

4.3.6 Providing marine algal taxonomic expertise to *Coastal Ecosystem and Biodiversity in Western Australia*, a core CSIRO work priority area, and preparation of an interactive key to the seagrass epiphytes

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Introduction

Benthic plants (algae and seagrasses) are a dominant component of most inshore marine ecosystems in Western Australia, and several CSIRO projects presently underway incorporate macroalgal surveys to establish baseline community structure. One of SRFME's core research projects, *Coastal Ecosystem and Biodiversity in Western Australia* has as a primary objective the 'provision of representative baseline assessments'. It is imperative that these surveys be based on reliable and consistent taxonomic information if they are to provide meaningful habitat and community characterizations. This project uses the taxonomic expertise of John Huisman to ensure consistent and accurate identifications of the macroalgae. In addition to the benefits to CSIRO core research, this project will contribute to 'FloraBase', a CALM endeavour to document information regarding Western Australia's plant life. This information is web-based and, in part, made available to the public.

Aims/Objectives

This project has several objectives. The first is to provide taxonomic expertise to SRFME core research projects, the results of which will enhance our knowledge of Western Australia's marine flora and will be used to provide information to establish and update CALM's 'FloraBase', the web-based repository of information pertaining to Western Australia's plants. The second objective is to construct an interactive key to the algal epiphytes occurring on seagrasses. This key will use the program LUCID and will be an extremely valuable resource for monitoring the health of Western Australia's seagrasses, as epiphyte composition and load is regarded as a key indicator of ecosystem health.

Results

Work on this project began in mid January 2005 at 20% time (one day per week) and is due to be completed late in 2006. Since commencement the backlog of unidentified/tentatively identified specimens has been cleared, most being named to species level. These names have been incorporated into the 'Coastal Ecosystem' project. Many of the specimens represent range extensions for the species and are therefore of value in establishing accurate distributions. Once these specimens have been curated they will be lodged with the WA Herbarium and their details entered into FloraBase. The Jurien Bay specimens will partly form the basis of an annotated checklist being compiled for the region.

As a result of this work, the extremely rare red alga *Gelidiella ramellosa* (Kützinger) Feldmann & Hamel has been recognized in the Perth specimens. This species was originally described from collections made over 150 years ago from Western Australia (Kützinger 1843) and has not been found in the region since that time (Womersley 1994). Materials have been sent to Dr Wilson Freshwater (University of North Carolina) for DNA sequence analyses and a collaborative paper is being prepared. Dr Freshwater is the acknowledged expert in the Gelidiales, the red algal order to which *Gelidiella* belongs.

Two other collaborative projects are underway. One is to produce a small booklet on the common marine plants of the Perth Region. This will be co-authored by John Huisman, Julia Phillips, and Cheryl Parker (CALM, State Herbarium) and is due to be completed in April, publication following shortly thereafter.

A second project ties in with the Jurien Bay coastal ecosystem project and a current project by Huisman at the State Herbarium to verify all extant collections of marine algae from the Jurien Bay region. All records will be collated and published as an authoritative checklist for the region, providing a detailed summary of the flora of this important region.

With regard to the 'Seagrass Epiphyte Interactive Key', John Huisman attended a CALM workshop on using LUCID for developing interactive keys and purchased the updated version of the software, which is now usable on the web. A list of known epiphytes has been compiled (over 200 species) and the major portion of the key has been built. At present it includes some 57 characters ('Features'), and 200 character states ('States') for 204 species ('Entities'). A large portion of the final product will be the species descriptions and images for confirmation of identification. Many of these are 'in house' and the remainder will be acquired before the end of the project (late 2006). We envisage that the final product will appear as a self-contained CD, complete with interactive key, descriptions, and images. Example photographs and pages are included (Figs 4.10, 4.11).

Summary

This project has made significant advances towards recognition of the Western Australian marine flora, having already added new distributional data and rediscovered an extremely rare species. In addition, considerable progress has been made toward building the interactive key to the seagrass epiphytes.

References

Kützinger, F. T. (1843). *Phycologia generalis*. Leipzig.

Womersley, H. B. S. (1994). *The Marine Benthic Flora of Southern Australia. Part IIIA*. Australian Biological Resources Survey, Canberra.

Publications

Two manuscripts, a booklet, and a CD are being prepared:

- a. The rediscovery of *Gelidiella ramellosa*.
- b. Annotated checklist of the marine alga of Jurien Bay.
- c. Seaweeds of the Perth Region (booklet).
- d. Seagrass Epiphytes: Interactive Key and Identification Guide (CD).

