



JULY 2025
ONLINE VERSION 2.0

ZOOLOGICAL SURVEY OF INDIA

Ministry of Environment, Forest & Climate Change

ASCIDIACEA

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DOI : <https://doi.org/10.26515/Fauna/2/2025/Ascidiacea>

Key words: Sea squirts, Ascidians

Citation: Raghunathan, C. (2025). Fauna of India Checklist: Ascidiacea. Version 2.0. Zoological Survey of India. DOI: <https://doi.org/10.26515/Fauna/2/2025/Ascidiacea>

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FAUNA OF INDIA CHECKLIST



ASCIDIACEA

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Introduction: Ascidians are exclusively marine found from the intertidal to the greater depth of ocean and distributed from tropics to poles. These filter-feeding invertebrate chordates are displaying retrogressive metamorphosis and benthic in nature. Therefore, the faunal group has free-swimming larval stage and is then metamorphosed into sessile adult individuals. They also lose their notochord and dorsal hollow nerve cord during the metamorphosis and only retain the pharyngeal gill slits through-out the life. The faunal group is commonly known as sea-squirts as they eject water when disturbed. The size of the ascidians varies greatly from few

millimetre to more than 10 cm. Ascidians can be solitary or colonial in nature. The class Ascidiacea is divided into three orders, i.e., Phlebobranchia, Stolidobranchia and Aplousobranchia.

Global diversity: The Class Ascidiacea comprises of 2991 species from intertidal to greater depth of the ocean.

Diversity in India: A total of 262 species are reported from the Indian waters.

Diversity in States: Presented in table 1.

Table 1: Ascidians of India, State-wise distribution

Sl. No.	State/ Union Territory	No. of Species
1.	Andhra Pradesh	01
2.	Gujarat	01
3.	Goa	01
4.	Kerala	63
5.	Maharashtra	07
6.	Odisha	01
7.	Tamil Nadu	220
8.	Andaman & Nicobar	79
9.	Lakshadweep Sea	02
	Total number of species	262

Endemism: Ascidians are not well studied group world-wide to establish the endemism of this particular group. The recent newly described species might be considered by few

researchers as endemic to the region but more exploration studies are required to establish endemism from any particular region.



Habitat: Ascidians are found from the intertidal to greater depth of the ocean. Due to their sessile nature animals are found on the seafloor attached to the rock or hard substratum or even they can settle on the sandy bottom.

Ecological Significance: The faunal group is acting as bio-fouler and causes a great economic loss every year. Apart from being a bio-fouler ascidians can act as indicator of marine water quality and also act as an important fauna in the reef areas. These filter-feeding animals also act as prey for several marine faunal groups.

Human Significance: A few ascidians are considered as resources of proteinaceous food and the faunal group has a well-established pharmacological importance to the society and several immune-modulatory secondary metabolites have been found from the faunal group.

Threatened species: No species of ascidians from India is assessed for IUCN threatened categories.

Protected Species as per WPA: Not listed.

Species under CITES: There is no species enlisted under the CITES Appendices.

Invasive alien species: Jaffar Ali *et al.* (2014, 2015) reported a total 16 invasive species from the Indian waters and among them four species were reported from the Andaman and Nicobar Islands (Mondal *et al.*, 2016).

Gap areas: Indian ascidians are considered as lesser-known faunal group due to the availability of less expertise. Molecular taxonomy of ascidians is also recently started. There are no reports from the several diverse reef areas of India. Therefore, an extensive survey through experts of these group is encouraged to conduct to explore the faunal diversity in India.

Systematic list: Species list cited below (Table 2).

Table 2: Ascidians of India

Sl. No.	Species
1.	<i>Clavelina australis</i> (Herdman, 1899)
2.	<i>Clavelina fecunda</i> (Sluiter, 1904)
3.	<i>Clavelina moluccensis</i> (Sluiter, 1904)
4.	<i>Clavelina oblonga</i> Herdman, 1880
5.	<i>Clavelina picta</i> (Verrill, 1900)
6.	<i>Clavelina robusta</i> Kott, 1990
7.	<i>Pycnoclavella diminuta</i> (Kott, 1957)
8.	<i>Rhopalaea circula</i> Monniot & Monniot, 2001
9.	<i>Rhopalaea fusca</i> (Herdman, 1880)
10.	<i>Rhopalaea macrothorax</i> Tokioka, 1953
11.	<i>Rhopalaea bilobata</i> Mondal <i>et al.</i> , 2017
12.	<i>Aplidiopsis amoyense</i> Tokioka, 1967
13.	<i>Aplidiopsis confluata</i> Kott, 1992
14.	<i>Aplidium brevilarvacium</i> Kott, 1963
15.	<i>Aplidium caelestis</i> Monniot, 1987
16.	<i>Aplidium digitalis</i> Meenakshi & Senthamarai, 2013



