

Marine Benthic Algae from Ni‘ihau and Adjacent Lehua Islet, Main Hawaiian Islands¹

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The published records of marine benthic algal species from the privately-owned island of Ni‘ihau (Hawaiian Islands) are represented by four species cited in Abbott (1999) and Abbott & Huisman (2004). The species consist of the red alga *Chondrophyucus dotyi* (Y. Saito) K.W. Nam [= *Laurencia dotyi* Y. Saito], two brown algae *Dictyopteris plagiogramma* (Montagne) Vickers and *Distromium flabellatum* Womersley, and the green alga *Pseudochlorodesmis parva* W. J. Gilbert [= *Siphonogramen parvum* (W.J. Gilbert) I.A. Abbott & Huisman]. *Distromium flabellatum* and *Pseudochlorodesmis parva* were collected in waters between Ni‘ihau and Lehua Islet. The paucity of algal records from Ni‘ihau is not surprising, very few collections have been made along its coastline because of its remoteness and general lack of access.

The U.S. Fish and Wildlife Service, however, funded field surveys between 2001 and 2004 to study the biodiversity of Lehua Islet, located just 1.2 km north of Ni‘ihau. Lehua Islet is a Hawai‘i Seabird Sanctuary federally owned by the U.S. Coast Guard and maintained by the Hawai‘i Department of Land and Natural Resources. Forty species of marine

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benthic algal species were reported by Wood *et al.* (2004) from Lehua Islet. The specimens were collected by Maya LeGrande in March and May 2003 "... from inter-tidal and shallow marine areas near the rock bench fronting the sea caves along Lehua's south shore." The algae recorded from Lehua Islet (see Appendix) included 2 species of Cyanobacteria, 21 species of Rhodophyta, 12 species of Phaeophyceae, and 5 species of Chlorophyta. All of the above specimens were databased and deposited in the *Herbarium Pacificum* (BISH) at the Bernice P. Bishop Museum.

This paper is based on algal specimens collected in the intertidal zone, shallow coral reefs (SCR, <30 m depth) and the mesophotic coral ecosystem (MCE, 30–150 m depth) from Ni'ihau and adjacent Lehua Islet. In this paper, Lehua Islet is considered part of Ni'ihau; thus algae collected from Lehua Islet are considered a "New island record" for Ni'ihau. BISH specimens are deposited at the Bishop Museum and MHI (Main Hawaiian Islands) specimens are deposited at Alison R. Sherwood's (ARS) Laboratory at the University of Hawai'i Department of Botany.

Guiry & Guiry (2020) and Brummitt & Powell (1992) were, respectively, consulted for currently accepted algal names and synonyms, and for spelling of authors of algal names.

Most unpublished algal collections from Ni'ihau and Lehua Islet were hand collected by Lynn M. Hodgson from Lehua Islet on 26–27 May 2001 via SCUBA at depths of 12.2–27.4 m, and by Ryan Okano, aboard NOAA R/V *Hi'ialakai*, from Ni'ihau on 9–11 Aug 2006 via SCUBA at depths of 10.7–13.7 m, and from the intertidal and SCR off Lehua Islet on 12 Aug 2006. Heather Spalding, Randall Kosaki, Jason Leonard and Steve Matadobra, aboard NOAA R/V *Hi'ialakai*, hand collected specimens from the SCR and/or MCE on 14–15 Sep 2018. A fourth algal collection was retrieved by Louise M. Giuseffi and Annika Little from NOAA freezers which held algae collected from Lehua Islet and Ni'ihau. Additional specimens collected by Ryan Okano, Aline Tribollet, and Stefane Charette from Lehua Islet and Ni'ihau on 9–12 Aug 2006 via SCUBA at depths of 9–16 m were also retrieved from the freezers.

Ten species collected from Lehua Islet (Wood *et al.* 2004) and one species collected from Ni'ihau (Abbott & Huisman 2004), each preceded by an asterisk (*), were reported in the past literature. Forty-seven species represent new records for Ni'ihau (includes adjacent Lehua Islet) in the Main Hawaiian Islands (MHI). Information on species distribution in the coastal waters of the 10 islands, atolls and shoals of Papahānaumokuākea Marine National Monument (PMNM) can be obtained from Tsuda (2014) and Tsuda *et al.* (2015). One green alga, *Codium hawaiiense* P.C. Silva & Chacana, represents a new record for Ni'ihau and the MHI. Two Cyanobacteria, *Rivularia atra* Roth and *Symploda atlantica* Gomont, may also represent new published records for the MHI. Specimens of the two species of Cyanobacteria, however, are documented from the MHI in BISH.

Of the 68 species of marine benthic algae reported from Ni'ihau (including Lehua Islet), only 11 species (16%) were collected from the MCE (30–150 m depth). The species included three species of Rhodophyta (*Amansia glomerata* C. Agardh, *Haloplegma duperreyi* Mont., *Plocamium sandvicense* J. Agardh), three species of Phaeophyceae (*Dictyota ceylanica* Kütz., *Dictyota* sp., *Distromium* sp.) and five species of Chlorophyta (*Cladophora* sp., *Codium mamillosum* Harv., *Halimeda opuntia* (L.) J.V. Lamour., *Phyllocladon anastomosans* (Harv.) Kraft & M.J. Wynne, *Siphonocladus tropicus* (P. Crouan & H. Crouan) J. Agardh).

Phylum CYANOBACTERIA

Blennothrix cantharidosum (Gomont
ex Gomont)

New island record

[Anagnost. & Komárek [= *Hydrocoleum cantharidosum* Gomont]

MHI distribution. Kauaʻi (Tilden 1910); Oʻahu (Khan 1967).

