

New islet records of marine benthic algae from offshore islets associated with O‘ahu, Maui, Moloka‘i, and Lāna‘i in the main Hawaiian Islands¹

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Introduction

Reefs around offshore islets of the main Hawaiian Islands can be relatively pristine sites because of their remoteness and limited access to them due to distance and high wave energy. The Hawaii offshore islets are recognized as important marine and terrestrial habitats which prompted the establishment in September 2002 of the Offshore Islet Restoration Committee (OIRC), a multi-agency group, to oversee biological surveys and to restore the biota of selected offshore islets in the Hawaiian Islands.

Coles *et al.* (2008) reported a total of 1,486 marine taxa observed or collected from 10 islets in the main Hawaiian Islands. The list included species names of 81 taxa of marine benthic algae, i.e., 7 cyanobacteria (blue-green algae), 39 red algae, 14 brown algae, and 21 green algae. The main islands and adjacent islets include O‘ahu (Kāohikaipu and Kāpapa Islets), Maui (Kaemi, Hulu, and Molokini Islets), Moloka‘i (Mōkapu, ‘Ōkala and Nāmoku Islets) off Kaulapapa National Historic Park, and Lāna‘i (Pu‘u Pehe and Po‘o Po‘o Islets).

Eight algal species (Table 1) from offshore islets associated with O‘ahu, Maui, Moloka‘i, and Lāna‘i in the main Hawaiian Islands are recorded in past published literature or the database of Bishop Museum’s *Herbarium Pacificum* (BISH). Three of the eight species, i.e., *Neomeris vanbosseae*, *Sphacelaria novae-hollandiae* and *Taenioma perpusillum*, were found in the present collection. Four species, i.e., *Boodleopsis hawaiiensis*, *Chaetomorpha antennina*, *Cladophora hawaiiiana*, and *Caulerpa taxifolia* inhabit the intertidal zone or tidepools, and, therefore, would not be expected to be present among the collections which targeted algae in subtidal waters (4–28 m deep). *Antithamnion percurrens*, a tiny red epiphyte, might have been overlooked.

Moku o Lo‘e (Coconut Island) located in the inshore waters of Kāne‘ohe Bay, O‘ahu is not considered here as a comparable offshore islet. Forty species of marine benthic algae, including both gametophyte and sporophyte of *Asparagopsis taxiformis* (Delile) Trevisan, were listed by Wood *et al.* (2004) from Lehua Islet located 1.2 km north of Ni‘ihau and approximately 31 km west of Kauai’s Mana Point.

The 84 species of marine benthic algae reported here, i.e., 5 cyanobacteria, 53 red algae, 10 brown algae, and 16 green algae, are new records for the individual offshore islets and are based on voucher specimens, databased, and deposited in the *Herbarium Pacificum* at the Bishop Museum, Honolulu, Hawai‘i. This listing differs from the 81 species names reported in Coles *et al.* (2008) since some of their species were only observed in the field, few specimens were mistakenly discarded, and all macroalgal herbarium specimens from Moloka‘i were retained by the Kaulapapa National Historic

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Park. No introduced or cryptogenic algae were found during the survey. Table 2 provides a summary of the number of marine benthic algal species databased from each islet.

Materials and Methods

The islets surveyed were selected in consultation with OIRC to supplement previous surveys and did not target previously studied areas around a selected islet. Algae were photographed with a digital camera and collected for later laboratory identification. Only one site visit to each islet was made in either early summer or late summer, i.e., islets off Lānaʻi and Maui in April and May 2007, respectively, and islets off Oʻahu and Molokaʻi in August and September 2007, respectively. Positions were located with a Garmin 12™ GPS receiver.

Prior to examination, the frozen algae in plastic bags from each station (site) were thawed in tap water. Excess seawater was poured carefully out of the bag and replaced with 4% formalin in seawater. The collections were examined under the dissecting microscope, and epiphytes and turf were separated. The majority of the small specimens were mounted on glass slides, i.e., specimens were decalcified with 10% hydrochloric acid, stained with aniline blue and mounted with 30% karo with phenol. Larger specimens were mounted on segments of herbarium paper.

