Scorpaena decemradiata new species (Teleostei: Scorpaenidae) from the Gulf of Aqaba, northern Red Sea, a species distinct from Scorpaena porcus

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Summary: The scorpionfish Scorpaena decemradiata n. sp. is described from off the coast of Israel in the Gulf of Aqaba, northern Red Sea. The new species is similar to S. porcus Linnaeus, 1758, but is characterized by dorsal fin spines XII, soft dorsal fin rays 10 (the last divided at base); pectoral fin rays 16, uppermost branched pectoral fin ray is the second; lacrimal with 2 spines over maxilla that point at nearly right angle from each other, the posterior pointing ventrally and slightly anteriorly; occipital pit well developed; anteriormost mandibular lateral-line pores small, separated; scales ctenoid; 59-62 scale rows in longitudinal series; scales absent on chest and pectoral fin base; and cirri developed over entire head and body, but no cirri on lower jaw. An updated checklist of the species of the genus Scorpaena Linnaeus, 1758 and a key to the species of the eastern Atlantic, Mediterranean Sea and Red Sea are presented.

Keywords: taxonomy; fishes; new species; Red Sea; distribution; checklist; key.

Scorpaena decemradiata nueva especie (Teleostei: Scorpaenidae) del golfo de Aqaba, mar Rojo del norte, una especie distinta de Scorpaena porcus

Resumen: En este trabajo se describe el escorpeniforme Scorpaena decemradiata n. sp. de la costa de Israel, golfo de Aqaba, mar Rojo del norte. La nueva especie es similar a S. porcus Linnaeus, 1758, pero se caracteriza por la presencia de XII espinas y 10 radios blandos (el último dividido en la base) en la aleta dorsal; 16 radios en la aleta pectoral, el radio ramificado más superior es el segundo; lacrimal con 2 espinas sobre el maxilar que apuntan casi en ángulo recto, la posterior apuntando ventralmente y ligeramente en dirección anterior; fosa occipital bien desarrollada; los poros más anteriores de la línea lateral mandibular son pequeños y separados; escamas ctenoides; de 59 a 62 filas de escamas en series longitudinales; escamas ausentes en el torax y en la base de la aleta pectoral; y cirros desarrollados sobre toda la cabeza y el cuerpo, pero no en la mandíbula inferior. Se presenta una lista actualizada de las especies del género Scorpaena Linnaeus, 1758, y una clave para las especies del Atlántico este, mar Mediterráneo y mar Rojo.

Palabras clave: taxonomía; peces; nueva especie; Red Sea; distribución; checklist; clave.

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INTRODUCTION

The scorpionfishes of the genus Scorpaena Linnaeus, 1758 are mostly distributed in warm temperate seas, and occasionally also in tropical seas, around the world. They inhabit benthic habitats, mostly dwelling on rocky reefs. The genus includes a total of 61 valid species (Fricke et al. 2018). It is characterized within the family Scorpaenidae by the dorsal rays normally XII, 9 (7-10, 8 or 10 normal for some species), anal rays normally III, 5; pectoral rays 16-21, some rays branched, the branching usually compound in larger specimens; swimbladder absent; vertebrae 24; scales on body cycloid or ctenoid; occipital pit usually present, never flat or convex; palatine teeth present; ventral margin of lacrimal bone usually with numerous spines; posterior lacrimal spine absent or not hooked forward; no slit behind fourth gill arch; scales on pectoral fin base reduced or absent; lateral line normal, continuing onto or near base of caudal fin; pored lateral-line scales forming relatively complete tubes; and peritoneum pale (Eschmeyer 1969; 1999; modified).

The genus Scorpaena has been known since ancient times (Aristotle, 4th century BC; see Arédi 1738b); in modern ichthyology it was first described by Linnaeus (1758: 266), with S. porcus Linnaeus, 1758 and S. scrofa Linnaeus, 1758 as the only known species at the time. The species description of S. porcus by Linnaeus (1758) was based on multiple sources from localities in the Mediterranean Sea (see Arédi 1738b, “Scorpaena pinnulis, ad oculos et nares”), and it was subsequently designated by Bleeker (1876: 3) as the type species. The genus has been placed on the Official List of Generic Names in Zoology by Opinion 77 (Anonymous 1922).

When examining specimens of Scorpaena from the Gulf of Aqaba, our attention was drawn to the identity of specimens previously misidentified as Scorpaena porcus. We found these specimens to be distinct from populations in the Mediterranean Sea, prompting our group to reconsider the identity of species described from the area. The description of a new species, Scorpaena decemradiata n. sp., is provided for the first time.

MATERIALS AND METHODS

Specimens were examined at the Australian Museum, Sydney (AMS), the Natural History Museum, London (BMNH), the Hebrew University, Jerusalem (HUI), the Muséum National d’Histoire Naturelle, Paris (MNHN), Tel Aviv University (SMNH-TAU) and the Staatliches Museum für Naturkunde, Stuttgart (SMNS).

Descriptive methods follow Eschmeyer (1969). In the description, the data of the holotype are presented first, followed by those of the paratype in parentheses. The classification is based on Fricke et al. (2018) and references follow Fricke (2018). The museum abbreviations follow Fricke and Eschmeyer (2018).

