



Barnacle Editor Workshop, February 24-28 2020

Target Group: The barnacles – more specifically, the broader group of Thecostraca including the traditional barnacles (Cirripedia) as well as the related groups of Facetotecta and Ascothoracida. The thecostracan barnacles rank among the most commonly encountered marine crustaceans in the world. They deviate from almost all other Crustacea in that only the larvae are free-living, while the adults are permanently sessile and morphologically highly specialized as filter feeders or parasites. In the most recent classifications of the crustacean Maxillopoda ¹ and latest phylogenetic analyses ²⁻⁴ the Thecostraca *sensu* Grygier ⁵, comprising the Facetotecta, Ascothoracida, and Cirripedia, form monophyletic assemblages. Barnacle phylogenetics has advanced greatly over the last 10 years. Nonetheless, the relationships and taxonomic status of some groups within these three infraclasses are still a matter of debate. While the barnacles were the focus of Darwin's detailed taxonomic work, there has not been a comprehensive review of the species of barnacles as a whole since Darwin.

Contact & Responsible Person for the Workshop: Prof. Keith A. Crandall, PhD. Department of Biological Sciences, George Washington University, Washington DC, USA +2027698411, kcrandall@gwu.edu. Prof. Crandall has over 20 years of experience in barnacle evolutionary genetics and genomics and has organized multiple workshops around barnacle phylogeny and integration of taxonomy and phylogeny. He is also an active editor of the Decapod crustaceans on WoRMS, specifically the freshwater crayfishes (Astacidea). Thus, Crandall is in an ideal position to bring together the barnacle taxonomic community to update the barnacle taxonomy and implement that update in WoRMS.

When: February 24-28, 2020

Where: Flanders Marine Institute (VLAAMS INSTITUUT VOOR DE ZEE)

The "LifeWatch-WoRMS Thecostraca Editor Workshop" will be held from Monday 24 February until Friday 28 February 2020 in the Meeting Room 'Noordzee' of VLIZ (Flanders Marine Institute):

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Program:

The Thecostraca, which include the Facetotecta, Ascothoracida and Cirripedia, is a highly variable crustacean group in terms of both morphology and biology^{6,7}. This makes them prime models for studying evolutionary adaptations in both morphology and reproductive systems^{8,9}. In fact, the specializations in adult morphology, growth, feeding biology and sexual systems prompted Darwin to study cirripedes resulting in one of the first “model organisms” of evolutionary adaptation¹⁰⁻¹³. While there has been much recent work on phylogenetic relationships among the barnacles at both the higher^{4,14-20} and lower²¹⁻²⁴ taxonomic levels, there has been little integration across levels and across groups working on barnacle evolution. Furthermore, there has not been a recent list of all the species of barnacles **since Darwin**. We have assembled a group of the world leaders in barnacle taxonomy, systematics, and evolutionary biology to develop a number of useful tools for barnacle evolutionary biology studies. We are an experienced group in both taxonomy and phylogenetics with extensive combined experience in producing both web-based and published products of species lists, diversity assessments, phylogenetics, and taxonomy. We currently have a working draft of an updated taxonomy and this workshop will allow all of us to update the WoRMS barnacle taxonomy reflecting these significant rearrangements which will be published by the time of the workshop AND provide training to this outstanding group of barnacle taxonomists to keep the WoRMS taxonomy updated. As dominant and recognizable marine members, this is an exceptional group to target for updating on WoRMS.

Barnacle Classification with species estimates:

Class **Maxillopoda** Dahl, 1956

Subclass **Thecostraca** Gruvel, 1905

Infraclass **Facetotecta** Grygier, 1985 ~ **5 species**

Infraclass **Ascothoracida** Lacaze-Duthiers, 1880 ~ **90 species**

Order **Laurida** Grygier, 1987

Order **Dendrogastrida** Grygier, 1987

Infraclass **Cirripedia** Burmeister, 1834 ~ **1100 species**

Superorder **Acrothoracica** Gruvel, 1905

Order **Pygophora** Berndt, 1907

Order **Apygophora** Berndt, 1907

Superorder **Rhizocephala** Müller, 1862

Order **Kentrogonida** Delage, 1884

Order **Akentrogonida** Häfele, 1911

Superorder **Thoracica** Darwin, 1854

Order **Pedunculata** Lamarck, 1818

Order **Sessilia** Lamarck, 1818

Activities

Monday 24 February (Day 1) – Arrival orientation to workshop, review of barnacle taxonomy

- 09:00-10:30**
- Welcome [Keith Crandall]
 - Practical information [Leen Vandepitte – DMT]
 - General introductions to WoRMS [Stefanie Dekeyzer – DMT]
 - Round table, introductions [all]
 - Orient to Workshop [all]
 - Overview of Goals for the week [all]
- 10:30-11:00** *Coffee break*
- 11:00-12:30** Overview of the state of Barnacle Taxonomy
- 12:30-13:30** *Lunch break*
- 13:30-15:00** Break-out groups to organize literature
- 15:00-15:30** *Coffee break*
- 15:30-17:00** Review taxonomic issues
- 17:00** End of the day (could be between 17:00 and 17:30)

Tuesday 25 February (Day 2) – Morning: APHIA overview and orientation, TRAINING Afternoon: editing standards, barnacle taxonomy overview

- 09:00-10:30** APHIA Overview and Orientation (including hands-on demonstration session) [DMT]
- 10:30-11:00** *Coffee break*
- 11:00-12:30** Further APHIA training
- 12:30-13:30** *Lunch break*
- 13:30-15:00** Editing standards for barnacles
- 15:00-15:30** *Coffee break*
- 15:30-17:00** Editing
- 17:00** End of the day (could be between 17:00 and 17:30)
- 19:00ish?** Group Workshop Dinner organized by WoRMS/LifeWatch

Wednesday 26 February (Day 3) – Morning: Barnacle Taxonomy paper

Afternoon: Divide and conquer – each individual will take on a particular taxon to start with updates, including accessing and uploading relevant taxonomic literature (we will create a GoogleDocs folder for accumulating pdfs of barnacle taxonomic before the meeting)

- 09:00-10:30** Barnacle taxonomy paper updates, issues, assignments (Jens)
- 10:30-11:00** *Coffee break*
- 11:00-12:30** Editing
- 12:30-13:30** *Lunch break*
- 13:30-15:00** Additional Training/Questions/further Editing
- 15:00-15:30** *Coffee break*
- 15:30-17:00** Editing
- 17:00** End of the day (could be between 17:00 and 17:30)

Thursday 27 February (Day 4) – Morning: APHIA Q&A, further TRAINING

Afternoon - Further WoRMS pages updates

- 09:00-10:30** Additional APHIA Training? Q&A/Further Editing
- 10:30-11:00** *Coffee break*
- 11:00-12:30** Editing
- 12:30-13:30** *Lunch break*
- 13:30-15:00** Future Directions
- 15:00-15:30** *Coffee break*
- 15:30-17:00** Editing
- 17:00** End of the day (could be between 17:00 and 17:30)

Friday 28 February (Day 5) – Further WoRMS pages updates, Taxonomy paper wrap up, conclusions, farewells

09:00-10:30 Assessment and Assignments

10:30-11:00 Coffee break

11:00-12:30 Editing

12:30-13:30 Lunch break

13:30-15:00 Editing

15:00-15:30 Coffee break

Farewells

Participant List:

Keith Crandall

Jens Hoeg

Marcos Perez-Losada

Benny Chan

Henrick Glenner

Andy Gale

Niklas Dreyer

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