BRIDGETTE E. CLARKSTON

Ph.D. Biologist with post-doctoral training in science education and eleven years teaching experience in formal and informal science education. Skilled in red algal taxonomy and systematics and collections-based research (over 6000 collections made), scientific diving, communicating science to university students and the general public, developing and delivering rigorous, interactive curricula, and coaching educators and departments in evidence-based pedagogy.

EDUCATION

University of New Brunswick. New Brunswick, Canada

PhD Biology, Dr. Gary Saunders (2011)

Integrated traditional morphological and genetic-based taxonomy to delimit species and elucidate relationships in the red algal family Kallymeniaceae (Rhodophyta).

University of New Brunswick. New Brunswick, Canada

Diploma in University Teaching (2011)

Comprehensive education diploma focused on adult learning, course design, teaching and learning theory.

University of Victoria. British Columbia (B.C.), Canada

Bachelor of Science, Biology (2005)

WORK EXPERIENCE

California State University Monterey Bay, Marina California

Curriculum Associate, Undergraduate Research Opportunities Center (11.2014 – present)

- Develop, teach and evaluate four courses of the UROC Scholars Program, a competitive two-year research and graduate school preparation program for first-generation, low-income background and/or underrepresented minority students.
- Develop, teach and evaluate professional development workshops for undergraduates and graduates. Topics include professional communication (CV, personal statement, email), research preparation, research ethics, graduate school preparation and mentor training.
- Publish scholarly articles about undergraduate research teaching, training and curriculum integration.
- Supervise outreach efforts to local community colleges and UROC online presence, including website and social media. Website: https://csumb.edu/uroc
- Supervise UROC Outreach Coordinator and Social Media Intern positions.

California State University Monterey Bay, Marina California

Program Coordinator, Research Experience for Undergraduates (11.2014 – present)

- Develop, administrate and evaluate a National Sciences Foundation-funded (Grant No. 1359488) 10-week ocean sciences summer Research Experience for Undergraduates program with an annual budget of approximately $130,000. Website: https://csumb.edu/reu
- Recruit and select 11 students from community colleges, liberal arts colleges and research-intensive universities across the U.S. and U.S. territories (278 applicants in 2016), match students with research mentors from one of six research partner institutions.
- Develop and deliver REU curriculum. Includes weekly professional development workshops (e.g. scientific boating, GIS, research ethics, graduate school 101, scientific communication),

reviewing student research proposals, written reports, and oral presentations at the CSUMB Regional Summer Undergraduate Research Showcase.
- Coordinate student travel housing. Supervise student research preparation and progress. Monitor cohort dynamics and students' overall well-being during 10-week program.
- Develop and administer program evaluations to students and mentors, incorporate feedback into subsequent REU iterations.

California State University Monterey Bay, Marina California
Science Educator, Polar Interdisciplinary Coordinated Education Network (05.2015 – present)

- Design and facilitate middle and high school teacher training workshops and student research symposia for a National Sciences Foundation-funded polar education and outreach program (Grant No. PLR-1525635) designed to provide public access to the Antarctic and Arctic regions through polar data and interactions with the scientists. Website: http://polar-ice.org/
- Create communities of practice among educators and polar scientists around understanding of polar science and data through workshops, data visualization tools, and data-focused activities appropriate for middle and high school students.

Bamfield Marine Sciences Centre, Bamfield B.C.
Instructor, Ecological Adaptations of Seaweeds undergraduate course *(09.2014 – 10.2014)*

- Taught a 3.5-week field course (MRNE 425) for 23 upper-level university students, the goal an exploration of the biodiversity, biology, ecology, biomechanics and ethnobotany of seaweeds.
- Developed collections-based multi-week field and lab module to compare traditional morphological and DNA-barcode taxonomy of common red and green seaweeds **(see Teaching Effectiveness Appendix)**.

Bamfield Marine Sciences Centre, Bamfield B.C.
Instructor, Science and the Sea undergraduate course *(07.2014 – 08.2014)*

- Taught, a six-week field course for non-science university students, the goal a broad understanding of science, development of science literacy skills and enriched connection to nature in the context of B.C. coastal marine ecosystems.
- Course summary: https://storify.com/funnyfishes/science-and-the-sea-2014-2016

University of British Columbia, Vancouver B.C.
Science Teaching Fellow, Carl Wieman Science Education Initiative (01.2012 – 09.2013)

- Collaborated with individual faculty and the Biology department administrators to assess and improve student engagement and learning in the UBC Biology Program core courses. My focus area was on evolution courses and topics.
- Worked directly with faculty to develop and apply interactive, hands-on activities for courses traditionally taught by lecture only. Consults ranged from one-time professional development meetings or workshops to year-long course development. **(see Teaching Effectiveness Appendix)**
- Designed and implement methods to collect data (e.g., learning gains, attitudes) about what students are actually learning.
- Designed and tested new course curricula, teaching methods, activities, assessments.
- Disseminated best teaching practices within and beyond UBC community through informal meetings, professional development workshops, academic conferences, academic publications and popular science blog posts.