Comparative material: Parascorpaena aurita: BMNH uncat. (1, 80.7 mm SL, previously identified as Scorpaena erythraea), Red Sea; BMNH 1871.4.13.26 (1, 88.7 mm SL, previously identified as Scorpaena erythraea), Massaua, Eritrea, Red Sea. Scorpaena porcus: BMNH 1929.8.7.25 (1), Sevastopol, Black Sea; BMNH 1935.4.12.2 (1), Dorset, UK; BMNH 1938.11.15.50 (1, 124.1 mm SL), Philippeville [Skikda], Algeria; BMNH 1960.6.24.154-149 (5, 99.1-131.3 mm SL), Catalunya, Spain; BMNH 1963.5.14.655 (1, 118.4 mm SL), Banyuls-sur-Mer, France; BMNH 2015.3.12.9 (1, 233.4 mm SL), Plymouth, UK; HUJ 4962 (1), Bat-Galim, Israel; HUJ 5315 (1), Michmoret, Israel; HUJ 12060 (1), Liguria Sea, Italy; HUJ 12258 (1), Jaffo, Israel; HUJ 14139 (2), Famagusta, Cyprus; HUJ 14223 (2), Cyprus; HUJ 14555 (1), Famagusta, Cyprus; HUJ 14573 (4), Rhodes, Greece; HUJ 14591 (1), Rhodes, Greece; HUJ 14674 (1), Cape Kiti, Cyprus; HUJ 17860 (1), Malta; HUJ 19126 (2), Cape Dolex, Cyprus; HUJ 19129 (3), Famagusta, Cyprus; HUJ 19394 (1), Istanbul, Turkey; HUJ 19437 (1), Yanai Beach, Israel; HUJ 20283 (6), east of Maliloca, Balearic Islands, Spain; MNHN 0000-6706 (2 symptypes of Scorpaena erythraea Cuvier in Cuvier and Valenciennes, 1812, 107.6-154.7 mm SL), Red Sea/locality probably erroneous; the larger specimen is the lectotype as designated below; SMF 35951 (9, 104.1-171.7 mm SL), France, Marseille; SMNH-TAU 2578 (1), Red Sea; SMNS 1003 (4), Nice, France; SMNS 1673 (1), Alicante, Spain; SMNS 9186 (1), Mallorca, Baleares, Spain; SMNS 9196 (1), Menorca, Baleares, Spain; SMNS 9450 (1), Orient-Cres, Croatia; SMNS 9610 (3), Varkiza, Greece; SMNS 9613 (1), Varkiza, Greece; SMNS 9870 (2), Varkiza, Greece; SMNS 10044 (3), Porto Santo Stefano, Toscana, Italy; SMNS 10055 (6), Porto Santo Stefano, Toscana, Italy; SMNS 11519 (1), Bodrum, Muğla, Turkey; SMNS 11534 (1), Bodrum, Muğla, Turkey; SMNS 11583 (2), Greece, Varkiza; SMNS 16399 (1), Beirut, Lebanon; SMNS 16696 (1), Karataş, Adana, Turkey; SMNS 16697 (1), Karataş, Adana, Turkey; SMNS 19046 (1), Girne, Northern Cyprus; SMNS 19046 (11), Girne, Northern Cyprus; SMNS 19056 (12), Girne, Northern Cyprus; SMNS 19062 (6), Girne, Northern Cyprus; SMNS 19078 (3), Girne, Northern Cyprus; SMNS 19099 (23), Girne, Northern Cyprus; SMNS 19209 (1), Malolot, Baleares, Spain; SMNS 20360 (1), Tabarka, Tunisia; SMNS 24887 (1), Paradise Bay, Malta; SMNS 24896 (4), Paradise Bay, Malta; SMNS 24904 (2), Paradise Bay, Malta; SMNS 25514 (4), Monaco; SMNS 25515 (2), Palermo, Sicily, Italy; SMNS 25517 (1), Venice, Italy; SMNS 25518 (4), Venice, Italy.

TAXONOMY

Scorpaena decemradiata n. sp.

(Fig. 1, Table 1)

Scorpaena porcus (non Linnaeus 1758): Frøiland 1972: 23 (Eilat, Israel, Gulf of Aqaba, Red Sea; based on HUJ 2418); Dor 1984: 82 (part). Goren and Dor 1994: 22 (part).

Holotype: HUJ 2418, 123.1 mm SL, Red Sea, Gulf of Aqaba, Israel. Eilat, Y. Berens, Sept. 1960.

Paratype: HUJ 20671, 1 specimen, 95.0 mm SL, Red Sea, Gulf of Aqaba, Israel Eilat, Y. Berens, Sept. 1960.

Diagnosis. A species of Scorpaena with dorsal fin spines XII, soft dorsal fin rays 10 (the last divided at base); pectoral fin rays 16, uppermost branched pectoral fin ray is the second; lacrimal with 2 spines over maxilla that point at nearly right angle from each other, the posterior pointing ventrally and slightly anteriorly; occipital pit well developed; anterior most mandibular lateral-line pores small, separated; scales ctenoid; 59-62 scale rows in longitudinal series; scales absent on chest and pectoral fin base; and cirri developed over entire head and body, but no cirri on lower jaw.

Description. Dorsal fin-ray formula XII, 10 (XII, 10). Anal fin-ray formula III, 5 (III, 5). Pectoral fin-ray formula, all elements, 16 (16), upper 2nd-7th (2nd-7th) branched. Gill rakers 5+12, total 17 (4+12, total 16) on first gill arch.

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Selected body proportions and counts, included in Table 1, are part of the description.

Body scaled; scales ctenoid. Chest, pectoral fin base and head naked. Predorsal scales 5 (6). Preorbital bone usually with 2 (2) spinous points over maxillary forming about a right angle; posterior spine pointing forward. Occipital pit present, well developed. Suborbital ridge with 3 (2-3) spinous points; first below ridge which runs under eye, second at end of this ridge, and third just before supplemental preopercular spine. Upper posttemporal spine present. Interorbital ridges present, diverging at rear. Supraorbital tentacle at most half of orbit diameter. Few small dermal flaps associated with preorbital, preocular, parietal, nuchal and preopercular spines; other tentacles at anterior nostril, below suborbital ridge, on eye, opercle flap, some body scales, and some pored lateral-line scales. Pores at symphysis small, separate. Lateral line a shallow convex curve from its origin to caudal fin base, with 29 (30) pored scales. Scale rows in longitudinal series 62 (59), vertical scale rows 53 (48). Maximum observed standard length 123 mm.

Colour in alcohol. For pigmentation of body refer to Figure 1, which is part of the description.

Head and body reddish brown, back with five indistinct darker saddles that continue irregularly across the upper two-thirds of the body. Head reddish brown; eye dark grey. Pectoral fin base and belly white. Dorsal fin marbled with brown, without a black blotch. Pectoral fins pale, with series of dark brown spots in their upper two-thirds. Pelvic fins pale. Anal fin light brown, with a central and a distal posterior bar of dark brown spots. Caudal fin whitish, with a basal, a central and a distal vertical dark brown bar.

Etymology. Decem (Latin) means ten; radiata (Latin) means rayed. The name refers to the ten soft rays in the dorsal fin of the new species, which clearly distinguish it from the closely related species, *S. porcus*.

### Table 1. – Selected counts and body proportions of *Scorpaena decemradiata* new species; proportions expressed as percentage of standard length unless otherwise stated.

| Range          | Red Sea HUJ 2148, holotype (123.1 mm SL) | Red Sea HUJ 20671, paratype (1) (90.5 mm SL) |
|----------------|----------------------------------------|------------------------------------------|
| **Counts:**    |                                        |                                          |
| Dorsal fin spines | XII                                    | XII                                      |
| Dorsal fin soft rays | 10                                    | 10                                       |
| Anal fin spines + soft rays | III + 5                                | III + 5                                  |
| Pectoral fin rays | 16                                     | 16                                       |
| Uppermost branched pectoral fin ray | 70h                                   | 60h                                      |
| Lowermost branched pectoral fin ray | 2nd                                   | 2nd                                      |
| Pored lateral-line scales | 29                                    | 30                                       |
| Scale rows in longitudinal series | 62                                    | 59                                       |
| Vertical scale rows | 53                                     | 48                                       |
| Circumpeduncular scales | 42                                     | 40                                       |
| Gill rakers (total) | 17                                     | 16                                       |
| Gill rakers on upper arch | 5                                     | 4                                        |
| Spines on suborbital ridge | 3                                     | 2-3                                      |
| Pectoral fin reaching to level of anus | 8                                     | anus                                      |
| **Proportions:** |                                        |                                          |
| Body depth      | 41                                     | 41                                       |
| Head length     | 44                                     | 42                                       |
| Horizontal eye diameter | 11                                    | 12                                       |
| Tip of snout to dorsal fin origin | 35                                    | 36                                       |
| Tip of snout to anal fin origin | 69                                    | 71                                       |
| Tip of snout to dorsal fin insertion | 73                                   | 73                                       |
| Tip of snout to pectoral fin insertion | 75                                    | 70                                       |
| Tip of snout to pelvic fin origin | 38                                    | 38                                       |
| Snout in orbit diameter | 1.2                                   | 1.4                                      |
| Orbit diameter in head length | 4.0                                   | 3.5                                      |
| Interorbital distance in orbit diameter | 1.8                                   | 1.6                                      |
| Dorsal fin origin to caudal fin base | 75                                    | 75                                       |
| Anal fin origin to caudal fin base | 38                                     | 39                                       |
| Pectoral fin origin to caudal fin base | 68                                    | 66                                       |
| Length of dorsal fin base | 62                                    | 63                                       |
| Length of anal fin base | 16                                    | 18                                       |
| Length of pectoral fin base | 16                                    | 15                                       |
| Length of pectoral fin | 29                                     | 32                                       |
| Length of pelvic fin | 26                                     | 29                                       |
| Length of pelvic fin spine | 13                                    | 15                                       |
| Dorsal fin insertion to caudal fin base | 32                                   | 32                                       |
| Anal fin insertion to caudal fin base | 30                                    | 33                                       |
| Least depth of caudal peduncle | 12                                     | 12                                       |

