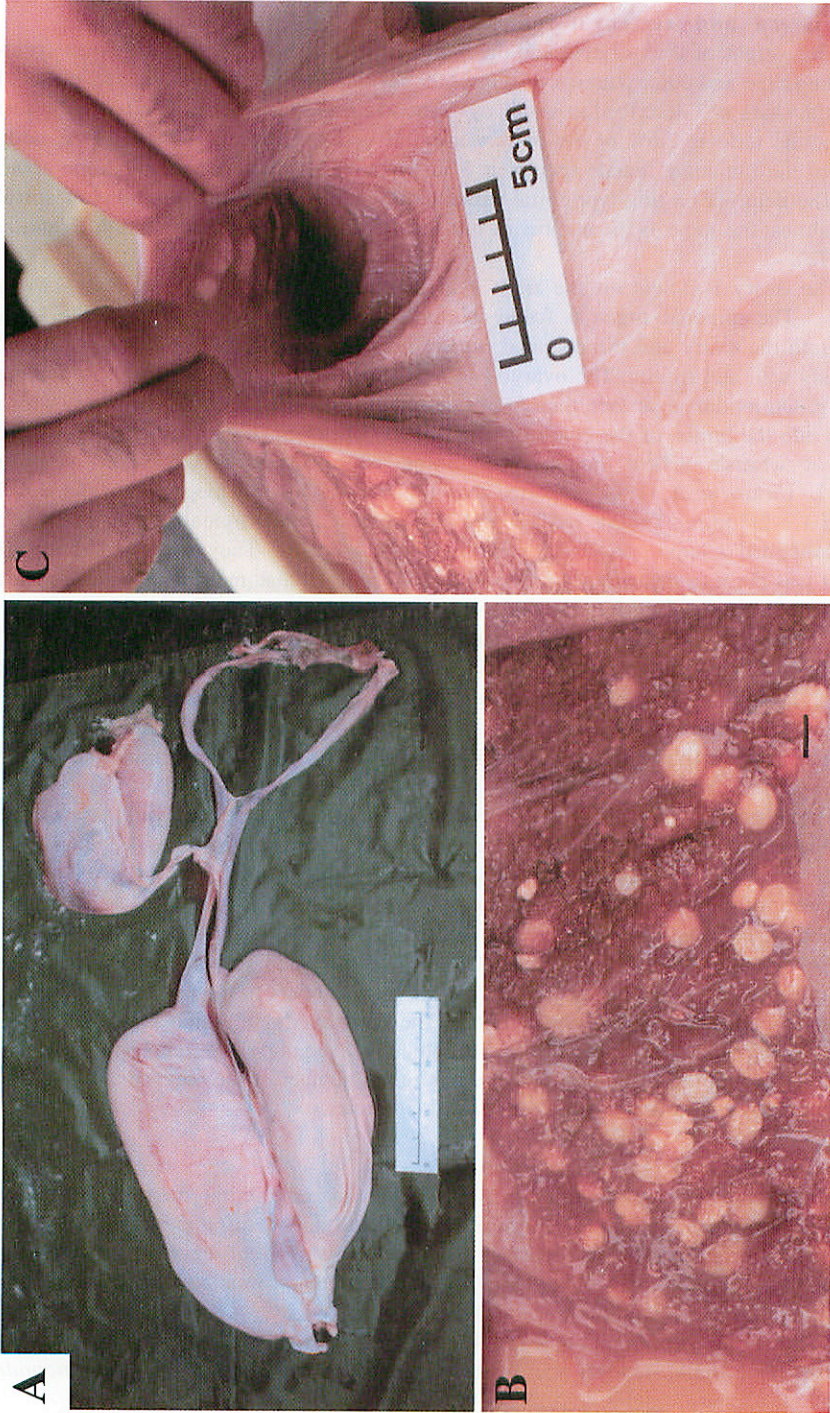


Fig. 5. - Mature female megamouth shark, *Megachasma pelagios*. A: Reproductive tract, scale bar = 300 mm. B: the ova in the ovary, scale bar = 10 mm. C: Funnel-like fold of the ovary, scale bar = 50 mm.

