

A comparative study on the morphometric characters of the first recorded west African Spanish mackerel *Scomberomorus tritor* (Cuvier, 1832) and the Red Sea migrant narrow barred Spanish mackerel *Scomberomorus commerson* (Lacepsde, 1800) family: Scombridae in the Egyptian Mediterranean waters (off Abu- Qir).

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ABSTRACT

Three fishes of genus *Scomberomorus* (family: Scombridae) were observed among the catch of pelagic fish (*Sardinella aurita*, *Sardinella maderensis*, *trachurus mediterraneus* and *Engraulis encrasicolus*) obtained by pure seine net using light operated in the Egyptian Mediterranean waters (off Abu- Qir). Two fish were recorded for the first time of West African Spanish mackerel (*Scomberomorus tritor*; Cuvier, 1832); the third was the migrated red sea species into the Mediterranean Sea (*Scomberomorus commerson*; laceped, 1800). By comparing the morphometric characters of both species having the same length (TL: 41.0 cm.); it was found that they have the same meristic counts, but differing in about 10 morphometric indices out of 26, where *Scomberomorus commerson* have greater values than *Scomberomorus tritor*. Generally, the external features of the bodies of the two species are the main difference between them, as *Scomberomorus tritor* have about 40 black rounded spots around the lateral line, while *Scomberomorus commerson* have about 16 vertical bars below the first, and second dorsal fin followed by about twenty black rounded spots extended behind till caudal fin.

INTRODUCTION

Fishes genus *Scomberomorus* (family: Scombridae) include 18 species widely distributed around the world. Two species of this genus were observed in the Egyptian water of Mediterranean Sea. *Scomberomorus tritor* (Cuvier, 1832) - (first record) is of Atlantic origin distributed around Canary Islands, Senegal, Gulf of Guinea and Angola. *Scomberomorus commerson* an immigrant Red Sea species of indo-pacific origin migrated to the eastern Mediterranean Sea by the way of Suez Canal. El-Sayed (1994) and Rizkalla (1997) recorded this species in Egyptian waters. Gucu *et al.* (1994) documented this species on the Turkish Mediterranean coast northern Cilician basin and coast of Lebanon and Syria. Golani *et al.* (2002) reported this species as exotic one in the Mediterranean Sea. Corsini-Foka and Kalogirou (2008) recoded it around Rhodes Island (Greece).

The aim of this research is to through light on the recently recorded Atlantic mackerel (*S. tritor*), and compare its morphometric characters with the indo-pacific species (*S. commerson*) in the Mediterranean Sea.

MATERIALS AND METHODS

On 10 Aug. 2018, two specimens of *S. tritor* and one specimen of *S. commerson* were obtained from the catch of purse seine net using light, that operating in the Egyptian Mediterranean waters off Abu- Qir area (Fig. 1) and were identified according to FAO identification sheets. These mackerels were found within the catch of other pelagic fishes such as *Sardinella aurita*, *Sardinella maderensis*, *trachurus mediterraneus* and *Engraulis encrasicolus*.

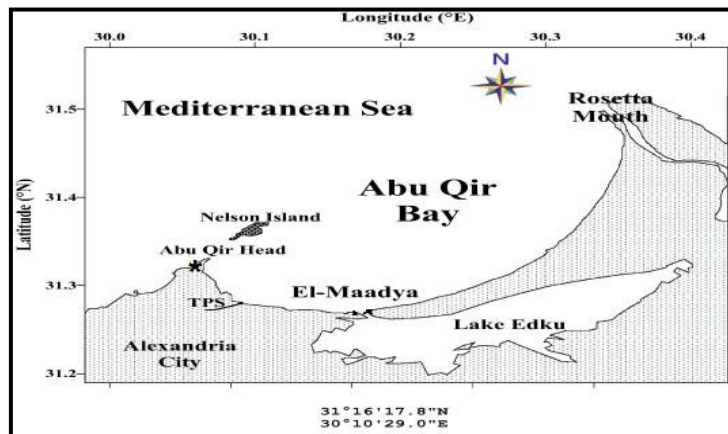


Fig. 1: A map showing the Abu Qir area in the Egyptian Mediterranean waters.

The two specimens of *S. tritor* have total length 41.0 cm. and 21.0 cm, having 450.0 g and 100.0 g respectively; the third specimen of *S. commerson* has total length 41.0 cm and weighted 450.0 g.

Twenty six morphometric measurements were taken for each specimen to the nearest 0.1 centimeter by using a digital caliper as given in (Figs. 2&3).

