

Cataloging Diversity in the Sacoglossa: documenting species through the Encyclopedia of Life (EOL)

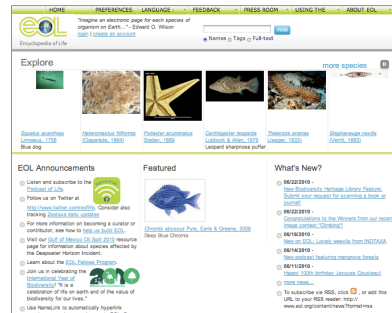
Jann E. Vendetti, Postdoctoral Researcher & 2010 Rubenstein Fellow, Department of Biological Sciences, California State University, Los Angeles

Abstract

The Sacoglossa is an order of mostly herbivorous marine and estuarine sea slugs with nearly 400 described species (Jensen, 1996; Krug et al., 1997). Many species can sequester actively photosynthetic chloroplasts from their algal hosts and others have evolved defensive adaptations such as crypsis, autotomy, and noxious anti-predator chemicals (Cimino and Ghiselin, 1998; Gavagnin et al. 2000; Pierce et al. 2003). Because sacoglossans are generally small and cryptically colored, current faunal lists are considerable underestimates of true species diversity (Trowbridge et al., 2009; Carlson and Hoff, 2003). For example, in the most recent guide to Indo-Pacific opisthobranchs, more than half of all identified sacoglossans (n=122) were undescribed (Gosliner et al., 2008). This hidden diversity makes the Sacoglossa an excellent clade to catalogue through the Encyclopedia of Life (EOL).

1 The Encyclopedia of Life is an online resource and species database of taxa from across the tree of life (www.eol.org/). As an EOL Rubenstein Fellow (Smithsonian Institution) I am using the **LifeDesks platform** to create **2** approximately **400 species pages** **3** for the sacoglossan molluscs. Genera of particular focus are *Alderia* Allman, 1846, *Elysia* Risso, 1818, *Costasiella* Pruvot-Fol, 1951, *Thuridilla* Begh, 1872, and *Plakobrancheus* van Hasselt, 1824. Species pages are being compiled with the **4** **collaboration** of scientists, amateurs, and a variety of informative databases. An improved understanding of the Sacoglossa as a result of EOL species pages has the potential to inform comprehensive studies of their range, reproduction, development, speciation, phylogeography, morphological and molecular evolution.

1 Encyclopedia of Life



<http://www.eol.org/>

- ❖ The EOL is an online reference that combines biological and taxonomic information from many sources (e.g. NCBI, Barcode of Life, World Register of Marine Species, Census of Marine Life) with the expertise of specialists.
- ❖ With these data the EOL endeavors to answer questions about organismal diversity and provide the public with a trusted resource to which interested individuals may contribute.

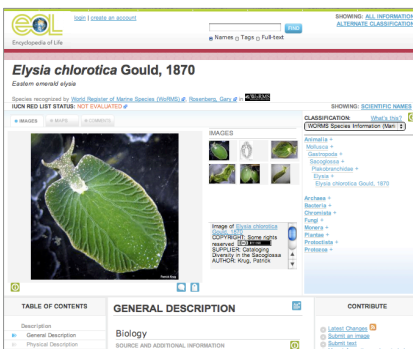
<http://sacoglossa.lifedesks.org>

- ❖ LifeDesks are a platform on which EOL species page drafts are created and organized. It allows collaborators to post pictures, add text, and edit classifications.
- ❖ When these pages are complete they are uploaded to the EOL.
- ❖ The LifeDesk I made, **Cataloging Diversity in the Sacoglossa**, has draft pages for approximately 1/4 of sacoglossan species.

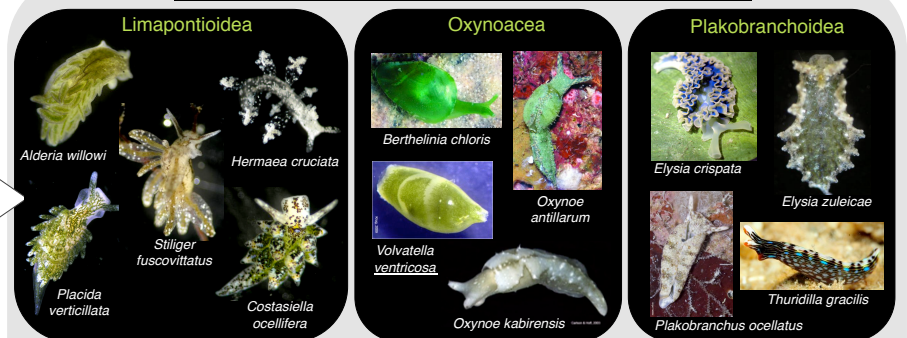
2 LifeDesks



3 Sacoglossa in the EOL



Contributed Images from Three Major Sacoglossan Clades



Species pages also include a description, type locality, nucleotide sequences, and information on reproduction, life history, habitat, algal host, chloroplast retention, and distribution. The Images above were contributed by Clay Carlson, John Fraser, Patrick Krug, Angela Liban, Angel Valdés, and the author. They are not to scale.

4 Collaborating Organizations



Rubenstein Fellowships

David M. Rubenstein fellowships are funded by a gift to the Smithsonian Museum of Natural History. A one-year stipend that matches up to 50% of institutional funds supports the efforts of an early career scientist to organize and contribute species-level information to the EOL.

The inaugural 2010 cohort of 18 Fellows was chosen from >100 applicants in the Fall of 2009. Yearly competitions are expected until 2013 with a goal of funding at least 60 taxonomists (especially with expertise in **marine organisms**) as Rubenstein fellows.

How to Get Involved

- ❖ **Contribute images** to the EOL using Flickr.
- ❖ **Create a LifeDesk** with a theme of your choice (e.g. Chitons, Bivalves of California, Invertebrates of SF Bay, etc.)
- ❖ **Become an EOL curator** and use your taxonomic expertise to review submitted information for accuracy.
- ❖ **Apply to be a Rubenstein Fellow.** Applications are due in late Summer/early Fall.

For more information on all ways to participate see www.eol.org

Acknowledgments

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Angel Valdés (Cal Poly, Pomona).

To contact the author, email jannvendetti@yahoo.com

Please get in touch with me if you would like to contribute sacoglossan information to the EOL!