

**DISTRIBUTION OF *EPINEPHELUS EPISTICTUS*  
(Temminck and Schlegel, 1843) (Perciformes: Epinephelidae)  
IN THE COASTAL AREAS OF NORTH CENTRAL, VIETNAM**

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The article provides data on the morphological characteristics and the distribution of the dotted grouper *Epinephelus epistictus* (Temminck & Schlegel, 1843) in the coastal area of Thanh Hoa province, North Central Vietnam. Five specimens were collected from Minh Loc fishing port during a fish fauna survey on 06 August 2023. Combine with data from previous studies, this paper provides information of the distribution of *E. epistictus* in Vietnam in a northward expansion direction, thereby demonstrating the widespread distribution of this species. Species identification was confirmed by morphological characteristics and colour patterns on the body.

**Keywords:** Dotted grouper; new distribution; Thanh Hoa province.

**1. Introduction**

Groupers (family Epinephelidae) are commercially valuable taxa globally also in Vietnam. To date, a total of approximately 170 species belong to 16 genera in the world [1]. According to [2], 59 species in 13 genera have been recorded in Vietnam. Until 2011, the number of species in this family discovered in Vietnam was 72 species belonging to 15 genera [3]. Tran et al. announced the list of grouper species preserved in the Oceanographic museum including 33 species of seven genera, adding one species to Le's list in 2011 [4]. Thus, the number of species in the family Epinephelidae in Vietnam as of 2015 is 73 species, belonging to 16 genera. The dotted grouper *Epinephelus epistictus* (Temminck & Schlegel, 1843) is a widely distributed species in the Indo-West Pacific: Red Sea, Kenya to South Africa; Oman, west coast of India, Korea, Japan including Ogasawara Islands, China, Taiwan, Hong Kong, Indonesia, Papua New Guinea, the Arafura Sea, and northern Australia [1]; northeastern Peninsula Malaysia [5].

In Vietnam, *Epinephelus epistictus* has been distributed in the coastal areas of southern Vietnam [6]. This species were also recorded in other locations to the central of

Vietnam, including Phu Yen [7], Thua Thien Hue [8], Quang Binh [9], and Ha Tinh provinces [10]. During the sampling process in the coastal areas of Thanh Hoa province, we found specimens of *E. epistictus*, which are new records for the study area and also an additional report to the current database about the distribution of this species in Vietnam.

## 2. Methods

Fieldwork was conducted in August 2023 in the coastal area of Hau Loc commune, Thanh Hoa province, Vietnam. Specimens were collected from small fishing boats caught by fishermen in coastal areas, 2-3 nautical miles from the mainland. Specimens were preserved in formalin 10% and deposited at the Animal Laboratory, Hong Duc University; five specimens were examined. The technical terms and measurements follow the description by Heemstra & Randall [6]. The following abbreviations used in the article: total length (TL), standard length (SL), pre-dorsal length (PDL), head length (HL), post-orbital length (POL), snout length (SnL), eye diameter (ED), interorbital distance (ID), body depth (BD), caudal peduncle length (CPL); dorsal spines, dorsal rays, pectoral fin rays, ventral fin rays, anal spines, anal rays, caudal fin rays, number lateral line scale, and number lateral scale series. Field numbers are abbreviated LT for specimens collected in Lach Truong estuary, Hau Loc commune.