Sl. No.	Species
17.	<i>Aplidium directum</i> Kott, 1972
18.	<i>Aplidium distaplium</i> Kott, 1992
19.	<i>Aplidium indicum</i> Renganathan & Monniot F., 1984
20.	<i>Aplidium lunacratum</i> Kott, 1992
21.	<i>Aplidium macrolobatum</i> Kott, 1992
22.	<i>Aplidium mernooensis</i> (Brewin, 1956)
23.	<i>Aplidium minisculum</i> Kott, 1992
24.	<i>Aplidium multiplicatum</i> Sluiter, 1909
25.	<i>Aplidium parolineatum</i> Kott, 1992
26.	<i>Aplidium pentatrema</i> Monniot F., 1972
27.	<i>Aplidium pliciferum</i> (Redikorzev, 1927)
28.	<i>Aplidium ritteri</i> (Sluiter, 1895)
29.	<i>Aplidium rubricollum</i> Kott, 1963
30.	<i>Aplidium undulatum</i> Monniot F., & Gaill, 1978
31.	<i>Aplidium uteute</i> Monniot & Monniot, 1987
32.	<i>Polyclinum constellatum</i> Savigny, 1816
33.	<i>Polyclinum fungosum</i> Herdman, 1886
34.	<i>Polyclinum glabrum</i> Sluiter, 1895
35.	<i>Polyclinum incrustatum</i> Michaelsen, 1930
36.	<i>Polyclinum indicum</i> Sebastian, 1954
37.	<i>Polyclinum madrasensis</i> Sebastian, 1952
38.	<i>Polyclinum marsupiale</i> Kott, 1963
39.	<i>Polyclinum nudum</i> Kott, 1992
40.	<i>Polyclinum psammiferum</i> Hartmeyer, 1911
41.	<i>Polyclinum saturnium</i> Savigny, 1816
42.	<i>Polyclinum sundaicum</i> (Sluiter, 1909)
43.	<i>Polyclinum tenuatum</i> Kott, 1992
44.	<i>Polyclinum vasculosum</i> Pizon, 1908
45.	<i>Synoicum castellatum</i> Kott, 1992
46.	<i>Synoicum citrum</i> Kott, 1992
47.	<i>Synoicum galei</i> (Michaelsen, 1930)
48.	<i>Synoicum indicum</i> Meenakshi, 2003
49.	<i>Synoicum macroglossum</i> (Hartmeyer, 1919)
50.	<i>Synoicum papiliferum</i> (Michaelsen, 1930)
51.	<i>Synoicum prunum</i> (Herdman, 1899)
52.	<i>Distaplia nathensis</i> Meenakshi, 1997
53.	<i>Cystodytes dellechiaiei</i> (Della Valle, 1877)
54.	<i>Eudistoma amplum</i> (Sluiter, 1909)
55.	<i>Eudistoma angolanum</i> (Michaelsen, 1914)
56.	<i>Eudistoma carnosum</i> Kott, 1990
57.	<i>Eudistoma constrictum</i> Kott, 1990
58.	<i>Eudistoma eboreum</i> Kott, 1990
59.	<i>Eudistoma gilboviride</i> (Sluiter, 1909)



