

Check list of Philippine Holothurians

1. *Cucumaria conjungens* Semper.

General color brownish. Habitat: Mariveles, Luzon. In shallow water. Length 20-25 millimeters.

2. *Cucumaria longipeda* Semper.

Color dull gray. Habitat: Bohol, Pandanon. In water of 30 fathoms. Length 20 millimeters.

3. *Cucumaria citrea* Semper.

Color orange-yellow. Habitat: Bohol. In 8 fathoms. Length 15-20 millimeters.

4. *Cucumaria versicolor* Semper.

General color olive-green. Habitat: Bohol. In water of 6 to 10 fathoms. Length 6-7 centimeters.

5. *Cucumaria maculata* Semper.

Habitat: Bohol. In water of 10 fathoms. Length 4.5 centimeters.

6. *Cucumaria mirabilis* Théel.
Habitat: Cebu, at the depth of 100 fathoms.
7. *Cucumaria canescens* Semper.
Habitat: Bohol. In water from 6 to 30 fathoms. Length 1.5-3 centimeters.
8. *Mülleria nobilis* Sel.
General color dusky. Habitat: Bohol. In shallow water.
9. *Mülleria mauritiana* Quoy & Gaim.
Habitat: Philippines. In shallow water.
10. *Mülleria lecanora* Jæger.
General color dirty yellowish. Habitat: Philippines. In shallow water up to 6 fathoms.
11. *Psolus complanatus* Semper.
General color grayish. Habitat: Zamboanga. In shallow water. Length 22 millimeters.
12. *Psolus boholensis* Semper.
Upper portion gray, lighter below. Habitat: Bohol. In water from 6 to 17 fathoms. Length 15 millimeters.
13. *Psolus boholensis pandanensis* Semper.
Habitat: Bohol at Pandanon. In water of 30 fathoms.
14. *Thyone villosa* Semper.
General color yellowish-brown. Habitat: Philippines. In water of 10 fathoms. Length 20-30 millimeters
15. *Thyone rigida* Semper.
General color grayish brown. Habitat: Bohol. In 10 fathoms.
16. *Thyonidium cebuense* Semper.
General color brownish gray. Habitat: Cebu. In 10 fathoms. Length 30-35 millimeters.
17. *Echinocucumis adversaria* Semper.
General color grayish. Habitat: Bohol. In 30 fathoms. Length 8-10 millimeters.
18. *Haplodactyla molpadioides* Semper.
General color pale-violet or lavender. Five branching papillæ around the anal pore. Habitat: Bohol, Cebu. In 13 to 20 fathoms.
19. *Haplodactyla molpadioides pellucida* Selenka.
Habitat: Cebu. Shallow water.
20. *Chirodota rigida* Semper.
Color light brown with whitish dots. Habitat: Bohol.
21. *Chirodota incongrua* Semper.
Sixteen tentacles, each with 18 to 20 digits. Habitat: Camiguin Island. Shallow water.
22. *Chirodota dubia* Semper.
Tentacles 18, each with 18 to 20 digits. Habitat: Camiguin Island. Shallow water.
23. *Chirodota variabilis* Semper.
Tentacles 17 or 18, each with 20 to 24 digits. Habitat: Mariveles, Luzon.

24. *Chirodota panaensis* Semper.
Habitat: Panay. Shallow water.
25. *Synapta dubia* Semper.
Habitat: Bohol. In water from 6 to 10 fathoms.
26. *Synapta pseudo-digitata* Semper.
Habitat: Bohol. In water of 15 fathoms.
27. *Synapta molesta* Semper.
Habitat: Philippines. In shallow water.
28. *Synapta reticulata* Semper.
Habitat: Philippines. In water of 8 fathoms.
29. *Synapta indivisa* Semper.
Tentacles 13, each with about 20 very long slender digits. Habitat: Zamboanga.
30. *Synapta nigra* Semper.
Digits of tentacles united by web at base. Habitat: Bohol. In shallow water.
31. *Synapta grisea* Semper.
Color in life greenish-gray, arranged in spots and bands, the ground color being a dirty light-green. Habitat: Bohol. In water from 4 to 6 fathoms.
32. *Synapta glabra* Semper.
Color dark yellowish-brown above, yellowish below. Habitat: Cebú, Bohol. Length 500 millimeters. Found in water from 4 to 6 fathoms.
33. *Synapta innominata* Ludwig.
Habitat: Manila Bay.
34. *Synapta recta* Semper.
Thirteen tentacles, with very short digits. Habitat: Bohol. In water of 6 to 8 fathoms.
35. *Synapta gracilis* Semper.
General color whitish with slight wash of yellowish-brown. Habitat: Manila Bay.
36. *Synapta beselii* Jäger.
Color in life greenish. Habitat: Cebú reefs.
37. *Synapta similis* Semper.
Pinkish-white, with some brown anteriorly. Habitat: Bohol. In shallow water.
38. *Ocnus pygmæus* Semper.
Upper color greenish, the underparts yellowish-brown. Habitat: Bohol. In water of 9 fathoms. Length 10 millimeters.
39. *Ocnus imbricatus* Semper.
General color yellowish-brown, lighter below. Habitat: Bohol. In water of 8 to 15 fathoms. Length 35-40 millimeters.
40. *Colochirus cœruleus* Semper.
General color pinkish and green with markings of yellowish. Habitat: Bohol. In water of 10 fathoms. Length 18-20 centimeters.
41. *Colochirus viridis* Semper.
General color sea-green. Habitat: Zamboanga, Mindanao. In shallow water.
42. *Colochirus cucumis* Semper.
Habitat: Bohol. In 6 fathoms. Length 3 centimeters.