Specimens were sorted primarily by L.M. Giuseffi who accompanied S.L. Coles on all dives and collected all specimens. The majority of the specimens bear her collection numbers (LMG). Selected epiphytes were also separated from the host macroalgae by J.R. Fisher and mounted on glass slides. All specimens were provided BISH specimen numbers. L.M. Giuseffi served as the intern responsible for algal identification on the project under the tutorship of J.R. Fisher. All specimens were reviewed by either R.T. Tsuda or I.A. Abbott. Descriptions and illustrations of the species reported below can be found in Abbott (1999), Abbott & Huisman (2004) and Huisman *et al.* (2007).

Habitat Description

The habitat descriptions were summarized from Coles *et al.* (2008).

OʻAHU: Kāohikaipu (21°19'10.1" N, 157°39'14.8" W), near Rabbit Islet, leeward (east) side of 4.5 ha islet, strong swell and high rugosity with high basalt platforms and low rubble, few algae, 8–12 m deep, 7 Aug 2007, *L.M. Giuseffi*; Kāpapa (21°28'48.6" N, 157°47'32.9" W), seaward of NE coast of islet, low rugosity, some sandy patches, very diverse and high algal cover, 8–9 m deep, 30 Aug 2007, *L.M. Giuseffi*.

MAUI: Kaemi (20°58'49.1" N, 156°31'32.4" W), NE side of 1.0 ha islet, large boulders with very little sand, 6–12 m deep, 29 May 2007, *L.M. Giuseffi*; Hulu (20°57'26.6" N, 156°31'00.9" W), N coast of 0.6 ha islet, large basalt boulders and adjacent vertical wall, with little sand, 6–15 m deep, 30 May 2007, *L.M. Giuseffi*; Molokini (20°37'153.0, 156°29'36" W), between Kahoʻolawe and Maui, vertical wall outside of crater, backside, strong current, 4–28 m deep, 31 May 2007, *L.M. Giuseffi*.

MOLOKAʻI: Mōkapu (21°11'00.8" N, 156°55'28.9" W), leeward (west) side of 1.5 ha islet, steep basalt wall, 13–22 m deep, 18 Sep 2007, *L.M. Giuseffi*; ʻŌkala (21°10'28.1" N, 156°55'48.3" W), around and through 0.9 ha islet, low algal cover, 14–19 m deep, 19 Sep 2007, *L.M. Giuseffi*; Nāmoku, (21°12'26.2" N, 156°59'02.2" W) W side of 0.04 ha islet, 11–22 m deep, 20 Sep 2007, *L.M. Giuseffi*.

LĀNAʻI: Puʻu Pehe (20°44'01.7" N, 156°53'26.5" W), SW side of 0.4 ha islet, high rugosity with sandy grooves, limestone intermixed with sand and rubble, includes a vertical rock wall and ledge, 8–11 m deep, 2 Apr 2007, *L.M. Giuseffi*; Puʻu Pehe 1st Cathedral (20°43'57.9" N, 156°53'18.1" W), S and E side of cavern, 17–18 m deep, 4 Apr 2007, *L.M. Giuseffi*; Poʻo Poʻo (20°44'06.9" N, 156°55'20.3" W), 0.2 ha, SW side

of islet, rubble with turf on dead coral heads, small patches of sand, some small caves, 8–13 m deep, 3 Apr 2007, *L.M. Giuseffi*; Po‘o Po‘o Pinnacle (20°44'01.7" N, 156°55'24.5" W), N, W and large cave halfway around and through islet, vertical walls descending to 20 m, 4–18 m deep, 3 Apr 2007, *L.M. Giuseffi*.

Catalog of Species

Forty (preceded by asterisks) of the 84 species listed here were not reported by Coles *et al.* (2008).