Material examined. NIʻIHAU: BISH 589663, coll. M. Reed, 14 Aug 1905.

Note. The specimen, initially identified by F. Drouet as *Hydrocoleum cantharidosum* Gomont in May 1987, was dark green and formed slimy rocks in shallow water.

Leptolyngbya crosbyana (Tilden) Anagnost.
& Komárek

New island record

[= *Phormidium crosbyanum* Tilden]

MHI distribution. Oʻahu (Tilden 1910, Huisman *et al.* 2007), Kahoʻolawe (Coles *et al.* 1998, Tsuda & Abbott 2018).

Material examined. LEHUA ISLET: MHI 061, NFWF cruise 2018, 8 m depth, coll. H. Spalding, 14 Sep 2018.

Lyngbya confervoides C. Agardh

New island record

MHI distribution. Hawaiian Islands (Tilden 1910).

Material examined. LEHUA ISLET: BISH 777664 (NOAA 167-1312), LEH 3, 15 m depth, coll. unspecified, 18 Jul 2005; BISH 777665 (NOAA 167-1313), LEH 3, 15 m depth, coll. unspecified, 18 Jul 2005; BISH 777666 (NOAA 167-1314), LEH 3, 15 m depth, coll. unspecified, 18 Jul 2005.

Note. All trichomes were 12–24 µm dia.

Phormidium sp.

Material examined. LEHUA ISLET: MHI 060, NFWF cruise 2018, 11 m depth, coll. H. Spalding, 14 Sep 2018.

Rivularia atra P.H. Roth ex Bornet & Flahault **New island record**

Material examined. LEHUA ISLET: BISH 777667 (NOAA 167-1315), LEH 03, 15 m depth, coll. unspecified, 18 Jul 2005.

Schizothrix cf. calcicola Gomont

New island record

MHI distribution. Oʻahu (Khan 1967).

Material examined. LEHUA ISLET: BISH 777662 (NOAA 167-1310), LEH 3, 15 m depth, coll. unspecified, 18 Jul 2005.

Symploca atlantica Gomont

New island record

Material examined. LEHUA ISLET: MHI 043, NFWF cruise 2018, 9 m depth, coll. H. Spalding, 14 Sep 2018; MHI 044, NFWF cruise 2018, 9 m depth, coll. H. Spalding, 14 Sep 2018; MHI 051, NFWF cruise 2018, 11 m depth, coll. H. Spalding, 14 Sep 2018; MHI 052, NFWF cruise 2018, 8 m depth, coll. H. Spalding, 14 Sep 2018; MHI 070, NFWF cruise 2018, 8 m depth, coll. H. Spalding, 14 Sep 2018.

Phylum RHODOPHYTA

Acanthophora pacifica (Setch.) Kraft

New island record

MHI distribution. Kauaʻi, Oʻahu, Maui, Lānaʻi, Kahoʻolawe, Hawaiʻi (Abbott 1999).

Material examined. NI'HAU: BISH 725042 (IA 31752), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 777683 (NOAA 167-1333), NII 05, 12–14 m depth, coll. R. Okano & S. Charette, 11 Aug 2006; BISH 777672 (NOAA 167-1320), NII05, 11–12 m depth, coll. C. Richards, 10 Nov 2008. LEHUA ISLET: BISH 716747 (IA 28411), key hole, 15.2–24.4 m, coll. L.M. Hodgson, 27 May 2001.

***Actinotrichia fragilis* (Forssk.) Børgesen** **New island record**

MHI distribution. Kaua'i, O'ahu, Moloka'i, Lāna'i, Maui, Kaho'olawe, Hawai'i (Abbott 1999).

Material examined. NI'HAU: BISH 725030 (IA 31728), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 725036 (IA 31736), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 777687 (NOAA 167-1337), NII 05, 12–14 m depth, coll. R. Okano, 11 Aug 2006.

***Aglaothamnion cordatum* (Børgesen)**

Feldm.-Maz.

New island record

MHI distribution. Kaua'i, O'ahu, Moloka'i, Maui (Abbott 1999).

Material examined. LEHUA ISLET: BISH 701349 (LR 003), 15.2–27.4 m depth, coll. L.M. Hodgson, 26 May 2001.

****Amansia glomerata* C. Agardh**

MHI distribution. Lehua Islet (Wood *et al.* 2004); Kaua'i, O'ahu, Maui, Kaho'olawe, Hawai'i (Abbott 1999).

Material examined. NI'HAU: BISH 777652 (NOAA 167-1300), NII 09, 13–16 m depth, coll. R. Okano & S. Charette, 11 Aug 2006; BISH 777680 (NOAA 167-1328), NII 05, 12–14 m depth, coll. R. Okano & S. Charette, 11 Aug 2006; BISH 777671 (NOAA 167-1319), NII 05, 11–12 m depth, coll. C. Richards, 10 Nov 2008; MHI 079 (ARS 09530), NFWF cruise 2018, 73 m depth, coll. R. Kosaki, 15 Sep 2018; MHI 105 (ARS 09536), NFWF cruise 2018, 73 m depth, coll. J. Leonard, 15 Sep 2018. LEHUA ISLET: BISH 692134 (IA 28402), Vertical Awareness Pinnacle, 27.4 m depth, coll. L.M. Hodgson, 26 May 2001; BISH 701902 (LR 007), 15.2–27.4 m depth, coll. L.M. Hodgson, 26 May 2001; BISH 777673 (NOAA 67-1321), 9–12 m depth, coll. A. Tribollet & R. Okano, 12 Aug 2006; MHI 024 (ARS 09495), NFWF cruise 2018, 74 m depth, coll. R. Kosaki, 14 Sep 2018; MHI 040 (ARS 09511), NFWF cruise 2018, 49 m depth, coll. S. Matadobra, 14 Sep 2018; MHI 049, NFWF cruise 2018, 11 m depth, coll. H. Spalding, 14 Sep 2018.

