

CDF Checklist of Galapagos Heterokonts: Brown algae and related groups

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Abstract

This Checklist of Galapagos Heterokonts: Brown algae and related groups includes a total of all 55 taxa reported from the Galapagos Islands.

For each name, detailed information is provided: its Galapagos distribution in islands groups or bioregions generated from the specimen records, comments about the taxonomy (especially synonyms), the origin (native and introduced), taxon status (accepted vs. rejected records) and relevant literature references.

Introduction

This publication lists all species of Galapagos Heterokonts: Brown algae and related groups currently known.

The **Ochrophyta** are a phylum of phylogenetically related organisms with heterokont motile cells, meaning that they have two flagella of unequal length that are typically attached laterally.

The largest and best known group in the Ochrophyta is the brown algae, aptly named because of the brown pigmentation caused by the presence of xanthophylls like fucoxanthine or flavoxanthine.

The cell wall of the brown algae is poor in cellulose but rich in alginates, a polysaccharide of commercial importance.

Brown algae are also rich in laminarin and manitol, both storage sugars.

Methods

This checklist of all known Galapagos Heterokonts: Brown algae and related groups is automatically generated using the online database of the Charles Darwin Foundation Galapagos Species Checklist.

All CDF Galapagos Species Checklists represent the synthesis of many different records: literature citations, data from previously unpublished reports (grey literature), specimen records of natural history collections located in Galapagos and all over the world. To the best of their knowledge authors of the individual checklists revised all available data. When new information becomes available, the taxonomy of a group changes or new species are discovered, the CDF online database and thus this publication becomes updated.

For many poorly known species groups the higher taxonomic classification still regularly changes according to how our knowledge about species being related changes. In many well known groups the phylogeny is somewhat stable, but to avoid confusion, in particular for groups where taxonomic changes are frequent, all checklists presented here are sorted alphabetical according to genus

name and specific epithet. Please refer to the website for the currently accepted taxonomic hierarchy of each group.

Please be aware that the distribution presented here is automatically generated from specimen records and does not always accurately reflect the known distribution for all species.

For marine species, the distribution generally refers to the five main bioregions of the archipelago (Far Northern, Northern, Western, South Eastern and the Elisabeth Bay Bioregion). For the terrestrial species more than 120 islands, islets and small rocks have been aggregated into Islands Groups, thus, for example, the island group "Santa Cruz" includes smaller islands like Santa Fé, Plaza Norte, Plaza Sur, Baltra, Daphne Mayor, Daphne Minor, and others.

IUCN red-list assessments presented here may deviate from the global IUCN list for the following reasons:

- for well known species groups like vascular plants or vertebrates updates proposed to the IUCN are shown instead of the outdated, but currently accepted status;
- for poorly known species groups (e.g., lichenized fungi) a general assessment is currently not possible and the list presented here is a regional red-list list for Galapagos archipelago.

Numbers of the species included in this list are auto-generated. Adding up the number of species in each category will not always equal the total number indicated. Some species have insufficient data to be categorized while others (e.g., category eradicated) will not be included in the total.

Results

Names of taxa included in this checklist: 55 (46 accepted, 4 unidentified taxon, 1 doubtful, 3 preliminary identification, 1 problematic).

Origin of the taxa included: 18 endemic, 2 indigenous.

1. *Bifurcaria galapagensis* (Piccone & Grunow) Womersley

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Fucodium galapagensis* Piccone & Grunow, *Blossevillea galapagensis* (Piccone & Grunow) W.R. Taylor, *Pelvetia galapagensis* (Piccone & Grunow) De Toni, fide Guiry & Guiry (2010)

Origin: Native, Endemic.

IUCN Red List: Critically Endangered.

Galapagos Distribution: Floreana, Santa Cruz.

References: Farlow, W.G. et al. (1902), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Piccone, A. et al. (1886), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945), Womersley, H.B.S. et al. (1964).

2. *Carpomitra sp. 1*

Taxon status: Taxon not identified to species, subspecies, form or variety.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Isabela, Pinzón, Santa Cruz.