CYANOPHYCEAE

Chroococcales

Microcystaceae

Aphanothece stagnina* (Sprengel) **New island record

A. Braun *in* Rabenhorst

Material Examined: LĀNA‘I: Po‘o Po‘o, BISH 730537 (*LMG 006*).

Oscillatoriales

Oscillatoriaceae

Lyngbya majuscula (Dillwyn) Harvey **New island record (Moloka‘i)**

Material Examined: MOLOKA‘I: Mōkapu, BISH 730468 (*LMG 161a*). LĀNA‘I: Pu‘u Pehe, BISH 730532 (*LMG 001*).

Phormidiaceae

Phormidium cf. laysanense Lemmermann

Material Examined: O‘AHU: Kāpapa, BISH 730979 (*LMG 155*), BISH 730996 (*LMG 156*). MAUI: Kaemi, BISH 730559 (*LMG 038*). MOLOKA‘I: Mōkapu, BISH 730441 (*LMG 159*); ‘Ōkala, BISH 730466 (*LMG 184*). LĀNA‘I: Pu‘u Pehe, BISH 730533 (*LMG 002*); Pu‘u Pehe Cathedral, BISH 730556 (*LMG 028*).

Pseudanabaenaceae

**Spirocoleus cf. fragilis* (Meneghini) P. Silva

Material Examined: O‘AHU: Kāpapa, BISH 730997 (*LMG 157*).

Nostocales

Nostocaceae

Hormothamnion enteromorphoides Grunow

Material Examined: O‘AHU: Kāohikaipu, BISH 730963 (*LMG 092*).

RHODOPHYCEAE

Nemaliales

Galaxauraceae

Dichotomaria marginata (Ellis & Solander) Lamarck

Material Examined: LĀNA‘I: Po‘o Po‘o, BISH 730551 (*LMG 020*).

Dichotomaria obtusata (Ellis & Solander) **New island record (Maui)**

Lamarck

Material Examined: MAUI: Kaemi, BISH 730928 (*LMG 043*); Hulu, BISH 730945 (*LMG 65*). LĀNA‘I: Po‘o Po‘o, BISH 730545 (*LMG 014*).

Sciniaia furcata Zablackis

New island record

Material Examined: LĀNA‘I: Po‘o Po‘o, BISH 730543 (*LMG 012*).

Scinaia hormoides Setchell**New island record***Material Examined:* LĀNA'I: Po'o Po'o, BISH 730544 (*LMG 013*).**Liagoraceae*****Akalaphycus setchelliae*** (Yamada) Huisman, **New island record**

Abbott & Sherwood

Material Examined: MAUI: Hulu, BISH 730953 (*LMG 073*).**Bonnemaisoniales****Bonnemaisoniaceae*****Asparagopsis taxiformis*** (Delile) Trevisan*Material Examined:* O'AHU: Kāpapa, BISH 730614 (*LMG s.n.*), sporophyte; BISH 730988 (*LMG 120*), gametophyte; BISH 731000 (*LMG 126*), sporophyte. MOLOKA'I: Nāmoku, BISH 730512 (*LMG 225*), sporophyte.**Gigartinales****Hypneaceae*****Hypnea spinella*** (C. Agardh) Kützting*Material Examined:* O'AHU: Kāpapa, BISH 730585 (*LMG 137*), BISH 730999 (*LMG 132*). MOLOKA'I: 'Ōkala, BISH 730522 (*LMG 235*).**Peyssonneliaceae******Peyssonnelia inamoena*** Pilger**New island record***Material Examined:* O'AHU: Kāpapa, BISH 730595 (*LMG 150*).**Corallinales****Corallinaceae******Amphiroa valonioides*** Yendo*Material Examined:* MAUI: Kaemi, BISH 730635 (*LMG s.n.*). MOLOKA'I: Mōkapu, BISH 730478 (*LMG 175*); 'Ōkala, BISH 730520 (*LMG 233*). LĀNA'I: Po'o Po'o, BISH 730549 (*LMG 018*).****Jania adhaerens*** Lamouroux*Material Examined:* O'AHU: Kāpapa, BISH 730586 (*LMG 138*).***Jania pumila*** Lamouroux**New island record (Moloka'i)***Material Examined:* O'AHU: Kāpapa, BISH 730985 (*LMG 117*). MAUI: Kaemi, BISH 730570 (*LMG 049*), BISH 730634 (*LMG s.n.*). MOLOKA'I: Mōkapu, BISH 730528 (*LMG 241*); 'Ōkala, BISH 730492 (*LMG 189b*), BISH 730519 (*LMG 232*); Nāmoku, BISH 730456 (*LMG 208*).**Rhodymeniales****Champiaceae******Champia parvula*** (C. Agardh) Harvey*Material Examined:* O'AHU: Kāpapa, BISH 730611 (*LMG s.n.*). MOLOKA'I: Mōkapu, BISH 730531 (*LMG 243*); Nāmoku, BISH 730502 (*LMG 215*).**Lomentariaceae******Gelidiopsis intricata*** (C. Agardh) Vickers*Material Examined:* MOLOKA'I: Mōkapu, BISH 730461 (*LMG 182*).