***Antithamnionella breviramosa* (E.Y. Dawson)**

E.M. Woll.

New island record

MHI distribution. O'ahu, Maui (Abbott 1999).

Material examined. LEHUA ISLET: BISH 7019005 (LR 010), 15.2–27.4 m depth, coll. L.M. Hodgson, 26 May 2001.

****Asparagopsis taxiformis* (Delile) Trevis.**

MHI distribution. Lehua Islet (Wood *et al.* 2004); Kaua'i, O'ahu, Moloka'i, Hawai'i (Abbott 1999).

Material examined. LEHUA ISLET: BISH 725047 (IA 31758), NOAA R/V *Hi'ialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

***Ceramium* sp.**

Material examined. LEHUA ISLET: BISH 691247, key hole, epizoic on hydroid, 15.2–24.4 m depth, coll. L.M. Hodgson, 27 May 2001.

Note. Only a few immature specimens of this approximately 40 μm dia *Ceramium* sp. were available for identification.

Ceratodictyon variable (J. Agardh)

R.E. Norris

New island record

MHI distribution. O'ahu, Lāna'i, Hawai'i (Abbott 1999).

Material examined. LEHUA ISLET: BISH 725054 (IA 31767), NOAA R/V *Hi'ialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

Chrysomenia okamurae Yamada & Segawa **New island record**

MHI distribution. Maui, Hawai'i (Abbott 1999).

Material examined. LEHUA ISLET: BISH 725052 (IA 31764), NOAA R/V *Hi'ialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

Exophyllum sp.

Material examined. NI'HAU: BISH 725028 (IA 31726), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

Note. Although only one species, *Exophyllum wentii* Weber-van Bosse, is recognized in the genus, the Hawaii specimens differ from the type material (Indonesia) as per detailed study by Indy *et al.* (2006). Further studies are necessary on this Hawaiian specimen.

Galaxaura divaricata (L.) Huisman &

R.A. Towns.

New island record

[= *Galaxaura fasciculata* Kjellm.]

MHI distribution. O'ahu, Moloka'i, Kaho'olawe (Abbott 1999).

Material examined. NI'HAU: BISH 725027 (IA 31725), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006. LEHUA ISLET: BISH 725049 (IA 31760), NOAA R/V *Hi'ialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

Gibsmithia hawaiiensis Doty

New island record

MHI distribution. Kaua'i, O'ahu, Lāna'i, Kaho'olawe, Hawai'i (Abbott 1999).

Material examined. NI'HAU: BISH 725029 (IA 31727), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

Haloplegma duperreyi Mont.

New island record

MHI distribution. Kaua'i, O'ahu, Moloka'i, Maui, Hawai'i (Abbott 1999); Kaho'olawe (Tsuda & Abbott 2018).

Material examined. LEHUA ISLET: MHI 039 (ARS 09510), NFWF cruise 2018, 49 m depth, coll. S. Matadobra, 14 Sep 2018.

Halymenia sp.

Material examined. NI'HAU: BISH 725033 (IA 31733), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

Note. The specimens are represented by two sterile blades, 2 and 3 cm high, respectively.

Herposiphonia crassa Hollenb.

New island record

MHI distribution. O'ahu, Maui, Hawai'i (Abbott 1999).

Material examined. LEHUA ISLET: BISH 701347 (LR 001), 15.2–27.4 m depth, coll. L.M. Hodgson, 27 May 2001.

Jania adhaerens J.V. Lamour.**New island record**

MHI distribution. O‘ahu, Maui, Hawai‘i (Abbott 1999).

Material examined. LEHUA ISLET: BISH 701904 (LR 009), 15.2–27.4 m depth, coll. L.M. Hodgson, 27 May 2001.

Jania pumila J.V. Lamour.**New island record**

MHI distribution. O‘ahu, Maui, Hawai‘i (Abbott 1999).

Material examined. NI‘IHAU: BISH 777657 (NOAA 167-1305), NII09, 13–16 m depth, coll. R. Okano & S. Charette, 11 Aug 2006. LEHUA ISLET: BISH 777670 (NOAA 167-1318), LEH 03, on hydroid, 15 m depth, coll. unspecified, 18 Jul 2005.

Jania subulata (J. Ellis & Sol.) Sond.**New island record**

[= *Haliptilon subulatum* (Ellis & Solander) H.W. Johans.]

MHI distribution. Kaua‘i, O‘ahu, Moloka‘i, Lāna‘i, Maui, Hawai‘i (Abbott 1999).

Material examined. NI‘IHAU: BISH 725017 (IA 31712), NOAA R/V *Hi‘ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 777679 (NOAA 167-1327), NII 03, 15 m depth, coll. A. Tribollet & R. Okano, 9 Aug 2006.

Laurencia sp.

Material examined. LEHUA ISLET: BISH 725056 (IA 31769) & BISH 725051 (IA 31755), NOAA R/V *Hi‘ialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

Note. Specimens appear similar to *Laurencia galtsoffii* M. Howe, however, cortical cells are clearly not protruding.

Martensia hawaiiensis A.R. Sherwood

& S.M. Lin

New island record

MHI distribution. Kaua‘i, O‘ahu, Lāna‘i, Maui (Sherwood *et al.* 2019).