3. *Chnoospora implexa* J. Agardh

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Santa Cruz.

References: Appeltans, W. et al. (2010), Dawson, E.Y. et al. (1963), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964).

4. *Colpomenia bullosa* (De A.Saunders) Yamada
Taxon status: Accepted name; taxon occurs in Galapagos.
Syn.: *Colpomenia sinuosa* f. *deformans* Setchell & N.L. Gardner, fide Guiry & Guiry (2010)
Origin: No Data.
IUCN Red List: Not Evaluated.
Galapagos Distribution: Santa Cruz.
References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Setchell, W.A. et al. (1937), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).
5. *Colpomenia ramosa* W.R.Taylor
Taxon status: Accepted name; taxon occurs in Galapagos.
Type locality: South Bay, Isla Cerros, Baja California, Mexico. (Taylor 1945: 84, 85). Holotype: W.R. Taylor no. 34-651; 10 Mar. 1934; Littoral pools.. Hancock Foundation (Taylor 1945: 84, 85).
Origin: No Data.
IUCN Red List: Not Evaluated.
Galapagos Distribution: Fernandina.
References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Taylor, W.R. et al. (1945).
6. *Colpomenia sinuosa* (Mertens ex Roth) Derbès & Solier
Taxon status: Accepted name; taxon occurs in Galapagos.
Origin: No Data.
IUCN Red List: Not Evaluated.
Galapagos Distribution: Fernandina.
References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).
7. *Colpomenia tuberculata* De A.Saunders
Taxon status: Accepted name; taxon occurs in Galapagos.
Syn.: *Colpomenia sinuosa* f. *expansissima* Setchell & N.L. Gardner, *C. sinuosa* f. *tuberculata* (De A. Saunders) Setchell & N.L. Gardner
Origin: No Data.
IUCN Red List: Not Evaluated.
Galapagos Distribution: Santa Cruz.
References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964).
8. *Desmarestia ligulata* Setchell & N.L. Gardner
Taxon status: Accepted name; taxon occurs in Galapagos.
Origin: No Data.
Galapagos Distribution: Fernandina.
References: Guiry, M.D. et al. (2010).
9. *Desmarestia munda* Setchell & N.L. Gardner
Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Isabela.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

10. *Desmarestia tropica* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Post Office Bay, Isla Santa María, Galápagos Islands, Ecuador (Taylor 1945: 107-108).

Holotype: W.R. Taylor No. 34-388; 29 Jan. 1934; dredged from 60 m. NOT in Peru (Acleto 1973; annotation by A. Peters in UC)

Origin: Native, Endemic.

IUCN Red List: Critically Endangered.

Galapagos Distribution: Santa Cruz.

References: Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

11. *Dictyopteris cokeri* (M.A. Howe) W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Antilles, West Indies (Silva, Basson & Moe 1996: 581).

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Floreana, Isabela, Santa Cruz.

References: Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Howe, M.A. et al. (1914), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

12. *Dictyopteris diaphana* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Post Office Bay, Isla Santa María, Galápagos (Taylor 1945: 95, 96). Holotype: W.R. Taylor, no. 34-386A; 29 Jan. 1934; Hancock Foundation (Taylor 1945: 95, 96). Notes: Type infrequent as dredged from 55 m.

Origin: Native, Endemic.

IUCN Red List: Data Deficient.

Galapagos Distribution: Fernandina, Floreana, Isabela.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

13. *Dictyota binghamiae* J. Agardh

Taxon status: Accepted name; taxon occurs in Galapagos.

"Is Galapagos dictyotalean entity a new species?" (Miller, K.A. 2011)

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina, Floreana, Isabela, Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011).

14. *Dictyota dichotoma* (Hudson) J.V. Lamouroux

Taxon status: The identification of this taxon or its occurrence in Galapagos is doubtful.