Sl. No.	Species
60.	<i>Eudistoma glacum</i> (Sluiter, 1909)
61.	<i>Eudistoma globosum</i> Kott, 1957
62.	<i>Eudistoma incubitum</i> Kott, 1990
63.	<i>Eudistoma kaverium</i> Meenakshi, 1997
64.	<i>Eudistoma lakshmiani</i> Renganathan, 1986
65.	<i>Eudistoma laysani</i> (Sluiter, 1900)
66.	<i>Eudistoma loricatum</i> (Sluiter, 1909)
67.	<i>Eudistoma malum</i> Kott, 1990
68.	<i>Eudistoma microlarvum</i> Kott, 1990
69.	<i>Eudistoma ovatum</i> (Herdman, 1886)
70.	<i>Eudistoma pyriforme</i> (Herdman, 1886)
71.	<i>Eudistoma reginum</i> Kott, 1990
72.	<i>Eudistoma rubrum</i> Tokioka, 1954
73.	<i>Eudistoma sabulosum</i> Kott, 1990
74.	<i>Eudistoma sluiteri</i> Hartmeyer, 1909
75.	<i>Eudistoma superlatum</i> Kott, 1990
76.	<i>Eudistoma toealensis</i> Millar, 1975
77.	<i>Eudistoma tokarae</i> Tokioka, 1954
78.	<i>Eudistoma tumidum</i> Kott, 1990
79.	<i>Eudistoma viride</i> Tokioka, 1955
80.	<i>Eudistoma vitiata</i> Kott, 1981
81.	<i>Exostoma ianthium</i> (Sluiter, 1909)
82.	<i>Polycitor calamus</i> Kott, 1990
83.	<i>Atrioalum robustum</i> Kott, 1983
84.	<i>Didemnum albidum</i> (Verrill, 1871)
85.	<i>Didemnum albopunctatum</i> Sluiter, 1909
86.	<i>Didemnum augusti</i> Michaelsen, 1920
87.	<i>Didemnum candidum</i> Savigny, 1816
88.	<i>Didemnum chartaceum</i> Sluiter, 1909
89.	<i>Didemnum cuculliferum</i> (Sluiter, 1909)
90.	<i>Didemnum etiolum</i> Kott, 1982
91.	<i>Didemnum fragile</i> Sluiter, 1909
92.	<i>Didemnum fulgens</i> (Milne Edwards, 1841)
93.	<i>Didemnum granulatum</i> Tokioka, 1954
94.	<i>Didemnum lambitum</i> Sluiter, 1900
95.	<i>Didemnum ligulum</i> Monniot, F. 1983
96.	<i>Didemnum megasterix</i> Monniot, F. 1994
97.	<i>Didemnum membranaceum</i> Sluiter, 1909
98.	<i>Didemnum molle</i> (Herdman, 1886)
99.	<i>Didemnum moseleyi</i> (Herdman, 1886)
100.	<i>Didemnum nekozita</i> Tokioka, 1967
101.	<i>Didemnum nigricans</i> Monniot, F. 1994
102.	<i>Didemnum obscurum</i> Monniot, F. 1969



Sl. No.	Species
103.	<i>Didemnum ossium</i> Kott, 2001
104.	<i>Didemnum pardum</i> Tokioka, 1962
105.	<i>Didemnum psammatode</i> (Sluiter, 1895)
106.	<i>Didemnum perlucidum</i> Monniot, F. 1983
107.	<i>Didemnum semifusum</i> Sluiter, 1909
108.	<i>Didemnum spadix</i> Kott, 2001
109.	<i>Didemnum spongioides</i> Sluiter, 1909
110.	<i>Didemnum ternerratum</i> Kott, 2001
111.	<i>Didemnum tonga</i> (Herdman, 1886)
112.	<i>Didemnum translucidum</i> Tokioka, 1953
113.	<i>Didemnum vahatuio</i> Monniot, C. & F. 1987
114.	<i>Didemnum vexillum</i> Kott, 2002
115.	<i>Didemnum viride</i> (Herdman, 1906)
116.	<i>Diplosoma listerianum</i> (Milne-Edwards, 1841)
117.	<i>Diplosoma simileguwa</i> Oka & Hirose, 2005
118.	<i>Diplosoma simile</i> (Sluiter, 1909)
119.	<i>Diplosoma spongiforme</i> (Giard, 1872)
120.	<i>Diplosoma swamiensis</i> Renganathan, 1986
121.	<i>Diplosoma virens</i> (Hartmeyer, 1909)
122.	<i>Leptoclinides doboensis</i> (Sluiter, 1913)
123.	<i>Leptoclinides madara</i> Tokioka, 1953
124.	<i>Leptoclinides reticulatus</i> (Sluiter, 1909)
125.	<i>Leptoclinides rufus</i> (Sluiter, 1909)
126.	<i>Lissoclinum abdominale</i> Monniot, F. 1983
127.	<i>Lissoclinum bistratum</i> (Sluiter, 1905)
128.	<i>Lissoclinum fragile</i> (Van Name, 1902)
129.	<i>Lissoclinum patella</i> (Gottschaldt, 1898)
130.	<i>Lissoclinum punctatum</i> Kott, 1977
131.	<i>Lissoclinum tasmanense</i> (Kott, 1954)
132.	<i>Lissoclinum textile</i> Monniot & Monniot, 2001
133.	<i>Lissoclinum timorensis</i> (Sluiter, 1909)
134.	<i>Lissoclinum triangulum</i> (Sluiter, 1909)
135.	<i>Polysyncraton aspiculatum</i> (Tokioka, 1949)
136.	<i>Polysyncraton doboense</i> (Sluiter, 1913)
137.	<i>Polysyncraton lithostrotum</i> (Brewin, 1956)
138.	<i>Polysyncraton meandratum</i> Monniot, 1993
139.	<i>Polysyncraton millepore</i> Vasseur, 1969
140.	<i>Polysyncraton multipapillae</i> Monniot, 1993
141.	<i>Polysyncraton pavementum</i> Monniot, 1993
142.	<i>Polysyncraton rugosum</i> Monniot, 1993
143.	<i>Polysyncraton thallomorpha</i> Monniot, F.1993
144.	<i>Polysyncraton victoriensis</i> Kott, 1976
145.	<i>Trididemnum caelatum</i> Kott, 2001