Rhodymeniaceae***Botryocladia skottsbergii*** (Børgesen) Levring

Material Examined: MAUI: Nāmoku, BISH 730458 (LMG 210).

Ceramiales**Ceramiaceae******Aglaothamnion boergesenii*** (Aponte & Ballantine) L'Hardy-Halos & Rueness

Material Examined: O'AHU: Kāpapa, BISH 730590 (LMG 143).

****Antithamnionella breviramosa*** (Dawson) Wollaston

Material Examined: O'AHU: Kāpapa, BISH 730622 (LMG s.n.). MOLOKA'I: Nāmoku, BISH 730508 (LMG 221). LĀNA'I: Po'ō Po'ō, BISH 730627 (LMG s.n.).

****Centroceras clavulatum*** (C. Agardh) Montagne

Material Examined: O'AHU: Kāpapa, BISH 730609 (LMG s.n.). LĀNA'I: Po'ō Po'ō Pinnacle, BISH 730565 (LMG 024).

Ceramium borneense Weber-van Bosse

Material Examined: MOLOKA'I: Mōkapu, BISH 730480 (LMG 178).

****Ceramium cingulum*** Meneses

Material Examined: O'AHU: Kāpapa, BISH 730607 (LMG s.n.).

****Ceramium clarionensis*** Setchell & Gardner **New island record**

Material Examined: MOLOKA'I: Mōkapu, BISH 730484 (LMG 179b); 'Ōkala, BISH 730523 (LMG 236).

Ceramium dumosertum R.E. Norris & Abbott

Material Examined: O'AHU: Kāpapa, BISH 730601 (LMG 124). MAUI: Hulu, BISH 730637 (LMG s.n.).

****Ceramium macilentum*** J. Agardh

Material Examined: O'AHU: Kāpapa, BISH 730618 (LMG s.n.). LĀNA'I: Pu'u Pehe, BISH 730642 (LMG s.n.).

****Corallophila apiculata*** (Yamada) R.E. Norris **New island record (Lāna'i)**

Material Examined: MOLOKA'I: Mōkapu, BISH 730483 (LMG 179a). LĀNA'I: Po'ō Po'ō Pinnacle, BISH 730566 (LMG 024).

****Corallophila huysmansii*** (Weber-van Bosse) **New island record**

R.E. Norris

Material Examined: LĀNA'I: Pu'u Pehe, BISH 740644 (LMG s.n.).

****Crouania mageshimensis*** Itono

Material Examined: O'AHU: Kāpapa, BISH 730320 (LMG 127). MOLOKA'I: 'Ōkala, BISH 730490 (LMG 188b).