De Clerck (2003) notes that this species is reported from all around the world but is possibly restricted to the north-east Atlantic Ocean and Mediterranean Sea. Tsuda (2004: 50) notes that Schnetter et al (1987), Hornig & Schnetter (1988) and De Clerck & Coppejans (1997) follow the premise that *D. dichotoma* is restricted to the North Atlantic; therefore, the Pacific species cited as *D. dichotoma* and *D. apiculata* should bear another name.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Darwin, Fernandina, Isabela, Wolf.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011).

15. *Dictyota dichotoma var. intricata* (C. Agardh) Greville

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Dictyota divaricata* J.V. Lamouroux, fide Guiry & Guiry (2010)

Origin: No Data.

Galapagos Distribution: Santa Cruz.

References: Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010).

16. *Dictyota flabellata* (F.S. Collins) Setchell & N.L. Gardner

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina.

References: Guiry, M.D. et al. (2010).

17. *Dictyota galapagensis* (Farlow) De Clerck

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Glossophora galapagensis* Farlow, fide De Clerck et al. (2006); Type locality: [Albermarle I.] Isabela, Turtle Pt., March 1899, Snodgrass & Heller.

Origin: Native, Endemic.

Galapagos Distribution: Española, Floreana, Santa Cruz.

References: De Clerck, O. et al. (2006), Farlow, W.G. et al. (1902), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

18. *Dictyota major* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Isla Santa María, Galápagos (Silva, Basson & Moe 1996: 595). Holotype: W.R. Taylor, 34-598; 7 Mar. 1938; Dredged from 13-18 m. Hancock Foundation (Taylor 1945: 89). Notes: Type: rare as dredged from 3-18 m off Post Office Bay, I. Santa María, no 34-357, 27 Jan. 1934 (Taylor, 1945: 88, 89). De Clerck (2003: 173) gives the following data: Type locality: Post Office Bay, Isla Santa Maria, Galapagos; Holotype: AHFH in LAM Taylor No. 34-357.

Origin: Native, Endemic.

IUCN Red List: Data Deficient.

Galapagos Distribution: Isabela.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

19. *Eisenia galapagensis* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Academy Bay, Isla Santa Cruz, Galápagos Islands, Ecuador (Taylor 1945: 109-110). Type: W.R. Taylor No. 34-305; 20 Jan. 1934; Hancock Foundation (Taylor 1945: 109-110). Notes: Frequent as dredged off Academy Bay.

Origin: Native, Endemic.

IUCN Red List: Critically Endangered.

Galapagos Distribution: Fernandina, Isabela.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Graham, M.H. et al. (2007), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

20. *Lobophora sp. 1*

Taxon status: Taxon not identified to species, subspecies, form or variety.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Isabela.

21. *Lobophora variegata* (J.V. Lamouroux) Womersley ex E.C. Oliveira

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Pocockiella variegata* (J.V. Lamouroux) Papenfuss, fide Guiry & Guiry (2010)

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina, Isabela, Santa Fé.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

22. *Mesospora pangoensis var. galapagensis* (Setchell & Gardner) Chihara & J. Tanaka

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Ralfsia pangoensis var. galapagensis* Setchell & N.L. Gardner, fide Guiry & Guiry (2010). Type locality: Conway Bay, Indefatigable Island Type: No. 236506 (CAS), leg. J.T. Howell 781, 8 June 1932 Tanaka, J. and M. Chihara. 1982. Note: J. Tanaka & Chihara (1982: 388--389) proposed the family Mesosporaceae to accommodate three genera usually placed in the Ralfsiaceae--- *Mesospora* Weber-van Bosse (1911: 27), *Hapalospongidion* D. Saunders (1899: 37), and *Basispora* D. John & Lawson (1974: 285--289). These genera were said to share an allegedly unique combination of characters, including intercalary plurilocular reproductive organs, terminal unilocular sporangia not associated with paraphyses, and free-standing vegetative filaments. Womersley (1987: 74--75), however, gave cogent reasons for merging the three genera under the earliest name, *Hapalospongidion* D. Saunders (1899: 37). He retained the combined genus in the Ralfsiaceae

Origin: No Data.

Galapagos Distribution: Santa Cruz.

References: Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Setchell, W.A. et al. (1937), Silva, P.C. et

al. (1964), Tanaka, J. et al. (1982).

