A collection of deep-water marine plants from Rottnest Island

by

J.M. Huisman¹, C.B. Sim² and D.I. Walker³

¹School of Biological Sciences and Biotechnology, Murdoch University, Western Australia 6150

²Department of Botany, The University of Western Australia, Western Australia 6907.

ABSTRACT

Deep water dredging around Rottnest Island allowed the collection of marine benthic flora from below usual diving depths. Identifications of some 52 species were from the following Divisions: Chlorophyta (2); Heterokontophyta (11), Rhodophyta (34), and Magnoliophyta (5).

These species were largely represented in the shallower Rottnest marine flora. Macroalgal species newly recorded for Western Australia are Chlorodesmis bacalifera, Dictyopteris gracilis and Rhabdonia clavigera. Species newly recorded for Rottnest Island are Herposiphonia versicolor, Herposiphonia secunda, Osmundaria prolifera, and Callophyllis rangiferina.

INTRODUCTION

Rottnest Island has played a significant role in the recognition of the Western Australian marine benthic flora. Its pristine conditions, abundance of macroalgal habitats and seagrass beds, and close proximity to Perth have ensured its popularity as a collecting location. Important historical collections include those made by W.H. Harvey during the middle of the nineteenth century, with many of these specimens forming the basis of his five volume 'Phycologia Australica' (Harvey 1858–63).

The marine flora of Rottnest Island was catalogued by Huisman and Walker (1990). This paper compiles the flora collected by dredging deeper habitats during the 1996 Marine Biological Workshop.

MATERIALS AND METHODS

Material was dredged from Rottnest Island, using the Fisheries WA vessel, RV Flinders. Details of the dredge sites are given in Table 1.

The taxonomic sequence is: Division Chlorophyta, Division Heterokontophyta, Division Rhodophyta, Division Magnoliophyta. Within each division the classes, orders, genera and then species are arranged alphabetically. Detailed information (recent reference, type locality, distribution) is given for species newly recorded for Western Australia or where it is not available in previous catalogues, in which case the reader is referred to publications dealing with Rottnest.
Table 1. Dredge site details for algal and seagrass collections, January 1996.

<table>
<thead>
<tr>
<th>Station No.</th>
<th>Depth (m)</th>
<th>Trawl start way-point</th>
<th>Direction of trawl</th>
<th>Habitat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station 1</td>
<td>22</td>
<td>31° 59.69 115° 37.14</td>
<td>West</td>
<td>Sand, seagrass, algae</td>
</tr>
<tr>
<td>Station 2</td>
<td>25</td>
<td>31° 58.10 115° 31.30</td>
<td>East</td>
<td>limestone rubble, algae</td>
</tr>
<tr>
<td>Station 3</td>
<td>32</td>
<td>31° 58.04 115° 29.65</td>
<td>East-Nth West</td>
<td>sand, algae, limestone rubble</td>
</tr>
<tr>
<td>Station 4</td>
<td>44</td>
<td>31° 57.12 115° 59.03</td>
<td>South</td>
<td>Limestone rubble, seagrass, algae</td>
</tr>
<tr>
<td>Station 5</td>
<td>40</td>
<td>31° 55.08 115° 28.34</td>
<td>West-Sth West</td>
<td>Limestone rubble, seagrass, algae</td>
</tr>
<tr>
<td>Station 9</td>
<td>14</td>
<td>32° 01.79 115° 34.63</td>
<td>South-West</td>
<td>Limestone rubble, algae</td>
</tr>
<tr>
<td>Station 10</td>
<td>27</td>
<td>32° 02.42 115° 32.47</td>
<td>West-Sth West</td>
<td>Sand</td>
</tr>
<tr>
<td>Station 11</td>
<td>33</td>
<td>32° 02.94 115° 30.35</td>
<td>East-Sth West</td>
<td></td>
</tr>
<tr>
<td>Station 12</td>
<td>38</td>
<td>32° 03.07 115° 28.55</td>
<td>East-Nth East</td>
<td>Limestone rubble, algae</td>
</tr>
<tr>
<td>Station 13</td>
<td>42</td>
<td>32° 03.27 115° 27.30</td>
<td>East-Nth East</td>
<td>Limestone rubble, algae</td>
</tr>
</tbody>
</table>

Island (Huisman & Walker, 1990) or the Houtman Abrolhos (Huisman, 1997). ‘UWA’ is the herbarium of the University of Western Australia.

**Division Chlorophyta (Green Algae)**

**Class Bryopsidophyceae**

**Order Bryopsidales**

*Chlorodesmis baculifera* (J. Agardh) Ducker 1966: 245.


Type Locality: Port Phillip Heads, Victoria.

Distribution: From Rottnest Island, Western Australia, and Waterloo Bay (Elliston), South Australia to Waratah Bay, Victoria and the north coast of Tasmania.

Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

Remarks: This is the first record of *Chlorodesmis baculifera* from Western Australia. The single Rottnest Island specimen (Figure 1) is particularly robust, being 27 cm in height with an 8 cm stipe, somewhat larger than the reported upper thallus dimensions for this species [to 16 cm in height with a 5 cm stipe (Womersley 1984, Ducker 1967)]. In all other features (including filament diameter and presence of constrictions on only one branch of a dichotomy), however, the present specimen is in agreeance with *C. baculifera*. 
Class Cladophorophyceae

Order Cladophorales

Cladophora lehmanniana (Lindenburg) Kützing.
For details see Huisman & Walker (1990, p. 357).
Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA).

Division Heterokontophyta

Class Phaeophyceae (Brown Algae)

Order Dictyotales

Type Locality: D’Estrees Bay, Kangaroo Island, South Australia.
Distribution: Known from the Houtman Abrolhos and Rottnest Island, Western Australia, and from Investigator Strait and the lower Gulfs in South Australia.
Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA). Figure 2
Remarks: This is the first record of Dictyopteris gracilis from Western Australia. It is a distinctive species, characterised by its monostromatic wings and lack of lateral veins.

Dictyopteris muelleri (Sonder) Reinbold.
For details see Huisman & Walker (1990, p. 375).
Specimen: North of Rottnest I. Dredged from 40 m depth (C. Sim, 15.i.1996; UWA).

Dictyota furcellata (C. Agardh) Greville
For details see Huisman & Walker (1990, p. 374).
Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA).

Dictyota naevosa (Suhr) Montagne
For details see Huisman & Walker (1990, p. 374).
Specimens: North of Rottnest I. Dredged from 40 m depth (C. Sim, 15.i.1996; UWA) and from 44 m depth (C. Sim, 15.i.1996; UWA).
Remarks: This is apparently the first recorded sexual specimen of this species (Figure 3).
Oogonia are borne in clusters on both sides of the thallus, with the clusters arranged in vague transverse bands 3–4 mm broad and separated by sterile zones 1–1.5 mm broad.

*Lobophora variegata* (Lamouroux) Womersley ex Oliveira.

For details see Huisman & Walker (1990, p. 376).
Specimen: South of Rottnest I. Dredged from 42 m depth (*C. Sim*, 16.i.1996; UWA).

*Padina sanctae-crucis* Bærgesen.

For details see Huisman & Walker (1990, p. 377).
Specimen: South of Rottnest I. Dredged from 42 m depth (*C. Sim*, 16.i.1996; UWA).

*Scoresbyella profunda* Womersley

For details see Huisman & Walker (1990, p. 378).
Specimen: North of Rottnest I. Dredged from 40 m depth (*C. Sim*, 15.i.1996; UWA).

Order Sporochnales

*Austronereia australis* (Harvey) Womersley

For details see Huisman & Walker (1990, p. 379).
Specimen: South of Rottnest I. Dredged from 27 m depth (*C. Sim*, 16.i.1996; UWA).

*Encyothalia cliftonii* Harvey

For details see Huisman & Walker (1990, p. 379).
Specimen: South of Rottnest I. Dredged from 42 m depth (*C. Sim*, 16.i.1996; UWA).

Order Fucales

*Sargassum distichum* Sonder

For details see Huisman & Walker (1990, p. 384).
Specimen: South of Rottnest I. Dredged from 42 m depth (*C. Sim*, 16.i.1996; UWA).

Order Sphacelariales

*Sphacelaria rigidula* Kützing

For details see Huisman & Walker (1990, p. 373).
Specimen: North of Rottnest I. Dredged from 32 m depth (*C. Sim*, 15.i.1996; UWA).
Division Rhodophyta (Red Algae)

Class Florideophyceae

Order Bonnemaisoniales

*Delisea pulchra* (Greville) Montagne
For details see Huisman & Walker (1990, p. 399).
Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

Order Ceramiales

*Cliftonaea pectinata* (Harvey) Harvey
For details see Huisman & Walker (1990, p. 432).
Specimens: North of Rottnest I. Dredged from 22 m and 32 m depth (C. Sim, 15.i.1996, UWA).

*Dasyaculum flaccidum* (Harvey) Kylin
For details see Huisman & Walker (1990, p. 433).
Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA).

*Dictyomenia sonderi* Harvey
For details see Huisman & Walker (1990, p. 434, as *Dictymenia*).
Specimen: South of Rottnest I. Dredged from 14 m and 27 m depth (C. Sim, 16.i.1996; UWA).

*Dictyomenia tridens* (Mertens ex Turner) Greville
For details see Huisman & Walker (1990, p. 434, as *Dictymenia*).
Specimens: South of Rottnest I. Dredged from 14 m and 27 m depth (C. Sim, 16.i.1996; UWA).