****Crouania minutissima*** Yamada

Material Examined: O'AHU: Kāhōhikaipu, BISH 730317 (LMG 100); Kāpapa, BISH 730604 (LMG s.n.).

****Diplothamnion jolyi*** van den Hoek

Material Examined: O'AHU: Kāpapa, BISH 730608 (*LMG s.n.*). MAUI: Hulu, BISH 730641 (*LMG s.n.*). MOLOKA'I: Mōkapu, BISH 730485 (*LMG 179c*); Nāmoku, BISH 730509 (*LMG 222*). LĀNA'I: Pu'u Pehe, BISH 730645 (*LMG s.n.*); Po'o Po'o, BISH 730628 (*LMG s.n.*).

Gayliella fimbriata (Setchell & Gardner) T.O. Cho & S.M. Boo

[= *Ceramium fimbriatum* Setchell & Gardner]

Material Examined: O'AHU: Kāpapa, BISH 730605 (*LMG s.n.*). MAUI: Hulu, BISH 730577 (*LMG 080*). See Cho *et al.* (2008) for circumscription of the new genus *Gayliella*.

Gayliella flaccida (Kützinger) T.O. Cho & L. McIvor

[= *Ceramium flaccidum* (Kützinger) Ardissonne]

Material Examined: O'AHU: Kāpapa, BISH 730588 (*LMG 140*). MAUI: Hulu, BISH 730638 (*LMG s.n.*). MOLOKA'I: 'Ōkala, BISH 730518 (*LMG 231*).

Griffithsia heteromorpha Kützinger

Material Examined: O'AHU: Kāpapa, BISH 730621 (*LMG s.n.*), BISH 730625 (*LMG s.n.*). MOLOKA'I: Nāmoku, BISH 730515 (*LMG 228*).

Haloplegma duperryi Montagne

Material Examined: O'AHU: Kāpapa, BISH 730986 (*LMG 118*). MOLOKA'I: Nāmoku, BISH 730501 (*LMG 214*). LĀNA'I: Po'o Po'o, BISH 730547 (*LMG 016*).

****Monosporus indicus*** Børgesen

Material Examined: O'AHU: Kāpapa, BISH 730602 (*LMG s.n.*).

****Pleonosporium intricatum*** R.E. Norris

Material Examined: O'AHU: Kāpapa, BISH 730612 (*LMG s.n.*). MAUI: Kaemi, BISH 730632 (*LMG s.n.*).

****Ptilothamnion cf. cladophorae*** (Yamada & Tanaka) Feldmann-Mazoyer

Material Examined: MAUI: Kaemi, BISH 730631 (*LMG s.n.*). MOLOKA'I: 'Ōkala, BISH 730521 (*LMG 234*).

****Wrangelia dumontii*** (Dawson) Abbott **New island record**

Material Examined: O'AHU: Kāpapa, BISH 730603 (*LMG s.n.*).

Dasyaceae***Dasya iridescens*** (Schlecht)**New island record (Lāna'i)**

A. Millar & Abbott

Material Examined: O'AHU: Kāpapa, BISH 730584 (*LMG 136*). MAUI: Molokini, BISH 730941 (*LMG 061*). LĀNA'I: Po'o Po'o, BISH 730550 (*LMG 019*).

****Heterosiphonia crispella*** (C. Agardh)**New island record (Lāna'i)**

Wynne

Material Examined: O'AHU: Kāpapa, BISH 730610 (*LMG s.n.*), BISH 731005 (*LMG 118b*). MOLOKA'I: Nāmoku, BISH 730503 (*LMG 215*), BISH 730510 (*LMG 223*). LĀNA'I: Po'o Po'o, BISH 730626 (*LMG s.n.*).

Delesseriaceae****Hypoglossum minimum*** Yamada

Material Examined: O'AHU: Kāpapa, BISH 730616 (*LMG s.n.*)

****Hypoglossum simulans*** Wynne, Price **New island record (Lāna'i)**
& Ballantine

Material Examined: MAUI: Hulu, BISH 730575 (*LMG 078*). MOLOKA'I: Mōkapu, BISH 730486 (*LMG 179d*); Nāmoku, BISH 730500 (*LMG 213*). LĀNA'I: Pu'u Pehe, BISH 730643 (*LMG s.n.*).