23. *Padina concrescens* Thivy

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Black Beach Anchorage, I. Santa María, Galápagos Islands, Ecuador (Taylor 1945: 102-103).

Holotype: W.R. Taylor, No. 34-245; 17 Jan. 1934; partly decumbent and concrescens, on rocks. Hancock Foundation (Taylor 1945: 102-103).

Origin: Native, Endemic.

IUCN Red List: Least Concern.

Galapagos Distribution: Fernandina, Isabela, Santa Cruz, Wolf.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

24. *Padina crispata* Thivy

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Golfo Dulce, Costa Rica (Taylor 1945: 100-101). Holotype: W.R. Taylor, no. 39-100; 26 Mar. 1939; infrequent on rocks near the entrance to the bay. Hancock Foundation (Taylor 1945: 100-101).

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Wolf.

References: Guiry, M.D. et al. (2010), Taylor, W.R. et al. (1945).

25. *Padina durvillaei* Bory Saint-Vincent

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

Galapagos Distribution: Española, Fernandina, Floreana, Isabela, Santa Cruz.

References: Appeltans, W. et al. (2010), Farlow, W.G. et al. (1902), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Reed, J. et al. (1995), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

26. *Petalonia* sp.

Taxon status: Taxon not identified to species, subspecies, form or variety.

Origin: No Data.

Galapagos Distribution: Unknown.

References: Appeltans, W. et al. (2010), Bustamante, R.H. et al. (2002).

27. *Pilinia maritima* f. *pacifica* F. Thivy ex W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Is. Revilla Gigedo, México. (Taylor 1945: 45). W.R. Taylor No. 39-4 pro parte; 1 Mar. 1939; Hancock Foundation (Taylor 1945: 45).

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

28. *Sargassum albermarlense* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Pta. Albemarle, Isla Isabela, Galápagos Islands, Ecuador (Taylor 1945: 118-119). Holotype: W.R. Taylor No. 34-105; 12 Jan. 1934; Hancock Foundation (Taylor 1945: 118-119). Notes: Drifted ashore on Pta. Albemarle.

Origin: Native, Endemic.

IUCN Red List: Vulnerable.

Galapagos Distribution: Fernandina, Floreana, Isabela, Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

29. *Sargassum brandegeei* Setchell & N.L.Gardner

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Guaymas, Mexico (Setchell & Gardner 1924: 736). Type: Brandegee no.4; (Setchell & Gardner 1924: 736)

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964).

30. *Sargassum cymosum* C. Agardh

Taxon status: Identification not yet confirmed.

Origin: No Data.

Galapagos Distribution: Santa Cruz.

References: Farlow, W.G. et al. (1902), Guiry, M.D. et al. (2010).

31. *Sargassum galapagense* Grunow

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: Native, Endemic.

IUCN Red List: Vulnerable.

Galapagos Distribution: Fernandina, Floreana, Isabela, Santa Cruz.

References: Appeltans, W. et al. (2010), Farlow, W.G. et al. (1902), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Piccone, A. et al. (1886), Setchell, W.A. et al. (1937), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

32. *Sargassum galapagense var. setifolia* Grunow

Taxon status: Identification not yet confirmed.

Origin: No Data.

Galapagos Distribution: Santa Cruz.

References: Farlow, W.G. et al. (1902), Piccone, A. et al. (1886).

33. *Sargassum howellii* Setchell

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Floreana.

References: Dawson, E.Y. et al. (1963), Garske, L.E. et al. (2002), Miller, K.A. et al. (2011), Setchell, W.A. et al. (1937), Silva, P.C. et al. (1964).

34. *Sargassum ilicifolium var. compactum* (Bory de Saint-Vincent) Grunow

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Sargassum compactum* Bory de Saint-Vincent, fide Grunow (1915)

Origin: No Data.

Galapagos Distribution: Santa Cruz.

References: Grunow, A. et al. (1915), Guiry, M.D. et al. (2010).

35. *Sargassum lendigerum var. furcifolia* Grunow ined.?