*Ditria expleta* Huisman
For details see Huisman (1997, p. 204).
Specimens: South of Rottnest I. On *Lobophora variegata* dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

*Gatya pinella* Harvey
For details see Huisman & Walker (1990, p. 423).
Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.1.1996; UWA).

*Haraldiophyllum erosum* (Harvey) Millar & Huisman

For details see Huisman (1997, p. 201).

Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.1.1996; UWA).

Remarks: Previously recorded from Rottnest Island as *Myriogramme erosa* (Harvey) Kylin (Huisman & Walker 1990, p. 431). The generic placement was clarified by Millar & Huisman (1996).

*Herposiphonia secunda* (C. Agardh) Ambronn

For details see Huisman (1997, p.204).

Specimen: South of Rottnest I. Dredged from 27 m depth (C. Sim, 16.1.1996; UWA).

Remarks: Specimen epiphytic on *Sargassum* sp.

*Herposiphonia versicolor* (J. Hooker & Harvey) Falkenberg 1901: 315.

*Polysiphonia versicolor* J.Hooker & Harvey in Harvey 1847 [1847–1849]: 48.

Type Locality: Tasmania.

Distribution: Rottnest Island, Western Australia, around southern Australia to Tasmania.

Specimen: North of Rottnest I. Dredged from 32 m depth (C. Sim, 15.1.1996; UWA).

Remarks: The present specimens (Figure 4) appear identical to those described in Harvey (1847) and differ from the apparently closely related *Herposiphonia rostrata* (Sonder) Reinbold in having fewer pericentral cells. The Australian species of *Herposiphonia* are in need of revision.

*Kuetzingia canaliculata* (Greville) Sonder

For details see Huisman & Walker (1990, p. 435).

Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.1.1996; UWA).

*Osmundaria prolifera* Lamouroux


Type Locality: Western Australia.

Distribution: South-west Western Australia to Kangaroo Island, South Australia.

Remarks: *Osmundaria prolifera* is relatively common in south-western Australia, but this represents the first record of this species from Rottnest Island.

**Order Corallinales**

*Amphiroa anceps* (Lamarck) Decaisne
For details see Huisman (1997, p. 208).
Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

*Haliptilon roseum* (Lamarck) Garbary & Johansen
For details see Huisman & Walker (1990, p. 411).
Specimen: North of Rottnest I. Dredged from 40 m depth (C. Sim, 15.i.1996; UWA).

*Metamastophora flabellata* (Sonder) Setchell
Specimens: North of Rottnest I. Dredged from 40 m depth depth (C. Sim, 15.i.1996; UWA). South of Rottnest Island. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

**Order Gigartinales**

*Areschougia ligulata* Harvey ex. J. Agardh
For details see Huisman & Walker (1990, p. 400).
Specimens: North of Rottnest I. Dredged from 40 m depth depth (C. Sim, 15.i.1996; UWA). South of Rottnest Island. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

*Callophycus dorsifer* (C. Agardh) Silva
For details see Huisman & Walker (1990, p. 401).
Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

*Callophycus harveyanus* (J. Agardh) Silva.
For details see Huisman & Walker (1990, p. 401).
Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

*Callophycus oppositifolius* (C. Agardh) Silva
For details see Huisman & Walker (1990, p. 401).
Specimen: South of Rottnest I. Dredged from 42m depth (C. Sim, 16.i.1996; UWA).

Type Locality: Georgetown, Tasmania.
Distribution: From Champion Bay, Western Australia, around southern Australia and Tasmania to Tathra, New South Wales.
Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA).

Erythroclonium muelleri Sonder

For details see Huisman & Walker (1990, p. 404).
Specimens: North of Rottnest I. Dredged from 22 m depth (C. Sim, 15.i.1996; UWA). South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

Hennedya crispa Harvey

For details see Huisman & Walker (1990, p. 405).
Specimens: North of Rottnest I. Dredged from 40 m depth (C. Sim, 15.i.1996; UWA). South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

Hypnea ramentacea (C. Agardh) J. Agardh 1876: 561.

Type Locality: “Novae Hollandiae”.
Distribution: Port Denison, Western Australia, around southern Australia to Walkerville, Victoria, and the north coast of Tasmania.
Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA).
Remarks: Previously recorded from Rottnest Island as Hypnea episcopalis Hooker & Harvey (Huisman & Walker 1990). The synonymy was proposed by Womersley (1994).

Nizymenia conferta (Harvey) Chiovitti, Saunders & Kraft.

For details see Huisman (1997, p. 216).
Specimen: North of Rottnest I. Dredged from 40 m depth (C. Sim, 15.i.1996; UWA).
Remarks: Previously recorded from Rottnest Island as Stenocladia australis (Sonder) Silva (Huisman & Walker 1990). The synonymy was proposed by Chiovitti et al. (1995).