Bamfield Marine Sciences Centre, Bamfield B.C.
Marine Sciences Educator, Public Education Program (01.2014 – 05.2014)

- Developed and facilitated hands-on immersion learning in field and lab settings for over 1000 youth and adult students as part of the Public Education Program team.

- Taught marine and coastal science to provincial learning objectives (primarily British Columbia and Alberta) and custom/course learning objectives for university and community groups.

Beaty Biodiversity Museum, Vancouver B.C.
Scientist Partner, University Hill Elementary School Partnership Project (03.2013 – 05.2013)

- Developed and delivered one in-class and two field-based biodiversity activities for a grade 5 class in collaboration with teacher partner Sean Rupert.
- Facilitated student exploration of flora and fauna of Acadia Beach and Pacific Spirit Park, modeling and encouraging the scientific process components of asking questions and making predictions based on accurate observations and documenting biodiversity through journaling and herbarium collections.

James Thompson Elementary School, Richmond B.C.
Scientist Partner (11.2012 – 06.2013)

- Developed and delivered several indoor and outdoor activities about making observations and asking questions for a kindergarten class in collaboration with teacher partner Louesa Byrne.
- Provided feedback to Mrs. Byrne about how to incorporate aspects of the process of science into lessons.
- Co-facilitated a biodiversity exploration field trip to Pacific Spirit Park. Created a story time book "Looking Closely Around the Forest" to reinforce the field trip lessons **(see Teaching Effectiveness Appendix)**

University of New Brunswick, Fredericton N.B.
Post-Doctoral Fellow, Dr. Gary Saunders Phycology Lab (06.2011 – 12.2011)

- Developed a protocol for environmental sampling and sequencing of DNA barcode for freshwater cyanobacteria.
- Mentored an undergraduate researcher in cyanobacterial collection, identification and culturing, and algal DNA extraction, PCR and sequence analysis and critical reading of scientific literature.

University of New Brunswick, Fredericton N.B.
Laboratory Course Instructor & Coordinator (09.2011 – 12.2011)

- Taught introductory biology laboratory course for 418 students divided into seven lab sections. Prepared pre–lab talks, quizzes, midterms and final exam, coordinated all lab activities and supervised during each lab.
- Trained and supervised twenty graduate and undergraduate teaching assistants.

University of New Brunswick, Fredericton N.B.
Sessional Instructor (2010, 2011)

- Co-taught Biological Principles II, an introductory biology course for 348–384 students. Topics covered include: animal development, evolution, systematics, behaviour and conservation biology.
- Redesigned curriculum to include case studies, peer discussion, student response system (clickers), written assignments and online surveys.

University of New Brunswick, Fredericton N.B.
Sessional Instructor (2008, 2010, 2011)

- Co-taught Biological Principles I, an introductory biology course for 425–515 students. Topics covered included evolution, systematics, biodiversity of prokaryotes and fungi, and current research on protist biodiversity.
- Incorporated case studies and written assignments into the curriculum.

University of New Brunswick, Fredericton N.B.

Scientific Diver, Saunders Lab (2005-2009)

- Certified Level II with Canadian Association of Underwater Scientists (expired).
- Collected approximately 6300 algal samples in Eastern, Western & sub-Arctic Canada, California and New England. Organized supplies and shipping, transportation, accommodation, diving charters and collecting permits for provincial and state parks.

University of New Brunswick, Fredericton N.B.
Undergraduate Research Mentor, Saunders Lab (2007, 2009)

- Mentored two undergraduate researchers during summer internships in collecting and preparing red algal specimens for the Connell Memorial Herbarium, red algal DNA extraction, PCR and DNA Barcode sequence analysis, and critical reading of scientific literature.

University of New Brunswick, Fredericton N.B.
Teaching Assistant, multiple university biology courses (2005-2009)

- Assisted instructors in courses ranging from introductory biology, ecology and research methods to upper-level algal diversity and systematics.
- Delivered activities, advised students, graded assignments, papers and tests, organized and facilitated field trips.

PEER-REVIEWED PUBLICATIONS

Burchett, D., **Clarkston, B.E.,** Gutiérrez, J.J., Leininger, L., Logan, C., Silveus, J. Zapata, G. and Unruh, H. Undergraduate Research Across the Curriculum at a Hispanic Serving Institution. *CUR Quarterly.* In Review.