****Martensia fragilis*** Harvey

Material Examined: MOLOKA'I: Mōkapu, BISH 730476 (*LMG 173*).

Taenioma perpusillum (J. Agardh) J. Agardh

Material Examined: O'AHU: Kāpapa, BISH 730617 (*LMG s.n.*). MOLOKA'I: Nāmoku, BISH 730504 (*LMG 217*).

Rhodomelaceae***Acanthophora pacifica*** (Setchell) Kraft

Material Examined: LĀNA'I: Po'o Po'o, BISH 730540 (*LMG 009*).

****Chondria minutula*** Weber-van Bosse **New island record (Lāna'i)**

Material Examined: LĀNA'I: Po'o Po'o, BISH 730629 (*LMG s.n.*).

****Chondria polyrhiza*** Collins & Hervey

Material Examined: MOLOKA'I: 'Ōkala, BISH 730517 (*LMG 230*); Nāmoku, BISH 730511 (*LMG 224*).

****Chondria simpliciuscula*** Weber-van Bosse

Material Examined: O'AHU: Kāpapa, BISH 730592 (*LMG 145*), BISH 730598 (*LMG 153*). MAUI: Hulu, BISH 730581 (*LMG 084*).

****Herposiphonia cf. obscura*** Hollenberg

Material Examined: MOLOKA'I: Nāmoku, BISH 730513 (*LMG 226*).

Herposiphonia parca Hollenberg

Material Examined: O'AHU: Kāhōikaipu, BISH 730318 (*LMG 101*). MAUI: Kaemi, BISH 730573 (*LMG 052*); Hulu, BISH 730640 (*LMG s.n.*).

Herposiphonia secunda (C. Agardh) Ambronn

Material Examined: O'AHU: Kāpapa, BISH 733590 (*LMG 141*). MOLOKA'I: Nāmoku, BISH 730506 (*LMG 219*).

****Laurencia majuscula*** (Harvey) Lucas

Material Examined: O'AHU: Kāpapa, BISH 730983 (*LMG 115*). MOLOKA'I: Mōkapu, BISH 730482 (*LMG 179*). LANA'i: Po'o Po'o, BISH 730548 (*LMG 017*).

Polysiphonia flaccidissima Hollenberg **New island record (Maui)**

Material Examined: O'AHU: Kāpapa, BISH 730600 (*LMG 125*). MAUI: Kaemi, BISH 730572 (*LMG 051*), BISH 730636 (*LMG s.n.*). MOLOKA'I: Mōkapu, BISH 730481 (*LMG 179a*); 'Ōkala, BISH 730491 (*LMG 189a*); Nāmoku, BISH 730516 (*LMG 229*).

***Polysiphonia homoia** Setchell & Gardner **New island record (Maui)**

Material Examined: O'AHU: Kāpapa, BISH 730594 (LMG 149). MAUI: Kaemi, BISH 730574 (LMG 053). MOLOKA'I: Mōkapu, BISH 730479 (LMG 177).

Tolypocladia glomerulata (C. Agardh) F. Schmitz

Material Examined: O'AHU: Kāohikaipu, BISH 730319 (LMG 102); Kāpapa, BISH 730321 (LMG 128). MAUI: Hulu, BISH 730578 (LMG 081). MOLOKA'I: Mōkapu, BISH 730477 (LMG 174); 'Ōkala, BISH 730488 (LMG 188a); Nāmoku, BISH 730499 (LMG 212). LĀNA'I: Po'o Po'o, BISH 730630 (LMG s.n.)