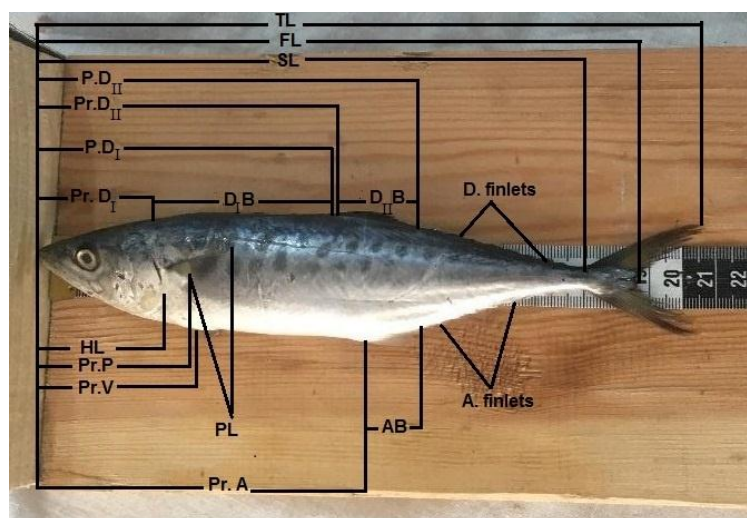


Fig. 2: Different morphometric parameters of the new record Atlantic mackerel (*S. tritor*) collected from Abu Qir area in the Egyptian Mediterranean waters.

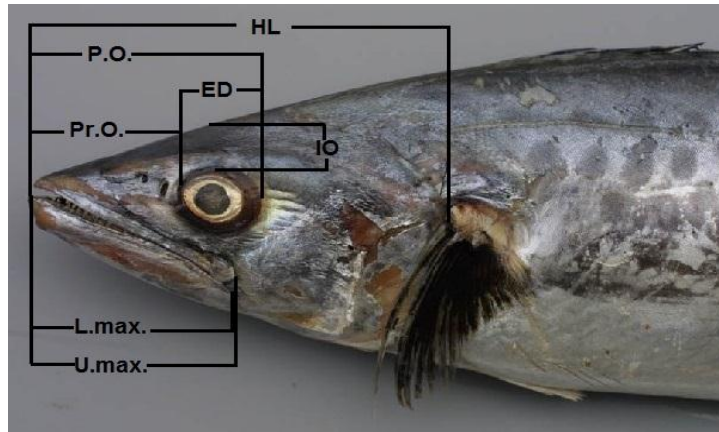


Fig. 3. Different head region morphometric parameters of the new recorded Atlantic mackerel (*S. tritor*) collected from Abu Qir area in the Egyptian Mediterranean waters.

These measurements were: total length (TL), forked length (FL), stander length (SL), pre first dorsal (Pr. D_I), post first dorsal (P. D_I), length of first dorsal base (D_IB), pre second dorsal (Pr. D_{II}), post second dorsal (P. D_{II}), length of second dorsal base (D_{II}B), length between D_I and D_{II} space (D_I- D_{II}), pre pectoral (Pr. P), length of pectoral (PL), pre ventral (Pr. V), length of ventral (VL), pre anal (Pr. A), anal fin base (AB), height of first dorsal (D_IH), height of second dorsal (D_{II}H), body depth (BD), head length (HL), pre orbit (Pr. O.), post orbit (P. O.), inter orbit (IO), eye diameter (ED), upper maxillary (U. max.), lower maxillary (L. max.).

The morphometric index of each character was calculated as percentage to the total length whereas (ED; Pr. O.; IO; U. max., L. max.) were related to head length. Morphometric index= (morphometric measurement /total length or head length) × 100.

RESULTS

West African Spanish mackerel *S. tritor* (Cuvier, 1832):

Body elongated with forked caudal fin. The second dorsal fin situated in front of the vertical line between it and anal fin. D_I spines (total): XVI; D_{II} rays (total): 15; D. finlets: 9; A. finlets 9- 10; v. fin: 1 + 4; A. rays: 15- 18; P. F.: 22- 25. Lateral line started behind the upper part of operculum going straight and the decline below the second dorsal rays and below the dorsal finlets. Both upper maxilla and lower maxilla are equal in lengths. Teeth on the jaws are sharp arranged in one raw; their number ranged (24- 28) in upper jaw and (18- 24) lower jaw, Fig. (4&5) and Table (1).



Fig. 4: A photo showing the external feature of *S. tritor* collected from Abu Qir area in the Egyptian Mediterranean waters.