Material examined. NI‘IHAU: BISH 725032 (IA 31732), NOAA R/V *Hi‘ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 725034 (IA 31734), NOAA R/V *Hi‘ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 725035 (IA 31735), NOAA R/V *Hi‘ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 725038 (IA 31738), NOAA R/V *Hi‘ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; MHI 129 (ARS 09542), NFWF cruise 2018, 20 m depth, coll. H. Spalding, 15 Sep 2018; MHI 131 (ARS 09579), NFWF cruise 2018, 11 m depth, coll. H. Spalding, 15 Sep 2018.

Note. The newly described species was also recorded from Midway Atoll in the PMNM (Sherwood *et al.* 2019).

Peyssonnelia cf. inamoena Pilg.**New island record**

Material examined. NI‘IHAU: BISH 777660 (NOAA 167-1308), NII 09, 13–16 m depth, coll. R. Okano & S. Charette, 11 Aug 2006.

****Plocamium sandvicense*** J. Agardh

MHI distribution. Lehua Islet (Wood *et al.* 2004); Kaua‘i, O‘ahu, Maui, Hawai‘i (Abbott 1999).

Material examined. NI‘IHAU: MHI 106 (ARS 09537), NFWF cruise 2018, 73 m depth, coll. J. Leonard, 15 Sep 2018. LEHUA ISLET: MHI 031 (ARS 09498) NFWF cruise 2018, 49 m depth, coll. R. Kosaki, 14 Sep 2018.

Spyridea filamentosa (Wulfen) Harv.**New island record**

MHI distribution. Kaua‘i, O‘ahu, Maui, Kaho‘olawe, Hawai‘i (Abbott 1999).

Material examined. LEHUA ISLET: BISH 725044a (IA 31755) & BISH 725057 (IA 31770), NOAA R/V *Hi'ialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

***Tolypocladia glomerulata* (C. Agardh)**

F. Schmitz

New island record

MHI distribution. O'ahu, Maui, Kaho'olawe, Hawai'i (Abbott 1999).

Material examined. LEHUA ISLET: BISH 693512 (IA 28405), key hole, 15.2–24.4 m depth, coll. L.M. Hodgson, 26 May 2001; BISH 701909 (LR 014), 15.2–24.4 m depth, coll. L.M. Hodgson, 26 May 2001.

Class PHAEOPHYCEAE

****Chnoospora minima* (K. Hering) Papenf.**

MHI distribution. Lehua Islet (Wood *et al.* 2004); O'ahu, Maui, Kaho'olawe, Hawai'i (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 725043 (IA 31754), NOAA R/V *Hi'ialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

****Colpomenia sinuosa* (K. Mert. ex Roth) Derbès & Solier**

MHI distribution. Lehua Islet (Wood *et al.* 2004); Kaua'i, O'ahu, Maui, Hawai'i (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 725046 (IA 31757), NOAA R/V *Hi'ialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

***Dictyopteris australis* (Sond.) Askenasy**

New island record

MHI distribution. Kaua'i, O'ahu, Moloka'i, Lāna'i, Maui, Hawai'i (Abbott & Huisman 2004); Kaho'olawe (Tsuda & Abbott 2018).

Material examined. NI'ĪHAU: BISH 777682 (NOAA 167-1330), NII 05, 12–14 m depth, coll. R. Okano & S. Charette, 11 Aug 2006.

***Dictyopteris repens* (Okamura) Børgesen**

New island record

MHI distribution. O'ahu, Moloka'i, Maui, Hawai'i (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 701901 (LR 006), 15.2–24.4 m depth, coll. L.M. Hodgson, 26 May 2001.

***Dictyopteris* sp.**

Material examined. LEHUA ISLET: BISH 701906 (LR 011), 15.2–24.4 m depth, coll. L.M. Hodgson, 26 May 2001.

Note. The 5 mm long “leaf” was initially identified as *Dictyopteris plagiogramma* (Montagne) Vickers; however, the veinlets, which extend from midrib to margin, are absent.

***Dictyota acutiloba* J. Agardh**

New island record

MHI distribution. Kaho'olawe (Coles *et al.* 1998); O'ahu, Moloka'i, Lāna'i, Maui, Hawai'i (Abbott & Huisman 2004).

Material examined. NI'ĪHAU: BISH 725022 (IA 31715), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

****Dictyota bartayresiana* J.V. Lamour.**

MHI distribution. Lehua Islet (Wood *et al.* 2004); Kaua'i, O'ahu, Lāna'i, Maui (Abbott & Huisman 2004).

Material examined. NI'ĪHAU: BISH 725026 (IA 31724), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

***Dictyota ceylanica* Kütz.**

New island record

MHI distribution. Kaua'i, O'ahu, Moloka'i, Lāna'i, Maui, Kaho'olawe, Hawai'i (Abbott & Huisman 2004).

Material examined. NI'ĪHAU: BISH 777653 (NOAA 167-1301), NII 09, 13–16 m depth, coll. R. Okano & S. Charette, 11 Aug 2006; BISH 777654 (NOAA 167-1302), NII 09, 13–16 m depth, coll. R. Okano & S. Charette, 11 Aug 2006; BISH 777685 (NOAA 167-1335), NII 05, 12–14 m depth, coll. R. Okano & S. Charette, 11 Aug 2006. LEHUA ISLET: BISH 777663 (NOAA 167-1311), LEH 03, 15 m depth, coll. unspecified, 18 Jul 2005; MHI 042a (ARS 09513), NFWF cruise 2018, 49 m depth, coll. S. Matadobra, 14 Sep 2018; MHI 047 (ARS 09518), NFWF cruise 2018, 9 m depth, coll. H. Spalding, 14 Sep 2018.