**Distribution and habitat.** Known only from the Gulf of Aqaba (Eilat, Israel) (Fig. 2). The depth of collection and the habitat are unknown.
Comparisons. Scorpaena decemradiata n. sp. is very similar to S. porcus from the Mediterranean Sea and eastern Atlantic; these two species are distinguished from other congeners by the following combination of characters: presence of a deep occipital pit, pectoral fin base naked, lateral-line pores immediately posterior to symphysis of lower jaw widely separate, and more than 56 scale rows in longitudinal series. The new species is distinguished from S. porcus (see Table 2) by 10 dorsal fin soft rays (versus 7-9 in S. porcus), scales on body ctenoid (versus emarginate), and uppermost branched pectoral fin ray is the second (versus usually third, rarely second to fourth).

An identification key to the species of Scorpaena in the eastern Atlantic, Mediterranean and Red Sea is presented below, in order to easily identify this species.

In the Red Sea, the new species might be confused with Parascorpaena aurita (Rüppell, 1829), which among other characters, however, only has 8-9 dorsal fin soft rays (versus 10 in Scorpaena decemradiata n. sp.), and larger scales, with only 35-44 scale rows in longitudinal series (versus 59-62 in Scorpaena decemradiata n. sp.).

Table 2 – Comparison Scorpaena decemradiata n. sp. and S. porcus; proportions expressed as percentage of standard length unless otherwise stated. Differences of S. porcus compared with S. decemradiata n. sp. are printed in bold face.

| Character                      | Scorpaena decemradiata n. sp. | S. porcus |
|-------------------------------|--------------------------------|-----------|
| Dorsal fin spines              | XII                            | XII       |
| Dorsal fin rays                | 10                             | 7-9       |
| Anal fin spines + rays         | III, 5                         | III, 4-5  |
| Pectoral fin rays              | 16                             | 16-18     |
| Uppermost branched pectoral fin ray | 2nd                            | usually 3rd |
| Lateral scale rows             | 59-62                          | 56-60     |
| Vertical scale rows            | 48-53                          | 51-58     |
| Circumpeduncular scales        | 40-42                          | 32-40     |
| Body scales                    | ctenoid                        | emarginate, without distinct ctenii |
| Gill rakers on upper arch      | 4-5                            | 5-6       |
| Body depth                     | 41                             | 34-40     |
| Tip of snout to pectoral fin origin | 38                             | 39-45     |
| Tip of snout to pelvic fin origin | 38-41                          | 40-48     |
| Orbit diameter in head length  | 3.5-4.0                        | 3.7-4.3   |
| Length of pectoral fin base    | 15-16                          | 12-15     |

**Diagnosis.** A species of Scorpaena with dorsal fin spines XII, soft dorsal fin rays 7-9 (the last divided at base); pectoral fin rays 16-18, uppermost branched pectoral fin ray is usually the third (rarely second to fourth); lacrimal with usually 2 spines over maxilla that point at nearly right angle from each other, the posterior pointing ventrally and slightly anteriorly; occipital

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**Fig. 2.** Geographical distribution of the Scorpaena decemradiata n. sp. and S. porcus Linnaeus, 1758 in the eastern Atlantic, Mediterranean Sea and Red Sea. 1, S. decemradiata n. sp., type locality; 2, S. porcus; 3, S. porcus (probable lectotype locality of S. erythraea).
pit well developed; anteriormost mandibular lateral-line pores widely separated; scales small, emarginate, without distinct ctenii; 56-60 scale rows in longitudinal series; scales absent on chest and pectoral fin base; cirri well developed over entire head and body, but no cirri on lower jaw.

Distribution and habitat. Mediterranean Sea, Black Sea, eastern Atlantic; British Isles to Morocco including Azores and Canary Islands (Fig. 2). The species dwells benthic habitats, from shallow water to 800m depth, in the shallows usually on rocks covered with algæ.

DISCUSSION

Scorpaena erythraea was originally described by Cuvier in Cuvier and Valenciennes (1829: 316), based on three specimens collected by Étienne Geoffroy Saint-Hilaire in Egypt. Geoffroy Saint-Hilaire’s fish material was collected during the French expedition to Egypt in 1798-1799; in 1799, the material was transported to Alexandria, Egypt, and when Alexandria was conquered by British troops, Geoffroy Saint-Hilaire refused to hand over the materials and documents to the British General Hutchinson, and later sent the material to Paris (Bauchot et al. 1990: 88). The specimens were neither described nor illustrated in the works of Étienne and Isidore Geoffroy Saint-Hilaire (1802a, 1802b, 1809, 1817, 1827a, 1827b).

The species was subsequently reported by several authors based on Cuvier in Cuvier and Valenciennes (1829); only Günther (1860: 116) described an additional specimen from the Red Sea (BMNH 1871.4.13.26). This specimen, as well as another specimen identified...
as *Scorpaena erythraea* (non Cuvier in Cuvier and Valenciennes 1829), turned out to be based on misidentified *Parascorpaena aurita* (Rüppell 1829). Smith (1957: 51) erroneously reported *Scorpaena erythraea* from Mauritius.

Eschmeyer and Dempster (1990: 674-675) were the first authors to discuss the identity of *S. erythraea*; they noticed that the species was probably identical with *S. porcus* Linnaeus 1758, and supposed that the type locality of *S. erythraea* was incorrect and the species was rather collected on the Mediterranean Sea shore of Egypt. This suspicion was followed by subsequent authors. Golani and Bogorodsky (2010: 65) treated the Red Sea record of *S. porcus* as incorrect, and suggested that it was based on misidentifications. A confusion of the localities of material collected by Geoffroy Saint-Hilaire is highly likely, as the material was apparently not labelled originally, but subsequently after it arrived at Paris. There were just three major collecting localities of that expedition, the Nile, the Mediterranean Sea at Alexandria, and the Red Sea coast of Egypt.

