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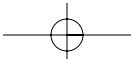
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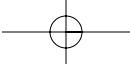
*ALISON R. SHERWOOD*



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Cover: *Cloniophora plumosa* (a green alga). Photo A. Sherwood.

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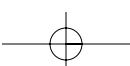
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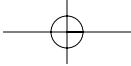
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## Bibliographic Checklist of the Nonmarine Algae of the Hawaiian Islands

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### INTRODUCTION

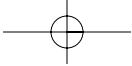
This checklist represents the first comprehensive compilation of nonmarine algae for the Hawaiian Islands. Records in non-published forms (such as theses, dissertations and technical reports) were generally not included in this first version of the checklist. Current taxonomic names are reported in the checklist, with synonyms listed as in the original publications. The report covers all known records of nonmarine algae from the Hawaiian Islands, with reports from stream, terrestrial, airborne, taro patch and hot spring habitats. The brackish water flora is excluded. Where known, the island distribution of each alga is noted (no species level records were encountered for Lāna‘i or Kaho‘olawe). If habitat was indicated in the original publication, this information was also included. Taxa believed to be endemic to the Hawaiian islands are also noted as such in the checklist.

Although the body of literature contained in this checklist is not vast, it spans 127 years, from 1876 to 2003, and includes an impressive total of 800 records. Representatives of most of the algal groups commonly observed in non-marine habitats are listed, including the Cyanobacteria (blue-green algae), Chlorophyta (green algae), Rhodophyta (red algae), Dinophyta (dinoflagellates), Euglenophyta (euglenoids), Cryptophyta (cryptophytes), Bacillariophyta (diatoms), Chrysophyta (chrysophytes), and Tribophyta (yellow-green algae) (Table 1). The most significant contributions to the nonmarine algal flora include the algal checklists of Nordstedt (1876) and Lemmerman (1905), works resulting from the extensive collections by Tilden (1901, 1902, 1910), the three Hawaiian algal publications by MacCaughey (1917, 1918a, 1918b), the stream diatom surveys of Fungladda *et al.* (1983), and the first macroalgal stream survey of the Hawaiian islands (Vis *et al.*, 1994).

The level of endemism in the freshwater and subaerial flora of the Hawaiian Islands

**Table 1. Number of records and number of endemic non-marine algal taxa reported from the Hawaiian islands.**

Algal Group	Number of records	Number of endemic taxa
Cyanobacteria	153	12
Chlorophyta	240	14
Rhodophyta	5	1
Dinophyta	2	0
Euglenophyta	8	0
Cryptophyta	1	1
Chrysophyta	3	0
Tribophyta	7	0
Bacillariophyta	378	12



is surprisingly low, especially when compared to other groups of organisms. Overall, the level of endemism is estimated from the checklist at only 5.0%, which is extremely low compared to estimates for the angiosperms (89%) and the insects (99%) (Wagner and Funk, 1995). Estimates for the freshwater and subaerial algae are also much lower than for the marine algae. The most current estimate of endemism in the marine algal flora of the Hawaiian islands is approximately 19.5% for the Rhodophyta, or red algae (Abbott, 1999). Estimates for other marine algae have not been assembled. Within the different taxonomic categories, the level of endemism also varies. Only two endemic genera are known from the non-marine flora (*Bjornbergiella*, described from a soil sample from the big island [Bicudo, 1966], and *Diprora*, from a cave wall on the island of Kaua'i [Main, 2003]). A total of 40 endemic species and subspecific taxa are reported, including 12 Cyanobacteria, 14 Chlorophyta, 12 Bacillariophyta, one Cryptophyta, and one Rhodophyta. No endemic taxa are known for the non-marine representatives of the Chrysophyta, Tribophyta, Dinophyta, or Euglenophyta.

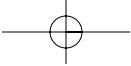
Island distribution data were listed in the publications for the majority (89.3%) of the taxa included in the checklist. In some cases island distribution was only included for some of the records of a taxon. The Cyanobacteria, Chlorophyta, and Bacillariophyta accounted for the majority of the records in the checklist, and of these, the first two groups were primarily reported from O'ahu and Hawai'i, while the largest number of records for the diatoms was from Kaua'i, followed by Hawai'i and O'ahu. Although most early researchers of nonmarine algae in the Hawaiian islands did not travel to Kaua'i, the large number of diatom records for this island is due primarily to the work of Hustedt (1942), which included reports from O'ahu and Kaua'i, and Fungladda *et al.* (1983), which included the results of stream surveys on the islands of O'ahu, Kaua'i, Moloka'i, Maui, and Hawai'i.

Habitat information was indicated for 78.0% of the taxa in the checklist. Again, in some cases a taxon was reported in more than one publication, and habitat information may have only been included in some of these. Most of the records for the Cyanobacteria and Chlorophyta are from standing water (taro patches, rice fields, fish ponds, pools, and lakes), but a large number are also from streams and terrestrial habitats. Ten of the 14 reports from hot springs are accounted for by the Cyanobacteria, while the airborne algal records are made up mostly of the Cyanobacteria (17 out of 45) and the Chlorophyta (24 out of 45). The majority of the diatom records are from streams, as this is the most extensively surveyed habitat for this group.

It is evident from the checklist that a varied nonmarine algal flora exists in the Hawaiian Islands, in a wide array of habitats. Almost endless possibilities for future research into these algal groups are available, ranging from continued survey work on the different islands to ecological studies into the roles that these algae play in the functioning of their respective ecosystems. At a time when biodiversity studies are becoming recognized as increasingly important, assessing the current status of the field of non-marine algal studies in Hawai'i is crucial to opening the door to further work.

#### ACKNOWLEDGMENTS

I thank Dr. Joseph Gerrath for his help in updating the taxonomic names of desmids, and Dr. Jürgen Böhmer for his assistance with the German translations of some original articles. The AlgaeBase database was of invaluable help for updating taxonomic names



## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

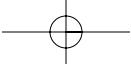
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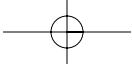
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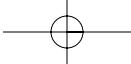


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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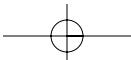
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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<b>Cyanobacteria</b>			
<i>Anabaena catenula</i> (Kütz.) Bornet et Flahault	K, O	S, T	7, 16, 18, 40
<i>A. confervoides</i> Reinsch	O	T	16, 18, 39, 40
<i>A. variabilis</i> Kütz.	O, H	T, TR	15, 16, 17, 18, 38, 39, 40
<i>Anabaena</i> sp.	O, H	A, T, TR	3, 4, 6, 7, 17, 22, 38
<i>Anacyclis</i> sp.	H		24
<i>Aphanothecaceae naegelii</i> Wartm. ex Rabenh.	O	S, TR	16, 17, 18, 38, 39, 40
<i>A. prasina</i> A.Braun ex Rabenh.	O	T	18, 38
<i>A. repens</i> A.Braun	O	T	16, 18
<i>A. stagnina</i> (Spreng.) A.Braun	O	T	18, 39, 40
<i>Aphanothecaceae</i> sp.		T	17
<i>Calothrix fusca</i> (Kütz.) Bornet et Flahault	O	T	15, 16, 18, 40
<i>C. sandwicensis</i> (Nordst.) Schmidle	H	T	15, 18, 30, 40
<i>Calothrix</i> sp.	O, H	A, T, TR	3, 6, 14, 17
<i>Chamaesiphon conferviculus</i> A.Braun syn. <i>C. curvatus</i> Nordst.	O	T	15, 16, 18, 24, 40
<i>C. elongatus</i> (Nordst.) Kann syn. <i>C. curvatus</i> var. <i>elongatum</i> Nordst.	K, O	S, T	15, 24, 33
<i>Chamaesiphon</i> sp.	O	A, T	3, 17
<i>Chroococcus macrococcus</i> (Kütz.) Rabenh.	H	T	15, 18, 24, 40
<i>C. turgidus</i> (Kütz.) Nägeli	H	T	15, 18, 24, 40
<i>Chroococcus</i> sp.	O, H	A, T, TR	3, 6, 17
<i>Cylindrospermum catenatum</i> Ralfs	O	S, TR	16, 18, 40
<i>C. muscicola</i> Kütz.			42
<i>C. stagnale</i> (Kütz.) Bornet et Flahault	K, O, H	S, TR	10, 16, 18, 40
<i>C. stagnale</i> var. <i>minor</i> Tilden	H	TR	39
<i>Cylindrospermum</i> sp.	K, O, H	A, S, T, TR	3, 6, 10, 17, 24, 38
<i>Entophysalis</i> sp.	H	TR	4
<i>Eucapsis</i> sp.	H	TR	6
<i>Fischerella ambigua</i> (Nägeli) Gomont	O	S, TR	16, 17, 18, 40
<i>F. thermalis</i> (Schwabe) Gomont	H	H	17, 18, 40
<i>F. thermalis</i> var. <i>mucosa</i> Lemmerm.	H	H	18, 40
<i>Gloeocapsa magma</i> (Bréb.) Komárek et Anagn.	O, H	S	15, 16, 17, 18, 24, 40
<i>G. polydermatica</i> Kütz.	O, H	S, TR	16, 18, 40
<i>G. quarternata</i> Kütz.	O, H	S, TR	16, 17, 18, 38, 39, 40
<i>G. thermalis</i> Lemmerm.	H	H, T	15, 17, 18, 40
<i>Gloeocapsa</i> sp.	O	A, T	3, 17
<i>Gloeothecaceae fuscolutea</i> Nägeli	O	T	16, 18, 38, 39, 40
<i>Gloeothecaceae</i> sp.		T	17
<i>Gloeostrichia natans</i> (Hedw.) Rabenh. syn. <i>Rivularia natans</i> (Hedw.) Welw.	O	T	16, 18, 40
<i>Gomphosphaeria</i> sp.	H	TR	6
<i>Hapalosiphon braunii</i> Nägeli	H	T	24
<i>H. pumilus</i> (Kütz.) Kirch. syn. <i>H. fontinalis</i> (C.Agardh) Bornet	H	T	15, 18, 40
<i>Hapalosiphon</i> sp.	O	A	3
<i>Heteroleibleinia distincta</i> (Schmidle) Anagn. et Komárek syn. <i>Lyngbya distincta</i> (Nordst.) Schmidle	O, H	S, T	16, 18, 40
<i>Hydrocoleum meneghinianum</i> Kütz.	H	S	32
<i>Hydrocoleum</i> sp.	O	S	24
<i>Hypheothrix</i> sp.	H	T	24
<i>Inactis hawaiiensis</i> (Lemmerm.) DeToni syn. <i>Schizothrix hawaiiensis</i> Lemmerm.	H	H, T	15, 17, 18, 40
<i>Leptolyngbya angustissima</i> (W.West et G.S.West) Anagn. et Komárek	O	S	10
<i>L. distincta</i> (Nordst.) Anagn. et Komárek syn. <i>Lyngbya martensiana</i> var. <i>distincta</i> Nordst.	H		24, 30