***Dictyota friabilis* Setch.**

New island record

MHI distribution. Kaua'i, O'ahu, Lāna'i, Maui, Kaho'olawe, Hawai'i (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: MHI 046 (ARS 09517). NFWF cruise 2018, 9 m depth, coll. H. Spalding, 14 Sep 2018; MHI 071, NFWF cruise 2018, 8 m depth, coll. H. Spalding, 14 Sep 2018.

***Dictyota* sp.**

Material examined. NI'ĪHAU: MHI 082 (ARS 09533), NFWF cruise 2018, 73 m depth, coll. R. Kosaki, 15 Sep 2018.

Note. The entire specimen is a 3 mm long apical fragment from the MCE depth which is, morphologically, not possible to identify to species.

***Distromium* sp.**

Material examined. NI'ĪHAU: BISH 700665 (IA 28415), between Ni'ihau and Lehua, 12.2–18.3 m depth, coll. L.M. Hodgson, 26 May 2001; MHI 081 (ARS 09532), NFWF cruise 2018, 73 m depth, coll. R. Kosaki, 15 Sep 2018; MHI 100 (ARS 09544), NFWF cruise 2018, 73 m depth, coll. J. Leonard, 15 Sep 2018; MHI 116 (ARS 09540), NFWF cruise 2018, 55 m depth, coll. S. Matadobra, 15 Sep 2018. LEHUA ISLET: BISH 681171 (IA 28401), Vertical Awareness Pinnacle, 27.4 m depth, coll. L.M. Hodgson, 26 May 2001; BISH 700666 (IA 28401), Vertical Awareness Pinnacle, 27.4 m depth, coll. L.M. Hodgson, 26 May 2001; MHI 022 (ARS 09493), NFWF cruise 2018, 74 m depth, coll. R. Kosaki, 14 Sep 2018; MHI 035a (ARS 09507), NFWF cruise 2018, 76 m depth, coll. J. Leonard, 14 Sep 2018; MHI 036 (ARS 09508), NFWF cruise 2018, 76 m depth, coll. J. Leonard, 14 Sep 2018; MHI 041 (ARS 09512), NFWF cruise 2018, 49 m depth, coll. S. Matadobra, 14 Sep 2018.

Note. Studies are presently underway on separating the molecular, morphological and ecological characteristics of Hawaiian *Distromium*.

***Lobophora* sp.**

Material examined. NI'ĪHAU: BISH 725023 (IA 31720), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 725037 (IA 31737), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006. LEHUA ISLET: MHI-045, NFWF cruise 2018, 9 m depth, coll. H. Spalding, 14 Sep 2018.

Note. The descriptions of 10 new species of *Lobophora* from New Caledonia (Vieira *et al.* 2014) and 8 new species from the western Atlantic and eastern Pacific (Camacho *et al.* 2019) clearly prompt further detailed studies on Hawaiian *Lobophora*.

****Padina sanctae-crucis*** Børgesen

MHI distribution. Lehua Islet (Wood *et al.* 2004); Kaua'i, O'ahu, Lāna'i, Maui, Hawai'i (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 777655 (NOAA 167-1303), NII 09, 13–16 m depth, coll. R. Okano & S. Charette, 11 Aug 2006. LEHUA ISLET: BISH 725053 (IA 31765), intertidal, coll. R. Okano, 12 Aug 2006; MHI-050, NFWF cruise 2018, 11 m depth, coll. H. Spalding, 14 Sep 2018.

Sargassum obtusifolium J. Agardh**New island record**

[= *Sargassum hawaiiensis* Doty & Newhouse]

MHI distribution. O'ahu, Moloka'i, Maui, Hawai'i (Abbott & Huisman 2004); Kaho'olawe (Tsuda & Abbott 2018).

Material examined. LEHUA ISLET: BISH 700824 (IA 28403), Vertical Awareness Pinnacle, 27.4 m depth, coll. L.M. Hodgson, 26 May 2001; BISH 777668 (NOAA 167-1316), LEH 03, 15 m depth, coll. unspecified, 18 Jul 2005.

Sargassum polyphyllum J. Agardh**New island record**

MHI distribution. Kaua'i, Maui, Kaho'olawe, Hawai'i (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 725045 (IA 31756), intertidal, coll. R. Okano, 12 Aug 2006.

****Turbinaria ornata*** (Turner) J. Agardh

MHI distribution. Lehua Islet (Wood *et al.* 2004); O'ahu, Maui, Hawai'i (Abbott & Huisman 2004); Kaho'olawe (Tsuda & Abbott 2018).

Material examined. NI'IHAU: BISH 725031 (IA 31729), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 725040 (IA 31740), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006. LEHUA ISLET: BISH 725048 (IA 31759), intertidal, coll. R. Okano, 12 Aug 2006.

Phylum CHLOROPHYTA***Boodlea composita*** (Harv.) F. Brand**New island record**

MHI distribution. Kaua'i, O'ahu, Lāna'i, Maui (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 725012 (IA 31707), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

Bornetella sphaerica (Zanardini) Solms**New island record**

MHI distribution. Kaua'i, O'ahu, Moloka'i, Lāna'i, Maui, Kaho'olawe (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 725010 (IA 31705), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

Caulerpa taxifolia (Vahl) C. Agardh**New island record**

MHI distribution. O'ahu, Lāna'i, Maui, Kaho'olawe, Hawai'i (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 725015 (IA 31710), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

Caulerpa webbiana Mont.**New island record**

MHI distribution. Kaua'i, O'ahu, Maui, Kaho'olawe (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 777681 (NOAA 167-1329), NII 05, 12–14 m depth, coll. R. Okano & S. Charette, 11 Aug 2006.