As signing the locality was straightforward for freshwater fishes, and not a problem for material with manuscript notes by Geoffroy Saint-Hilaire, which could be easily identified, but for the other material which was not mentioned by Geoffroy Saint-Hilaire, the locality had to be guessed. The present study confirms the identity of the syntypes of *Scorpaena erythraea* Cuvier in Cuvier and Valenciennes, 1829 as conspecific with *Scorpaena porcus* Linnaeus, 1758, and based on Mediterranean populations of *S. porcus* (see Table 3). The syntypes of *S. erythraea* (MNHN 0000-6706) were most probably collected near Alexandria, Egypt. The larger specimen (154.7 mm SL; Fig. 4, Table 2) of MNHN 0000-6706 collected near Alexandria, Egypt. The larger specimen.

Table 3. – Selected counts and body proportions of Mediterranean specimens of *Scorpaena porcus* Linnaeus, 1758; proportions expressed as percentage of standard length unless otherwise stated. Number of specimens in parentheses.

| Count | Eastern Mediterranean (7): MNHN 0000-6706 (2 syntypes of *Scorpaena erythraea*; larger specimen designated as lectotype, see above) | Eastern Mediterranean: HUJ 19472 (1), 5315 (1), 12258 (1), 14139 (2), 14223 (2), 14555 (1), 14591 (1), 14573 (4), 14674 (1), 19126 (2), 19129 (3), 19394 (1), HUJ 19437 (1), SMNHTAU P2578 (1) (53.1-154.1mm SL; n=22) | Western Mediterranean: BMNH 1938.11.15.50 (1), BMNH 1960.6.24.145-149 (5), BMNH 1963.5.14. 655 (1), HUJ 12060 (1), HUJ 17860 (1), HUJ 20823 (5), SMF 35951 (9) (74.5-171.7mm SL; n=23) |
|-------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Dorsal fin spines | XII | XII | XII |
| Dorsal fin soft rays | 9 (2) | 8 (1), 9 (20) | 7 (1), 9 (23) |
| Anal fin spines + soft rays | III + 4 (1), III + 5 (1) | III + 5 (20), III + 6 (1) | III + 4 (1), 5 (23) |
| Pectoral fin rays | 16 (3), 17 (1) | 16 (12), 17 (20), 18 (1) | 16 (23), 17 (18), 18 (5) |
| Uppermost branched pectoral fin ray | 3rd (4th) | 2nd (1), 3rd (32), 4th (1) | 2nd (11), 3rd (32), 4th (3) |
| Lowermost branched pectoral fin ray | 7th-8th | 5th-8th | 5th-7th |
| Pored lateral-line scales | 18-31 | 28-31 | 28-30 |
| Scale rows in longitudinal series | 56-57 | 56-60 | 56-60 |
| Vertical scale rows | 52-53 | 51-58 | 51-58 |
| Circumpeduncular scales | 34-36 | 32-38 | 34-40 |
| Gill rakers (total) | 16 | 16-17 | 16-18 |
| Gill rakers on upper arch | 5 | 5-6 | 5-6 |
| Spines on suborbital ridge | 7 | 2-3 | 2-3 |
| Pectoral fin reaching to level of anus | 2nd anal spine | 2nd or 3rd anal spine | 2nd anal spine |
| Body depth | 36-37 | 36-44 | 34-40 |
| Head length | 42-44 | 42-47 | 42-47 |
| Horizontal eye diameter | 11 | 10-13 | 10-13 |
| Tip of snout to dorsal fin origin | 34 | 35-39 | 35-39 |
| Tip of snout to anal fin origin | 58-74 | 69-74 | 67-76 |
| Tip of snout to dorsal fin insertion | 71-73 | 72-79 | 67-72 |
| Tip of snout to anal fin insertion | 76-79 | 75-80 | 73-82 |
| Tip of snout to pectoral fin origin | 39 | 40-42 | 39-45 |
| Tip of snout to pelvic fin origin | 40-41 | 42-44 | 41-48 |
| Snout in orbit diameter | 1.1-1.3 | 1.2-1.7 | 1.0-1.4 |
| Orbit diameter in head length | 3.7-3.9 | 3.7-4.3 | 3.7-4.4 |
| Intercorporal distance in orbit diameter | 1.5-1.8 | 1.0-1.8 | 1.2-2.1 |
| Dorsal fin origin to caudal fin base | 70-75 | 70-80 | 70-74 |
| Anal fin origin to caudal fin base | 34-35 | 35-39 | 33-37 |
| Pectoral fin origin to caudal fin base | 60-65 | 63-69 | 62-67 |
| Length of dorsal fin base | 60-64 | 56-64 | 57-63 |
| Length of anal fin base | 14-17 | 15-18 | 15-22 |
| Length of pectoral fin base | 12-13 | 14-15 | 14-17 |
| Length of pectoral fin | 29-31 | 29-34 | 28-30 |
| Length of pelvic fin | 26-31 | 25-30 | 23-27 |
| Length of pelvic fin spine | 12-17 | 14-17 | 11-16 |
| Dorsal fin insertion to caudal fin base | 30-32 | 30-33 | 30-33 |
| Anal fin insertion to caudal fin base | 29-30 | 27-32 | 26-33 |
| Least depth of caudal peduncle | 11 | 10-12 | 10-12 |
remains dubious. It was named Scorpaena klausewitzi in the unpublished doctoral dissertation by Frøiland (1972: 25), and then again referred to as Scorpaenopsis erythraea (see Frøiland 1972: 72). The former is a manuscript name that was supposed to be published but never was as the manuscript was first submitted to and then withdrawn from the journal Senckenbergiana biologica. However, the specimen also clearly belongs to S. porcus, and the locality is most probably in error, i.e. the specimen probably originated from the Mediterranean coast of Israel.

Frøiland (1972: 23) also recorded Scorpaena porcus (non Linnaeus, 1758) from Eilat, Israel, based on two specimens numbered HUJ 2418; these are the only specimens that were really collected in the Red Sea and belong to the Scorpaena porcus complex, but were found to represent S. decemradiata n. sp., which is described in the present paper.

Summarizing these results, Scorpaena porcus was previously thought to be a case of anti-Lesserepsian migration, but is obviously restricted to the eastern Atlantic and Mediterranean, and previous records from the Red Sea were based on material with incorrect localities or misidentifications. The Red Sea (Gulf of Aqaba) is inhabited by the closely related species S. decemradiata n. sp. This species has not yet been recorded from Jordan (Khalaf and Zajonz 2007).