Type Locality: Probably Tasmania.
Distribution: Rottnest Island, Western Australia, around southern Australia to Collaroy, New South Wales, and the east coast of Tasmania.
Specimen: North of Rottnest I. Dredged from 40 m depth (C. Sim, 15.i.1996; UWA).
Remarks: The present specimen is cystocarpic and in thallus habit and dimensions is seemingly intermediate between *P. peperocarpos* and *P. apodus*. Lateral ramuli near the apices are not as closely set as depicted for *P. peperocarpos* by Womersley (1994) and more closely resemble *P. apodus*. Branch widths, however, are 3–4 mm and fall within the range described for *P. peperocarpos*. Womersley (1994) acknowledged the presence of intermediates between the two species. This species was previously recorded from Rottnest Island as *Phacelocarpus labillardieri* (Turner) J. Agardh (Huisman & Walker 1990). The synonymy was proposed by Wynne et al. (1993).

*Rhabdonia clavigera* J. Agardh 1872: 38.
Type Locality: Western Port, Victoria.
Distribution: From Rottnest Island, Western Australia, and Point Sinclair, South Australia, to Western Port, Victoria.
Specimen: North of Rottnest I. Dredged from 32 m depth (C. Sim, 15.i.1996; UWA).
Remarks: This is the first record of *Rhabdonia clavigera* from Western Australia. Although sterile, the Rottnest specimens (Figure 5) are entirely compatible with the description of this species given by Womersley (1994).

**Order Gelidiales**

*Ptilophora prolifera* (Harvey) J. Agardh
For details see Huisman & Walker (1990, p. 414).
Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

**Order Nemaliales**

*Galaxaura marginata* (Ellis & Solander) Lamouroux
For details see Huisman & Walker (1990, p. 396).
Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

**Order Plocamiales**

*Plocamium mertensii* (Greville) Harvey
For details see Huisman & Walker (1990, p. 409).
Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA).

**Plocamium preissianum** Sonder

For details see Huisman & Walker (1990, p. 409).

Specimen: South of Rottnest I. Dredged from 27 m depth (C. Sim, 16.i.1996; UWA).

**Order Rhodymeniales**

**Botryocladia leptopoda** (J. Agardh) Kylin

For details see Huisman & Walker (1990, p. 414).

Specimens: North of Rottnest I. Dredged from 25 m, 44 m depth (C. Sim, 15.i.1996; UWA).

**Gloiosaccion brownii** Harvey

For details see Huisman & Walker (1990, p. 416).

Specimen: North of Rottnest I. Dredged from 32 m depth (C. Sim, 15.i.1996; UWA).

**Rhodymenia sonderi** P. Silva in Silva, Basson & Moe 1996: 370

For details see Huisman (1997, p. 224).

Specimens: North of Rottnest I. Dredged from 40 m depth (C. Sim, 15.i.1996; UWA). South of Rottnest I. Dredged from 14 m depth (C. Sim, 16.i.1996; UWA).

Remarks: Previously recorded from Rottnest Island as *Rhodymenia australis* Sonder (Huisman & Walker 1990, p. 416), a superfluous name recently replaced (Silva *et al.* 1996)

**Webervanbossea kaliformis** (J. Agardh) De Toni

For details see Huisman & Walker (1990, p. 416).

Specimen: South of Rottnest I. Dredged from 42 m depth (C. Sim, 16.i.1996; UWA).

**Division Magnoliophyta** (Sea Grasses)

**Amphibolis griffithii** (Black) den Hartog

For details see Huisman & Walker (1990, p. 442)

Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA).

**Halophila ovalis** (R. Brown) Hooker

For details see Huisman & Walker (1990, p. 443)
Specimen: North of Rottnest I. Dredged from 22 m depth (C. Sim, 15.i.1996; UWA). South of Rottnest I. Dredged from 38 m depth (C. Sim, 16.i.1996; UWA).

*Posidonia angustifolia* Cambridge & Kuo
For details see Robertson (1984, p. 96)
Specimen: North of Rottnest I. Dredged from 44 m depth (C. Sim, 15.i.1996; UWA).

*Posidonia coriacea* Cambridge & Kuo
For details see Kuo & Cambridge (1984, p. 270)
Specimen: North of Rottnest I. Dredged from 22 m depth (C. Sim, 15.i.1996; UWA).

*Thalassodendron pachyrhizum* den Hartog
For details see Huisman & Walker (1990, p. 442)
Specimen: North of Rottnest I. Dredged from 46–48 m depth (C. Sim, 15.i.1996; UWA).

**ACKNOWLEDGEMENTS**
The assistance of the crew of the RV Flinders was invaluable, and we gratefully acknowledge Fisheries WA for allowing this component of the Workshop to take place. Emily Glover and John Taylor were most helpful during the dredging and we gratefully acknowledge their tolerance of these strange plant people!

**Literature Cited**