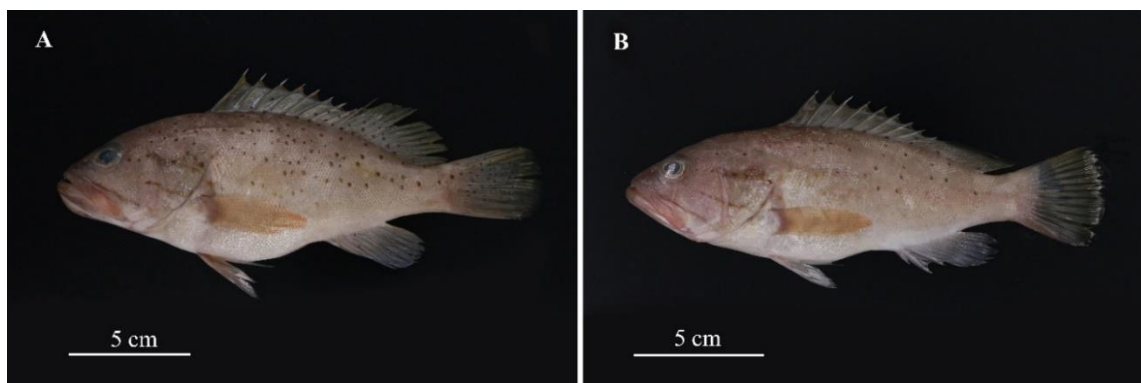
## 3. Results and discussion

### *Epinephelus epistictus* (Temminck and Schlegel, 1842)

**Specimens.** 05 specimens (LT 253, LT 466, LT 467, LT 468, LT 469) collected from fishermen's boats fishing in Hau Loc district, Minh Loc commune, Minh Loc fishing port; 19°55'N, 105°57'E; 06 August 2023.

**Identification.** Our specimens agree well with the description of the species by Heemstra & Randall [6]: Body depth contained 3.18 (2.87-3.31) times in standard length; head length contained 2.26 (2.01-2.35) times in standard length. Interorbital area and dorsal head profile slightly convex; preopercle angle produced, with three distinctly enlarged serrae; upper edge of operculum straight or slightly convex; maxillary extending to the posterior border of eye. Snout length 0.69 (0.68-0.71) times in diameter of eye; eye medium-sized, diameter of eye 4.44 (4.21-5.13) times in head length, and 1.45 (1.41-1.47) times in snout length; interorbital width 0.57 (0.49-0.83) in the eye. Gill rakers seven on upper limb, 15 on lower limb; length of longest gill raker longer than to longest gill filaments. Dorsal fin with XI spines and 14 rays, the second or third spine longest, shorter than longest ray, the interspinous membranes deeply incised; anal fin with III spines and eight rays; pectoral fin rays 17; pelvic fin with I spine and five rays; caudal fin rays 17. Pectoral fin length contained 1.58 to 1.62 times in head length; pelvic fin length contained 2.5 to 2.8 times in head length; caudal fin slightly rounded. Lateral line scales 70-71; lateral scale series 105-110.

Regarding color: The colour pattern of the Vietnam specimens identified as *Epinephelus epistictus* was similar to the species' description in Heemstra & Randall [6], and Bray [11]: head and body pale brownish, with conspicuous, small, brownish-black spots on dorsolateral part of the body, the rear part of the head, and some specimens on dorsal and caudal fins. All five specimens with faint dark band from the back of the eye to end of the operculum, another running diagonally across the cheek, and third a continuation of the maxillary streak. Pectoral-fin rays brownish, the membranes clear (Figure 1).



**Figure 1:** *Epinephelus epistictus* from the coastal areas of Thanh Hoa province (A: LT 466; B: LT 467)

The specimens collected from Thanh Hoa province, Vietnam agree well with the description of *Epinephelus epistictus* by Heemstra & Randall [6] (Table 1).

**Table 1:** Comparison proportional measurements of *Epinephelus epistictus* between specimens from Vietnam with the described of Heemstra & Randall