Sl. No.	Species
146.	<i>Trididemnum cerebriforme</i> Hartmeyer, 1913
147.	<i>Trididemnum clinides</i> Kott, 1977
148.	<i>Trididemnum cyanophorum</i> Lafargue & Duclaux, 1979
149.	<i>Trididemnum cyclops</i> Michaelsen, 1921
150.	<i>Trididemnum discrepans</i> (Sluiter, 1909)
151.	<i>Trididemnum miniatum</i> Kott, 1977
152.	<i>Trididemnum nubilum</i> Kott, 1980
153.	<i>Trididemnum paraclinides</i> Kott, 1982
154.	<i>Trididemnum paracyclops</i> Kott, 1980
155.	<i>Trididemnum profundum</i> (Sluiter, 1909)
156.	<i>Trididemnum pseudodiplosoma</i> Kott, 1962
157.	<i>Trididemnum savignii</i> (Herdman, 1886)
158.	<i>Trididemnum spiculatum</i> Kott, 1962
159.	<i>Trididemnum spumosum</i> Kott, 2001
160.	<i>Trididemnum strigosum</i> Kott, 1980
161.	<i>Trididemnum vermiforme</i> Kott, 2001
162.	<i>Ecteinascida bombayensis</i> Das, 1938
163.	<i>Ecteinascida diaphanis</i> Sluiter, 1885
164.	<i>Ecteinascida diligens</i> Sluiter, 1900
165.	<i>Ecteinascida garstangi</i> Sluiter, 1898
166.	<i>Ecteinascida imperfecta</i> Tokioka, 1950
167.	<i>Ecteinascida krishnani</i> Renganathan & Krishnaswamy, 1985
168.	<i>Ecteinascida nexa</i> Sluiter, 1904
169.	<i>Ecteinascida rubricollis</i> Sluiter, 1886
170.	<i>Ecteinascida sluiteri</i> Herdman, 1906
171.	<i>Ecteinascida styeloids</i> (Traustedt, 1882)
172.	<i>Ecteinascida thurstoni</i> Herdman, 1890
173.	<i>Ecteinascida venui</i> Meenakshi, 1997
174.	<i>Perophora clavata</i> Kott, 1985
175.	<i>Perophora hutchisoni</i> Macdonald, 1859
176.	<i>Perophora modificata</i> Kott, 1985
177.	<i>Perophora multiclathrata</i> (Sluiter, 1904)
178.	<i>Ascidia andamanensis</i> Oka, 1915
179.	<i>Ascidia caguayensis</i> Millar & Goodbody, 1974
180.	<i>Ascidia challengerii</i> Herdman, 1882
181.	<i>Ascidia conchilega</i> Muller, 1776
182.	<i>Ascidia decepta</i> Kott, 1985
183.	<i>Ascidia dorsata</i> Meenakshi, 1999
184.	<i>Ascidia gemmata</i> Sluiter, 1895
185.	<i>Ascidia glabra</i> Hartmeyer, 1922
186.	<i>Ascidia indica</i> Meenakshi, 1997
187.	<i>Ascidia irregularis</i> Oka, 1915
188.	<i>Ascidia kesavanica</i> Meenakshi, 1997