***Chaetomorpha antennina* (Bory) Kütz. New island record**

MHI distribution. Kauaʻi, Oʻahu, Molokaʻi, Lānaʻi, Maui, Hawaiʻi (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 725044b (IA 31755), NOAA R/V *Hiʻialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

***Cladophora* sp.**

Material examined. NIʻIHAU: MHI 080 (ARS 09531), NFWF cruise 2018, 73 m depth, coll. R. Kosaki, 15 Sep 2018; MHI 104 (ARS 09535), NFWF cruise 2018, 73 m depth, coll. J. Leonard, 15 Sep 2018.

Note. The apical cells of the 4 cm tall erect filaments are up to 1 mm dia and appear to resemble the branching pattern of *Cladophoropsis* except for the cell wall closure.

***Codium hawaiiense* P.C. Silva & Chacana New MHI record**

Material examined. NIʻIHAU: BISH 725011 (IA 31706), NOAA R/V *Hiʻialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 725018 (IA 31713), NOAA R/V *Hiʻialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

Note. BISH 725011 is a 1 cm long branched fragment.

***Codium mamillosum* Harv. New island record**

MHI distribution. Oʻahu, Molokaʻi, Maui (Abbott & Huisman 2004).

Material examined. NIʻIHAU: MHI 078 (ARS 09529), NFWF cruise 2018, 73 m depth, coll. R. Kosaki, 15 Sep 2018; MHI 125 (ARS 09541), NFWF cruise 2018, 55 m depth, coll. S. Matadobra, 15 Sep 2018.

***Dictyosphaeria cavernosa* (Forssk.) Børgesen New island record**

MHI distribution. Oʻahu, Molokaʻi, Lānaʻi, Maui, Kahoʻolawe (Abbott & Huisman 2004).

Material examined. NIʻIHAU: BISH 777677 (NOAA 167-1325), NII 03, 15 m depth, coll. A. Tribollet & R. Okano, 9 Aug 2006. LEHUA ISLET: BISH 725055 (IA 31768), NOAA R/V *Hiʻialakai*, intertidal, coll. R. Okano, 12 Aug 2006.

***Dictyosphaeria versluisii* Weber-van Bosse New island record**

MHI distribution. Kauaʻi, Oʻahu, Lānaʻi, Kahoʻolawe, Hawaiʻi (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 777669 (NOAA 167-1317), LEH 03, 15 m depth, coll. unspecified, 18 Jul 2005.

***Halimeda discoidea* Decne. New island record**

MHI distribution. Oʻahu, Molokaʻi, Kahoʻolawe (Abbott & Huisman 2004).

Material examined. NIʻIHAU: BISH 725016 (IA 31711), NOAA R/V *Hiʻialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 777676 (NOAA 167-1324), NII 03, 15 m depth, coll. A. Tribollet & R. Okano, 9 Aug 2006.

***Halimeda opuntia* (L.) J.V. Lamour. New island record**

MHI distribution. Molokaʻi, Lānaʻi, Kahoʻolawe (Abbott & Huisman 2004).

Material examined. NIʻIHAU: BISH 777658 (NOAA 167-1306), NII 09, 13–16 m depth, coll. R. Okano & S. Charette, 11 Aug 2006; MHI 109, NFWF cruise 2018, 73 m depth, coll. J. Leonard, 15 Sep 2018. LEHUA ISLET: MHI 023 (ARS 09494), NFWF cruise 2018, 74 m depth, coll. R. Kosaki, 14 Sep 2018.

****Microdictyon setchellianum*** M. Howe

MHI distribution. Lehua Islet (Wood *et al.* 2004), O'ahu, Moloka'i, Maui, Kaho'olawe (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 777661 (NOAA 167-1309), LEH 03, 15 m depth, coll. unspecified, 18 Jul 2005; BISH 725050 (IA 31761), NOAA R/V *Hi'ialakai*, intertidal, coll. R. Okano, 12 Aug 2006; MHI 053, NFWF cruise 2018, 11 m depth, coll. H. Spalding, 14 Sep 2018.

Microdictyon umbilicatum (Velley) Zanardini **New island record**

MHI distribution. O'ahu, Maui, Kaho'olawe, Hawai'i. (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 701734 (IA 28404), key hole, 15.2–24.4 m depth, coll. L.M. Hodgson, 26 May 2001; BISH 777674 (NOAA 167-1322), LEH 01, 9–12 m depth, coll. A. Tribollet & R. Okano, 12 Aug 2006.

Neomeris annulata Dickie**New island record**

MHI distribution. O'ahu, Maui, Kaho'olawe, Hawai'i (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 725013 (IA 31708), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006; BISH 725039 (IA 31739), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006.

****Neomeris vanbosseae*** M. Howe

MHI distribution. Lehua Islet (Wood *et al.* 2004); Kaua'i, O'ahu, Lāna'i (Egerod 1952); Maui, Kaho'olawe, Hawai'i (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 777659 (NOAA 167-1307), NII 09, 13–16 m depth, coll. R. Okano and S. Charette, 11 Aug 2006; BISH 777678 (NOAA 167-1326), NII 03, 15 m depth, coll. A. Tribollet and R. Okano, 09 Aug 2006.