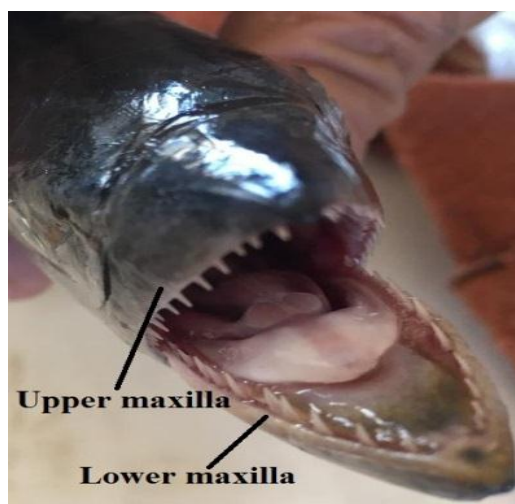


Fig. 5: A photo showing the upper and lower maxillae of *S. tritor* collected from Abu Qir area in the Egyptian Mediterranean waters.

Table 1: Comparison between values of different morphometric indices of the new record Atlantic mackerel (*S. tritor*) and recent migrant Red Sea mackerel (*S. commerson*) collected from Abu Qir area in the Egyptian Mediterranean waters.

Species	<i>Scomberomorus tritor</i>				<i>Scomberomorus commerson</i>	
	Fish No. 1 Wt. =450.00 TL = 41.00		Fish No. 2 Wt. =100.00 TL = 21.00		Fish No. 3 Wt. =450.00 TL= 41.00	
Morphometric Parameters	cm.	%	cm.	%	cm.	%
FL	37.000	90.24	18.500	88.10	35.600	86.83
SL	34.000	82.93	16.800	80.00	32.300	78.78
Pr. D _I	8.800	21.46	4.900	23.33	8.700	21.22
p. D _I	17.500	42.68	9.200	43.81	18.100	44.15
D _I B	8.600	20.98	3.800	18.10	9.400	22.93
Pr. D _{II}	18.000	43.90	9.500	45.24	18.800	45.85
P. D _{II}	21.600	52.68	11.400	54.29	22.200	54.15
D _{II} B	3.600	8.78	1.900	9.05	3.300	8.05
D _I - D _{II}	0.700	1.71	0.200	0.95	0.700	1.71
Pr. P.	9.200	22.44	5.100	24.29	9.100	22.20
PL	3.400	8.29	1.500	7.14	3.300	8.05
Pr. V	9.300	22.68	4.800	22.86	8.800	21.46
LV	2.100	5.12	1.400	6.67	2.100	5.12
Pr. A	20.000	48.78	10.400	49.52	19.400	47.32
AB	2.800	6.83	1.900	9.05	3.400	8.29
D _I H	3.700	9.02	1.900	9.05	4.000	9.76
D ₂ H	3.800	9.27	1.900	9.05	3.900	9.51
BD	7.300	17.80	3.800	18.10	6.900	16.83
HL	8.200	20.00	4.500	21.43	7.900	19.27
ED	1.200	14.63	0.900	20.00	1.400	17.72
Pr. O.	3.100	37.80	1.600	35.56	3.000	37.97
P. O.	4.400	53.66	2.500	55.56	4.400	55.70
IO	2.200	26.83	1.200	26.67	2.300	29.11
U. max	4.300	52.44	2.600	57.78	4.300	54.43
L. max	4.300	52.44	2.600	57.78	4.400	55.70
Meristic Counts						
Fish No. 1	D _I XVI spines; D _{II} 15 Rays; D. finlets: 9; A. finlets: 10; P. rays: 25; ventral: I spine + 4 rays; upper jaw teeth: 28, lower jaw teeth: 24; dark spots: 40.					
Fish No. 2	D _I XVI spines; D _{II} 15 Rays; D. finlets: 9; A. finlets: 10; P. rays: 25; ventral: I spine + 4 rays; upper jaw teeth: 24; lower jaw teeth: 18; dark spots: 20.					
Fish No. 3	D _I XVI spines; D _{II} 15 Rays; D. finlets: 10; A. finlets: 10; P. rays: 25; ventral: I spine + 4 rays; upper jaw teeth: 30; lower jaw teeth: 30; darker grey vertical bars: 16; and spots: 20.					

Color: blue grey in upper part of body and lower part white. Membrane between first six dorsal spines black, while the rest of it white. Pectoral and caudal fins are black. The body is characterized by the presence of black rounded spots distributed mostly around the lateral line but absent in the lower part of the body, its number ranged from 20- 40 from small specimen and large one, respectively.