Taxon status: Identification not yet confirmed.

Origin: No Data.

Galapagos Distribution: Santa Cruz.

References: Farlow, W.G. et al. (1902).

36. *Sargassum obtusifolium* J. Agardh

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Sargassum skottsbergii* Sjöestedt, fide Guiry & Guiry (2010)

Origin: No Data.

Galapagos Distribution: Santa Cruz.

References: Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Setchell, W.A. et al. (1937), Taylor, W.R. et al. (1945).

37. *Sargassum pacificum f. congestum* Setchell

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: Native, Endemic.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina, Floreana, Isabela, Santa Cruz.

References: Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Setchell, W.A. et al. (1937), Taylor, W.R. et al. (1945).

38. *Sargassum pacificum f. rigidiusculum* (Grunow) Setchell

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: Native, Endemic.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina, Floreana, Isabela.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Setchell, W.A. et al. (1937).

39. *Sargassum pacificum var. megaphyllum* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Pta. Albemarle, Isla Isabela, Galápagos Islands, Ecuador (Taylor 1945: 122). Holotype: W.R.

Taylor No. 34-106; January 1934; Hancock Foundation (Taylor 1945: 122). Notes: Type: in the shore drift at Pta. Albemarle, 13 January 1934. Date given in Latin diagnosis is 12 January 1934.

Origin: Native, Indigenous.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Pedroche, P.F. et al. (2008), Taylor, W.R. et al. (1945).

40. *Sargassum pacificum* var. *pacificum* Bory de Saint-Vincent

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: Native, Endemic.

Galapagos Distribution: Santa Cruz.

References: Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Setchell, W.A. et al. (1937).

41. *Sargassum pacificum* var. *subdelicatulum* (Grunow) Setchell

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: Native, Endemic.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina, Floreana, Isabela, San Cristóbal, Santa Cruz.

References: Garske, L.E. et al. (2002), Setchell, W.A. et al. (1937).

42. *Sargassum setifolium* (Grunow) Setchell

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: Native, Endemic.

IUCN Red List: Endangered.

Galapagos Distribution: Fernandina, Floreana, Isabela, San Cristóbal, Santa Cruz.

References: Appeltans, W. et al. (2010), Farlow, W.G. et al. (1902), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Setchell, W.A. et al. (1937), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

43. *Sargassum templetonii* Setchell

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: Native, Endemic.

IUCN Red List: Vulnerable.

Galapagos Distribution: Floreana, Isabela, San Cristóbal, Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Pedroche, P.F. et al. (2008), Setchell, W.A. et al. (1937), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

44. *Sargassum zaca* Setchell

Taxon status: Taxonomic status unresolved or unrevised.

= *S. albemarlense*? fide J. Jensen in Miller 2011.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Floreana, Isabela, Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Miller, K.A. et al. (2011), Setchell, W.A. et al. (1937), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

45. *Spatoglossum howellii* Setchell & N.L. Gardner

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Spatoglossum veleroae* W.R. Taylor, fide Guiry & Guiry (2010). Type locality: Five miles northeast of Webb Cove, Albemarle Island. Type: CAS 236485, leg. J.T. Howell (938), 22 May 193

Origin: Native, Indigenous.

IUCN Red List: Data Deficient.

Galapagos Distribution: Fernandina, Floreana, Isabela, Santa Cruz.

References: Appeltans, W. et al. (2010), Farlow, W.G. et al. (1902), Garske, L.E. et al. (2002), Howe, M.A. et al. (1914), Miller, K.A. et al. (2011), Pedroche, P.F. et al. (2008), Setchell, W.A. et al. (1937), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

46. *Spatoglossum schmittii* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Post Office Bay, Isla Santa María, Galápagos Islands, Ecuador (Taylor 1945: 93-94). Holotype: W.R. Taylor, no. 34-294; 19 Jan. 1934; Hancock Foundation (Taylor 1945: 93-94). Notes: Type: infrequent as dredged from 27 m off Post Office Bay, no. 34-294. No. 34-295 (Latin diagnosis).

Origin: Native, Endemic.