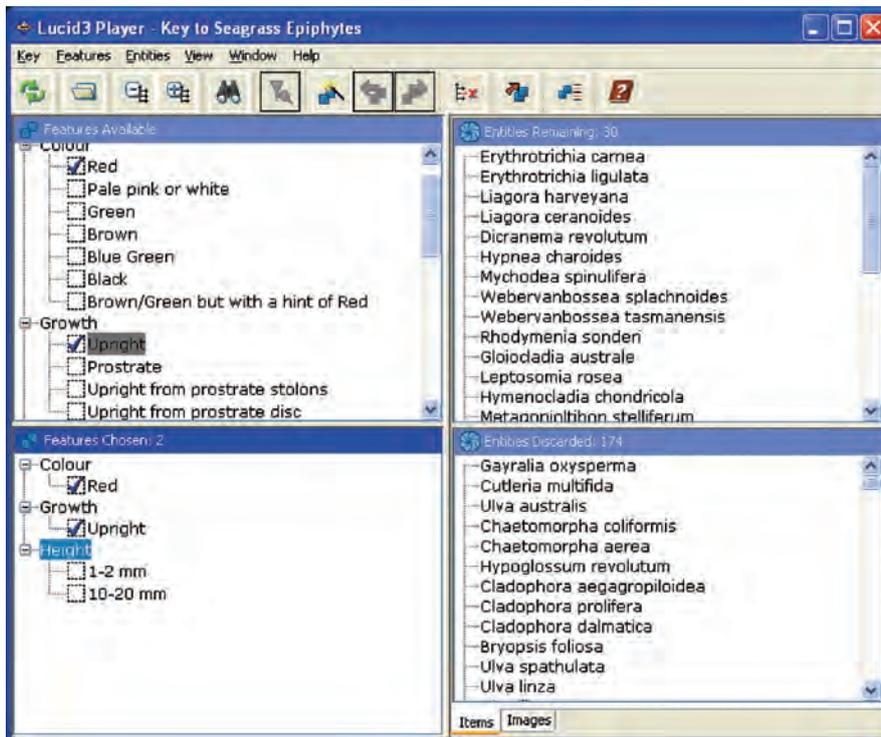


Figure 4.10: Example Screen from Interactive Key to Seagrass Epiphytes

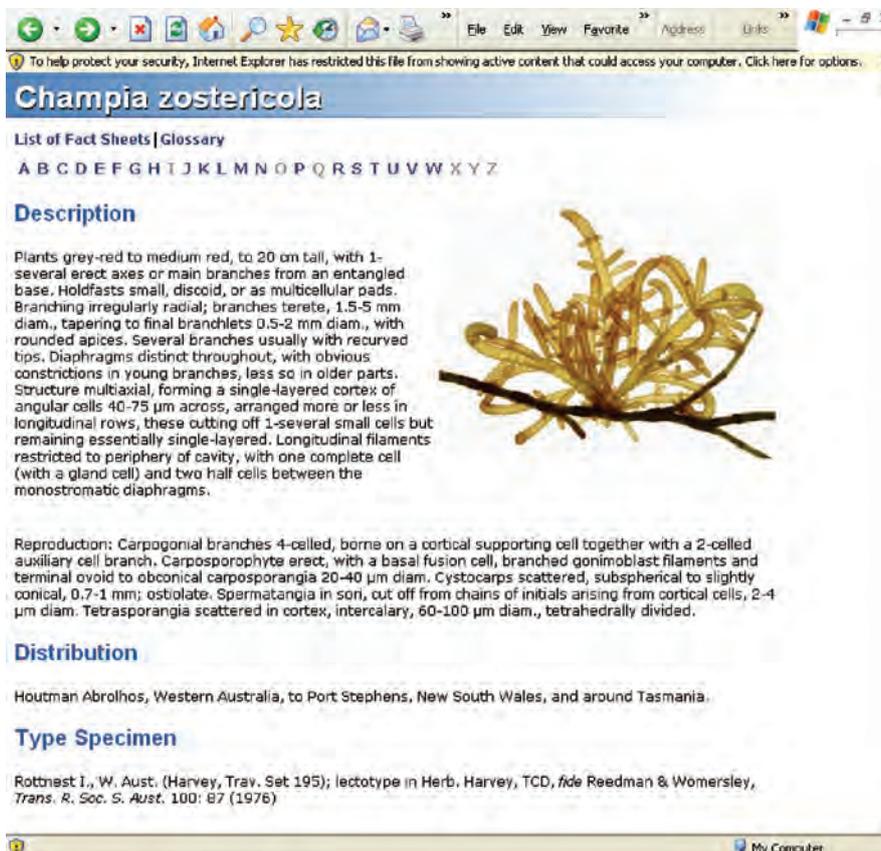


Figure 4.11: Example Screen from Species Fact Sheets