The narrow- barred Spanish mackerel *S. commerson* (Laceped, 1800) migrant from Red Sea to Mediterranean Sea.

Body elongated with forked caudal fin. Second dorsal fin situated in front of the vertical line between it and anal fin. D_I spines (total): XVI; D rays (total): 15; D. finlets: 10; A. finlets: 10; A. rays: 15; V. F.: 1+ 4; P. rays: 22. The lateral line declines below the second dorsal ray and the dorsal finlet. Both maxillae (upper and lower) are equal. Teeth in the upper and lower jaws arranged in one row. There number reached 30 teeth on each, Fig. (6) Table (1).

Color: blue grey above and white below. Pectoral and caudal fins black. This species is characterized by the presence of 16 vertical bars started below the beginning of D_I to the end of D_{II} followed by 20 dark spots till the caudal peduncle region.



Fig. 6: A photo showing the external feature of *S. commerson* collected from Abu Qir area in the Egyptian Mediterranean waters.

DISCUSSION

The previous identification of *S. tritor* is in accordance with that given by (Collette and Neun, 1983) and the identification of *S. commerson* agrees with that reported by (collette & Nauen, 1983 and Heemstra. 1995).

From the above data the comparison between the small (21.0 cm.) and large (41.0 cm.) morphometric indices of the new recorded of *S. tritor* shared only in six indices out of 26 of the larger fish have higher values than these of small size fish. These were: FL; SL; length of D_IB; D_I- D_{II} space; Pr. P and Pr. O., whereas indices of small size fish were to have higher values than larger fish. These were Pr. D_I; P. D_I; Pr. D_{II}; P. D_{II}; D_{II}B; VL; Pr. A; AB; BD; HL; ED, P. O.; U. and L. max. The other indices between them were seemed to have nearly the same values.

The comparison between both large fish of *S. tritor* and *S. commerson* having the same sizes (41.0 cm.) shared only 10 out of 26 indices of *S. commerson* have higher indices as compared with *S. tritor*. These were P.D_I; D_IB; Pr. D_{II}; P. D_{II}; AB; ED; IO; P. O.; U. and L. max. Concerning the meristic characters, it was observed that both of *S. tritor* and *S. commerson* (41.0 cm.) have the same meristic counts.

Finally, it was observed that the external features of the body is considered as the main difference between the two species (*S. tritor* and *S. commerson*), as the first is characterized by having greater number of black rounded spots (40) around the lateral line, where 16 interrupted vertical bars distinguish the second followed by about 20 black rounded spots.

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ARABIC SUMMARY

دراسة مقارنة للصفات الظاهرية لنوع الدراك الأسباني الغرب أفريقي (*Scomberomorus tritor*- Cuvier, 1832) الذى يسجل للمرة الأولى مع نوع الدراك المهاجر من البحر الأحمر الى البحر المتوسط (*Scomberomorus commerson*- Lacepsde, 1800) عائلته اسكمبوريدي ، فى المياه المصرية (بمنطقة أبوقير).

سمير ابراهيم رزق الله & رشا على حنيش

المعهد القومى لعلوم البحار والمصايد، مصر

لوحظ وجود 3 أسماك من أسماك الدراك ضمن صيد الأسماك السطحية مثل (السردين، والأنشوجة، والشاخورة)، والتي تم صيدها بشبكة الشانثولا فى منطقة أبوقير. اثنين من هذه الأسماك كانت من نوع الدراك الأسباني الغرب أفريقي (*Scomberomorus tritor*) وهذه هى المرة الأولى التى يتم رصد هذا النوع من الدراك فى المياه المصرية للبحر المتوسط، أما السمكة الثالثة فكانت من نوع الدراك المهاجر من البحر الأحمر الى البحر المتوسط (*Scomberomorus commerson*) بمقارنه الصفات الظاهرية لسمكتين من أسماك الدراك لهما نفس الطول من النوعين وجد أن النوعين مختلفين فى 10 صفات من 26 صفة ظاهريه التى تم قياسها.

بشكل عام، يمكن تمييز النوعين من الشكل الخارجى حيث أنا سمكة الدراك من النوع الأسباني الغرب أفريقي يتميز بوجود حوالي 40 بقعه مستديرة متناثره حول الخط الجانبي؛ بينما سمكة الدراك من النوع الثانى المهاجر من البحر الأحمر يتميز بوجود حوالي 16 من الخطوط العمودية تحت الزعنفة الأولى والثانية، يتبعها حوالي 20 بقع سوداء مستديرة تمتد حتى الزعنفة الذيلية.