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Research article

MORPHOMETRIC AND MERISTIC COMPARISON OF *DECAPTERUS MACROSOMA* BLEEKER, 1851 FROM MAKASSAR STRAIT AND BONE BAY, SOUTH SULAWESI, INDONESIA

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ABSTRACT: Shorffin Scad, *Decapterus macrosoma* Bleeker, 1851 is one of the fish resource found in South Sulawesi waters, which at the moment is being commercially exploded by mini purse seine. This study was conducted to campare the morfometric and meristic character of *Decapterus macrosoma* from Makassar Strait and Bone Bay, South Sulawesi, Indonesia. The necessary data and information of fish specimens were collected from November 2012 to December 2012; 60 specimens specimens were collected from Makassar Strait and 60 specimens from Bone Bay. Results showed that there were four differences of morphometric character from the two collected location, namely caudal peduncle length, lower jaw, head depth and head width.

Key words*:* Morphometric and Meristic, *Decapterus macrosoma*, South Sulawesi

INTORODUCTION

Makassar Strait and Bone Bay is one of the waters in eastern Indonesia has the potential in marine fishery resources, reached 929. 700 tons/year, with an estimated of large pelagic fish 193. 600 tonnes / year, small small pelagic fish resources 605, 400 tonnes / year , demersal fish 87, 200 tons / year , penaeid shrimps 4,800 tons/year, reef fish consumption of 34,100 tons/year, lobster 700 ons/year and the squid was 3,900 tons /year (Ministry of Maritime Affairs and Fisheries , 2011) [1]. Based on these data indicate that pelagic fish resources has a huge potential in the Makassar Strait and the Bone Bay. One of the pelagic fish resources in the waters are shortfin scad, *Decapterus macrosoma* (Fig. 1). Shortfin scad, genus *Decapterus* of the family Carangidae distributed throughout the world, widespread in the tropical Indo-West Pacific, from East Africa, including the Red Sea, north to southern Japan and south to Australia and eastward to Hawaii; also present in the eastern Pacific Ocean, from the Gulf of California and Peru, and are commercially important resources, especially in Indonesia [2].

Diagnostic characters of Shortfin scad, genus *Decapterus* are**:** Body very elongate, slender and nearly rounded. Eye moderate, with adipose eyelid well developed, completely covering eye except for a vertical slit centered on pupil. Scales on top of head do not extend forward to beyond posterior margin of pupil. Posterior end of upper jaw concave above, rounded and produced below. Upper jaw without teeth and lower jaw with a single series of minute teeth. Two widely separate dorsal fins, the first with VIII spines, the second with I spine and 33 to 39 soft rays (including finlet); anal fin with II detached spines followed by I spine and 27 to 31 soft rays (including finlet); terminal dorsal- and anal-fin rays each consisting of a widely detached finlet; pectoral fins short (61 to 75% of head length), tip of appressed fins falling considerably short of a vertical line from second dorsal-fin origin [2].

The high catches society to shortfin scad fish resources in the waters of the Makassar Strait and the Bone Bay can lead to excessive exploitation. If there is exploitation of fish continuously without control, it will cause degradation of fish resources and ultimately lead to the extinction of stock permanently [3]. Therefore, it is necessary that an integrated resource management in a sustainable shortfin scad fish, *Decapterus macrosoma* in some waters in South Sulawesi. One of the important information that is known in the scad fish resource management in South Sulawesi is the biological aspects, including differences in character and meristik morfomerik of the species from Makassar Strait and Bone Bay. Currently the research on the character and meristik morphomteric of Shortfin scad fish resources is still incomplete and limited.