Sarcomeniaceae**Dotyella hawaiiensis** (Doty & Wainwright) Womersley & Shepley

Material Examined: O'AHU: Kāpapa, BISH 730591 (LMG 144). MAUI: Kaemi, BISH 730571 (LMG 050); Hulu, BISH 730580 (LMG 083). MOLOKA'I: Mōkapu, BISH 730526 (LMG 239).

PHAEOPHYCEAE**Sphacelariales****Sphacelariaceae*****Sphacelaria novaehollandiae** Sonder

Material Examined: MOLOKA'I: Nāmoku, BISH 733591 (LMG 192).

Dictyotales**Dictyotaceae*****Dictyopteris plagiogramma** (Montagne) Vickers

Material Examined: MAUI: Hulu, BISH 730579 (LMG 082), immature.

Dictyota bartayresiana Lamouroux

Material Examined: MAUI: Hulu, BISH 730960 (LMG 088). MOLOKA'I: Mōkapu, BISH 730529 (LMG 242). LĀNA'I: Pu'u Pehe, BISH 730561 (LMG 036).

Dictyota ceylanica Kützinger

Material Examined: O'AHU: Kāpapa, BISH 730615 (LMG s.n.). MOLOKA'I: Mōkapu, BISH 730527 (LMG 240); Nāmoku, BISH 730498 (LMG 206). LĀNA'I: Pu'u Pehe, BISH 730646 (LMG s.n.).

Dictyota friabilis Setchell

Material Examined: MOLOKA'I: 'Ōkala, BISH 730530 (LMG 187).

Distromium flabellatum Womersley **New island record**

Material Examined: MOLOKA'I: Nāmoku, BISH 730451 (LMG 200).

Lobophora variegata Womersley ex Oliviera

Material Examined: MOLOKA'I: Mōkapu, BISH 730443 (LMG 166); Nāmoku, BISH 730452 (LMG 201).

Padina boryana Thivy**New island record (Maui)**

Material Examined: O'AHU: Kāpapa, BISH 730597 (LMG 152). MAUI: Kaemi, BISH 730936 (LMG 056), "vaughaniella stage"; Hulu, BISH 730583 (LMG 090). MOLOKA'I: Nāmoku, BISH 730465 (LMG 203), BISH 730497 (LMG 205).

Padina thivyae* Doty & Newhouse** **New island recordMaterial Examined:* MAUI: Kaemi, BISH 730937 (LMG 057).**Sporochnales****Sporochnaceae*****Sporochnus dotyi* Brostoff** **New island record***Material Examined:* MOLOKA'I: Nāmoku, BISH 730454 (LMG 204).**CHLOROPHYCEAE****Cladophorales****Anadyomenaceae*****Microdictyon setchellianum* Howe***Material Examined:* MOLOKA'I: Nāmoku, BISH 730494 (LMG 197).***Microdictyon umbilicatum* Decaisne** **New island records***Material Examined:* MOLOKA'I: Mōkapu, BISH 730474 (LMG 167). LĀNA'I: Pu'u Pehe, BISH 730562 (LMG 035).***Phyllocladion anastomosans* (Harvey) Kraft & Wynne***Material Examined:* O'AHU: Kāpapa, BISH 730322 (LMG 129), BISH 730599 (LMG 154). MOLOKA'I: Mōkapu, BISH 730472 (LMG 164)**Cladophoraceae******Cladophora laetevirens* (Dillwyn) Kützing***Material Examined:* MOLOKA'I: Mōkapu, BISH 730473 (LMG 165); 'Ōkala, BISH 730487 (LMG 186).****Cladophora luxurians* (Gilbert)** **New island record (Lānai)**