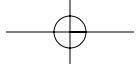


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Leptolyngbya foveolarum</i> (Mont. ex Gomont) Anagn. et Komárek syn. <i>Phormidium foveolarum</i> Mont. ex Gomont	O	S	32
<i>L. tenuis</i> (Gomont) Anagn. et Komárek syn. <i>Phormidium tenue</i> (Menegh.) Gomont	K, M	S	33, 35, 41
<b><i>Lophodidium sandwicense</i> Nordst.</b>	H		24
<i>Lyngbya aestuarii</i> (Mertens) Liebm. <i>L. aestuarii</i> f. <i>aeruginosa</i> (C. Agardh) Wolle	O	T, TR	15, 16, 18, 39, 40
<i>L. aestuarii</i> f. <i>natans</i> Gomont	O	T	18, 40
<b><i>L. cladophorae</i> Tilden</b>	K	T	18, 39, 40
<i>L. kuetzingii</i> var. <i>distincta</i> (Nordst.) Lemmerm.	O, H	S	16, 18, 40
<i>L. lutea</i> (C. Agardh) Areschoug syn. <i>Oscillatoria lutea</i> C. Agardh	O, H	T	15, 18
<i>L. mertensiana</i> Menegh.	H	T	8
<i>L. rivulariarum</i> Gomont	O	T, TR	16, 18, 39, 40
<i>L. subtilis</i> W. West		T	15, 16, 18, 40
<i>Lyngbya</i> sp.	O, H	A, S, T, TR	18, 40
<b><i>Merismopedia glauca</i> (Ehrenb.) Nügeli</b>	O, H	T	3, 4, 6, 17, 22, 38
<b><i>Merismopedia</i> sp.</b>		T	15, 16, 18, 24, 40
<i>Microchaete uberrina</i> N. Carter	K	S	17
<i>Microcoleus lacustris</i> (Rabenh.) Farl.	H	S	10
<i>M. paludosus</i> (Kütz.) Gomont	H	H, T	10, 35
<i>M. vaginatus</i> (Vaucher) Gomont	O, H	S, T, TR	17, 18, 40
<i>Microcoleus</i> sp.	O	A	8
<i>Nostoc commune</i> Vaucher	O, H	T, TR	3
<i>N. foliaceum</i> Moug.	O, H	S, TR	15, 16, 18, 38, 39, 40
<i>N. cf. hatei</i> S.C. Dixit	K	S	16, 18, 39, 40
<i>N. hederulae</i> Menegh.		A	33
<i>N. intricatum</i> Menegh.	O	T	15
<i>N. linckiae</i> (Roth) Bornet ex Bornet et Thuret syn. <i>N. piscinale</i> Kütz.	K, O	S, T	24
<i>N. natans</i> Kütz.	O		10, 15, 16, 18, 40
<i>N. paludosum</i> Kütz.	O	T	24
<i>N. pruniforme</i> (C. Agardh) Bornet et Flahault	H	S	15, 16, 18, 40
<i>N. punctiforme</i> (Kütz.) Har.	O	T, TR	32
<i>N. spongiaeforme</i> C. Agardh	O	T	16, 18, 40
<i>N. verrucosum</i> (L.) Vaucher	O, H	S	15, 18, 40
<i>Nostoc</i> sp.	O, H	A, T, TR	16, 18, 38, 39, 40
<i>Nostochopsis lobatus</i> Wood emend. Geitler	K	S	4, 3, 6, 7, 14, 17, 22, 38
<i>N. radians</i> Bharadwaja	K, O	S	10
<i>Oscillatoria limosa</i> C. Agardh ex Gomont	K, O	S	10
<i>O. princeps</i> f. <i>purpurea</i> Collins			42
<i>O. sancta</i> Kütz.	K, O, H	S, TR	16, 17, 18, 39, 40
<i>Oscillatoria</i> sp.	K, O, H	A, S, T, TR	3, 4, 6, 10, 17, 22, 24, 38
<i>Phormidium ambiguum</i> Gomont	K	S	32
<b><i>P. amoenum</i> (Kütz. ex Gomont) Anagn. et Komárek</b>	K	S	10
<i>P. corium</i> (C. Agardh) Gomont syn. <i>P. papryaceum</i> Gomont	O	S, T, TR	10, 16, 17, 18, 39, 40
<i>P. corium</i> var. <i>capitatum</i> N.L. Gardner	M	S	35
<i>P. favosum</i> Gomont	O	S, T	16, 18, 39, 40
<i>P. formosum</i> (Bory ex Gomont) Anagn. et Komárek syn. <i>Oscillatoria formosa</i> Bory	O, H	S, TR	16, 17, 18, 40
<i>P. inundatum</i> Kütz.	K, M, H	S	41
<i>P. retzii</i> (C. Agardh) Gomont	K, O, M, H	S, TR	8, 10, 33, 41, 36
<i>P. splendidum</i> (Grev. ex Gomont) Anagn. et Komárek syn. <i>Oscillatoria splendidida</i> Grev.	O, H	S, TR	10, 40
<i>P. stagnina</i> C.B. Rao	O	S	32
<i>P. subfuscum</i> Kütz.	K, M	S	41
<i>P. subincrassatum</i> Fritsch et Rich	H	S	32



TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Phormidium submembranaceum</i> (Ardisson et Strafforello) F.E.Drouet syn. <i>Oscillatoria submembranacea</i> Ardisson et Strafforello	O, H	T, TR	8
<i>P. tinctorium</i> Kütz.	K	S	32
<i>Phormidium</i> sp.	O, H	A, T, TR	3, 4, 6, 17, 24, 38
<i>Planktothrix perornata</i> (Skuja) Anagn. et Komárek syn. <i>Porphyrosiphon notarisii</i> (Menegh.) Kütz.	K, O	T, TR	8
<i>P. planctonica</i> (Elekin) Anagn. et Komárek syn. <i>Microcoleus lyngbyaceus</i> (Kütz.) P.L.Crouan et H.M.Crouan	L, K, H	S, T	8
<i>Plectonema nostocorum</i> Bornet ex Bornet et Thuret	H	H, T	15, 17, 18, 40
<i>Plectonema</i> sp.	O, H	A, TR	3, 6, 7
<i>Polycystis</i> sp.	H	TR	6
<i>Pseudoanabaena</i> sp.	O	S	10
<i>Rivularia haematis</i> (DC.) C.Agardh	K	S	41
<i>Rivularia</i> sp.		T	14, 17
<i>Schizothrix arenaria</i> (Berkeley) Gomont	O, H	H, T, TR	8
<i>S. calcicola</i> (C.Agardh) Gomont	Ni, K, O, M, H	S, T, TR	8
<i>S. friesii</i> (C.Agardh) Gomont	K, O, M, Mo, H	S, TR	8, 41
<i>S. lacustris</i> A.Braun ex Gomont	K	S	41
<i>S. rivulis</i> (Wolle) F.E.Drouet	K	S	33
<i>S. rubella</i> Gomont	O	TR	8
<i>S. tenerrima</i> (Gomont) F.E.Drouet	H		8
<i>Schizothrix</i> sp.	H	T	24
<i>Scytonema ambiguum</i> Kütz.			15
<i>S. arcangelii</i> Bornet et Flahault	M	S	41
<i>S. azureum</i> Tilden	H	H	17, 18, 40
<i>S. calothrichoides</i> Kütz.	H	T	24
<i>S. chiaustum</i> Geitler	K	S	10
<i>S. coactile</i> Mont. ex Kütz.	K	S	10
<i>S. crispum</i> (C.Agardh) Bornet syn. <i>S. cincinnatum</i> (Kütz.) Thuret	O, M	T	15, 16, 18, 24, 36, 39, 40
<i>S. fritschii</i> S.L.Ghose	H	S	35
<i>S. guyanensis</i> (Mont.) Bornet et Flahault	O	S, TR	15, 16, 18, 40
<i>S. javanicum</i> var. <i>hawaiiense</i> Lemmerm.	H	TR	15, 18, 40
<i>S. mirabile</i> (Dillwyn) Bornet syn. <i>S. figuratum</i> C.Agardh	H	T	15, 18, 40
<i>S. myochrous</i> (Dillwyn) C.Agardh	O, M	S	41
<i>S. ocellatum</i> Lyngb.	O	S, TR	15, 16, 17, 18, 40
<b><i>S. pulvinatum</i> Nordst.</b>	O	TR	24
<i>S. rivulare</i> Borzí	O	S	16, 17, 18, 39, 40
<i>S. tolypothricoides</i> Kütz.	K, M	S	10, 41
<i>S. varium</i> Kütz.	O	S, TR	15, 16, 17, 18, 40
<i>Scytonema</i> sp.	O, H	A, S, T, TR	3, 6, 7, 17, 38
<i>Sirosiphon ocellatus</i> (Dillwyn) Kütz.	H	T	24
<i>S. saxicola</i> Nägeli	H	TR	24
<i>Spirulina maior</i> Kütz.	O, H	S, TR	16, 17, 18, 40
<i>Spirulina</i> sp.		T	17
<i>Stigonema aerugineum</i> Tilden	O, H	T	16, 18, 40
<i>S. minutum</i> (C.Agardh) Hassall	H	TR	15, 18, 40
<i>S. minutum</i> var. <i>saxicola</i> (Nägeli) Bornet et Flahault	H	TR	40
<i>S. ocellatum</i> (Dillwyn) Thuret	O, H	T	15, 16, 18, 40
<i>S. thermale</i> (Schwabe) Borzí	H	H	15
<b><i>S. thermale</i> var. <i>mucosa</i> Lemmerm.</b>	H	H	15
<i>Stigonema</i> sp.	H	T, TR	6, 17
<i>Symploca</i> sp.	O, H	A, TR	3, 6
<i>Tolypothrix distorta</i> (O.F.Müll.) Kütz.	O	S	16, 17, 18, 39, 40
<i>T. lanata</i> var. <i>hawaiiensis</i> Nordst.	H	T	40
<i>T. musicola</i> var. <i>hawaiensis</i> Nordst.	H	T	15