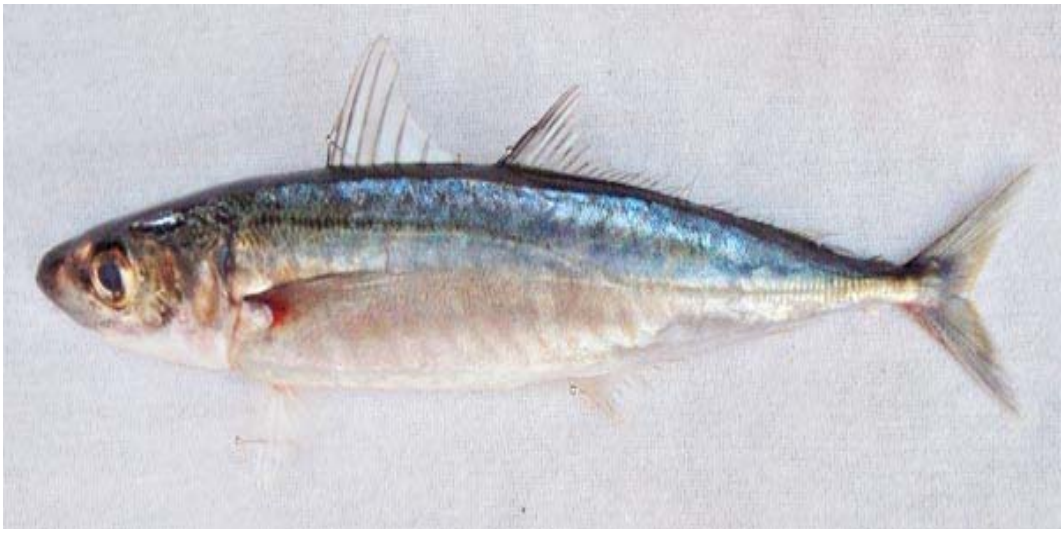

Figure 1. The Shortfin scad, *Decapterus macrosoma* from the Makassar Strait

MATERIALS AND METHODS

Samples of *Decapterus macrosoma* were collected from November 2012 to December 2012. The specimens purchased had been collected mostly by hand-line operated by local fisherman and landed at the fishing base of district Tanete Riattang Timur, Bone Regency as representive of Bone Bay and fishing base of district of Sumpang Binanggae, Barru Regency as representive of Makassar Strait (Fig. 2). The specimens were transferred to the laboratory of Fisheries Biology, Department of Fisheries, Faculty of Marine Science and Fisheries, Hasanuddin University. Method of counts and measurements (morphometric and meristic characteristics) generally follow to Turan [4], [5]. Specimens were measured with digital slide callipers up to the nearest 0.1 cm and weighed with an electric balance up to the nearest 0.1 g. The comparison of morphometric characteristics between Makassar Strait and the Bone Bay performed using discriminant analysis.

RESULTS AND DICUSSION

Diagnosis

Shorffin Scad, *Decapterus macrosoma* (Indonesian name: ikan layang) is one of the fish resource found in South Sulawesi waters, which at the moment is being commercially exploded by mini purse seine [6]. A species of *Decapterus* with the following combination of characters: Dorsal rays VIII + I, 33-39 (including detached finlet); anal rays II + I, 27-31 (including detached finlet); gill rakers on first arch (including rudiments) 10-12 + 34-38; posterior end of upper jaw concave on upper part, rounded below and slightly projecting behind; Lateral line anteriorly with a low regular arch, with junction of curved and straight parts below vertical from eleventh to thirteenth soft rays of second dorsal fin; scales in straight part of lateral line 14-29, followed by 24-40 scutes; total scales and scutes in lateral line (excluding caudal scales) 110-126; scales on top of head usually do not extend forward of posterior margin of pupil; body long and slender; pectoral fins 61-75% of head length; membrane at front of roof of mouth transparent or grey.

Colour**:** in life, metallic blue above, silvery below; small black blotch on margin of opercle near upper edge; caudal fin hyaline to dusky and dorsal-fin lobe sometimes dark distally; other fins mostly pale.

Table 1. Morphometric Measurements of Shorffin Scad, *Decapterus macrosoma* from Makassar Strait and Bone Bay.

Characterstic	Range (mm)	
	Makassar Strait (n= 64)	Bone Bay (n=61)
Total length (mm)	149 – 188	163 – 280
Standard Length (mm)	126 – 153	137 – 235
Counts:		
Dorsal fin rays	VIII + I, 32-35	VIII + I, 32-34
Anal fin rays	II, I 27 - 29	II, I 27 – 30
Caudal fin rays	22- 24	22- 26
Ventral fin rays	12 - 14	12 – 14
Pectoral fin rays	22-23	22-23
Scales on lateral line	64 - 106	68 – 106
Scales above lateral line	14 -30	17 – 38
Scales below lateral line	28 - 70	32 – 65
Scales before dorsal fin	13 - 26	18 – 35
Scales on caudal peduncle	19 - 36	21 – 38
Measurement:		
Dorsal fin base length	43.53 – 53.32	43.98 – 51.49
Pectoral fin base length	2.94 – 4.08	2.60 - 4.71
Pelvic fin base length	1.76 – 3.14	21.75 – 2.61
Anal fin base length	23.95 – 30.47	24.46 – 26.94
Predorsal length	28.41 – 34.87	29.24 – 32.33
Caudal peduncle length	3.47 – 4.72	4.82 – 6.22
Preopercle length	7.09- 10.31	6.15 – 9.14
Body Depth	13.9 – 18.52	14.11- 17.81
Longest pectoral-fin length	13.68 -16.51	12.21 – 15.31
Longest pelvic-fin length	8.35-10.19	7.11 – 9.00
Longest dorsal-fin base length	9.14 – 12.86	10.52 – 12.62
Longest dorsal-fin rays length	6.36 – 9.12	7.04 – 10.14
Longest anal-fin spine length	2.36 – 3.30	1.43- 2.50
Longest anal-fin ray length	7.11 – 8.93	6.51 – 7.48
Caudal peduncle depth	2.20 – 3.14	2.23 -3.47
Head length	18.27 – 24.81	19.61- 22.93
Snout length	4.14 – 5.22	2.99 – 3.55
Postorbital length	9.21 -11.00	9.63 – 11.21
Upper jaw length	5.60 -6.92	5.78 – 7.22
Lower jaw length	5.70 – 7.08	3.65 – 5.63
Interorbital length	1.14 – 1.98	0.98 – 1.61
Head depth	13.72 – 14.69	12.95 – 13.53
Eye diameter	1.66 – 2.91	1.94 – 2.84
Head width	8.45 – 10.00	10.64 – 12.20