Sl. No.	Species
189.	<i>Ascidia latesiphonica</i> Hartmeyer, 1922
190.	<i>Ascidia liberata</i> Sluiter, 1887
191.	<i>Ascidia samea</i> Oka, 1935
192.	<i>Ascidia sydneyensis</i> Stimpson, 1855
193.	<i>Ascidia tuticoriensis</i> Meenakshi, 1997
194.	<i>Ascidia virginea</i> Muller, 1776
195.	<i>Ascidia zara</i> Oka, 1935
196.	<i>Ascidella aspersa</i> (Mueller, 1776)
197.	<i>Phallusia arabica</i> Savigny, 1816
198.	<i>Phallusia barbarica</i> Kott, 1985
199.	<i>Phallusia julinea</i> Sluiter, 1915
200.	<i>Phallusia mammillata</i> (Cuvier, 1815)
201.	<i>Phallusia nigra</i> (Savigny, 1816)
202.	<i>Phallusia polytrema</i> (Herdman, 1906)
203.	<i>Rhodosoma turcicum</i> (Savigny, 1816)
204.	<i>Botrylloides anceps</i> (Herdman, 1891)
205.	<i>Botrylloides chevalense</i> Herdman, 1906
206.	<i>Botrylloides diegensis</i> Ritter & Forsyth, 1917
207.	<i>Botrylloides leachii</i> (Savigny, 1816)
208.	<i>Botrylloides magnicoecum</i> Hartmeyer, 1912
209.	<i>Botrylloides niger</i> Herdman, 1886
210.	<i>Botrylloides perspicuus</i> (Herdman, 1886)
211.	<i>Botrylloides pizoni</i> Brunetti & Mastrototaro, 2012
212.	<i>Botryllus schlosseri</i> (Pallas, 1766)
213.	<i>Botryllus stewartensis</i> Brewin, 1958
214.	<i>Botryllus tuberatus</i> Ritter & Forsyth, 1917
215.	<i>Eusynstyela tinctoria</i> (Van Name, 1902)
216.	<i>Eusynstyela latericius</i> (Sluiter, 1904)
217.	<i>Eusynstyela misakiensis</i> (Watanabe & Tokioka, 1972)
218.	<i>Polyandrocarpa chendurensis</i> Renganathan & Krishnaswamy, 1985
219.	<i>Polyandrocarpa durbanensis</i> Millar, 1955
220.	<i>Polyzoa violacea</i> (Oka, 1915)
221.	<i>Symplegma brakenhielmi</i> (Michaelsen, 1904)
222.	<i>Symplegma reptans</i> (Oka, 1927)
223.	<i>Symplegma viride</i> Herdman, 1886
224.	<i>Cnemidocarpa areolata</i> Heller, 1878
225.	<i>Cnemidocarpa intestinata</i> Kott, 1985
226.	<i>Polycarpa annandalei</i> Oka, 1915
227.	<i>Polycarpa aurita</i> (Sluiter, 1890)
228.	<i>Polycarpa cryptocarpa</i> (Sluiter, 1885)
229.	<i>Polycarpa glebosa</i> (Sluiter, 1904)
230.	<i>Polycarpa palkensis</i> Herdman, 1906
231.	<i>Polycarpa papillata</i> (Sluiter, 1885)



Sl. No.	Species
232.	<i>Polycarpa pigmentata</i> (Herdman, 1906)
233.	<i>Polycarpa maniensis</i> Meenakshi, 1997
234.	<i>Polycarpa scatterata</i> Meenakshi, 1997
235.	<i>Styela canopus</i> (Savigny, 1816)
236.	<i>Styela plicata</i> (Lesueur, 1823)
237.	<i>Boltenia transversaria</i> Sluiter, 1904
238.	<i>Ctenyura intermedia</i> Van Name, 1918
239.	<i>Herdmania andamanensis</i> Mondal <i>et al.</i> , 2017
240.	<i>Herdmania pallida</i> (Heller, 1878)
241.	<i>Herdmania momus</i> (Savigny, 1816)
242.	<i>Herdmania papietensis</i> (Herdman, 1882)
243.	<i>Microcosmus curvus</i> Tokioka, 1954
244.	<i>Microcosmus exasperatus</i> Heller, 1878
245.	<i>Microcosmus helleri</i> Herdman, 1881
246.	<i>Microcosmus propinquus</i> Herdman, 1882
247.	<i>Microcosmus pupa</i> (Savigny, 1816)
248.	<i>Microcosmus stoloniferus</i> Kott, 1952
249.	<i>Microcosmus squamiger</i> Michaelsen, 1927
250.	<i>Microcosmus vulgaris</i> Heller, 1877
251.	<i>Pyura ennurensis</i> (Das, 1940)
252.	<i>Pyura isobella</i> Kott, 1985
253.	<i>Pyura lanka</i> (Herdman, 1906)
254.	<i>Pyura sacciformis</i> (Drasche, 1884)
255.	<i>Pyura spinosa</i> (Quoy & Gaimard, 1834)
256.	<i>Pyura vittata</i> Stimpson, 1852
257.	<i>Molgula calvata</i> Sluiter, 1904
258.	<i>Molgula ficus</i> (Macdonald, 1859)
259.	<i>Molgula mortensini</i> (Michaelsen, 1922)
260.	<i>Molgula pyriformis</i> Herdman, 1881
261.	<i>Molgula sphaera</i> Kott, 1972
262.	<i>Halocynthia spinosa</i> Sluiter, 1905

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