43. *Colochirus anceps* Selenka.
General color orange, the feet red. Habitat: Bohol. Shallow water up to 10 fathoms. Length 8-10 centimeters.
44. *Colochirus cylindricus* Semper.
Habitat: Bohol. In water of 10 fathoms. Length 5 centimeters.
45. *Colochirus tuberculosus* Quoy & Gaim.
Habitat: Bohol. In shallow water and up to 10 fathoms.
46. *Colochirus quadrangularis* Less.
Habitat: Bohol. In shallow water and up to 10 fathoms.
47. *Stichopus variegatus* Semper.
Yellowish-gray with markings of gray and brown. Habitat: Philippines. In shallow water up to 10 fathoms.
48. *Stichopus naso* Semper.
General color yellowish-gray. Habitat: Bohol. In 10 to 15 fathoms.
49. *Holothuria marmorata* Jæger.
Auburn above, with some large spots or bands of yellowish-white; yellowish below. Scattered over the sides of the body are violet spots on a yellowish-white area. The deposits in the body wall are X-shaped, or oval with central incisions on each side. Habitat: Bohol. In shallow water.
50. *Holothuria tenuissima* Semper.
Pedicels all over the body. The deposits consist of incomplete rosettes, or slightly branched rods. Habitat: Bohol, in 15 fathoms of water.
51. *Holothuria similis* Semper.
Fine papillæ all over the body. Habitat: Bohol, in 10 to 15 fathoms of water.
52. *Holothuria erinæus* Semper.
Color dark-brown or blackish, lighter below; pedicels a light yellowish-brown. The rods bear a few spines on their sides, their ends are slightly branched or perforated. Habitat: Bohol and Luzon, in shallow water.
53. *Holothuria græffei* Semper.
Ventral pedicels in three distinct longitudinal series. The dorsal papillæ large. The deposits consist of tables, rosettes, and irregular branched plates. Habitat: Luzon.
54. *Holothuria pulchella* Selenka.
The ventral pedicels are more crowded than the dorsal papillæ. The spire of the table consisting of a reduced almost annular disk, with 12 teeth on the top. Habitat: Philippine Islands, in shallow water.
55. *Holothuria pervicax* Selenka.
Color in alcohol grayish-brown, with some darker cross bands on the back. The pedicels and papillæ are about the same size. The ventral surface is more crowded. The tables are not well developed, the spire being short and terminating in but 4 teeth; disks small, rounded, smooth or slightly uneven on the margins. Rods small, elongate, and uneven on the margins, or with holes on the sides. Habitat: Philippine Islands.

56. *Holothuria atra* Jæger.
Dorsal papillæ and ventral pedicels of nearly equal size. Disks forming simple rings; often with small hole at the base of each vertical rod. The spire terminating in 8 horizontal and 4 vertical teeth. The plates are evenly rounded, or

undulated on margins, often with X-shaped branches. Habitat: Philippine Islands, in shallow water.

57. *Holothuria edulis* Lesson.

Color a dark reddish-brown, light gray on sides and belly, a minute, dark ring around the base of the pedicels. The dorsal papillæ are very minute and more scattered than the ventral pedicels. Disk of the tables reduced to a small ring more narrow than the top of the spire, which, when seen from above, presents a small circular hole surrounded by 4 prominences, each with 4 or 5 teeth. Habitat: Bohol, in 10 to 20 fathoms of water.

58. *Holothuria monacaria* Lesson.

Color yellowish white, speckled with brown or greenish-brown on the back. The young specimens are auburn, with the ventral surface white. The papillæ paler. The dorsal papillæ are arranged in 4 indistinct longitudinal rows. The rounded disks of the tables have a central hole surrounded by 4 to 12 holes. The spire terminates in 12 teeth. Habitat: Zamboanga, in shallow water. Length 110 millimeters.

59. *Holothuria vagabunda* Selenka.

The color varies from a dark brown to a reddish-brown. The tables have small disks; the spires terminate in 8 to 10 teeth placed around a nearly circular aperture at their top; buttons with 6 holes; the dorsal pedicels alone have supporting rods, these are spinous and taper towards the ends. Habitat: Philippines, in shallow water.

60. *Holothuria fusco-cinerea* Jæger.

Color dusky-red, with some darker transverse bands on the back. The tables never seem to attain the usual length of the spire, nor to have the usual number of transverse beams. Habitat: Bohol, in 6 to 10 fathoms of water. Length 222 millimeters.

61. *Holothuria immobilis* Semper.