Figure 2. Collection localities for specimen examined of *Decapterus macrosoma*. A) Tanete Riattang Timur, Bone Regency as representive of Bone Bay and, B) Sumpang Binanggae, Barru Regency as representive of Makassar Strait

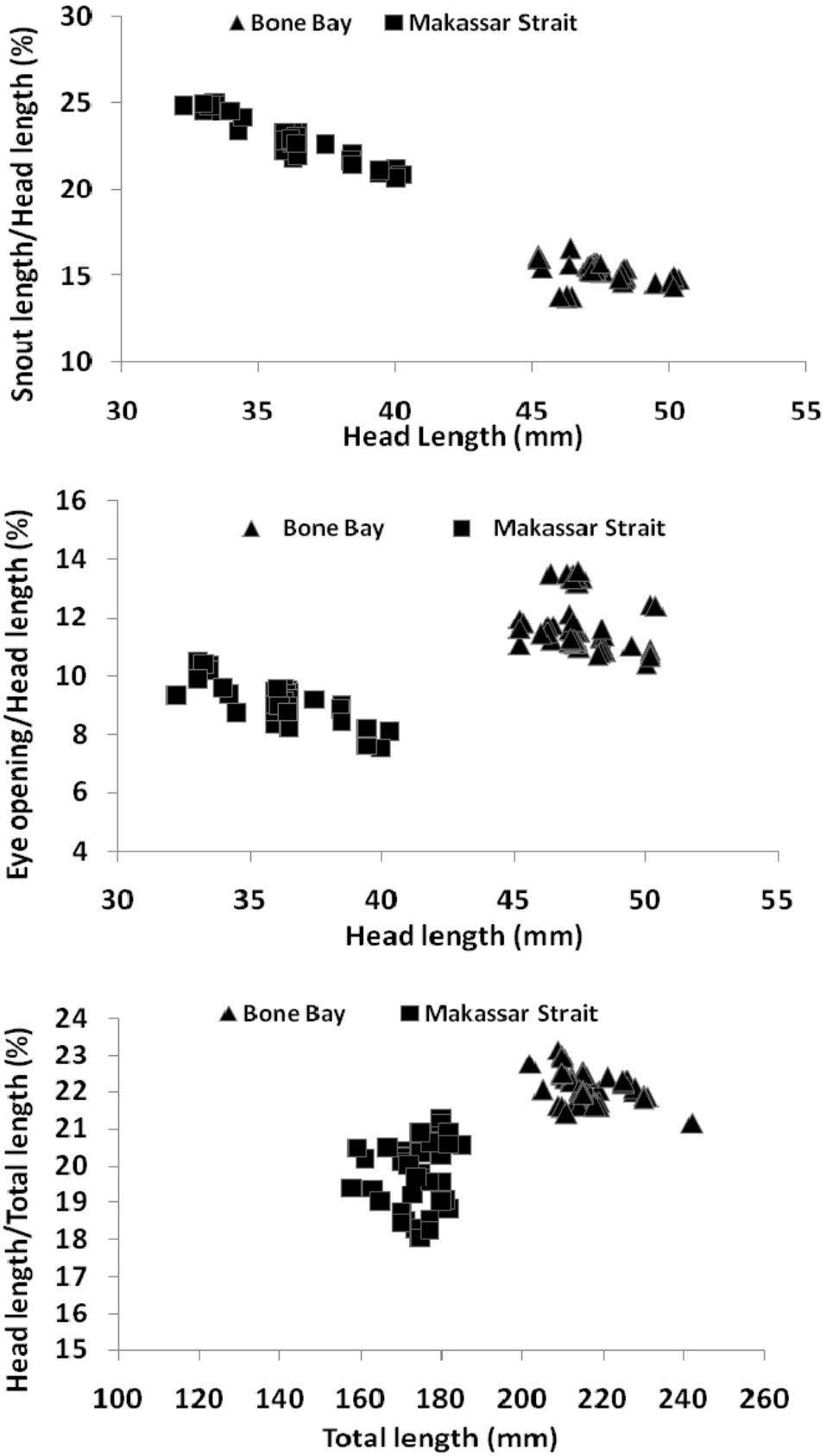

Figure 3. Morfometric differences of *Decapterus macrosoma* from Makassar Strait and Bone Bay

DISCUSSION

In overall appearance and color pattern, scad fishes from Makassar Strait is most similar to scad fish and the Bone Bay. A comparison of selected counts of both species is shown in Table 1. Notwithstanding, *Decapterus macrosoma* from Makassar Strait can be distingushed with *Decapterus macrosoma* from the Bone Bay having caudal peduncle length range 3.47-4.72 % of total length (vs. 4.82-6.22% of TL); lower jaw range 5.70-7.08% of total length (vs. 3.65-5.63% of TL); head depth range 13.72-14.57% of total length (vs. 12.95-13.53 of TL); head width range 8.45-10.00 of total length (vs. 10.64-12.20 of TL). (Table 1 and Figure 3). These characters above are considered to be important distinguished feature between the species.

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