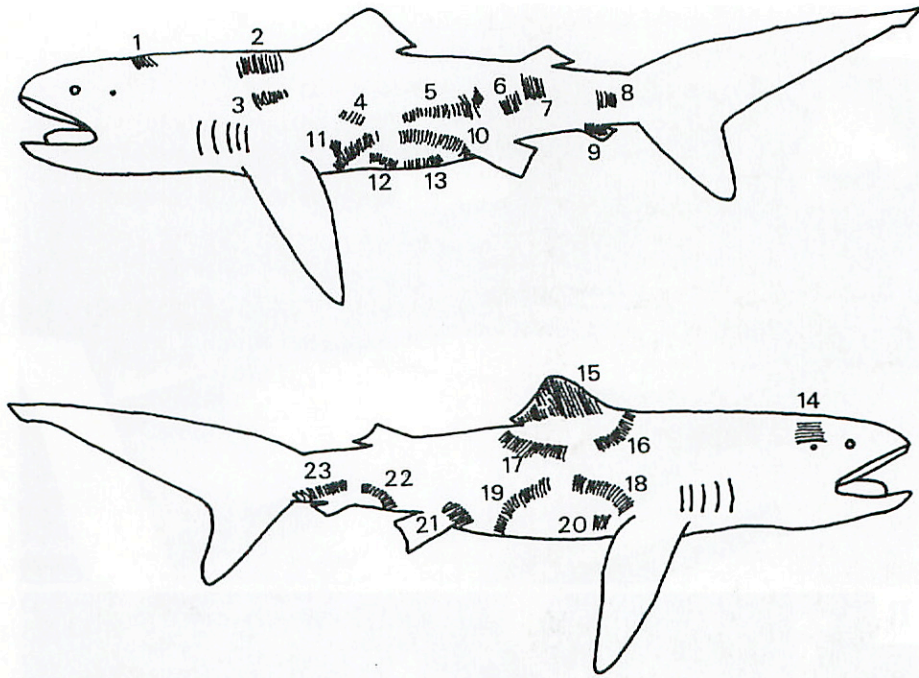


Fig. 6. - Position of twenty-three mating scars on the mature female megamouth shark *Megachasma pelagios*.

pectinata. The stomach contents of the second specimen included fragments of euphausiids, copepods, and the jellyfish *Atolla vanhaeffeni* (Berra and Hutchins, 1990). Yano *et al.* (1997b) suggested that the euphausiids found in the megamouth shark n°7 from Fukuoka, Japan were *Euphausia nana*. The stomach contents of the present specimen are similar to the stomach contents of the Fukuoka specimen and are probably closely related species of Euphausiids (*E. nana*) of Fukuoka specimen. Compagno (1990) suggested that the megamouth shark probably swam slowly through aggregations of euphausiids and other prey with its mouth open.

Mating scars

Twenty-three mating scars are found on the trunk, head, and first dorsal fin (Figs 6, 7). Fresh tooth slashes are appeared as parallel straight or curved cuts (Fig. 6). Size of the scars, number of the slashes, and width between slashes (i.e., width between teeth male shark) are shown in table III. Average width between slashes are 5.75-9.94 mm. There are slightly narrower than the space between teeth of the present specimen (11.43 mm in the upper jaw and 11.14 mm in the lower jaw). However, we think that the space between teeth of smaller individuals of male megamouth shark are probably narrower than the present female, because the number of teeth in males is larger than that in females (Yabumoto *et al.*, 1997). Mating scars by males were often found on the bodies of mature female shark in other species. Thus, we think that the tooth slashes on the female specimen are mating scars by males. Fresh semi-circular jaw impressions showing continuous tooth marks are observed on the abdomen between pectoral and pelvic fins