Palmophyllum crassum (Naccari) Rabenh.**New island record**

MHI distribution. Oahu (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 777656 (NOAA 167-1304), NII 09, 13–16 m depth, coll. R. Okano & S. Charette, 11 Aug 2006; BISH 777684 (NOAA 167-1334), NII 05, 12–14 m depth, coll. R. Okano & S. Charette, 11 Aug 2006.

Phylloctyton anastomosans (Harv.) Kraft &

M.J. Wynne

New island record

MHI distribution. Kaua'i, O'ahu, Maui (Abbott & Huisman 2004).

Material examined. NI'IHAU: MHI-107 (ARS 09538), NFWF cruise 2018, 73 m depth, coll. J. Leonard, 15 Sep 2018.

****Pseudochlorodesmis parva*** W.J. Gilbert

[= *Siphonogramen parvum* (W.J. Gilbert) I.A. Abbott & Huisman]

MHI distribution. Ni'ihau, O'ahu (Abbott & Huisman 2004).

Material examined. NI'IHAU: BISH 725014 (IA 31709), NOAA R/V *Hi'ialakai*, 10.7–13.7 m depth, coll. R. Okano, 9–11 Aug 2006. LEHUA ISLET: MHI 063 (ARS 09525), NFWF cruise 2018, 8 m depth, coll. H. Spalding, 14 Sep 2018.

Note. Guiry & Guiry (2020) cites *Siphonogramen parvum* as the accepted species name of *Pseudochlorodesmis parva*. Verbruggen *et al.* (2009), however, showed convincing molecular evidence to maintain the species *P. parva* over *S. parvum*. The siphons of MHI 063 were 24–37 µm dia.

Rhipidosiphon javensis* Mont.*New island record**

MHI distribution. Kaua‘i, O‘ahu, Moloka‘i, Maui (Abbott & Huisman 2004).

Material examined. LEHUA ISLET: BISH 777675 (NOAA 167-1323), LEH 01, 9–12 m depth, coll. A. Tribollet & R. Okano, 12 Aug 2006.

***Siphonocladus tropicus* (P. Crouan & H. Crouan)**

J. Agardh

New island record

MHI distribution. Kaua‘i, O‘ahu, Maui (Abbott & Huisman 2004); Kaho‘olawe (Tsuda & Abbott 2018).

Material examined. NI‘IHAU: MHI 108 (ARS 09539), NFWF cruise 2018, 73 m depth, coll. J. Leonard, 15 Sep 2018.

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LITERATURE CITED

- Abbott, I.A.** 1999. *Marine red algae of the Hawaiian Islands*. Bishop Museum Press, Honolulu. 477 pp.
- Abbott, I.A. & Huisman, J.M.** 2004. Marine green and brown algae of the Hawaiian Islands. *Bishop Museum Bulletin in Botany* **4**, 259 pp.
- Brummitt, R.K. & Powell, C.E.** 1992. *Authors of plant names*. Royal Botanic Gardens, Kew. 732 pp.
- Camacho, O., Fernández-García, C., Vieira, C., Gurgel, C.F.D., Norris, J.N., Freshwater, D.W., & Fredericq, S.** 2019. The systematics of *Lobophora* (Dictyotales, Phaeophyceae) in the western Atlantic and eastern Pacific Oceans: Eight new species. *Journal of Phycology* **55**: 611–624.
- Coles, S.L., DeFelice, R.C., Smith, J.E., Muir, D. & Eldredge, L.G.** 1998. Determination of baseline conditions for introduced marine species in nearshore waters of the island of Kaho‘olawe, Hawaii. Prepared for the Kaho‘olawe Island Reserve Commission. *Bishop Museum Technical Report* **14**, 26 pp.
- Egerod, L.E.** 1952. An analysis of the siphonous Chlorophycophyta, with special reference to the Siphonocladales, Siphonales and Dasycladales of Hawaii. *University of California Publication in Botany* **25**: 325–454, pls. 29–42.