Abbott & Huisman

Material Examined: MAUI: Kaemi, BISH 730568 (LMG 041). MOLOKAI: Nāmoku, BISH 730495 (LMG 198). LĀNA'I: Po'o Po'o Pinnacle, BISH 730564 (LMG 023).****Cladophora vagabunda* (Linnaeus) Hoek***Material Examined:* MOLOKA'I: Nāmoku, BISH 730507 (LMG 220).****Rhizoclonium riparium* (Roth) Harvey** **New island record***Material Examined:* MOLOKA'I: 'Ōkala, BISH 730524 (LMG 237).**Siphonocladaceae******Cladophoropsis sundanensis* Reinbold***Material Examined:* MOLOKA'I: Nāmoku, BISH 730514 (LMG 227).**Bryopsidales****Caulerpaceae*****Caulerpa nummularia* Harvey ex J. Agardh** **New island record***Material Examined:* MOLOKA'I: Mōkapu, BISH 730442 (LMG 163).****Caulerpa webbiana* Montagne** **New island record***Material Examined:* LĀNAI: Pu'u Pehe Cathedral, BISH 730555 (LMG 027).

Derbesiaceae***Derbesia cf. fastigiata*** Taylor

Material Examined: MAUI: Kaemi, BISH 730567 (*LMG 040*), sterile.

Halimediaceae***Halimeda distorta*** (Yamada) L. H. Colinvaux

Material Examined: LĀNAI: Po'ō Po'ō, BISH 730535 (*LMG 004*).

Halimeda opuntia (Linnaeus) Lamouroux

Material Examined: O'AHU: Kāpapa, BISH 730974 (*LMG 107*).

Dasycladales**Dasycladaceae*****Neomeris annulata*** Dickie

Material Examined: MOLOKA'I: 'Ōkala, BISH 730467 (*LMG 185*).

Neomeris vanbosseae Howe

Material Examined: MOLOKA'I: Nāmoku, BISH 730448 (*LMG 194*).

Polyphysaceae***Parvocaulis parvula*** (Solms-Laubach)**New island record (Moloka'i)**

Berger *et al.*

Material Examined: MOLOKA'I: Mōkapu, BISH 730475 (*LMG 168*). LĀNA'I: Po'ō Po'ō Pinnacle, BISH 730554 (*LMG 026*).

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Table 1. Species reported previously from islets off O'ahu, Maui, Moloka'i and Lāna'i.

Island	Islet	Species	Reference*
O'ahu	Kapapa	<i>Boodleopsis hawaiiensis</i> Gilbert	A&H 2004
	Mokoli'i (Chinaman's Hat)	<i>Neomeris vanbosseae</i> Howe	E 1952
Maui	Molokini	<i>Antithamnion percurrans</i> Dawson	A 1999
Moloka'i	Unnamed islets off Kalaupapa	<i>Chaetomorpha antennina</i> (Bory)	
		Kützing	A&H 2004
		<i>Cladophora hawaiiiana</i> Tilden	A&H 2004
		<i>Sphacelaria novae-hollandiae</i> Sonder	A&H 2004
		<i>Taenioma perpusillum</i> (J. Agardh) J. Agardh	A 1999
Lāna'i	Pu'u Pehe 2nd Cathedral	<i>Caulerpa taxifolia</i> (Vahl) C. Agardh	A&H 2004

* E 1952 (Egerod 1952), A 1999 (Abbott 1999), A&H 2004 (Abbott & Huisman 2004).

Table 2. Number of marine benthic algal species with voucher specimens from each of the 10 islets and two adjacent sites (Pu'u Pehe Cathedral and Po'o Po'o Pinnacle).

Islets	Number of Species				
	Cyanobacteria	Red	Brown	Green	Total
O'AHU					
Kāohikaipu	1	3	0	0	4
Kāpapa	2	33	2	2	39
MAUI					
Kaemi	1	9	2	2	14
Hulu	0	11	3	0	14
Molokini	0	1	0	0	1
MOLOKA'I					
Mōkapu	2	15	3	5	25
ʻŌkala	1	10	1	3	15
Nāmoku	0	16	6	5	27
LĀNA'I					
Pu'u Pehe	2	4	2	1	9
Pu'u Pehe Cathedral	1	0	0	1	2
Po'o Po'o	1	14	0	1	16
Po'o Po'o Pinnacle	0	2	0	2	4