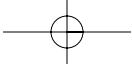


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>T. nodosa</i> Bharadw.	H	S	32
<i>T. tenuis</i> Kütz. emend. A.W.F.Schmidt syn. <i>T. lanata</i> (Desv.) Wartmann	O, H	S, T	10, 18, 41
<i>Tolyphothrix</i> sp.	O	A, T	3, 17, 38
<i>Xenococcus kernerii</i> Hansg.	O	S, T	15, 16, 17, 18, 40
<i>Xenococcus</i> sp.	O	A, T	3, 17
<b>Chlorophyta</b>			
<i>Actinotaenium curcurbitum</i> f. <i>roduntatum</i> (Willi Krieg.) Teiling			28
<i>A. palangula</i> (Bréb.) Teiling ex Růžička et Pouzar syn. <i>Cosmarium palangula</i> Bréb.	H	T	24
<i>A. subglobosum</i> (Nordst.) Teiling syn. <i>Cosmarium subglobosum</i> Nordst.	H	T	24, 28
<i>Apatococcus lobatus</i> (Chodat) J.B. Petersen syn. <i>Pleurococcus lobatus</i> Chodat			42
<i>Aphanochaete repens</i> A.Braun syn. <i>Herposterior repens</i> (A.Braun) Wittr.	O	T, TR	15, 18, 24
<i>Bambusina borneri</i> (Ralfs) Cleve syn. <i>B. brebissonii</i> Kütz., syn. <i>Gymnozyga moniliformis</i> Ehrenb.	H		15, 18, 24
<i>Basicladia chelonum</i> (Collins) W.E.Hoffmann et Tilden	O	S	10, 34
<i>Binuclearia tectorum</i> (Kütz.) S.Berger ex Wichmann syn. <i>B. tetrapora</i> Wittr.	K	S	33, 34
<i>Bracteacoccus</i> sp.	O	A	3
<i>Bulbochaete rectangularis</i> var. <i>hiloensis</i> Nordst.	H		15, 18, 24
<i>B. varians</i> var. <i>hawaiensis</i> Nordst.	H		15, 18, 24
<i>Bulbochaete</i> sp.	K, O, H	S, T	16, 17, 24, 33
<i>Chaetomorpha pacifica</i> Kütz.			34
<i>Chaetophora elegans</i> (Roth) C.Agardh	K	S	10
<i>Chaetophoracean</i> -like sp.	O	A	3
<i>Chaetosphaeridium globosum</i> (Nordst.) Kleb. syn. <i>Herposterior globosum</i> Nordst.	H	S, T	15, 18, 24
<i>Chara braunii</i> Gmelin	M	S	36
<i>C. braunii</i> f. <i>ohahuensis</i> (F.J.F.Meyen) R.D. Wood syn. <i>C. coronata</i> var. <i>leptosperma</i> f. <i>ohahuensis</i> (F.J.F.Meyen) A.Braun	O	T	15, 16, 18, 43
<i>C. zeylanica</i> Klein ex Willd.			43
<i>C. zeylanica</i> var. <i>diaphana</i> f. <i>diaphana</i> (F.J.F.Meyen) R.D. Wood syn. <i>C. gymnopus</i> var. <i>armata</i> (F.J.F.Meyen) Nordst.	throughout	T	15, 16, 18, 24, 43
<i>C. zeylanica</i> var. <i>diaphana</i> f. <i>armata</i> (F.J.F.Meyen) Zaneveld	K, O	S	43
<i>Chara</i> sp.	O	T	17, 38
<i>Characiopsis minuta</i> (A.Braun) Lemmerm. syn. <i>C. minutum</i> A.Braun	O	TR	15, 17, 18
<i>Characium ensiforme</i> Hermann	H	T	15, 18, 24
<i>C. groenlandicum</i> Richter	Mo	S, T	15, 17, 18
<i>Characium</i> sp.	O	A	3
<i>Chlamydomonas</i> sp.	O, H	A, TR	4, 3, 6, 7, 22
<i>Chlorella</i> sp.	O, H	A, TR	4, 3, 6, 7, 22
<i>Chlorococcum isabeliense</i> P.A.Archibald et H.C.Bold		TR	22
<i>C. minutum</i> R.C.Starr		TR	22
<i>C. paludosum</i> P.A.Archibald et H.C.Bold		TR	22
<i>C. reticulatum</i> P.A.Archibald et H.C.Bold		TR	22
<i>Chlorococcum</i> sp.	O, H	A, TR	4, 3, 6, 7
<i>Chlorosarcina</i> sp.	O, H	A, TR	3, 6

TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Chlorosarcinopsis</i> sp.	O, H	A, TR	3, 6
<i>Cladophora fluvialis</i> K.Möbius			2
<i>C. fracta</i> (Dillwyn) C.Agardh	O	S, T	10, 15, 16, 18
<i>C. fracta</i> var. <i>rigidula</i> (Kütz.) Rabenh.			42
<i>C. glomerata</i> (L.) Kütz.	K, O	S, T	10, 33, 39, 41
syn. <i>C. canalicularis</i> (Roth) Kütz.			
<i>C. glomerata</i> var. <i>crassior</i> (C.Agardh) C.Hoek	M	S	41
<b><i>C. longiarticulata</i> var. <i>valida</i> F.Brand</b>	O	S	2, 24
<i>C. nordstedtii</i> DeToni	O	T	15, 16, 18, 24
syn. <i>C. longiarticulata</i> Nordst.			
<i>C. rivularis</i> (L.) C.Hoek	O	S	41
<i>C. sericea</i> (Huds.) Kütz.	O	S, T	16, 17, 18
syn. <i>C. nitida</i> Kütz.			
<i>Cladophora</i> sp.	K, O	A, S, T	3, 14, 17, 33, 38
<i>Cloniophora macrocladia</i> (Nordst.) Bourr.	O	S, T	13, 15, 16, 17, 18, 24
syn. <i>Draparnaldia macrocladia</i> Nordst.			
syn. <i>Stigeoclonium macrocladium</i> (Nordst.) Schmidle			
<i>C. plumosa</i> Kütz. emend. Bory	K, O, M, H	S	10, 13, 33, 41
<i>C. spicata</i> Schmidle emend. A.K.Islam	K, O	S	33, 34
<i>Cloniophora</i> sp.	K	S	33
<i>Closteriopsis longissima</i> Lemmerm.	O	S, T	15, 16, 17, 18
<i>Closterium angustatum</i> Kütz.			42
<i>C. baileyanum</i> var. <i>multinucleatum</i> (Nordst.) Grönblad	H	T	15, 18, 24
syn. <i>C. didymotocum</i> var. <i>multinucleatum</i> Nordst.			
<i>C. dianae</i> Ehrenb.	H	T	15, 18, 24
<i>C. malinvernianiforme</i> Grönblad			26
<i>C. moniliferum</i> (Bory) Ehrenb.	O		15, 18, 24, 26
<i>C. navicula</i> (Bréb.) Lütkem.	H	T, TR	15, 18, 24, 26
syn. <i>Penium navicula</i> Bréb.			
<i>C. parvulum</i> Nägeli	H	T	15, 18, 24
<i>C. parvulum</i> f. <i>minor</i> Nägeli	H	T	24
<i>C. praelongum</i> Bréb.	O	T	15, 18
<i>C. pritchardianum</i> W.Archer	H		15, 18, 24, 26
<i>C. ralfsii</i> var. <i>hybridum</i> Rabenh.	H	T	15, 18, 24, 26, 39
syn. <i>C. lineatum</i> var. <i>sandwicense</i> Nordst.			
<i>C. setaceum</i> Ehrenb.	H		15, 18, 24
<i>C. venus</i> Kütz.			26
<i>Coleochaete irregularis</i> Pringsh.	O, H	S, T	15, 16, 18, 24
<i>C. orbicularis</i> Pringsh.	O, H	S, T	15, 16, 18, 24
<i>Coleochaete</i> sp.			17
<b><i>Conferva sandvicensis</i> C.Agardh</b>	O, H	T	15, 16, 24, 30
<i>Cosmarium anceps</i> P.Lundell	O	TR	15, 18, 24
syn. <i>C. parvulum</i> f. <i>spetbergensis</i> Nordst.			
<i>C. anisochondrum</i> Nordst.	H	T	15, 18, 24, 28
<i>C. annulatum</i> (Nägeli) deBary	H	T	15, 18, 24, 28
syn. <i>Disiphinctum annulatum</i> Nägeli			
<i>C. connatum</i> (Bréb.) Ralfs	H	T	24, 28
<i>C. crenatum</i> Ralfs	O		15, 18, 24
<b><i>C. depauperatum</i> Nordst.</b>	H	T	15, 18, 24
<i>C. formosulum</i> W.E.Hoffmann ex Nordst.			28
<i>C. holmiense</i> P.Lundell	O	TR	15, 18, 24, 28
<i>C. meneghinii</i> Bréb. ex Ralfs	Mo	T	15, 18
<i>C. sexangulare</i> P. Lundell	H		15, 18, 24, 28
syn. <i>C. sudatum</i> Nordst.			
<i>C. speciosum</i> P.Lundell			28
<b><i>C. speciosum</i> var. <i>simplex</i> Nordst.</b>	O		24, 28
<i>C. subgranatum</i> (Nordst.) Lütkem.	H		15, 18, 24, 28
syn. <i>C. granatum</i> var. <i>subgranatum</i> Nordst.			

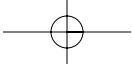


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Cosmarium subspeciosum</i> Nordst.			28
<i>C. trilobulatum</i> Reinsch			28
<i>Cylindrocapsa</i> sp.	H	TR	6
<i>Cylindrocystis brebissonii</i> Menegh.	O	TR	15, 18
<i>C. crassa</i> deBary	O		24
<i>Cylindrocystis</i> sp.	O	A	3
<i>Dactylococcus infusionum</i> var. <i>minor</i> Nordst.	O	S, T	15, 16, 18, 24
<i>Desmidium aptogonum</i> Bréb. ex Bréb. et Godet			5
<b><i>D. aptogonum</i> var. <i>acutius</i> Nordst.</b>	H		5, 15, 18, 24
<i>Desmococcus olivaceum</i> (Pers. ex Acherson) J.R.Laundon			42
syn. <i>Pleurococcus naegelii</i> Chodat			
<i>Dictyococcus</i> sp.	O	A	3
<i>Dictyosphaerium pulchellum</i> H.C.Wood	O	S	15, 16, 17, 18
<i>Diogenes bacillaris</i> (Naumann) W.Penn.		TR	22
<i>Disphinctium connatum</i> (Bréb.) deBary	H	T	15, 18
<i>D. palangula</i> (Bréb.) Hansg.	H	T	15, 18
<i>D. speciosum</i> var. <i>simplex</i> Nordst.	O		15, 18
<i>D. subglobosum</i> (Nordst.) DeToni	H	T	15, 18
<i>Draparnaldia</i> sp.		T	17
<i>Enteromorpha compressa</i> (L.) T.Nees			18
<i>E. flexuosa</i> (Wulff) J.Agardh			18
syn. <i>E. prolifera</i> var. <i>tubulosa</i> (Kütz.) Batters			
<i>E. intestinalis</i> (L.) Grev.	O	T	38
<i>E. intestinalis</i> var. <i>clavata</i> J.Agardh	O	T	39
syn. <i>E. intestinalis</i> f. <i>genuine</i> Hauck			
<i>Enteromorpha</i> sp.			38
<i>Euastrum ansatum</i> Ehrenb. ex Ralfs	H	T	15, 18, 24
<i>E. ansatum</i> var. <i>suprapositum</i> Nordst.	H	T	39
<i>E. binale</i> (Turpin) Ralfs	H	T	15, 18, 24, 27
<i>E. sinuosum</i> Lenorm.	H	T	15, 18, 24, 27
<i>Eudorina</i> sp.	O	TR	3
<i>Gloeocystis gigas</i> (Kütz.) Lagerh.	H	T, TR	15, 18, 24
syn. <i>G. ampla</i> (Kütz.) Rabenh.			
<i>Gloeocystis</i> sp.	H	TR	6, 24
<i>Gonatozygon monotaenium</i> deBary	H		15, 18, 24
syn. <i>G. ralfsii</i> deBary			
<i>Gonium sociale</i> (Dujard.) Warm.	throughout	T	15, 16, 18
<i>Gonium</i> sp.		T	17
<i>Haematococcus pluvialis</i> Flot.	throughout	S, T	15, 18
<b><i>H. thermalis</i> Lemmerm.</b>	H	H	15, 17, 18
<i>Haplotaenium rectum</i> (Del ponte) Bando	H	T	39
syn. <i>Pleurotaenium rectum</i> Del ponte			
<i>Hormidium neesii</i> Kütz.			42
<i>Hormidium</i> sp.	O, H	A, TR	3, 4, 6, 7
<i>Hormiscia flaccida</i> var. <i>minor</i> Hansg.	H	TR	39
<i>Hormiscia</i> sp.	H	TR	38
<i>Hyalotheca dissiliens</i> Bréb.	O	T	34
<i>Hydrodictyon reticulatum</i> (L.) Lagerh.	O	T	16, 18, 38, 39
<i>Hydrodictyon</i> sp.		T	17
<i>Klebsormidium flaccidum</i> (Kütz.) P.C. Silva, Mattox et W.H. Blackwell		TR	22
syn. <i>Chlorhormidium flaccidum</i> (A.Braun) Fott			
<i>K. fluitans</i> (Gay) Lokhorst	H	S	32
syn. <i>K. rivulare</i> (Kütz.) Morison et Sheath			
<i>K. subtile</i> (Kütz.) Tracanna ex Tell	Nh, O, M, Mo	T, TR	15, 16, 18, 32, 36
syn. <i>U. subtilis</i> Kütz.			
<b><i>Micrasterias ascendens</i> Nordst.</b>	H	T	15, 18, 24
<i>M. truncata</i> (Corda) Bréb.	Mo, H	T	15, 18, 24

TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Microspora pachyderma</i> (Wille) Lagerh.	K	S	10
<i>Microthamnion</i> sp.	O	A	3
<i>Monoraphidium convolutum</i> var. <i>pseudosabulosum</i>		S	17
Hindák syn. <i>Dactylococcus infusionum</i> Nägeli			
<i>Mougeotia capucina</i> (Bory) Nordst.	O, H	S, T	15, 16, 18, 24
<i>Mougeotia</i> sp. 1	M	S	41
<i>Mougeotia</i> sp. 2	K	S	41
<i>Mougeotia</i> sp.	K, M, H	S, T	10, 17, 36
<i>Nannochloris</i> sp.	O, H	A, TR	3, 4, 6, 7
<i>Neochloris</i> sp.	O, H	A, TR	3, 6
<i>Netrium digitus</i> var. <i>lamellosum</i> (Bréb.) Grönblad	H		15, 18, 24
syn. <i>Penium lamellosum</i> Bréb.			
<i>Netrium</i> sp.	H	TR	6
<i>Nitella gracilis</i> ssp. <i>havaiensis</i> (Nordst.) R.D.Wood	O, H	S, T	15, 16, 17, 18, 24, 43
syn. <i>N. havaiensis</i> Nordst.			
<i>Nitella</i> sp.		T	17
<i>Octacanthium octocorne</i> (Ralfs) Compère	H	T	15, 18
syn. <i>Arthrodemus octocornis</i> f. <i>havaiensis</i> Nordst.			
<i>Oedogonium acrosporum</i> var. <i>majuscum</i> Nordst.	H	T	15, 18, 24
<i>O. crispum</i> var. <i>havaiense</i> Nordst.	O, H	S, T	15, 16, 18, 24
<i>O. globosum</i> Nordst.	O	S	15, 17, 18, 24
<i>O. longicole</i> Nordst.	H	T	15, 18, 24
<i>O. obsoletum</i> Wittm.	Mo	T	15, 17, 18
<i>O. pringsheimii</i> f. <i>pachydermatosporum</i>	H	T	15, 18, 24
(Nordst.) Hirn			
syn. <i>O. pachydermatosporum</i> Nordst.			
<i>Oedogonium</i> sp. 1	O	S	41
<i>Oedogonium</i> sp. 2	M	S	41
<i>Oedogonium</i> spp.	K, O, H	S, T	10, 14, 16, 17, 33, 38
<i>Oocystis naegelii</i> A.Braun	H	T	15, 18, 24
<i>Oocystis</i> sp.	O, H	A, TR	3, 4, 6
<i>Palmella</i> sp.	H	TR	6
<i>Palmelloccoccus</i> sp.	H	TR	4
<i>Pediastrum bidentatum</i> var. <i>ornatum</i> Nordst.	H	T	15, 18, 24
<i>P. boryanum</i> (Turpin) Menegh.	H	S, T	15, 18
<i>P. boryanum</i> var. <i>granulatum</i> (Kütz.) A.Braun	H		24
<i>P. duplex</i> var. <i>reticulatum</i> Lagerh.	O	S, T	15, 18
syn. <i>P. duplex</i> var. <i>clathratum</i> A.Braun			
<i>P. integrum</i> var. <i>braunianum</i> (Grunov) Nordst.	H	S, T	15, 18, 24
<i>P. tetras</i> (Ehrenb.) Ralfs	O	S, T	15, 18, 24
<i>Pediastrum</i> sp.		S	17
<i>Phycopeltis aurea</i> Karsten		TR	37
<i>P. novae-zealandiae</i> Thompson et Wujek		TR	37
<i>Pithophora affinis</i> Nordst.	O, H	T	15, 24, 30, 39, 42
<i>P. macrospora</i> F.Brand	H	S	2
<i>Pithophora</i> sp.	O, H	T	24, 38
<i>PleurotaeAnium ehrenbergii</i> (Ralfs) Delponte	O, Mo	T	15, 18
<i>P. indicum</i> (Grunov) P.Lundell	O, H		15, 18, 24, 26
<i>P. nodulosum</i> (Bréb.) deBary	H		15, 18, 24
<i>P. trabecula</i> (Ehrenb.) Nägeli	H		15, 18, 24
<i>Protococcus</i> sp.	H	TR	4, 7
<i>Protosiphon</i> sp.	O	A	3
<i>Radiosphaera</i> sp.			3
<i>Raphidium polymorphum</i> Fresen.	throughout	S, T	15, 16, 17, 18
<i>Raphidium</i> sp.		T	17
<i>Rhizoclonium crassipellitum</i> W.West et G.S.West	O	S	32
<i>R. hieroglyphicum</i> (C.Agardh) Kütz.	K, H	S	33, 41
<i>R. hieroglyphicum</i> var. <i>hosfordii</i> (Wolle) Collins	K	S	34

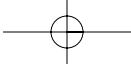


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Rhizoclonium sandvicense</i> (C.Agardh) Wille			42
<i>Rhizoclonium</i> sp.	O	A	3, 14
<i>Scenedesmus communis</i> E.H. Hegew. syn. <i>S. quadricauda</i> (Turpin) Bréb.	throughout	T	15, 16, 18, 24
<i>S. magnus</i> Meyen syn. <i>S. quadricauda</i> var. <i>oahuensis</i> Lemmerm.	O	T	15
<i>S. quadricauda</i> var. <i>genuina</i> Kirchner	H	T	39
<i>Scenedesmus</i> sp.	O, H	A, T, TR	3, 6, 17
<i>Schizomeris leibleinii</i> Kütz.	O	S	34
<i>Schroederia setigera</i> (Schröd.) Lemmerm.	O	S, T	15, 16, 17, 18
<i>Spirogyra dictyospora</i> C.C.Jao	M	S	32, 36
<i>S. dubia</i> Kütz.	M	S	32
<i>S. elegantissima</i> Ling et Zheng	O	S	32
<i>S. fallax</i> (Hansg.) Wille	H	S	32
<i>S. fluviatilis</i> Hilse	H	S	39
<i>S. plena</i> (W.West et G.S. West) Czurda	H	S	34
<i>S. rivularis</i> (Hassall) Rabenh.	K	S	33, 34
<i>Spirogyra</i> sp. 1	K, O, M, H	S	41
<i>Spirogyra</i> sp. 2	K, M	S	41
<i>Spirogyra</i> sp. 3	M	S	41
<i>Spirogyra</i> spp.	throughout	S, T	10, 14, 16, 17, 18, 24, 33, 36
<i>Spongiochloris</i> sp.	H	TR	7
<i>Staurastrum leptacanthum</i> Nordst.			25
<i>S. margaritaceum</i> (Ehrenb.) Menegh.	H	T	15, 18, 24
<i>S. monticulosum</i> var. <i>duplex</i> Nordst.	H	T	15, 18, 24
<i>S. muticum</i> Bréb.	H	T	15, 18, 24
<i>S. spongiosum</i> var. <i>griffithianum</i> (Nägeli) Lagerh. ex Wittr. et Nordst. syn. <i>S. griffithianum</i> Nägeli	H	T	15, 18, 24
<i>S. subscabrum</i> Nordst.	H	T	15, 18, 24
<i>S. subtile</i> Nordst.	H	T	15, 18, 24
<i>S. tenuissimum</i> W.West et G.S.West	O		15, 18
<i>Stichococcus</i> sp.	O, H	A, TR	4, 3, 6, 7, 22
<i>Stigeoclonium amoenum</i> Kütz.		T	18
<i>S. amoenum</i> var. <i>novizelandicum</i> Nordst.	O	S	39
<i>S. falklandicum</i> Kütz.	O	S, T	15, 16, 18, 24, 39
<i>S. fasciculare</i> Kütz.	H	S	32
<i>S. lubricum</i> (Dillw.) Kütz.	O	S	10
<i>S. nudiusculum</i> Kütz.	O	S	39
<i>S. pachydermum</i> Prescott	K	S	32
<i>S. segarare</i> A.K.Islam	K	S	10
<i>S. setigerum</i> Kütz.	O	S	10
<i>S. stagnatile</i> (Hazen) Collins	O, H	S	10, 41
<i>S. subsecundum</i> Kütz.	K	S	10, 41
<i>S. tenue</i> (C.Agardh) Kütz.	K, O	S, TR	16, 18, 41
<i>Stigeoclonium</i> sp.	O	S, T	17, 38
<i>Tetmemorus laevis</i> (Kütz.) Ralfs syn. <i>T. granulatus</i> f. <i>minor</i> Nordst., <i>T. laevis</i> var. <i>continuus</i> Nordst.	H	T	15, 18, 24
<i>Tetracystis aplospororum</i> (P.A.Archibald et H.C.Bold) R.M.Brown et H.C.Bold		TR	22
<i>Tetracystis</i> sp.	O, H	A, TR	4, 3, 6, 7
<i>Tetrasporidium javanicum</i> Möbius	GP, Nh	TR	32
<i>Trebouxia</i> sp.	O	A	3
<i>Trentepohlia abietina</i> (Flot.) Hansg.			42
<i>T. cucullata</i> var. <i>sandvicensis</i> Wille			42
<i>T. diffracta</i> var. <i>sandvicensis</i> Wille			42
<i>Trentepohlia</i> sp.	O	A, TR	3, 22

TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Triloceras</i> sp.		S	17
<i>Ulothrix minulata</i> Kütz.	O	S	16, 18
<i>U. minutula</i> Kütz.	O	T, TR	18, 24, 38
<i>U. tenuissima</i> Kütz.	H	S	10
<i>Ulothrix</i> sp.		S, T	14, 17
<i>Xanthidium armatum</i> var. <i>fissum</i> Nordst.	H	T	15, 18, 24, 25
<b><i>X. octocorne</i> var. <i>majus</i> f. <i>hawaiiensis</i> Nordst.</b>	H	T	24
<i>Zygnuma spontaneum</i> Nordst.	O, H	T	15, 16, 17, 18, 24
<i>Zygnuma</i> sp.	K, O	A, S, T	3, 17, 24, 33, 41
<b>Rhodophyta</b>			
<i>Audouinella eugenea</i> (Skuja) C.C.Jao	K	S	41
<i>A. pygmaea</i> (Kütz.) Weber-van Bosse	K, O, H	S	10, 41
<b><i>Brachospermum spermatoiphorum</i> Vis et Sheath</b>	M	S	36, 41
<i>Compsopogon coeruleus</i> (Balb.) Mont. syn. <i>Compsopogonopsis leptoclados</i> (Mont.) Krishnamurthy	K, O, M, H	S	10, 36, 41
<i>Hildenbrandia angolensis</i> Welw. ex W.West et G.S.West	K, O, H	S	10, 33, 41
<b>Dinophyta</b>			
<i>Hemidinium nasutum</i> F.Stein	O	S	15, 17
<i>Peridinium inconspicuum</i> Lemmerm.	O, Mo	T	15
<b>Euglenophyta</b>			
<i>Euglena spiropyra</i> Ehrenb.	Mo	T	15, 18
<i>Phacus pleuronectes</i> Nitzsch	O	T	15, 18
<i>P. pyrum</i> (Ehrenb.) F.Stein	Mo	T	15, 18
<i>Trachelomonas hispida</i> (Perty) F.Stein	Mo	T	15, 18
<i>T. oblonga</i> Lemmerm.	Mo	T	15
<i>T. oblonga</i> var. <i>truncata</i> Lemmerm.	Mo	T	15, 18
<i>T. volvocina</i> Ehrenb.	Mo	T	15
<i>T. volvocina</i> var. <i>minuta</i> Lemmerm.	Mo	T	15, 18
<b>Cryptophyta</b>			
<b><i>Bjornbergiella hawaiiensis</i> C.E.M.Bicudo</b>	H	TR	1, 9
<b>Chrysophyta</b>			
<i>Dinobryon sertularia</i> Ehrenb.	Mo	S, T	15, 17, 18
<i>Monallanthus</i> sp.	O	A	3
<i>Stichogloea</i> sp.	H	TR	6
<b>Tribophyta</b>			
<i>Botrydiopsis</i> sp.	O, H	A, TR	3, 6, 7
<i>Botrydium</i> sp.	O, H	A, TR	3, 6
<i>Heterococcus</i> sp.	O, H	A, TR	3, 6
<i>Ophiocytium gracilipes</i> (A.Braun) Rabenh.	O	T, TR	15, 18
<i>Tribonema affine</i> (G.S.West) G.S.West	O	S	41
<i>T. minus</i> (G.A. Klebs) Hazen syn. <i>Converfa bombycinia</i> var. <i>minor</i> Wille	O		17
<i>Vaucheria</i> spp.	O, M	S, TR	32
<b>Bacillariophyta</b>			
<i>Achnanthes coarctata</i> (Bréb. ex W.Sm.) Grunov	O	TR	11
<i>A. crenulata</i> Grunov			11
<i>A. inflata</i> (Kütz.) Grunov	K, O, H	S	11, 12
<i>A. inflata</i> var. <i>elata</i> (Leud.-Fortm.) Hust.	K, H	S	11
<i>A. laevis</i> Østrup	O	S	32
<i>A. lanceolata</i> ssp. <i>frequentissima</i> Lange-Bert.	O	S	32

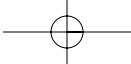


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Achnanthes lanceolata</i> var. <i>rostrata</i> (Østrup) Hust.	K, O		12
<i>A. lapidosa</i> var. <i>lanceolata</i> Hust.	K, Mo, H	S	11
<i>A. linearis</i> f. <i>curta</i> H.L.Sm.	H	S, TR	11, 29
<i>A. marginulata</i> Grunov	O	S	32
<i>A. montana</i> Krasske	K, H	S, TR	11, 12, 23
<i>A. rupestroides</i> Hohn syn. <i>A. hustedtii</i> (Krasske) Reimer	K, Mo, H	S	11
<i>A. cf. rupestris</i> Krasske	K	S	11
<i>A. subatomoides</i> (Hust.) Lange-Bert. et Archibald	O	S	32
<i>Achnanthes</i> sp.	H	T	31
<i>Achnanthidium bialettianum</i> (Grunov) Bukht.	O	S	32
<i>A. brevipes</i> var. <i>intermedia</i> (Kütz.) Cleve syn. <i>Achnanthes brevipes</i> var. <i>intermedia</i> (Kütz.) Cleve	K, O		12
<i>A. exiguum</i> (Grunov) Czarn.	K	S	11, 12
syn. <i>Achnanthes exigua</i> Grunov			
<i>A. hungarica</i> Grunov	K		12
syn. <i>Achnanthes hungarica</i> (Grunov) Grunov			
<i>A. microcephalum</i> (Kütz.) vide Rabenbh.	K, H	S, TR	11, 29
syn. <i>Achnanthes microcephala</i> (Kütz.) Grunov			
<i>A. minutissimum</i> (Kütz.) Czarn.	K, O, Mo, M, H	S	11, 12
syn. <i>Achnanthes minutissima</i> Kütz.			
<i>Actinella punctata</i> F.W.Lewis	K	S	11
<b><i>A. punctata</i> var. <i>alakaiensis</i> Main</b>	K	T	20
<i>Amphipora pulchra</i> Bailey	K		12
<i>Amphora coffeeaeformis</i> (C.Agardh) Kütz.	K, O		12, 15, 18
<i>A. costata</i> W.Sm.	H	T	21
<i>A. fontinalis</i> Hust.	O		12
<i>A. inariensis</i> Krammer	O	S	32
<i>A. normanii</i> Rabenbh.	K, M, H	S, TR	11, 23
<i>A. ovalis</i> (Kütz.) Kütz.	K, O	T	15, 18
<i>A. ovalis</i> var. <i>pediculus</i> (Kütz.) VanHeurck	O		12, 15
<i>A. subturgida</i> Hust.	K, O		12
<i>A. veneta</i> Kütz.	K, M, H	S, TR	11, 12, 29
<i>Anomoeneis sphaerophora</i> (Ehrenb.) Pfitzer	K		12
<i>A. styriaca</i> var. <i>ventricosa</i> Hust.	H	S	11
<i>Anuemastus tusculus</i> (Ehrenb.) D.G.Mann syn. <i>Navicula tuscula</i> Ehrenb.	O		12
<i>Asterionella formosa</i> Hassall	H	S	15, 17, 18
<i>Aulacoseira ambigua</i> (Grunov) Simonsen syn. <i>Melosira ambigua</i> (Grunov) O.F.Müll.	K		12
<i>A. granulata</i> (Ehrenb.) Simonsen syn. <i>Melosira granulata</i> (Ehrenb.) Ralfs ex A.Pritch.	K, O		12
<i>A. granulata</i> var. <i>angustissima</i> (O.F.Müll.) Simonsen syn. <i>Melosira granulata</i> var. <i>angustissima</i> O.F.Müll.	K		12
<i>A. italica</i> (Ehrenb.) Simonsen syn. <i>Melosira italica</i> (Ehrenb.) Kütz.	K		12
<i>A. italica</i> var. <i>tenuissima</i> (Grunov) Simonsen syn. <i>Melosira italica</i> var. <i>tenuissima</i> (Grunov) O.F.Müll.	K, O		12
<i>A. subarctica</i> (O.F.Müll.) E.Y.Haw. syn. <i>Melosira italica</i> ssp. <i>subarctica</i> O.F.Müll.	H	T	21
<i>Bacillaria paxillifer</i> (O.F.Müll.) Hendey syn. <i>B. paradoxa</i> J.F.Gmel.	K, O, H	S, TR	11, 12, 23
<i>Brachysira brebissonii</i> R.Ross in B.Hartley syn. <i>Anomoeneis serians</i> var. <i>brachysira</i> (Bréb.) ex Kütz.) Hust.	K, O, Mo, M, H	S, TR	11, 12, 23
<i>B. exilis</i> (Kütz.) Round et D.G. Mann syn. <i>Anomoeneis exilis</i> (Kütz.) Cleve	K, O		12
<i>B. styriaca</i> (Grunov) R.Ross in B.Hartley syn. <i>Anomoeneis styriaca</i> (Grunov) Hust.	K, H	S	11

TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Brachysira vitrea</i> (Grunov) R.Ross in B.Hartley syn. <i>Anomoeneis vitrea</i> (Grunov) R.Ross	K, O, M, H	S	11
<i>Caloneis bacillum</i> (Grunov) Cleve			23
<i>C. fontinalis</i> (Grunov) Lange-Bert. et E.Reichardt syn. <i>C. bacillum</i> var. <i>fontinalis</i> Hust.	K, M, H	S	11
<i>C. hyalina</i> Hust.	H	S, TR	11, 29
<i>C. leptosoma</i> (Grunov) Krammer syn. <i>Pinnularia leptosoma</i> (Grunov) Cleve	M, H	S, TR	11, 23, 29
<i>C. linearis</i> (Grunov) Boyer syn. <i>C. liber</i> var. <i>linearis</i> Grunov	H		15, 18
<i>Campylodiscus daemelianus</i> Grunov	K		12
<i>Chamaepinnularia evanida</i> (Hust.) Lange-Bert. syn. <i>Navicula ventosa</i> Hust.	H	TR	29
<i>C. mediocris</i> (Krasske) Lange-Bert. syn. <i>Navicula mediocris</i> Krasske	H	TR	29
<i>C. soehrensis</i> (Krasske) Lange-Bert. syn. <i>Navicula hassiaca</i> Krasske	H	TR	29
<i>Cocconeis disculus</i> var. <i>minor</i> Fontell	K, Mo, H	S	11
<i>C. flaviatilis</i> J.H.Wallace	K, H	S	11
<i>C. pediculus</i> Ehrenb.	K	S	11
<i>C. pellucida</i> Hantzsch	K		12
<i>C. placentula</i> Ehrenb.	K, O, H	T	12, 21
<i>C. placentula</i> var. <i>euglypta</i> (Ehrenb.) Cleve	K, O, Mo, M, H	S	11, 12
<i>C. placentula</i> var. <i>lineata</i> (Ehrenb.) Van Heurck	K, H	S, TR	11, 23, 29
<i>C. placentula</i> var. <i>pseudolineata</i> Geitler	O	S	32
<i>C. placentula</i> var. <i>rouxii</i> (Héribaud et Brun) Cleve	K	S	11
<i>C. scutellum</i> Ehrenb.	K		12
<i>Cosmioneis pusilla</i> (W.Sm.) D.G.Mann syn. <i>Navicula pusilla</i> W.Sm.	O	TR	11
<i>Craticula ambigua</i> (Ehrenb.) D.G. Mann syn. <i>Navicula cuspidata</i> var. <i>ambigua</i> Ehrenb.	O	S	15
<i>Ctenophora pulchella</i> (Ralfs ex Kütz.) D.M.Williams et Round syn. <i>Synedra pulchella</i> Ralfs ex Kütz.	O	S, TR	11, 15, 18
<i>C. pulchella</i> var. <i>lacerata</i> (Hust.) Bukht. syn. <i>Synedra pulchella</i> var. <i>lacerata</i> Hust.	O		12
<i>C. pulchella</i> var. <i>lanceolata</i> (O'Meara) Bukht. syn. <i>Synedra pulchella</i> var. <i>lanceolata</i> O'Meara	H	S	11
<i>Cyclotella atomus</i> Hust.	O		12
<i>C. comensis</i> Grunov	K		12
<i>C. comata</i> (Ehrenb.) Kütz.	K, O		12
<i>C. kuetzingiana</i> var. <i>parva</i> Fricke	H	TR	29
<i>C. meneghiniana</i> Kütz. syn. <i>C. kuetzingiana</i> Thwaites	K, O		12
<i>C. striata</i> (Kütz.) Grunov	O		12, 18
<i>Cyclotella</i> sp.		S	17
<i>Cymatopleura</i> sp.		S	17
<i>Cymbella</i> cf. <i>cesatii</i> f. <i>undulata</i> (Rabenh.) Grunov	H	S	11
<i>C. cistula</i> (Ehrenb.) Kirchn.	K, O		12
<i>C. cymbiformis</i> C.Agardh	H	S	11
<i>C. elgensis</i> Krammer syn. <i>C. turgida</i> W.Greg.	K, O		12
<i>C. cf. helvetica</i> Kütz.	M, H	S	11
<i>C. microcephala</i> Grunov	K, H	S, TR	11, 29
<i>C. perpusilla</i> Cleve	M	S	11
<i>C. pusilla</i> Grunov	H	S	11
<i>C. sumatrensis</i> Hust.	H	S	11
<i>C. tumida</i> (Bréb. ex Kütz.) Van Heurck syn. <i>C. tumida</i> var. <i>gracilis</i> Hust. ex A.W.F.Schmidt et al.	K, O, H	S	11, 12