- Guiry, M.D. & Guiry, G.M.** 2020. AlgaeBase. World-wide electronic publication. National University of Ireland, Galway. Available at: <http://www.algaebase.org>. (Last accessed 7 Feb 2020).
- Huisman, J.M., Abbott, I.A. & Smith, C.M.** 2007. *Hawaiian reef plants*. University of Hawai'i Sea Grant College Program, Report No. UNIHI-SEAGRANT-BA-03-02, 264 pp.
- Indy, J.R., N'Yeurt, A.D.R. & Yasui, H.** 2006. Reproductive morphology and taxonomic reappraisal of *Exophyllum wentii* Weber-van Bosse (Rhodomelaceae), Rhodophyta) from Bali Island, Indonesia. *Phycological Research* **54**: 308–316.
- Khan, K.R.** 1967. Developmental morphology of some blue-green algae of Oahu shores in relation to certain ecological factors. Unpublished M.S. Thesis, Department of Botany, University of Hawai'i at Mānoa, Honolulu. 182 pp.
- Sherwood, A., Lin, S.-M., Wade, R., Spalding, H., Smith, C. & Kosaki, R.** 2019. Characterization of *Martensia* (Delesseriaceae; Rhodophyta) from shallow and mesophotic habitats in the Hawaiian Islands: description of four new species. *European Journal of Phycology*. doi.org/10.1080/09670262.2019.1668062. [Published online 29 Oct. 2019]
- Tilden, J.** 1910. *Minnesota algae*. Volume I. The Myxophyceae of North America and adjacent regions including Central America, Greenland, Bermuda, the West Indies and Hawaii. Report of the Survey [Geological and Natural History Survey of Minnesota]. Botanical Series. VIII. Board of Regents, University of Minnesota, Minneapolis. 328 pp., 20 pls.
- Tsuda, R.T.** 2014. Bibliographic catalogue of the marine benthic algae in the Papahānaumokuākea Marine National Monument (Northwestern Hawaiian Islands). *Phytotaxa* **167**: 35–60. [<http://dx.doi.org/10.11646/phytotaxa.167.1.2>]
- Tsuda, R.T. & Abbott, I.A.** 2018. New species records and voucher specimens of marine benthic algae from Kaho'olawe, main Hawaiian Islands. In Evenhuis, N.L. (ed.), Records of the Hawaii Biological Survey for 2017. *Bishop Museum Occasional Papers* **123**: 41–50.
- Tsuda, R.T., Spalding, H.L. & Sherwood, A.R.** 2015. New species records of marine benthic algae in the Papahānaumokuākea Marine National Monument (Northwestern Hawaiian Islands). In Evenhuis, N.L. & Miller, S.E. (eds.), Records of the Hawaii Biological Survey for 2014. Part I: Articles. *Bishop Museum Occasional Papers* **116**: 41–47.
- Verbruggen, H., Vlaeminck, C., Sauvage, T., Sherwood, A.R., Leliaert, F. & De Clerck, O.** 2009. Phylogenetic analysis of *Pseudochlorodesmis* strains reveals cryptic diversity above the family level in the siphonous green algae (Bryopsidales, Chlorophyta). *Journal of Phycology* **45**: 726–731.
- Vieira, C., D'hondt, S., De Clerck, O., & Payri, C.E.** 2014. Toward an inordinate fondness for stars, beetles and *Lobophora*? Species diversity of the genus *Lobophora* (Dictyotales, Phaeophyceae). *Journal of Phycology* **50**: 1101–1119.
- Wood, K.R., VanderWerf, E.A. Swenson, C., LeGrande, M., Eijzenga, H. & Walker, R.I.** 2004. Biological inventory and assessment of Lehua Islet, Kaua'i County, Hawai'i. U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, USFWS Research Grant No. 12200-1-JO14, Final Report. 62 pp.

APPENDIX

Algal Species with BISH Numbers Reported from Lehua Islet Collected by Maya LeGrande in March and May 2003 in Wood *et al.* (2004).

Phylum Cyanobacteria

Lyngbya majuscula (Dillwyn) Harv. [BISH 696669]

Lyngbya semiplena Gomont [BISH 696668]

Phylum Rhodophyta

Aglaothamnion boergesenii (N. Aponte & D.L. Ballant.) L'Hardy-Halos & Rueness [BISH 695059]

Ahnfeltiopsis concinna (J. Agardh) P.C. Silva & De Cew [BISH 695490]

Amansia glomerata C. Agardh [BISH 695442]

Amphiroa rigida J.V. Lamour. [BISH 695453]

Antithamnion antillanum Børgesen [BISH 695456]

Asparagopsis taxiformis (Delile) Trevis. [BISH 695439]

Botryocladia skottsbergii (Børgesen) Levring [BISH 695449]

Champia parvula (C. Agardh) Harv. [BISH 695448]

Chrysymenia sp. [BISH 695388]

Dasya iridescens (Schlech) A. Millar & I.A. Abbott [BISH 695438]

Dasya murrayana I.A. Abbott & A. Millar [BISH 695443]

Gayliella fimbriata (Setch. & N.L. Gardner) T.O. Cho & S.M. Boo [= *Ceramium fimbriatum* Setchell & N.L. Gardner] [BISH 695062]

Gayliella flaccida (Kütz.) T.O. Cho & McIvor [= *Ceramium flaccidum* (Kütz.) Ardiss.] [BISH 695450]

Gelidiella machrisiana E.Y. Dawson [BISH 696667]

Griffithsia subcylindrica Okamura [BISH 695447]

Gymnothamnion elegans (Schousb. ex C. Agardh) J. Agardh [BISH 695455 & 696674]

Halichrysis coalescens (Farlow) A. Millar & R.E. Norris [BISH 695450]

Herposiphonia variabilis Hollenb. [BISH 696666]

Jania sp. [BISH 695060 & 695061]

Laurencia sp. [BISH 681178 & 692233]

Plocamium sandvicense J. Agardh [BISH 695445]

Class Phaeophyceae

Asteronema breviarticulatum Ouriques & Bouzon [BISH 695454]

Chnoospora minima (Hering) Papenf. [BISH 695446]

Colpomenia sinuosa (K. Mert. ex Roth) Derbès & Solier [BISH 690591]

Dictyota bartayresiana J.V. Lamour. [BISH 695399]

Dictyota sandvicensis Sond. ex Kütz. [BISH 695444]

Hydroclathrus clathratus (C. Agardh) M. Howe [BISH 690592]

Lobophora variegata (J.V. Lamour.) Womersley [BISH 690595]

Padina sanctae-crucis Børgesen [BISH 695457]

Padina sp. [BISH 695063]

Sargassum aquifolium (Turner) C. Agardh [BISH 695489]

Spacelaria tribuloides Menegh. [BISH 695441]

Turbiniaria ornata (Turner) J. Agardh [BISH 690590]

Phylum Chlorophyta

Caulerpa racemosa var. *peltata* (J.V. Lamour.) Eubank [BISH 690596]

Cladophora laetevirens (Dillwyn) Kütz. [BISH 695058]

Codium edule P.C. Silva [BISH 690593]

Microdictyon setchellianum M. Howe [BISH 695452]

Neomeris vanbosseae M. Howe [BISH 690594]