IUCN Red List: Data Deficient.

Galapagos Distribution: Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

47. *Spatoglossum schroederi* (C. Agardh) Kützing

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Santa Cruz.

References: Appeltans, W. et al. (2010), Farlow, W.G. et al. (1902), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010).

48. *Spatoglossum sp. 1*

Taxon status: Taxon not identified to species, subspecies, form or variety.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina, Isabela.

49. *Sphacelaria novae-hollandiae* Sonder

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Sphacelaria hancockii* E.Y. Dawson, fide Guiry & Guiry (2010). Type locality: Western Australia (probably near Fremantle) (Silva, Basson & Moe 1996: 576). Type: Preiss; MEL 15779 (Womersley & Bailey 1970: 290).

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964).

50. *Sphacelaria rigidula* Kützing

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964).

51. *Spongonema tomentosum* (Hudson) Kützing

Taxon status: Accepted name; taxon occurs in Galapagos.

Syn.: *Ectocarpus tomentosus* (Hudson) Lyngbye, fide Guiry & Guiry (2010)

Origin: No Data.

Galapagos Distribution: Santa Cruz.

References: Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010).

52. *Sporochnus bolleanus* Montagne

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Floreana.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

53. *Sporochnus rostratus* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Post Office Bay, Isla Santa María, Galápagos Islands, Ecuador (Taylor 1945: 106). Holotype: W.R. Taylor No. 34-287A; 19 Jan. 1934; Hancock Foundation (Taylor 1945: 106). Notes: Dredged at sta. 167 from 27 metres' depth off Post Office Bay.

Origin: Native, Endemic.

IUCN Red List: Vulnerable.

Galapagos Distribution: Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

54. *Taonia lennebackerae* Farlow ex J. Agardh

Taxon status: Accepted name; taxon occurs in Galapagos.

Origin: No Data.

IUCN Red List: Not Evaluated.

Galapagos Distribution: Fernandina, Pinzón, Santa Cruz.

References: Appeltans, W. et al. (2010), Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010).

55. *Zosterocarpus abyssicolus* W.R. Taylor

Taxon status: Accepted name; taxon occurs in Galapagos.

Type locality: Post Office Bay, Isla Santa María, Galápagos Islands, Ecuador (Taylor 1945: 79-80). Holotype: W.R. Taylor no. 34-380; 29 Jan. 1934; An epiphyte dredged from 55 m depth. Hancock Foundation (Taylor 1945: 79-80).

Origin: Native, Endemic.

IUCN Red List: Data Deficient.

Galapagos Distribution: Santa Cruz.

References: Garske, L.E. et al. (2002), Guiry, M.D. et al. (2010), Miller, K.A. et al. (2011), Silva, P.C. et al. (1964), Taylor, W.R. et al. (1945).

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References

1. Appeltans, W., Bouchet, P., Boxshall, G.A., Fauchald, K., Gordon, D.P., Hoeksema, B.W., Poore, G.C.B., van Soest, R.W.M., Stöhr, S., Walter, T.C., Costello, M.J. (eds.) (2010) *World Register of Marine Species (WoRMS)*. Available online at <http://www.marinespecies.org>.
2. Bustamante, R.H., Vinueza, L.R., Smith, F., Banks, S., Calvopiña, M., Francisco, V., Chiriboga, A., Harris, J. (2002) *Comunidades submareales rocosas I: Organismos sésiles y mesoinvertebrados móviles*. In: Danulat, E. & Edgar, G.J. (eds.) (2002): *Reserva Marina de Galápagos. Línea Base de la Biodiversidad*. Fundación Charles Darwin/Servicio Parque Nacional Galápagos, Santa Cruz, Galápagos, Ecuador, p. 38-67.
3. Dawson, E.Y. (1963) *New records of marine algae from the Galapagos Islands*. *Pacific Naturalist* 4(1): 1-23.
4. De Clerck, O., Leliaert, F., Verbruggen, H., Lane, C.E., De Paula, J.C., Payo, D.I. & Coppejans, E. (2006) *A revised classification of the Dictyoteae (Dictyotales, Phaeophyceae) based on rbcL and 26S ribosomal DNA sequence data analyses*. *Journal of Phycology* 42: 1271-1288, 6 figs.
5. Farlow, W.G. (1902) *Algae*. In: B.L. Robinson: *Flora of the Galapagos Islands*. *Proc. Amerc. Acad. Arts Sc.* 38(4): 89-99, N.S. 14 (Papers from the Hopkins-Stanford Expedition to the Galapagos Islands)
6. Garske, L.E. (2002) *Macroalgas Marinas*. In: Danulat, E. & Edgar, G.J. (eds.) (2002): *Reserva Marina de Galápagos. Línea Base de la Biodiversidad*. Fundación Charles Darwin/Servicio Parque Nacional Galápagos, Santa Cruz, Galápagos, Ecuador, p. 419-439.
7. Graham, M.H., Kinlan, B.P, Druehl, L.D., Garske, L.E. & Banks, S. (2007) *Deep-water kelp refugia as potential hotspots of tropical marine diversity and productivity* *PNAS* 104(42): 16576–16580