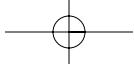


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Cymbella turgidula</i> Grunov	H	S	11, 12
<i>Cymbella</i> sp.	O, Mo	S	11
<i>Denticula elegans</i> Kütz.	K, O, H	S	11
<i>D. cf. parva</i> Hust.	O	TR	11
<i>D. tenuis</i> Kütz.	K		12
<i>Diadesmis confervacea</i> Kütz. syn. <i>Navicula confervacea</i> (Kütz.) Grunov	K, O		12, 15, 18
<i>D. contenta</i> (Grunov) D.G.Mann syn. <i>Navicula contenta</i> Grunov	O, H	TR	12, 29
<i>D. contenta</i> var. <i>biceps</i> (Grunov) Poulin syn. <i>Navicula contenta</i> var. <i>biceps</i> (H.J.Arn.) Grunov	O, H	S, TR	11, 12, 23, 29
<i>D. contenta</i> var. <i>parallela</i> (J.B.Petersen) P.B.Hamilton syn. <i>Navicula contenta</i> f. <i>parallela</i> (J.B.Petersen) Hust.	O, H	TR	12, 29
<i>Diatoma tenue</i> var. <i>elongatum</i> Lyngb. syn. <i>D. elongatum</i> (Lyngb.) C.Agardh	O		12
<i>Diploneis subovalis</i> Cleve	K		12
<i>Diploneis</i> sp.	H	T	31
<i>Diprora haenaensis</i> Main	K	TR	19
<i>Encyonema gracile</i> Rabenh. syn. <i>Cymbella gracilis</i> (Ehrenb.) Kütz.	K, O		12
<i>E. lunatum</i> (W.Sm.) Van Heurck syn. <i>Cymbella lunata</i> W.Sm.	Mo, H	S	11
<i>E. minutum</i> (Hilse) D.G.Mann <i>pro parte</i> syn. <i>Cymbella minuta</i> Hilse		S	11, 12
<i>E. minutum</i> (Hilse) D.G.Mann <i>pro parte</i> syn. <i>C. ventricosa</i> C.Agardh	O		12
<i>E. silesiacum</i> (Bleisch ex Rabenh.) D.G.Mann <i>pro parte</i> syn. <i>Cymbella minuta</i> var. <i>silesiaca</i> (Bleisch ex Rabenh.) Reimer	H	S, TR	11, 29
<i>E. silesiacum</i> (Bleisch ex Rabenh.) D.G.Mann <i>pro parte</i> syn. <i>C. ventricosa</i> C.Agardh	O		12
<i>E. spiculum</i> (Hust.) D.G.Mann syn. <i>Cymbella spicula</i> Hust.	O		12
<i>Epithemia adnata</i> var. <i>porcellus</i> (Kütz.) R.M.Patrick syn. <i>E. zebra</i> var. <i>porcellus</i> (Kütz.) Grunov	K, O		12
<i>E. adnata</i> var. <i>proboscidea</i> (Kütz.) R.M.Patrick	K	S	11
<i>Eunotia abbottiae</i> Main	K	T	20
<i>E. bidens</i> Ehrenb. syn. <i>E. praeerupta</i> var. <i>bidens</i> (W.Sm.) Grunov	H	S	11
<i>E. bidentula</i> W.Sm.	K		12
<i>E. curvata</i> (Kütz.) Lagerst.		S	11
<i>E. curvata</i> var. <i>linearis</i> (Okuno) H.Kobay., Ando et Nagumo	O	S	32
<i>E. curvata</i> var. <i>subarcuata</i> (Nägeli) Woodhead et Tweed	H	S, TR	11, 23
<i>E. diodon</i> Ehrenb.	K, H	S	11, 12
<i>E. exigua</i> (Bréb.) Rabenh.	K, O	S	11
<i>E. formica</i> Ehrenb.	O		11
<i>E. inflata</i> (Grunov) Nörpel et Lange-Bert. syn. <i>E. praeerupta</i> var. <i>inflata</i> Grunov	M, H	S, TR	11, 23
<i>E. microcephala</i> var. <i>tridentata</i> (Mayer) Hust.	M	S	11
<i>E. monodontiforma</i> Lange-Bert. et Nörpel syn. <i>E. monodonta</i> Ehrenb.	K, O, Mo, H	S	11, 12
<i>E. paludosa</i> var. <i>trinacria</i> (Krasske) Nörpel syn. <i>E. trinacria</i> var. <i>undulata</i> Hust.	K, M	S	11
<i>E. pectinalis</i> (O.F.Müll.) Rabenh.	Mo	T	12, 15, 18

TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Eunotia pectinalis</i> var. <i>minor</i> (Kütz.) Rabenh.	K, O	S	11, 12
<i>E. pectinalis</i> var. <i>undulata</i> (Ralfs) Rabenh.	O, H	TR	11, 12
<i>E. polydentula</i> Brun	K, H	H, TR	11, 12, 23
<i>E. polydentula</i> var. <i>perpusilla</i> (Grunov) Hust.	Mo, H	S	11
<i>E. praerupta</i> Ehrenb.	H	S, TR	11, 29
<i>E. quaternaria</i> Ehrenb.	K	S	11
<i>E. rhynchocephala</i> var. <i>satelles</i> Nöpbel et Lange-Bert. syn. <i>E. bigibba</i> var. <i>pumila</i> Grunov	H	H	11
<b><i>E. smithiae</i> Main</b>	K	T	20
<i>E. soleirolii</i> (Kütz.) Rabenh.	O	S	32
<i>E. sudetica</i> O.F.Müll.	H	S	11
<i>E. tenella</i> (Grunov) Cleve	K, H	S, TR	11, 12, 23, 29
<i>E. vanheurckii</i> var. <i>intermedia</i> (Krasske ex Hust.) R.M.Patrick syn. <i>E. pectinalis</i> var. <i>minor</i> f. <i>intermedia</i> Krasske	H	S	11
<i>Eunotia</i> sp.			11 12
<i>Fallacia subhamulata</i> (Grunov) D.G.Mann syn. <i>Navicula subhamulata</i> Grunov	K		
<i>Fragilaria capucina</i> Desm.	O	T, TR	15, 18
<i>F. capucina</i> var. <i>mesolepta</i> (Rabenh.) Rabenh.	O	S	32
<i>F. crotoneensis</i> Kitton	K, O		12
<i>F. famelica</i> (Kütz.) Lange-Bert.		S	11
<i>F. fasciculata</i> (C.Agardh) Lange-Bert.	O	S	32
<i>F. lanceolata</i> (Kütz.) E.Reichardt syn. <i>Synedra ulna</i> var. <i>fonticola</i> Hust.	K		12
<i>F. radians</i> (Kütz.) D.M.Williams et Round syn. <i>Synedra radians</i> Kütz.	O	TR	15
<i>F. vaucheriae</i> (Kütz.) J.B.Petersen	H	TR	29
<b><i>Frustulia creuzburgensis</i> (Krasske) Hust.</b> syn. <i>F. hawaiiensis</i> Hust.	K		11, 12
<i>F. rhomboides</i> (Ehrenb.) DeToni syn. <i>F. rhomboides</i> var. <i>saxonica</i> f. <i>undulata</i> Hust.	K, O, H	S, TR	11, 12, 23
<i>F. rhomboides</i> var. <i>capitata</i> (Mayer) R.M.Patrick			23
<i>F. rhomboides</i> var. <i>crassinervia</i> (Bréb. ex W.Sm.) R.Ross	H	TR	29
<i>F. saxonica</i> Ehrenb. syn. <i>F. rhomboides</i> var. <i>saxonica</i> (Rabenh.) DeToni	K, O	S	11, 12
<i>F. vulgaris</i> (Thwaites) DeToni	K, H	S, TR	11, 12, 29
<i>F. vulgaris</i> var. <i>elliptica</i> Hust.	H	S, TR	11, 23
<i>Gomphonema acuminatum</i> Ehrenb.	O		12
<i>G. affine</i> Kütz.	K	S	11
<i>G. affine</i> var. <i>insigne</i> (W.Greg.) Andrews syn. <i>G. lanceolatum</i> var. <i>insignis</i> (W.Greg.) Cleve	K, O	S	11, 12
<i>G. augur</i> Ehrenb.	K, O, Mo, M, H	S	11
<i>G. brasiliense</i> Grunov	H	S, TR	11, 23
<i>G. clevei</i> Fricke	K	S	11, 12
<i>G. dichotomum</i> Kütz.	K, H	S	11
<i>G. gracile</i> Ehrenb. emend. VanHeurck syn. <i>G. gracile</i> var. <i>dichotomum</i> (Kütz.) VanHeurck	O, H		12, 15, 18
<i>G. grunowii</i> R.M.Patrick syn. <i>G. lanceolatum</i> (Ehrenb.) Kütz.	K, O, H	H, T	11, 12, 15, 18
<i>G. cf. longiceps</i> var. <i>subclavatum</i> Grunov	K, O, H	S	11
<i>G. cf. longiceps</i> var. <i>subclavatum</i> f. <i>gracilis</i> Hust.		S	11
<i>G. mexicanum</i> Grunov	O	S	32
<i>G. olivaceum</i> var. <i>tenellum</i> (Kütz.) Cleve	O	TR	15, 18
<i>G. parvulum</i> (Kütz.) Kütz. syn. <i>G. parvulum</i> var. <i>lagenula</i> (Kütz.) Hust., syn. <i>G. parvulum</i> var. <i>micropus</i> Cleve, syn. <i>G. parvulum</i> var. <i>subelliptica</i> Cleve	K, O, Mo, H	S, T, TR	11, 12, 15, 18, 23

