First record of the rainbow runner *Elagatis bipinnulata* (Quoy and Gaimard, 1825) (Perciformes: Carangidae) from the Dongsha Atoll

東沙環礁之新紀錄種魚類—雙帶鰺

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Abstract

Elagatis bipinnulata, also known as the rainbow runner, is the only member of the genus *Elagatis* of the Carangidae, a pelagic species with an important role in recreational fisheries. *Elagatis bipinnulata* is broadly distributed in tropical oceans and abundant around Taiwanese waters, but it has never been reported from Dongsha, a remote atoll located in the northern South China Sea. In this study, we report the first record of *E. bipinnulata* in Dongsha. Morphological measurements and meristic counts of the specimen are also provided.

摘 要

雙帶鰺為鰺科帶鰺屬下之唯一物種，為一廣泛分布於全球暖水域的大洋性魚種，也是休閒漁業的重要目標魚。雙帶鰺在臺灣周遭海域頗常見，但迄今未曾紀錄於南海北部的東沙水域。本篇為雙帶鰺在東沙環礁的首筆紀錄，形態描述及形質測量詳細記錄於文中。

Key words: *Elagatis bipinnulata*, new record, Dongsha Atoll, Taiwan

關鍵詞: 雙帶鰺、新紀錄、東沙環礁、臺灣

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Introduction

The South China Sea (SCS) is a complex ecosystem with a rich diversity of marine fauna which stretches from shallow coral reefs to the oceanic basin near to 5,000 m depth. Sixty four species of carangids have been recorded in the SCS, with their occurrence dependent on habitat and food source (Randall and Lim 2000). The Dongsha Atoll is one of the remotest islands of Taiwan located in the northern SCS 450 km southwest from Kaohsiung. According to the biodiversity survey of coral reef ecosystems in the Dongsha Atoll , only 16 species of seven carangid genera have been recorded (Jeng *et al.* 2011).

The family Carangidae, known as jacks or pompanos, are globally distributed in the tropical and subtropical oceans with 140 species placed in 32 genera (Nelson 2006). Fifty six species placed in 22 genera have been recorded in Taiwanese waters, including remote islands located in the South China Sea such as the Dongsha Atoll and Spratly Islands (Shen and Wu 2011).

The rainbow runner *Elagatis bipinnulata* (Quoy and Gaimard 1825) is the only member of the genus *Elagatis*, distributed in the circumtropical oceans all around the world. *Elagatis bipinnulata* is commonly caught by trolling or as bycatch of other commercial species such as tuna or sailfish in eastern Taiwan (Lin and Shao 1999). *Elagatis bipinnulata* was recorded in the Spratly Islands, but not in the Dongsha Atoll (Shao *et al.* 2008). In this study, the first record of *E. bipinnulata* in the Dongsha Atoll is reported, and its morphology is examined.

Materials and Methods

A single specimen with 592 mm standard length was caught by lure fishing on the eastern side of the Dongsha Atoll at 15 m depth on 6 April 2016. The specimen was fixed with 10 % formalin, and it then transferred and preserved in 70 % ethanol solution. The morphometric measurements and meristic counts followed Lin and Shao (1999) and Shen and Wu (2011). The measurements were made with a tape measure and a digital caliper with the precision to 0.1 mm, and they were expressed as the proportion in the standard length (SL) and the head length (HL) in Table 1. The specimen was deposited in the

Department of Oceanography, National Sun Yat-sen University, Kaohsiung (DOS 03068).

Description of DOS 03068

Referred to Table 1 for morphometric measurements and Figure 1 for general appearance.

Table 1. Morphometrics of *Elagatis bipinnulata* (DOS 03068)

Characteristic	Length (mm)	Percentage
Fork length	634	
Total length	752	
Standard length	592	
In SL		
Body depth	129	21.8
Body width	81.4	13.8
Caudal peduncle length	36	6.1
Caudal peduncle depth	27.6	4.7
Snout to first dorsal fin	215	36.3
Pectoral fin length	77	13.0
Pelvic fin length	74	12.5
First dorsal fin base	61	10.3
Second dorsal fin base	244	41.2
Anal fin base	133	22.5
Head length	148	25.0
In HL		
Head width	62.4	42.2
Snout length	59	39.9
Interorbital width	51	34.5
Eye diameter	22.8	15.4

Fig. 1. *Elagatis bipinnulata*, DOS 03068, 592 mm SL.

Streamlined and elongated body in spindle shape. Body depth 21.8% SL. Head relatively small, head length 25.0% SL. Eye behind the edge of maxilla, eye diameter 15.4% HL. Mouth small, snout pointed. Lower jaw slightly longer than upper jaw. Teeth villiform. Upper end of gill opening lower than level of upper orbital margin; no spine on opercle. First dorsal fin composed of six weak spines with fin membranes; second dorsal fin with one spine and 25 soft rays, extending to near caudal peduncle. Anal fin similar to second dorsal fin in shape, but much shorter, origin approximately opposite to fifteenth ray of second dorsal fin; anterior anal fin with a detached spine. A detached finlet with two soft rays present after both second dorsal fin and anal fin. Pectoral fin short, fin tip approximately reaching vertical of fourth spine origin of first dorsal fin. Pelvic fin approximately equal to pectoral fin in length. Caudal fin deeply forked. D. VI + I, 25 + 2 (finlet); A. I + I, 15 + 2 (finlet); P. 18; V. I, 5. Body cover with cycloid scales; lateral line complete, with 108 perforated scales; 18 scales above lateral line counted along a putative line from dorsal fin origin. Anterior upper head bare without scale. A caudal keel on each side of caudal peduncle.

Body dusky bluish-green above while silver-white on ventral side. Two light blue stripes extending from snout to caudal peduncle with a broader yellow stripe in the middle, a thinner yellowish stripe below second blue stripe. All fins yellowish, caudal fin with a blackish margin.

Remark

Elagatis bipinnulata was originally named *Seriola bipinnulata* by Quoy and Gaimard (1825). Later, Bennett (1840) established the monotypic genus *Elagatis*, and phylogenetic analyses showed that *Elagatis* and *Seriola* are sister taxa (Reed and Carpenter 2002). *Elagatis bipinnulata* is a pelagic species distributed in circumtropical oceans from surface waters to 150 m depths all around the world (Lieske and Myers 1994). They usually form large schools and

sometimes can be very close to the coast in inshore areas (Leis and Carson-Ewart 2001). Furthermore, large individuals are commonly observed to aggregate under drifting floating objects for feeding in offshore areas far away from the coasts (Xuefang *et al.* 2013). A post-flexion larva of *E. bipinnulata* was collected from the estuary of the Tamsui River in northern Taiwan (Tzeng and Wang 1992), implying that the larval and/or juvenile of *E. bipinnulata* may use estuary habitats as nursery grounds such as the giant trevally *Caranx ignobilis* and the mangrove red snapper *Lutjanus argentimaculatus* (Smith and Parrish 2002; Zagars *et al.* 2012).

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