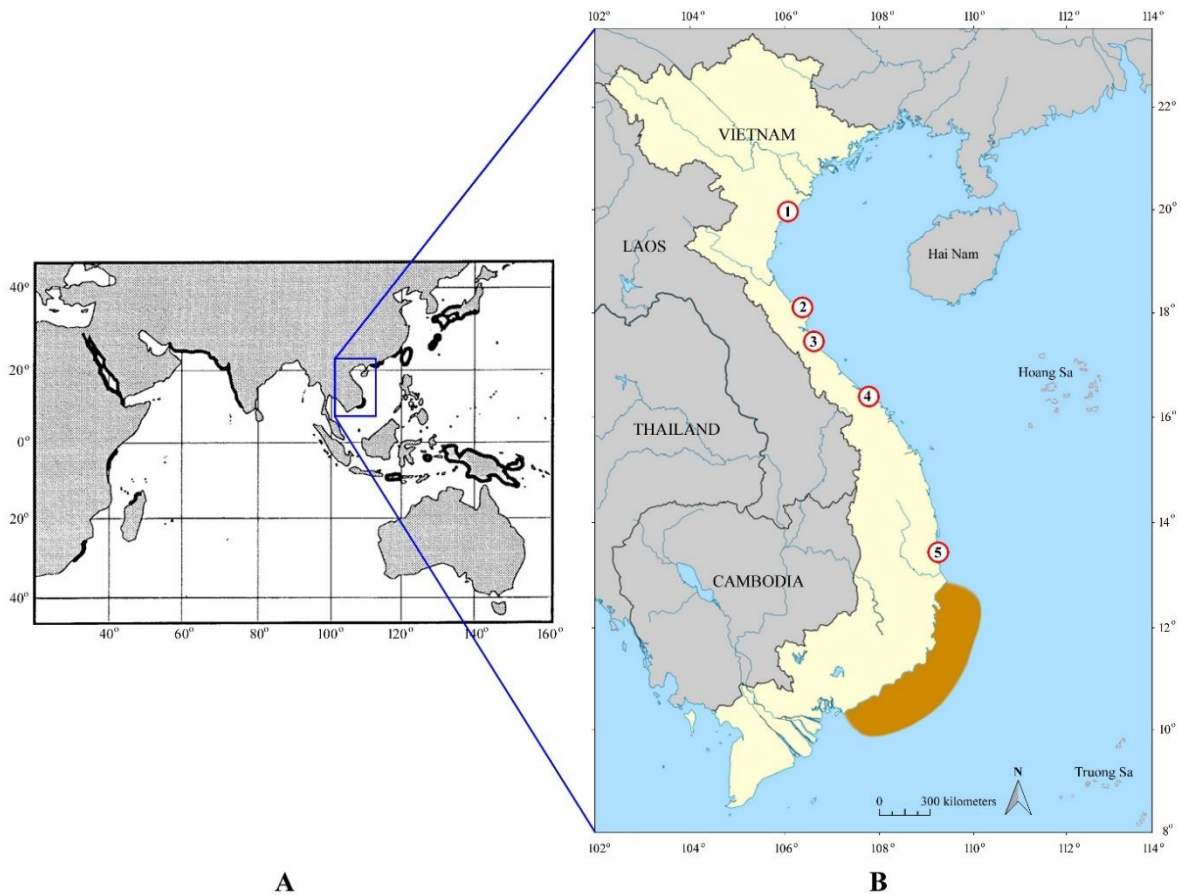
Characteristic	5 specimens in this study	Heemstra & Randall [6]
Dorsal spines	XI	XI
Dorsal rays	14	14-15
Anal spines	III	III
Anal rays	8	8
Pectoral rays	17	17-19
Gill rakers	7+15	7-10+15-19
Lateral line scales	70-71	57-70
Lateral scale series	107-110	105-127
<b>in SL</b>		
Head length	2.01-2.35	2.2-2.5
Body depth	2.87-3.30	3.0-3.3

Compared with the description of Heemstra & Randall [6], the specimens in this study have morphological characteristics that are completion consistent: Dorsal fin XI spines and 14 rays; anal fin III spines and eight rays; pectoral fin rays 17; pelvic fin I spine and five rays; caudal fin rays 17; lateral line scales 70-71. For proportional measurements, head length contained in standard length of the specimens in Vietnam less than with described in [6] (2.01-2.35 versus 2.2-2.5), body depth contained in standard length has a broader amplitude (2.87-3.30, versus 3.0-3.3). However this difference is insignificant.