8. Grunow, A. (1915) *Additamenta ad cognitionem Sargassorum*. Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien 65: 329-448.
9. Guiry, M.D., Guiry, G.M. (2010) *AlgaeBase*. World-wide electronic publication, National University of Ireland, Galway. <http://www.algaebase.org>.
10. Howe, M.A. (1914) *The marine algae of Peru*. Memoirs of the Torrey Botanical Club 15: 1-185, 44 figs, 66 plates.
11. Miller, K.A. (2011) *Galápagos Seaweeds*. unpublished manuscript, 49 pp.
12. Pedroche, P.F., Silva, P.C., Aguilar Rosas, L.E., Dreckmann, K.M. & Aguilar Rosas, R. (2008) *Catálogo de las algas bentónicas del Pacífico de México II. Phaeophycota*. Universidad Autónoma Metropolitana and University of California Berkeley, Mexicali & Berkeley, pp. [i-viii], i-vi, 15-146.
13. Piccone, A. (1886) *Alge del viaggio di circumnavigazione della Vettor Pisani*. pp. [1]-97, 2 pls. Genova [Genoa]: Tipografia del Reale Istituto Sordo-Muti.
14. Reed, J., Pomponi, S. (1995) *Submersible and scuba collections in the coastal waters of the Galapagos Islands*. Biomedical and Biodiversity research of the benthic communities with emphasis on the Porifera, Algae and Gorogonacea. Preliminary Cruise Report.
15. Setchell, W.A., Gardner, N.L. (1937) *The Templeton Crocker Expedition of the California Academy of Sciences, 1932. No. 31: A preliminary report on the algae*. Proceedings of the California Academy of Science, series 4, 22(2): 65-98, 1 fig, plates 3-25.
16. Setchell, W.A. (1937) *The Templeton Crocker Expedition of the California Academy of Sciences, 1932. No. 34. Report on the Sargassums*. Proceedings of the California Academy of Sciences, ser. 4, 22(5): 127-158, pls 28-33.
17. Silva, P.C. (1964) *Status of our knowledge of the Galapagos benthic marine algal flora prior to the Galapagos International Scientific Project*. In: Bowman, R.I. (ed.): *The Galapagos Islands Symposium of the Galapagos International Scientific Project*. University of California Press, Berkeley, p. 149-156.
18. Tanaka, J., Chihara, M. (1982) *Morphology and taxonomy of Mesospora schmidtii Weber van Bosse, Mesosporaceae fam. nov. (Ralfsiales, Phaeophyceae)*. Phycologia 21: 382-389.
19. Taylor, W.R. (1945) *Pacific marine algae of the Allan Hancock Expeditions to the Galapagos Islands*. Allan Hancock Pacific Expeditions 12: 1-528, 3 figs, 100 plates.
20. Womersley, H.B.S. (1964) *The morphology and taxonomy of Cystophora and related genera (Phaeophyta)*. Australian Journal of Botany 12: 53-110.

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