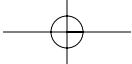


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Gomphonema subclavatum</i> (Grunov) Grunov	O	TR	15, 18
<i>G. truncatum</i> Ehrenb.	K, O, H	S, TR	11, 12, 23
syn. <i>G. constrictum</i> Ehrenb.			
<i>G. vibrio</i> var. <i>intricatum</i> (Kütz.) R.Ross	O	S	32
<i>G. vibrio</i> var. <i>pumilum</i> (Grunov ex VanHeurck) R.Ross	K		12
syn. <i>G. intricatum</i> var. <i>pumila</i> Grunov ex VanHeurck			
<i>Gomphonema</i> sp.	H	T	31
<i>Gyrosigma acuminatum</i> (Kütz.) Rabenh.	O		12
<i>G. cf. acuminatum</i> var. <i>gallica</i> Grunov	H	TR	23
<i>G. cf. obtusatum</i> (M.J.Sullivan et Wormley) C.S.Boyer	K, M	S	11
<i>G. scalpoides</i> (Rabenh.) Cleve	O	S	32
<i>Hantzschia amphioxys</i> (Ehrenb.) Grunov	K, O		11, 12
<i>H. amphioxys</i> var. <i>major</i> Grunov ex VanHeurck	K		12
<i>H. amphioxys</i> var. <i>minor</i> H.Pergallo et M.Pergallo	H	T	21
<i>Hyalodiscus laevis</i> Ehrenb.	K		12
<i>Hydrosera triquetra</i> G.C.Wall.	K	S	11, 12
<i>H. whampoenensis</i> (Schwartz) Duby	K, O, M	S	10, 33, 41
<i>Hydrosera</i> sp.			14
<i>Karayevia clevei</i> (Grunov in Cleve et Grunov) Round et Bukht.	K, M, H	S	11, 12
syn. <i>Achnanthes clevei</i> Grunov			
<i>Kobayasia subtilissima</i> (Cleve) Lange-Bert.		S	11
syn. <i>Navicula subtilissima</i> Cleve			
<i>Luticola mutica</i> (Kütz.) D.G.Mann	K, O, H	S, TR	11, 12, 23
syn. <i>Navicula mutica</i> Kütz.			
<i>L. muticoides</i> (Hust.) D.G.Mann	H	TR	23
syn. <i>Navicula muticoides</i> Hust.			
<i>Mastogloia pumila</i> (Cleve et Möller) Cleve	H	S	11, 15, 18
<i>M. smithii</i> var. <i>amphicephala</i> Grunov	K, H	S	11
<i>Melosira dendroteres</i> (Rabenh.) R.Ross	H	TR	12, 23
syn. <i>M. roseana</i> Rabenh.			
<i>M. dickiei</i> (Thwaites) Kütz.	H	TR	29
<i>M. octogona</i> Schmidt	K		12
<i>M. varians</i> C.Agardh	K, O	S	12, 33
<i>Melosira</i> sp.		S	17
<i>Meridion anceps</i> (Ehrenb.) D.M. Williams	K	S	11
syn. <i>Diatoma anceps</i> (Ehrenb.) Kirchner			
<i>Navicula anceps</i> var. <i>obtusa</i> Grunov	H		15, 18
<i>N. angusta</i> Grunov		S	11
<i>N. brekkaensis</i> J.B.Petersen	K	S	11
<i>N. bryophila</i> J.B.Petersen	H	TR	29
<i>N. capitatoradiata</i> H.Germ.	K, O, H	S	11
syn. <i>N. salinarum</i> var. <i>intermedia</i> (Grunov) Cleve			
<i>N. cari</i> Ehrenb.	O		12
<i>N. cincta</i> (Ehrenb.) Ralfs	H	TR	29
<i>N. contenta</i> f. <i>elliptica</i> Krasske	H	TR	29
<i>N. contenta</i> f. <i>undulata</i> Mang.	H	TR	29
<i>N. contenta</i> f. #1	H	TR	29
<i>N. cryptocephala</i> Lange-Bert.	K, O, H	S, T, TR	11, 12, 15, 18, 29
syn. <i>N. cryptocephala</i> Kütz.			
<i>N. cryptocephala</i> var. <i>veneta</i> (Kütz.) Rabenh.		S	11
<i>N. cryptotella</i> Lange-Bert.	K, H	S	11
syn. <i>N. radiosva</i> var. <i>tenella</i> (Bréb. ex Kütz.) Grunov			
<i>N. decussis</i> Østrup	O	S	32
<i>N. digitoradiata</i> (W.Greg.) Ralfs		S	11
<i>N. erifuga</i> Lange-Bert.	O	S	32
<i>N. exigua</i> var. <i>capitata</i> R.M.Patrick	K	S	11

TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Navicula genustriata</i> Hust.	O	S	12
<i>N. goeppertiaana</i> (Bleisch) H.L.Sm.	K, O, H	S	11
syn. <i>N. mutica</i> f. <i>goeppertiaana</i> (Bleisch) Cleve			
<i>N. gregaria</i> Donkin	O	S	32
<i>N. hambergii</i> Hust.	O, H	S, TR	11, 29
<i>N. hawaiiensis</i> J.R.Johansen	H	TR	29
<i>N. ignota</i> Krasske	K, O, H		11
syn. <i>N. lagerstedtii</i> Cleve			
<i>N. indifferens</i> Hust.	K	S	11
<i>N. insociabilis</i> Krasske	H	TR	29
<i>N. krasskei</i> Hust.	H	TR	29
<i>N. lagerheimi</i> var. <i>intermedia</i> Hust.	K, O		12
<i>N. lanceolata</i> (C.Agardh) Kütz.	O		12
<i>N. lapidosa</i> Krasske	H	TR	29
<i>N. mediocris</i> var. <i>atomus</i> Hust.	H	TR	29
<i>N. menisculus</i> Schum.	K		12
<i>N. menisculus</i> var. <i>upsaliensis</i> Grunov	K, H	S	11
<i>N. minima</i> Grunov	H	TR	29
<i>N. notanda</i> Østrup	K	S	11
<i>N. oahuensis</i> (Hust.) Krammer et Lange-Bert.	O		12
syn. <i>Cymbella oahuensis</i> Hust.			
<i>N. parsura</i> Hust.	H	TR	29
<i>N. perrotetii</i> (Grunov) Cleve	K		12
<i>N. quadripartita</i> Hust.	K		12
<i>N. radiosa</i> Kütz.	K, O, H	T	12, 21
<i>N. radiosafallax</i> Lange-Bert.	H	S, TR	11, 23
syn. <i>N. radiosa</i> cf. var. <i>parva</i> J.H.Wallace			
<i>N. rhynchocephala</i> Kütz.	O	S	12, 15
<i>N. rhynchotella</i> Lange-Bert.			15, 18
syn. <i>N. rhynchocephala</i> var. <i>amphiceros</i> (Kütz.) Grunov			
<i>N. schroeterii</i> F.Meister	K, O		12
<i>N. seminulum</i> var. <i>hustedtii</i> R.M.Patrick	H	TR	29
<i>N. splendicula</i> VanLand.	H	S	11
<i>N. subrhynchocephala</i> Hust.	K		12
<i>N. symmetrica</i> R.M.Patrick	K, Mo	S	11
<i>N. tantula</i> Hust.	H	TR	29
<i>N. tenera</i> Hust.	K		12
<i>N. testata</i> Hust.	K		12
<i>N. thurstonensis</i> Kaczmarska	H	TR	29
<i>N. veneta</i> Kütz.	O	S	32
<i>N. ventralis</i> Krasske	O	S	32
<i>N. viridula</i> (Kütz.) Ehrenb.	K	S	11
<i>N. viridula</i> var. <i>rostellata</i> (Kütz.) Cleve	K	S	11
<i>Navicula</i> sp. 1	H	S	11
<i>Navicula</i> sp. 2	K	S	11
<i>Navicula</i> sp.	H	T, TR	4, 7, 23, 31
<i>Nitzschia acicularis</i> (Kütz.) W.Sm.	O	S	12, 15, 18
<i>N. acidoclinata</i> Lange-Bert.	H	TR	29
<i>N. amphibia</i> Grunov	K, O, H	S, TR	11, 12, 29
<i>N. amphibia</i> f. <i>rostrata</i> Hust.	K	S	11
<i>N. clausii</i> Hantzsch	O, Mo	S	11, 12
<i>N. closterium</i> (Ehrenb.) W.Sm.	K		12
<i>N. coarctata</i> Grunov in Cleve et Möller	O		12
syn. <i>N. punctata</i> f. <i>coarctata</i> (Grunov) Hust.			
<i>N. communis</i> Rabenh.	O		12
<i>N. debilis</i> (H.J.Arn.) Grunov	K, O		12
<i>N. dissipata</i> (Kütz.) Grunov	K	S	11
<i>N. elegantula</i> Grunov in VanHeurck	O		12
syn. <i>N. jugiformis</i> Hust.			