Regarding distribution, *Epinephelus epistictus* is currently distributed in the Indo-West Pacific: the Red Sea, Kenya to South Africa; Oman, the west coast of India, Korea, Japan including Ogasawara Islands, China, Taiwan, Hong Kong, Indonesia, Papua New Guinea, the Arafura Sea, and northern Australia [1]. Du *et al.* reported the presence of *E. epistictus* in the northeastern Peninsula of Malaysia [5]. According to Heemstra & Randall [6] and IUCN [12], *E. epistictus* has been distribution in southern Vietnam. However, many studies on fish in coastal estuaries in Vietnam have been conducted but have not been updated, so the distribution of this species has not been fully provided, that can be mentioned include: research in the coastal area of Quang Ngai [13]; coastal area and

estuaries of Quang Nam [14-16]; Xuan Dai bay, Phu Yen province [17]; study on Serranidae from Da Nang to Binh Thuan province [18]; Son Tra peninsula [19]; O Loan lagoon, Phu Yen province [7].

In the coastal estuaries of the North Central Vietnam, there are studies in Thua Thien Hue lagoon [8], Bu Lu river [20], Tam Giang lagoon [21]; in the Quang Binh province, there are studies in Gianh river [22-24]; Nhat Le estuary [9]; in the coastal area of Ha Tinh province [10], [25-26]); in the mangrove area of Hung Hoa and estuary of Lam river, Nghe An province [27-28]; estuary of Mai Giang river [29]. In the coastal estuaries of Thanh Hoa province, there are studies in the Ma river [30-31], Yen river [32]. In the northern Vietnam, there are studies of Ba Lat river, Nam Dinh province and Xuan Thuy national park [33-34]. Among them, some studies recorded this species in other locations, including O Loan lagoon, Phu Yen province [7]; lagoon areas of Thua Thien Hue [8]; Nhat Le estuary, Quang Binh province [9]; coastal areas of Ha Tinh province [10], [26]; Ninh Thuan and Binh Thuan provinces [18], but have not recorded in northern Vietnam. Thus, this paper provides data on the distribution of *E. epistictus* in Vietnam in a northward expansion direction and currently to the coastal areas Thanh Hoa province (Figure 2).



**Figure 2:** Distribution of *Epinephelus epistictus*: A. In the worldwide [6].  
 B. In Vietnam: according to Heemstra & Randall [6] and IUCN [12] (Orange areas), and recent reports in Vietnam (1. This study - Coastal of Thanh Hoa province.  
 2. Coastal of Ha Tinh province. 3. Estuary of Nhat Le River, Quang Binh province.  
 4. Lagoon areas of Thua Thien-Hue province. 5. O Loan Lagoon, Phu Yen province).

#### 4. Conclusion

*Epinephelus epistictus* is widely distributed, however in Vietnam, its distribution is only recorded in Southern. This study identifies the expansion of distribution of this species in a northern direction, currently known to the coastal areas of Thanh Hoa province.

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## TÓM TẮT

### PHÂN BỐ CỦA LOÀI *EPINEPHELUS EPISTICTUS* (Temminck and Schlegel, 1843) (Perciformes: Epinephelidae) Ở VÙNG VEN BIỂN BẮC TRUNG BỘ, VIỆT NAM

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Ngày nhận bài 15/01/2024, ngày nhận đăng 05/3/2024

Bài báo cung cấp dẫn liệu về đặc điểm hình thái và phân bố của loài Cá mú chấm đen *Epinephelus epistictus* (Temminck & Schlegel, 1843) ở vùng biển ven bờ tỉnh Thanh Hóa, Bắc Trung Bộ, Việt Nam. Năm mẫu vật được thu thập ở cảng cá Minh Lộc trong quá trình nghiên cứu khu hệ cá của vùng vào tháng 8/2023. Kết hợp với các nghiên cứu trước đây, bài báo này cung cấp thông tin về phân bố của loài *E. epistictus* ở Việt Nam theo hướng mở rộng phân bố về phía bắc, điều này cũng khẳng định sự phân bố rộng của loài. Loài được định loại bằng các đặc điểm hình thái và màu sắc, hoa văn trên thân.

**Từ khóa:** Cá mú chấm đen; phân bố mới; tỉnh Thanh Hóa.