An updated checklist of the species of the genus Scorpaena is presented here (Appendix 1). It now includes a total of 62 valid species. Most species are known from the eastern Atlantic, including the Mediterranean (18 species, which is 29.0% of the total species of the genus; 15 species or 24.2% are endemic to the region), followed by the eastern Pacific (14 species, 22.6%, all endemic) and the western Atlantic (14 species, 22.6%, with 12 species endemic, 19.4%), the western Pacific (12 species, 19.4%; 8 endemic, 12.9%), the eastern Indian Ocean (5 species, 8.1%; 2 endemic, 3.2%), the central Pacific (3 species, 4.8%; all endemic), the Red Sea (1 endemic species, 1.6%), and the western Indian Ocean (1 species, 1.6%; none endemic). From the Red Sea, S. decemradiata n. sp. is the only known species of this genus; it is probably endemic to the northern Red Sea, because it is not present in the German deep-sea expeditions to the central Red Sea, MESEDA I–III and MINDIK (Türkay 1996; fish identifications and an unpublished faunal account by Uwe Zajonz).

As only two specimens of Scorpaena decemradiata n. sp. are known, little can be said about intraspecific variation. The intraspecific variation between specimens of S. porcus in the central Mediterranean Sea and the Black Sea was examined by Manilo and Peskov (2016), who found some significant differences for some length proportions between specimens in the two regions. Boissin et al. (2016) examined the population genetics of this species, and also found a weak genetic differentiation between populations in the Black Sea and the Mediterranean Sea. In the present study, western and eastern Mediterranean populations of S. porcus are compared (see Table 3), with no significant differences in fin-ray counts and scales, but again some differences in length proportions. We could not determine whether there are clines or rather a strict separation between the populations, but doubt that these differences are of taxonomic significance.

The restricted range of Scorpaena decemradiata n. sp. may be a relict distribution; the Scorpaena porcus complex that prefers a warm temperate climate may have had a wider distribution range during glacial periods, possibly all around the African continent, like S. scrofa. In this scenario, the S. porcus complex retreated to the north on both sides of the continent when the sea temperatures became warmer, but only on the western side was there room to spread out, while on the eastern side it was limited to the northernmost extent of the Red Sea in the Gulf of Aqaba. The subsequent continental barrier then facilitated speciation in this group, resulting in two different species on the western and eastern sides of the continent.

**Key to eastern Atlantic, Mediterranean and Red Sea species of the genus Scorpaena**

**Remark.** This key is based on Poss (2016), but updated and expanded to cover the Red Sea species.

1. – Pit or depression in occiput shallow or absent .. 2
   – A deep pit or depression in occiput (somewhat intermediate in Scorpaena elongata) ........ 5

2. – Chest (area anterior to pelvic fin) naked, without scales; membranes between dorsal spines 2 to 4 deeply incised more than half length of spine and nearly to base of fin in some specimens ................................. S. normani
   – Chest with scales (sometimes deeply embedded and difficult to see); membranes between dorsal spines 2 to 4 incised about half length of spines or less .......................................................... 3

3. – Suborbital ridge smooth, without spines; a shallow occipital pit; pectoral fin rays 20 .................. S. ascensionis
   – Suborbital ridge with 1 or 2 small spines; no occipital pit; pectoral fin rays 15 to 18 ............ 4

4. – Posterior lacrimal (preorbital) spine points anteriorly; second preopercular spine from above small, smaller than third and fourth below; 66 to 69 scales in longitudinal row above lateral line; no white specks in axil (inner surface) of pectoral fin .......... S. canariensis
   – Posterior lacrimal (preorbital) spine points posteriorly; second preopercular spine from above small, large, equal to or larger than third and fourth below; 52 to 56 scales in longitudinal row above lateral line; white specks in axil of pectoral fin........ S. maderensis

5. – Base of pectoral fin and chest scaled; scales on flank cycloid ........................................ 6
   – Base of pectoral fin naked, without scales (or with a few small deeply embedded scales); scales

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on flank ctenoid (or emarginate in S. porcus) .......................... 8
6 – Fewer than 50 scales in lateral row behind supracleithral spine to base of caudal fin .......................... 7
   – More than 60 scales in lateral row behind supracleithral spine to base of caudal fin ............ S. mellissisi
7 – Medial surface of pectoral fin and pectoral axil with large brown spots on a relatively pallid background .......................... S. laevis
   – Medial surface of pectoral fin and pectoral axil black, with large white spot .................. S. plumieri
8 – Lateral-line pores immediately posterior to symphysis of lower jaw fused into a single median pore that is usually readily visible .......................... 9
   – Lateral-line pores immediately posterior to symphysis of lower jaw widely separate, although at times minute (S. decemradiata n. sp., S. scrofa) and difficult to locate .......................................................... 12
9 – Maxilla with a ridge that runs along its length .......................................................... S. loppei
   – Maxilla without ridge running along its length .......................................................... 10
10 – A distinct, large spot on spinous dorsal fin between spines 6 and 9 (although sometimes more restricted); pectoral fin, soft part of dorsal fin and anal fin without numerous small, but distinct spots; spots when present on caudal fin confined primarily to fin rays .......................................................... 11
   – No distinct, large spot on spinous dorsal fin between spines 6 and 9; pectoral fin, soft part of dorsal fin, and anal fin with numerous small, but distinct spots; spots on caudal fin confined primarily to fin membranes .......................................................... S. azorica
11 – Dorsal soft rays usually 9 (last double); posteriormost lacrimal (preorbital) spine points ventrally or slightly to rear (not present or less distinct in juveniles) .......................................................... S. angolensis
   – Dorsal soft rays 10 (last double); posterior lacrimal spines strongly curved to rear (may be less distinct or absent in juveniles) .......................................................... S. ammonobae
12 – More than 56 scale rows in longitudinal series (counted from immediately behind supracleithral spine to base of caudal fin) .......................................................... 13
   – Fewer than 51 scale rows in longitudinal series (counted from immediately behind supracleithral spine to base of caudal fin) .......................................................... 14
13 – Dorsal fin soft rays 7-9; scales on body emarginate, without distinct etenii (small spines at posterior margin of scale); uppermost branched pectoral fin ray is usually the third (occasionally the second to fourth) .......................................................... S. porcus
   – Dorsal fin soft rays 10; scales on body ctenoid; uppermost branched pectoral fin ray is the second . .......................................................... S. decemradiata n. sp.
14 – Numerous cutaneous flaps and cirri on ventral side of head .......................................................... S. scrofa
   – Ventral surface of head without flaps or cirri .......................................................... 15
15 – Spinous part of dorsal fin without a black spot; pectoral fin rays usually 19 (sometimes 18) .................. S. elongata
   – Spinous part of dorsal fin with a distinct black spot; pectoral fin rays usually 17 or 18, rarely 19 ............ 16
16 – More than 20 rows of scales anterior to anus at ventral midline; orbit diameter smaller than snout (ratio of snout/orbit 0.8 to 1.2), except in small specimens .......................................................... S. stephanica
   – Fewer than 20 rows of scales anterior to anus at ventral midline; orbit diameter slightly larger than snout (ratio of snout/orbit 0.9 or less) .......................................................... S. notata

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### Appendix 1. – Checklist of the species of the genus *Scorpaena* Linnaeus, 1758.