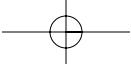


## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Nitzschia fonticola</i> Grunov		S	11
<i>N. frustulum</i> (Kütz.) Grunov	H	T	12, 21
<i>N. frustulum</i> var. <i>permixta</i> Hust.	O	S	11, 12
<i>N. frustulum</i> var. <i>subsalsa</i> Hust.	H	TR	23
<i>N. hantzschiana</i> Rabenh.	K	S	11
<i>N. ignorata</i> Krasske	K	S	11
<i>N. inconspicua</i> Grunov			11
<i>N. linearis</i> (C.Agardh) W.Sm.	K, O, Mo, H	S, T	11, 15, 18
<i>N. lorenziana</i> var. <i>incurva</i> Grunov	K		12
<i>N. lorenziana</i> var. <i>major</i> Grunov			15
<i>N. microcephala</i> Grunov	K, H	S	11
<i>N. minutula</i> Grunov	H	TR	23
<i>N. nana</i> Grunov in VanHeurck syn. <i>N. obtusa</i> var. <i>nana</i> (Grunov) VanHeurck	O	TR	15, 18
<i>N. obtusa</i> var. <i>scapelliformis</i> Grunov			11
<i>N. palcea</i> Grunov	K	S	11
<i>N. palea</i> (Kütz.) W.Sm.	K, O, Mo, H	S, T, TR	11, 12, 15, 23
<i>N. panduriformis</i> W.Greg.	H		15
<i>N. panduriformis</i> var. <i>continua</i> Grunov	K		12
<i>N. parvula</i> W.Sm.	K		12
<i>N. pellucida</i> f. <i>minores</i> A.Cleve	K, H	S, TR	11, 23
<i>N. punctata</i> (W.Sm.) Grunov	K, O		12
<i>N. cf. romana</i> Grunov		S	11
<i>N. scalaris</i> (Ehrenb.) W.Sm.	K, O		12
<i>N. sigma</i> (Kütz.) W.Sm.	O		15, 18
<i>N. sigmaoidea</i> (Nitzsch) W.Sm.	O		15, 18
<i>N. vermicularis</i> (Kütz.) Hantzsch	O	T	15
<i>N. vitrea</i> var. <i>salinarum</i> Grunov	H	T	21
<i>N. vitrea</i> var. <i>subvitrea</i> (Hust.) E.J.F.Wood syn. <i>N. subvitrea</i> Hust.	K, O		12
<i>Nitzschia</i> sp. 1	H	TR	11
<i>Nitzschia</i> sp. 2		S	11
<i>Nitzschia</i> sp.	H	T, TR	21, 31
<i>Pinnularia acrosphaeria</i> W.Sm.	K, O		12
<i>P. acrosphaeria</i> f. <i>maxima</i> Cleve			15
<i>P. appendiculata</i> (C.Agardh) Cleve	O, H	S, TR	11, 15, 18
<i>P. biceps</i> W.Greg. syn. <i>P. interrupta</i> f. <i>staurostomiformis</i> Cleve	Mo, H	S, TR	11, 15, 18
<i>P. borealis</i> Ehrenb.	K, O	S	11, 15, 18
<i>P. borealis</i> var. <i>rectangularis</i> G.W.F.Carlson	H	TR	23
<i>P. divergens</i> W.Sm. syn. <i>Navicula divergens</i> (W.Sm.) Grunov	H	T	15, 21
<i>P. gibba</i> Ehrenb. syn. <i>P. stauroptera</i> var. <i>interrupta</i> Cleve	O, H		12, 15, 18
<i>P. gibba</i> var. <i>sancta</i> (Grunov ex Cleve) F.Meister	O		12
<i>P. graciloides</i> Hust. ex A.W.F.Schmidt et al.	O		12
<i>P. major</i> (Kütz.) Rabenh.	K, O	S	12, 15
<i>P. mesolepta</i> (Ehrenb.) W.Sm.	Mo, H	S	11
<i>P. microstauron</i> (Ehrenb.) Cleve	K, O, H	TR	12, 29
<i>P. subcapitata</i> W.Greg.	M	S	11
<i>P. subcapitata</i> var. <i>paucistriata</i> (Grunov) Cleve		S	11
<i>P. termitina</i> (Ehrenb.) R.M.Patrick	H	S, TR	11, 23
<i>P. viridis</i> (Nitzsch) Ehrenb.	K, O, Mo, M, H	S, T	11, 12, 15
<i>Pinnularia</i> sp.	H	TR	29
<i>Placoneis elginensis</i> (W.Greg.) E.J.Cox syn. <i>Navicula elginensis</i> (W.Greg.) Ralfs	H	TR	29
<i>P. exigua</i> (W.Greg.) Mereschk.	O		12
<i>P. exigua</i> (W.Greg.) Mereschk. syn. <i>Navicula exigua</i> W.Greg. ex Grunov			11
<i>P. gastrum</i> (Ehrenb.) Mereschk.	M	S	
syn. <i>Navicula gastrum</i> Cleve			

TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Plagiopropis lepidoptera</i> var. <i>proboscidea</i> (Cleve) Reimer	K		12
syn. <i>Tropidoneis lepidoptera</i> var. <i>proboscidea</i> Cleve			
<i>Planothidium dubium</i> (Grunov) Round et Bukht.			11
syn. <i>A. lanceolata</i> var. <i>dubia</i> Grunov			
<i>P. hauckianum</i> (Grunov) Round et Bukht.	H	T	21
syn. <i>Achnanthes hauckiana</i> Grunov			
<i>P. lanceolatum</i> (Bréb.) Round et Buktiyarova	K, O, H	S, T, TR	11, 12, 15, 18, 23, 29
syn. <i>Achnanthes lanceolata</i> (Bréb.) Grunov,			
syn. <i>Achnanthis lanceolatum</i> Bréb.			
<i>Pleurosigma elongatum</i> W.Sm.	K		12
<i>Pleurosira laevis</i> (Ehrenb.) Compère	O	S	32
<i>Psammothidium bioreti</i> (H.Germ.) Round et Bukht.	O		12
syn. <i>Navicula rotaeana</i> (Rabenh.) Grunov ex VanHeurck			
<i>Rhoicosphenia curvata</i> (Kütz.) Grunov	K, O	S, TR	11, 12, 15
<i>Rhopalodia contorta</i> Hust.	O		12
<i>R. gibba</i> (Ehrenb.) O.F.Müll.	K, O	S, T	11, 12, 15, 18
<i>R. gibberula</i> (Ehrenb.) O.F.Müll.	K, O	S	11, 12
<i>R. gibberula</i> var. <i>minuens</i> O.F.Müll.	O		15, 18
<i>R. gibberula</i> var. <i>minuta</i> (Rabenh.) O.F.Müll.	O		15, 18
<i>R. gibberula</i> var. <i>vanheurckii</i> O.F.Müll.	O, H	S, TR	11, 15, 18, 23, 29
<i>R. musculus</i> (Kütz.) O.F.Müll.	O, H	T, TR	15, 21
<i>Rossithidium linearis</i> (W.Sm.) Round et Bukht.	O, H	S, TR	11, 12, 23, 29
syn. <i>Achnanthes linearis</i> (W.Sm.) Grunov			
<i>R. pusillum</i> (Grunov) Round et Bukht.	K, H	S, TR	11, 29
syn. <i>Achnanthes linearis</i> var. <i>pusilla</i> Grunov			
<i>Sellophora parapupula</i> Lange-Bert.			11
syn. <i>Navicula pupula</i> var. <i>capitata</i> Hust.			
<i>S. pupula</i> (Kütz.) Mereschk.	K	S	11, 12, 15, 18
syn. <i>Navicula pupula</i> Kütz.			
<i>S. seminulum</i> (Grunov) D.G.Mann syn. <i>Navicula seminulum</i> Grunov	O		12
<i>Stauroneis anceps</i> Ehrenb.	K		12
<i>S. anceps</i> var. <i>obtuse</i> Grunov	H		15
<i>S. kriegeri</i> R.M.Patrick	O, H	T	12, 21
syn. <i>S. pygmaea</i> Kreiger			
<i>S. maunaekensis</i> J.Massey	H	T	21
<i>S. smithii</i> Grunov	H	S, TR	11, 29
<i>Staurosira construens</i> Ehrenb.	K, O		12
syn. <i>Fragilaria construens</i> (Ehrenb.) Grunov			
<i>S. construens</i> var. <i>venter</i> (Ehrenb.) P.B. Hamilton syn. <i>Fragilaria construens</i> var. <i>venter</i> (Ehrenb.) Grunov	O		12
<i>Staurosirella lapponica</i> (Grunov) D.M. Williams et Round	H	T	21
syn. <i>Fragilaria lapponica</i> Grunov			
<i>S. pinnata</i> (Ehrenb.) D.M. Williams et Round syn. <i>Fragilaria pinnata</i> Ehrenb.	K		12
<i>Stenopterobia curvula</i> (W.Sm.) Krammer syn. <i>S. intermedia</i> (F.W.Lewis) VanHeurck		S	11
<i>Stephanodiscus astraea</i> (Ehrenb.) Grunov	K, O		12
<i>Surirella angusta</i> Kütz.	K, O	S	11, 12
<i>S. elegans</i> Ehrenb.	K, O		12
<i>S. robusta</i> var. <i>splendida</i> (Ehrenb.) VanHeurck	K, O	S	11, 12
<i>S. robusta</i> var. <i>splendida</i> f. <i>hustedtiana</i> (Mayer) Hust.	K	S	11
<i>S. tenera</i> W.Greg.	K, O		12



## Sherwood — Bibliographic Checklist of Hawaiian Nonmarine Algae

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TAXON (boldface = endemic)	DISTRIB. <sup>1</sup>	HABITAT <sup>2</sup>	REFERENCES
<i>Surirella tenera</i> var. <i>nervosa</i> A.W.F.Schmidt	K		12
<i>Synedra acus</i> Kütz.	O	TR	15
<i>S. fasciculata</i> var. <i>truncata</i> (Grev.) R.M.Patrick syn. <i>S. tabulata</i> var. <i>fasciculata</i> (Kütz.) Grunov	O		12
<i>S. nyansae</i> G.S.West syn. <i>S. dorsiventralis</i> O.F.Müll.		S	11
<i>S. rumpens</i> Kütz.	K, H	S, TR	11, 12, 29
<i>S. rumpens</i> var. <i>constricta</i> Hust.	K		12
<i>S. rumpens</i> var. <i>fragilaroides</i> Grunov	K, H	S	11, 12
<i>S. rumpens</i> var. <i>meneghiniana</i> Grunov		S	11
<i>S. socia</i> J.H.Wallace	H	S	11
<i>S. tabulata</i> var. <i>grandis</i> Mereschk.	K, O		12
<i>S. ulna</i> (Nitzsch.) Ehrenb. syn. <i>S. ulna</i> var. <i>splendens</i> (Kütz.) Brun	K, O, H	S, TR	11, 12, 15, 18, 23
<i>S. ulna</i> var. <i>amphirhynchus</i> (Ehrenb.) Grunov	H	S	11
<i>S. ulna</i> var. <i>danica</i> (Kütz.) Grunov	O		12
<i>Tabellaria fenestrata</i> (Lyngb.) Kütz.	K, O		12
<i>T. flocculosa</i> (Roth) Kütz.	K, O, H	S, T	10, 11, 12, 39
<i>Tabularia fasciculata</i> (C.Agardh) D.M.Williams et Round	K, H	S, TR	11, 15, 18, 23
syn. <i>Synedra affinis</i> Kütz., syn. <i>S. fasciculata</i> var. <i>truncata</i> (W.Greg.) R.M.Patrick			
<i>Terpsinöe musica</i> Ehrenb.	K, O	S, TR	10, 12, 15, 18
<i>Thalassiosira weissflogii</i> (Grunov) G.A.Fryxell et Hasle	K, O, H	TR	12, 29
syn. <i>T. fluvialis</i> Hust.			
<i>Tryblionella angustata</i> W.Sm. syn. <i>Nitzschia angustata</i> (W.Sm.) Grunov	O		12
<i>T. debilis</i> (H.J.Arн.) Grunov syn. <i>Nitzschia tryblionella</i> var. <i>debilis</i> (H.J.Arн.) Mayer	K, O, Mo	S	11
<i>T. gracilis</i> W.Sm. syn. <i>Nitzschia tryblionella</i> Hantzsch ex Rabenh.	K		12
<i>T. hungarica</i> (Grunov) D.G.Mann syn. <i>Nitzschia hungarica</i> Grunov	O	S	11
<i>T. levidensis</i> W.Sm. syn. <i>Nitzschia tryblionella</i> var. <i>levidensis</i> (W.Sm.) Grunov	K	S	11
<i>T. victoriae</i> Grunov syn. <i>Nitzschia tryblionella</i> var. <i>victoriae</i> Grunov	K, O	S	11, 12

Status of all species is unknown except those marked in boldface (= endemic).

1. L = Laysan Island, GP = Gardner Pinnacles, Nh = Nihoa, Ni = Ni'ihau, K = Kaua'i, O = O'ahu, M = Maui, Mo = Moloka'i, H = Hawai'i, throughout = distribution was indicated as throughout the islands.

2. A = airborne, H = hot springs, S = streams, T = standing water (taro patches / rice fields / fish ponds / pools / lakes), TR = terrestrial / subaerial.