Color on dorsal surface brown, with some darker spots or bands, belly dirty yellowish-white inclined to brown anteriorly. Tentacles 26; ventral surface with pedicels, the dorsal surface with papillæ. The disks of the tables spinous; the buttons irregularly formed, with about six holes. Habitat: Bohol, in from 6 to 8 fathoms of water.

62. *Holothuria coluber* Semper.

The dorsal surface with papillæ; ventral surface with pedicels. The tables have long spire of 4 rods, and 3 to 5 transverse beams. Habitat: Bohol, in 6 to 8 fathoms.

63. *Holothuria impatiens* Forskål.

Color in alcohol, light brown, inclined to violet. Integuments rough, the smooth disks of the tables are pierced with 9 holes of equal size; buttons symmetrical with 6 holes. Habitat: Philippines, in 6 fathoms.

64. *Holothuria scabra* Jæger.

The color varies with different localities. Some are cinereous with almost black transverse bands, with a few small whitish bands or spots on the back, the belly being yellowish-white, and each papilla being surrounded with a small dark circle. In other localities they are paler and punctated with a few large dark spots, but are without the dark bands. The tables are solid, with smooth, well developed disks, spires of usual shape with 12 to 16 teeth. The buttons have 6 holes, are symmetrical, and for the most part knotted. Habitat: Bohol, in shallow water. Length 170 millimeters.

65. *Holothuria albiventer* Semper.

Belly dirty gray, finely punctated; papillæ whitish; back dusky; tentacles yellowish-white. The tables have large rounded disk with numerous small holes. The spire is formed by 6 or 10 rods, its large rounded top is covered with small teeth; buttons oval. Habitat: Bohol, in shallow water.

66. *Holothuria squamifera* Semper.

Papillæ scale-like. Tables small, numerous; spire long narrow, with 5 transverse beams; buttons with from 6 to 12 holes. Habitat: Philippines.

THE MOST IMPORTANT WORKS RELATING TO TREPANG.

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ILLUSTRATIONS.

PLATE I. PHILIPPINE TREPANG.

- FIG. 1. The oe.
2. The gan sim.
3. The bark sim.
4. The moi whar che.
5. The hong che.

PLATE II. DIFFERENT VARIETIES OF "BARK SIM."

(Third grade Philippine Trepang.)

- FIG. 1. Small black trepang.
2. White ringed trepang.
3. Yellowish brown trepang.
4. Dark brown trepang.
5. Convoluted trepang.
6. Small convoluted trepang.

PLATE III. PHILIPPINE SHARK-FIN.

- FIG. 1. Dried shark-fin prepared for export.
2. The fin prepared for soup.

PLATE IV. THREE VARIETIES OF SEA TURTLES.

- FIG. 1. The loggerhead (*Thalassochelys caretta* Linn.).
2. Head of the loggerhead turtle.
3. The hawksbill turtle (*Chelone imbricata* Linn.).
4. Head of hawksbill turtle.
5. The green turtle (*Chelone mydas* Linn.).
6. Head of green turtle.

PLATE V. PHILIPPINE TORTOISE-SHELL.

- FIG. 1. Plate from the hawksbill turtle.
2. Section showing thickness of the above plate.
3. Plate from the green turtle.
4. Section showing thickness of the green turtle shell.

PLATE VI. COMBS MADE IN MANILA FROM PHILIPPINE TORTOISE-SHELL.

PLATE VII. PHILIPPINE WINDOW-SHELL.

- FIG. 1. Cross-section of shell near the adductor muscle showing actual width of shell including the animal.
2. Window shell, with growth of crustacean eggs near one margin.
3. Window shell opened and with the mantle of left side removed showing the organs in place.

PLATE VIII. ANATOMY OF THE WINDOW-SHELL MOLLUSK. *a*, Mantle; *b*, pallial fringe; *c*, gills; *d*, adductor muscle; *e*, liver; *f*, genital lobe; *g*, foot; *h*, anal funnel; *i*, labial palps; *j*, ventricle; *k*, auricle; *l*, kidneys.

PLATE IX. UTILIZING WINDOW SHELL.

- FIG. 1. Shell window in the new General Hospital, Manila.
 2. Screen made of window shell and red *narra* wood.

PLATE X. SHELL LAMPS.

- FIG. 1. Small porch-light made from window shell.
 2. Lantern light made from window shell.
 3. Reading lamp made of wood and window shell.
 4. The nautilus reading light. *a*, Base of red cement; *b*, stem of red coral-line; *c*, shade of chambered nautilus; *d*, electric wire to bulb which is hidden in nautilus shell.

PLATE XI. THE TOP SHELL.

- FIG. 1. Top shell (*Trochus niloticus* Linn.). Showing cuts for buttons in the partition walls.
 2. Side view of *Trochus niloticus* Linn.
 3. *Trochus niloticus* cut through the vertical plane.
 4. Top view of *Trochus niloticus* Linn.

PLATE XII. THE TURBON SHELL.

- FIG. 1. Turbon shell (*Turbo marmoratus* Linn.)
 2. Turbon shell (young).
 3. Turbon shell cut on a vertical plane.
 4. Side view of *Turbo marmoratus* Linn.