| Species | Original description | Type locality | Primary type(s) | Junior synonym(s) | Geographical distribution |
|---------|----------------------|---------------|-----------------|-------------------|--------------------------|
| *S. afuerae* Hildebrand, 1946 | Hildebrand 1946: 443, fig. 85 | Lobos de A fuera Island, Peru | Holotype: USNM 128130 | E Pacific: Costa Rica to Peru and Cocos Island |
| *S. agassizii* Goode and Bean, 1896 | Goode and Bean 1896: 247, pl. 67 (fig. 243) | Gulf of Mexico, 23°13'N 89°10'W | Holotype: MCZ 27996 | W Atlantic: North Carolina (USA) and Gulf of Mexico south to N Brazil |
| *S. albifimbria* Evermann and Marsh, 1900 | Evermann and Marsh 1900: 275, fig. 82 | off Culebra Island, southwest of Culebritas Lighthouse, Puerto Rico | Holotype: USNM 49532 | W Atlantic: Florida (USA) and Bahamas south to Netherlands Antilles |
| *S. angolensis* Norman, 1935 | Norman 1935: (26) 28, fig. 10 | Elephant Bay, Angola | Holotype: BMNH 1910.2.24.1 | E Atlantic: Mauritania to Angola, including Cape Verde Islands |
| *S. annobonae* Eschmeyer, 1969 | Eschmeyer 1969: 75, Fig. 8c | Anomobón Island, Equatorial Guinea, Gulf of Guinea, 1°24'N, 5°38'E | Holotype: CAS 14214 | E Atlantic: Annobón Island |
| *S. ascensionis* Eschmeyer, 1971 | Eschmeyer 1971: 503, fig. 1 | Ascension Island | Holotype: BMNH 1935.5.2.33 | SE Atlantic: at Ascension Island |
| *S. azorica* Eschmeyer, 1969 | Eschmeyer 1969: 80, fig. 8a | Terceira, Azores | Holotype: USNM 94463 | NE Atlantic: Azores Islands |
| *S. bergii* Evermann and Marsh, 1900 | Evermann and Marsh 1900: 276, fig. 83 | Mayaguez, Puerto Rico | Holotype: USNM 49532 | W Atlantic: New York (USA) and Bermuda south to northern Brazil |
| *S. brachyptera* Eschmeyer, 1965 | Eschmeyer 1965: 111, figs. 7a-b | off Venezuela, 10°50'N, 66°55'W | Holotype: USNM 198153 | W Atlantic: Florida (USA) south to Panama and Venezuela |
| *S. brasiliensis* Cuvier in Cuvier and Valenciennes, 1829 | Cuvier in Cuvier and Valenciennes 1829: 305 | Brazil | | W Atlantic: Virginia (U.S.A.) and Gulf of Mexico south to northern Brazil |
| *S. brevispina* Motomura and Senou, 2008 | Motomura and Senou 2008: 1762, figs. 1-5 | off Futo, Ito City, Shizuoka, Japan, 34°52'N, 139°08'E | Holotype: KPM-NI 16667 | NW Pacific: Izu Peninsula, Japan |
| *S. bulacephala* Motomura, Last and Yearskey, 2005 | Motomura et al. 2005: 19, figs. 1-3 | south of Norfolk Island, Norfolk Ridge, 28°54'-55°S, 167°40'-41'E | Holotype: CSIRO H 6009-05 | SW Pacific: Norfolk Island and Lord Howe Island, New Caledonia, Vanuatu |
| *S. calcarata* Goode and Bean, 1882 | Goode and Bean 1882: 422 | Clearwater Harbor, Florida, USA | Holotype: USNM 23556 | W Atlantic: South Carolina (U.S.A.) and Gulf of Mexico south to northern Brazil |
| *S. canariensis* (Sauvage, 1878) | Sauvage 1878: 117, pl. 1 (figs. 1-2), as Sebastes canariensis | Canary Islands | Holotype: MNHN 0000-7031 | E Atlantic: Canary Islands, Madeira and Azores |
| *S. cardinalis* Solander and Richardson in Richardson, 1842 | Solander and Richardson in Richardson 1842b: 212 | White Island, New Zealand, 37°30'S, 177°09'E | Neotype: NMNZ P.044152 | SW Pacific: New Zealand to Lord Howe, Norfolk and Kermadec islands |
| *S. cookii* Günther, 1874 | Günther, 1874: 78, pl. 55 | Off Futo, Ito City, Shizuoka, Japan, 34°52'N, 139°08'E | Holotype: CAS 219506 | E Pacific: Galapagos Archipelago and Cocos Island |
| *S. colorata* (Gilbert, 1905) | Gilbert 1905: 627, fig. 243 | S of Molokai, Hawaiian Islands | Holotype: USNM 51631 | Central Pacific: Hawaiian Islands to Johnston Atoll |
| *S. decemradiata* n. sp. | Present paper | | | Red Sea, Gulf of Aqaba |
### Appendix 1 (cont.). – Checklist of the species of the genus *Scorpaena* Linnaeus, 1758.