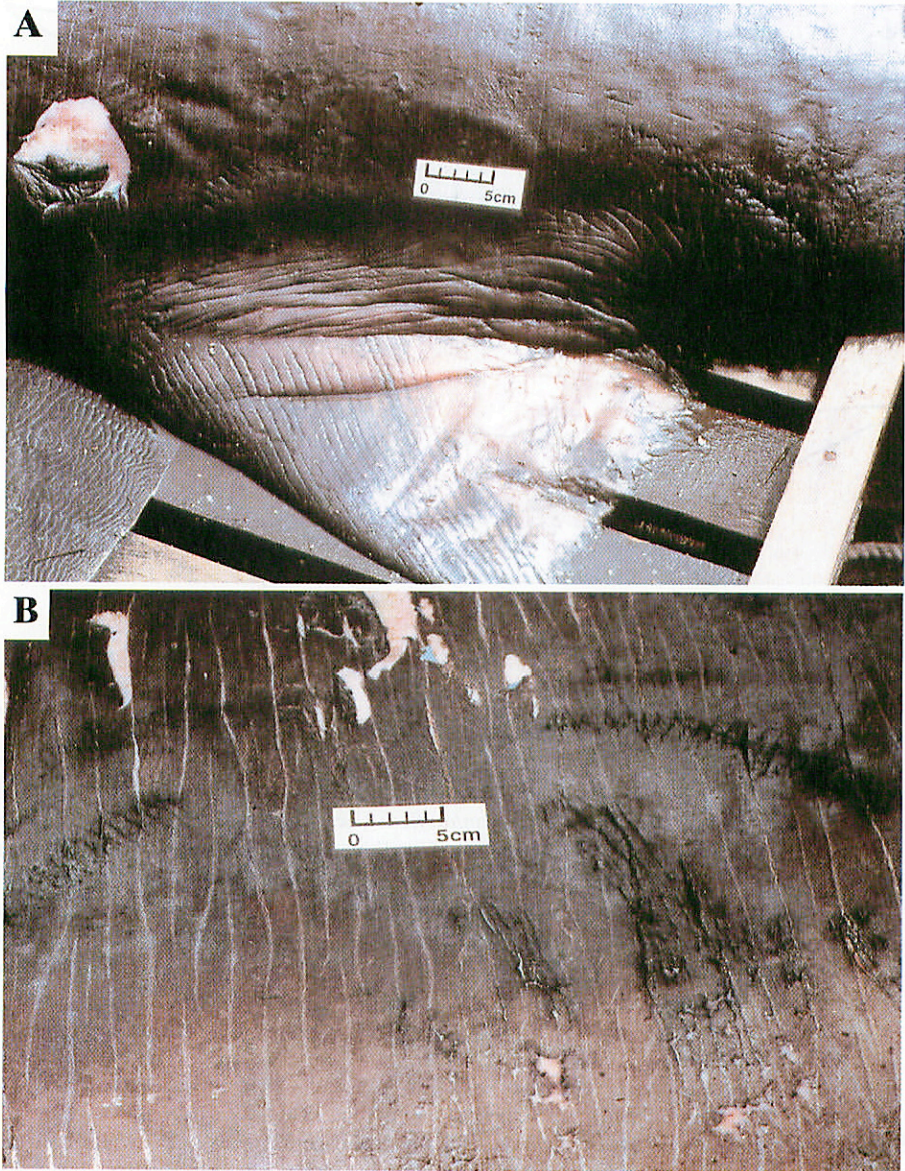


Fig. 7. - Mating scars of the megamouth shark, *Megachasma pelagios*. A: First dorsal fin (n°15 in Fig. 6); B: Abdomen between pectoral and pelvic fins (n°19, 18, 20 in Fig. 6).

(n°10, 11, 18, 19 in Fig. 6), the left and right lateral trunk below the first dorsal fin (n°4, 5, 16, 17 in Fig. 6), and the right lateral trunk between the pelvic and caudal fins (n°22, 23 in Fig. 6). No mark spaces were found between the semi-circular jaw impressions (Fig. 7). The spaces between marks are 78.2 mm in n°4 and 5; 78 mm in n°10 and 11;

300 mm in n°16 and 17; 215 mm in n°18 and 19, and 80 mm in n°22 and 23. Both jaw of the megamouth shark have symphyseal toothless space (190 mm in upper jaw and 70 mm in lower jaw). Yabumoto *et al.* (1997) reported that the symphyseal toothless space of the megamouth shark n°7 is 180 mm in upper jaw and 80 mm in lower jaw. We think that the semi-circular marks (n°4, 5, 10, 11, 22, 23) on the trunk of the mature female are mating scars by lower jaw of male megamouth sharks, and the marks (n°16, 17, 18, 19) are mating scars by upper jaw of the males.

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Table III. - Sizes of wounds and slashes of mating scars of the megamouth shark, *Megachasma pelagios*, collected from Mie, Japan.

N° in Fig. 4	Width of wound (mm)	Max. length of slash (mm)	N° of slashes	Average width between slashes (mm)	Min. width between slashes (mm)	Max. width between slashes (mm)	S D
1	140.0	113.0	14	9.03	7.30	10.80	1.151
2	119.0	310.0	16	7.37	5.00	12.00	1.796
3	129.0	61.0	21	9.94	5.60	27.30	4.715
4	114.6	78.2	12	8.74	7.30	10.40	0.915
5	320.0	78.2	34	9.58	6.20	12.50	1.651
6	-	-	-	-	-	-	-
7	69.0	128.0	11	8.42	6.40	14.20	2.191
8	32.0	114.6	7	5.75	4.70	6.60	0.797
9	105.0	136.8	12	8.75	6.60	10.90	1.428
10	292.0	-	-	-	-	-	-
11	188.0	-	-	-	-	-	-
12	330.0	-	-	-	-	-	-
13	530.0	-	-	-	-	-	-
14	48.0	244.0	7	7.87	6.00	11.00	1.806
15	213.0	-	27	8.62	6.50	11.20	1.289
16	221.0	-	21	8.81	7.50	12.20	1.262
17	151.0	-	23	7.83	6.70	9.40	0.869
18	209.1	-	28	8.60	5.00	11.40	1.846
19	148.3	-	17	8.28	6.60	9.00	0.882
20	45.0	148.0	8	9.00	6.60	11.00	1.584
21	133.0	195.0	19	7.78	5.40	13.20	2.044
22	71.0	-	11	8.93	7.00	10.80	1.300
23	550.0	-	45	8.00	5.00	12.00	1.702

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