| Species            | Original description | Type locality                        | Primary type(s)                                                                 | Junior synonym(s) | Geographical distribution                                                                 |
|--------------------|----------------------|---------------------------------------|---------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------|
| *S. dispar* Longley and Hildebrand, 1940 | Longley and Hildebrand 1940: 246, fig. 12 | S of Tortugas, Florida, USA            | Holotype: USNM 108867                                                          | – *S. similis* Gunter, 1948: 161, pl. 1. | W Atlantic: South Carolina (USA) and Gulf of Mexico south to northern Brazil |
| *S. elachys* Eschmeyer, 1965    | Eschmeyer 1965: 114, fig. 7c, 9 | N of Puerto Rico, 18°11’5”N, 67°33’W | Holotype: USNM 198149                                                            |                   | W Atlantic: Florida (U.S.A.) south to Panama                                             |
| *S. elongata* Cadenat, 1943     | Cadenat 1943: 552, figs. 14, 1 | Cap Blanc, Mauritania                 | Syntypes: MNHN R P.798 (2)                                                      |                   | E Atlantic: Morocco to Namibia; Mediterranean Sea                                        |
| *S. fernandeziana* Steindachner, 1875 | Steindachner 1875: 451 [9], pl. 1 (figs. 1, 1a) | Juan Fernández Islands, Western Australia, 27°30’S, 14°25’W | Holotype: whereabouts unknown                                                    |                   | SE Pacific: Juan Fernández and Desaventurados islands                                  |
| *S. gesta* Motomura, Last and Yersley, 2006 | Motomura et al. 2006: 361, figs. 1-3 | Kalbarri, Western Australia, 12°48’S, 114°25’W | Holotype: WAM P.27960-006                                                      |                   | SE Indian Ocean: Western Australia                                                     |
| *S. grandicornis* Cuvier in Cuvier and Valenciennes, 1829 | Cuvier in Cuvier and Valenciennes 1829: 309, pl. 86 | Martinique Island, West Indies; Puerto Rico; Havana, Cuba; Santo Domingo | Syntypes: MNHN 0000-6681 (1), 0000-6689 (1), 0000-6900 (1); SMF 440 (1); ZMB 752 (1) |                   | W Atlantic: Bermuda and Florida (USA) south to southern Brazil; S Atlantic: St. Helena and Ascension |
| *S. grandissquamis* Ogilby, 1910 | Ogilby 1910: 107 | North West Islet, Capricorn Group, Queensland, Australia | Holotype: AMS E.1418                                                              |                   | SW Pacific: Queensland (Australia)                                                      |
| *S. grattanica* Trunov, 2006    | Trunov 2006: 472, fig. 2 | Grattan Bank, near Ascension Island, 9°46’S, 12°48’W | Holotype: ZIN 52148                                                              |                   | S Atlantic: Grattan Bank near Ascension Island                                          |
| *S. guttata* Girard, 1854       | Girard 1854: 145 | Monterey, California, USA              | Holotype: USNM 350                                                               | – *S. guadalupae* Fowler, 1944: 429, figs. 217-218, *S. microlepis* Gunter, 1948: 162, pl. 2. | E Pacific: central California (USA) to Gulf of California (Mexico)                      |
| *S. hemilepida* Fowler, 1938    | Fowler 1938: 63, fig. 26 | off Tubig Point, between Samar and Masbate, Philippines, 12°12’35”N, 124°02’48”E | Holotype: USNM 98884                                                            |                   | W Pacific: Philippines                                                                |
| *S. histrionensis* Jenyns, 1840 | Jenyns 1840: 35, pl. 8 | San Cristóbal Island (Chatham Island), Galápagos Islands | Syntypes: BMNH 1917.7.14.73, 1917.7.14.74 (1)                                    | – *S. fucata* Valenciennes, 1846: Pl. 3 (fig. 2), *S. panama* Cramer in Gilbert, 1897: 446, pl. 52 | E Pacific: Baja California (Mexico) to Chile and some offshore islands, including the Galápagos Islands |
| *S. inermis* Cuvier in Cuvier and Valenciennes, 1829 | Cuvier in Cuvier and Valenciennes 1829: 311 | Martinique Island, West Indies | Holotype: MNHN 0000-0693                                                          | – *S. occipitalis* Poey, 1860: 171, *S. mercatoris* Delsman, 1941: 74, fig. 11, *S. luciei* Fowler 1941: 87, figs. 1-2. | W Atlantic: Florida (USA) and Bahamas south to Dutch West Indies |
| *S. isthmensis* Meek and Hildebrand, 1928 | Meek and Hildebrand 1928: 842, pl. 80 | Porto Bello, Panama, Caribbean Sea | Holotype: USNM 81617                                                              |                   | W Atlantic: Panama south to Rio de Janeiro (Brazil)                                   |
| *S. licanthus* Jordan and Starks, 1904 | Jordan and Starks 1904: 134, fig. 10 | Suruga Bay, Japan                    | Holotype: USNM 50909                                                              |                   | SE Indian Ocean and W Pacific: Western Australia north to S Japan                        |
| *S. jacksoniensis* Steindachner, 1866 | Steindachner 1866: 50 | Port Jackson, New South Wales, Australia | Holotype: NMW 75379                                                               |                   | SW Pacific: Queensland to Victoria (Australia)                                          |
| Species                  | Original description                  | Type locality               | Primary type(s)                          | Junior synonym(s)                  | Geographical distribution                                      |
|-------------------------|---------------------------------------|-----------------------------|-----------------------------------------|-----------------------------------|----------------------------------------------------------------|
| *S. lacrimata* Randall and Greenfield, 2004 | Randall and Greenfield 2004: 391, fig. 3 | Tahiti, Society Islands     | Holotype: BPBM 31706                     |                                   | S Pacific; Society Islands                                      |
| *S. laevis* Troschel, 1866    | Troschel 1866: 206                    | Cape Verde Islands          | Holotype: NMW 5632                      | – *S. senegaleensis* Steindachner, 1881a: 150; Steindachner 1881b: 31, pl. 4 | E Atlantic; Azores and Madeira S to Gulf of Guinea; Cape Verde Islands |
| *S. loppei* Cadenat, 1943  | Cadenat 1943: 541, figs. 1(3), 3       | Gulf de Gascogne, France    | Syntypes: MNHN P.797 (4); MNHN 1947-0002 to 0003 (2), 1887-0305 to 0306 (2), 1887-0307 to 0308 (2), 1887-0310 (1) |                                   | Mediterranean Sea, E Atlantic; Bay of Biscay south to Western Sahara |
| *S. maderensis* Valenciennes in Cuvier and Valenciennes, 1833 | Valenciennes in Cuvier and Valenciennes 1833: 463 (as *S. madurensis*) | Madeira                     | Syntypes: MNHN 0000-6682 (4), 0000-6683 (4) | – *S. rubellio* Jordan and Gunn, 1898: 344. | Mediterranean Sea, E Atlantic; Morocco to Senegal including Azores, Madeira, Canary and Cape Verde Islands |
| *S. melasma* Eschmeyer, 1965 | Eschmeyer 1965: 109, fig. 6c           | off Brazil, 2°10’S, 41°33’W | Holotype: USNM 198154                   |                                   | SW Atlantic; off Brazil                                        |
| *S. melissii* Günther, 1868 | Günther 1868: 228, pl. 19              | St. Helena, 15°58’S, 5°43’W | Holotype: BMNH                         |                                   | S Atlantic; Saint Helena                                        |
| *S. miostoma* Günther, 1877 | Günther 1877: 435                     | Yokohama, Japan             | Holotype: BMNH                         |                                   | NW Pacific; Japan to China                                       |
| *S. mystes* Jordan and Starks in Jordan, 1895 | Jordan and Starks in Jordan 1895: 491, pl. 52 | Mazatlán, Sinaloa, W Mexico | Lectotype: CAS-SU 2919 (missing); established by Jordan and Evermann (1900:3288) | – *Holoscorpaena didymogammos* Fowler, 1944: 277, figs. 214-215 | E Pacific; southern California (USA.) south to Chile |
| *S. neglecta* Temminck and Schlegel, 1843 | Temminck and Schlegel 1843: 43 pl. 17 (fig. 4) | Nagasaki, Japan             | Syntypes: RMNH D618-623 (6, stuffed)    | – *S. fimбриata* Döderlein in Steindachner and Döderlein, 1884: 195 [27] | Indo-West Pacific; Andaman Islands east to Philippines and New Guinea, N to Japan, S to northern Australia E Atlantic; Mauritania south to Angola |
| *S. normani* Cadenat, 1943 | Cadenat 1943: 539, fig. 2               | Mauritania                  | Syntypes: (17) MNHN B-2548 (2)          |                                   | Mediterranean Sea, Black Sea, E Atlantic; Bay of Biscay south to Senegal including Azores, Madeira and Canary Islands |
| *S. notata* Rafinesque, 1810 | Rafinesque 1810: 33                    | Sicily, Italy               | Notypes known                           | – 7*S. barbara* Gronow in Gray, 1854: 116. | Indo-West Pacific; NWAustralia and Andaman Sea; Korea and Japan to Taiwan; E Australia and N New Zealand to New Caledonia |
| *S. onaria* Jordan and Snyder, 1900 | Jordan and Snyder 1900: 365, pl. 16    | Misaki, Japan               | Holotype: USNM 49405                   |                                   | Indo-West Pacific; NWAustralia and Andaman Sea; Korea and Japan to Taiwan; E Australia and N New Zealand to New Caledonia |
| *S. orgia* Eschmeyer and Allen, 1971 | Eschmeyer and Allen 1971: 517, figs. 1a, 2 | Easter Island               | Holotype: CAS 24809                    |                                   | SE Pacific; Easter Island                                        |
### Appendix 1 (cont.). – Checklist of the species of the genus *Scorpaena* Linnaeus, 1758.

| Species | Original description | Type locality | Primary type(s) | Junior synonym(s) | Geographical distribution |
|---------|----------------------|---------------|-----------------|-------------------|--------------------------|
| *S. papillosa* (Schneider and Forster in Bloch and Schneider, 1801) | Schneider and Forster in Bloch and Schneider 1801: 196 | New Zealand | No types known | – *S. cottoides* Forster in Bloch and Schneider, 1801: 196, 1802: 196. | SW Pacific: SE Australia and New Zealand |
| *S. pascuensis* Eschmeyer and Allen, 1971 | Eschmeyer and Allen 1971: 523, figs. 1b, 3 | Easter Island | Holotype: CAS 24812 | | SE Pacific: Easter Island |
| *S. pele* Eschmeyer and Randall, 1975 | Eschmeyer and Randall 1975: 320, figs. 24, 25a, 1, 2A | Oahu, Hawaiian Islands | Holotype: USNM 214046 | | Central Pacific: Hawaiian Islands |
| *S. petricola* Eschmeyer, 1965 | Eschmeyer 1965: 107, fig. 6b off Brazil, 1°59'S, 42°05'W Martinique | Holotype: USNM 198150 | No types known | – *S. minfo* Cuvier in Cuvier and Valenciennes, 1829: 306. | SW Atlantic: Brazil |
| *S. plumieri* Bloch, 1789 | Bloch 1789: 234, pl. 7 (fig. 1) | off Brazil, 1°59'S, 42°05'W Martinique | | | W Atlantic including Ascension and Saint Helena |
| *S. porcus* Linnaeus, 1758 | Linnaeus 1758: 266 | Mediterranean Sea; Atlantic | Possible syntypes: NRM 22 (21), 23 (1), 123 (1) | – *Cottus musculiensis* Forskål, 1775x, 24; see Fricke (2008: 24). – *S. rascasia* Lacepède, 1801: 275. – *S. rascasia* Cuvier in Cuvier and Valenciennes, 1829: 316. – *S. fasciata* Costa, 1842-1853: Scorpaena p. 3, pl. 4. – *S. scarpaena* Nardo (ex Chiereghini), 1847: col. 121. – *S. phorcus* Gronow in Gray, 1854: 117. – *S. klausewitzi* Fritsland in Dor, 1984: 82. | Mediterranean Sea, Black Sea, E Atlantic: British Isles to Morocco including Azores and Canary Islands |

**Note:** The table continues with additional species and their relevant information.
### Appendix 1 (cont.). – Checklist of the species of the genus *Scorpaena* Linnaeus, 1758.

| Species | Original description | Type locality | Primary type(s) | Junior synonym(s) | Geographical distribution |
|---------|----------------------|---------------|-----------------|-------------------|---------------------------|
| *S. russula* Jordan and Bollman, 1890 | Jordan and Bollman 1890: 165 | off Pacific coast of Colombia | Syntypes: BMNH 19009:29.189 (1); NMW 8864 (1); CAS-SU 384 (4); USNM 41138 (1), 41140 (1), 41146 (1), 41154 (1), 41160 (1), 41191 (1), 41208-09 (1, 1), 41366 (1), 41379 (1), 41487-88 (1, 1), 20565 (1) | – *Scorpaena tota* rubens, cirris plurimis ad os: Artedi 1738a: 47; Artedi 1738b: 76. – *Scorpaena cavite* cavernoso, cirris geminis in maxilla inferiore: Gronow 1754: 46 (no. 103). – *S. barbata* Bonnaterre [ex Gronow], 1788: 70. – *S. gronovii* Walbaum [ex Gronow], 1792: 383. – *S. later* Risso, 1810: 190. – *S. barbata* Nardo [ex Chiereghini], 1847: col. 121. – *S. natalensis* Regan, 1906: 5, pl. 5. – *Scorpaenopsis marmoratus* Bonde, 1923: 30, pl. 7. | E Pacific: Gulf of California to northern Peru |
| *S. scrofa* Linnaeus, 1758 | Linnaeus 1758: 266 | Mediterranean Sea | No types known | | Mediterranean Sea, E Atlantic: British Isles to Cape Verde Islands including Madeira; W Indian Ocean |
| *S. sonorae* Jenkins and Evermann, 1889 | Jenkins and Evermann 1889: 150 | Guaymas, Sonora, W Mexico | Holotype: USNM 39644 | | E Pacific: Mexico, Gulf of California and SW coast of Baja California |
| *S. stephania* Cadenat, 1943 | Cadenat 1943: 550, figs. 1 (5), 8 | Port-ETienne, Cap Blanc, Mauritania | Syntypes: MNHN 1947-0004 (1), 1947-0005 (1) | – *S. gaillandii* Roux, 1954: 470. | E Atlantic: Mauritania south to Angola |
| *S. sumtuosa* Castelnau, 1875 | Castelnau 1875: 17 | Fremantle, Western Australia | Syntypes: MNHN A-4409 (1, dry), B-2570 (1) | | SE Indian Ocean: Western Australia, Shark Bay south to Albany |
| *S. thomsoni* Günther, 1880 | Günther 1880: 24, pl. 12 | Juan Fernández Islands | Holotype: BMNH 1879.5.14.232 | | SE Pacific, Chile: Juan Fernández and Desventuradas islands |
| *S. sierra* Hildebrand, 1946 | Hildebrand 1946: 441, fig. 84 | Lobos de Tierra Bay, Peru | Holotype: USNM 128128 | | E Pacific: Peru and Chile |
| *S. uncinata* Buen, 1961 | Buen 1961: 32, fig. 9 | Isla de San Ambrosio, Chile | Holotype: EBMC 10478 | | SE Pacific: Chile |
| *S. wellingtoni* Victor, 2013 | Victor 2013: 32, figs. 1-4 | Galápagos Islands, Isla Isabel, Tagus Cove, 0.26°S, 91.37°W | Holotype: SIO 13-2 | | E Pacific: Galápagos Islands (Ecuador) |
| *S. aplodactylus* Bleeker 1853 | Bleeker 1853: 698 | Wahai, Seram, Indonesia | Syntypes and/or Bleeker specimens: AMS B.8277 (1); RMNH 5861 | – *S. bleekeri* Day, 1878: 747, pl. 36, fig. 2. | |