Oehlman, N., Haeger, H., **Clarkston, B.E.** and Banks, J.E. Maximizing the Function of the Student ePortfolio: Demonstrating Learning in High-Impact Practices. *Peer Review.* Submitted.

Cooke, J., Weir, L., **Clarkston, B.E.,** Kalas, P., Mullally, M. Fictitious Frogs: From Speciation to Phylogenetic Trees. *CourseSource.* In preparation.

Gilley, B. and **Clarkston, B.E.** 2014. Collaborative Testing: Evidence of Learning in a Controlled In–Class Study of Undergraduate Students. *Journal of College Science Teaching* 43(3): 83–91. (http://bit.ly/1gtZyp4)

Clarkston, B.E. and Saunders, G.W. 2013. Resolving species diversity in the red algal genus *Callophyllis* (Gigartinales, Florideophyceae) in Canada using an integrated taxonomic method. *European Journal of Phycology* 48(1): 27–46.

Clarkston, B.E. and Saunders, G.W. 2012. An examination of the red algal genus *Pugetia* (Kallymeniaceae, Gigartinales) with descriptions of *Salishia firma* gen. et comb. nov., *Pugetia cryptica* sp. nov., and *Beringia wynnei* sp. nov. *Phycologia* 51(1): 33–61.

Clarkston, B.E. and Saunders, G.W. 2010. A comparison of two DNA barcode markers for species discrimination in the red algal family Kallymeniaceae (Gigartinales, Florideophyceae), with a description of *Euthora timburtonii* sp.nov. *Botany* 88(2): 119−131.

BOOKS AND FIELD GUIDES

Druehl, L. and **Clarkston, B.E.** Publication: 06.2016. Pacific Seaweeds: A Guide to Common Seaweeds of the West Coast. *Harbour Publishing.* 320 pp.

A revised and updated edition of the best-selling *Pacific Seaweeds,* with updated taxonomy, new photos and species, and new sections on DNA Barcoding, biodiversity and shore plants. http://www.harbourpublishing.com/title/PacificSeaweeds2

Clarkston, B.E. 2015. A Field Guide to Seaweeds of the Pacific Northwest**.** *Harbour Publishing.* A pocket-sized guide to seaweed and seagrass biodiversity of the PNW. http://www.harbourpublishing.com/title/AFieldGuidetoSeaweedsofthePacificNorthwest

PRESENTATIONS: TALKS & POSTERS

Haeger, H., **Clarkston, B.E.** and Banks, J. (talk) *Shedding Light on the Hidden Curriculum through Undergraduate Research.* American Association of Colleges and Universities Diversity, Learning, and Student Success conference. Philadelphia, Pennsylvania. March 17–19, 2016.

Clarkston, B.E. and Garza, C. (talk) *A Research Experiences for Undergraduates program (REU) Program Designed to Recruit, Engage and Prepare a Diverse Student Population for Careers in Ocean Sciences.* Ocean Sciences Meeting. New Orleans, Louisiana. Feb. 21–27, 2016.

Clarkston, B.E. and Garza, C. (talk) *Successes, Challenges and Lessons Learned for Recruiting, Engaging and Preparing a Diverse Student Population for 21st Century Careers in Ocean Sciences*. American Geophysical Union Meeting. San Francisco, California. Dec. 14–18, 2015.

Oehlman, N., Haeger, H. and **Clarkston, B.E.** (talk) *Re-Examining the Function of the Student ePortfolio: Demonstrating Learning in High-Impact Practices.* American Association of Colleges and Universities annual meeting. Washington, D.C. Jan. 20–24, 2016.

Clarkston, B.E., Haeger, H. and Oehlman, N. (poster) *Building a community of scholars: supporting undergraduate research through a research seminar series.* Undergraduate Research Programs: Building, Enhancing, Sustaining; Council on Undergraduate Research meeting. Norman, Oklahoma. June 23-25, 2015.

Fresquez, C., Haeger, H. and **Clarkston, B.E.** (poster) *Mentee evaluation: structuring meaningful feedback from mentors to students and gathering data on what works.* Undergraduate Research Programs: Building, Enhancing, Sustaining; Council on Undergraduate Research meeting. Norman, Oklahoma. June 23-25, 2015.

Bassett, M. and **Clarkston, B.E.** (poster) *Taking the leap: improving community college outreach through early engagement in undergraduate research.* Undergraduate Research Programs: Building, Enhancing, Sustaining; Council on Undergraduate Research meeting. Norman, Oklahoma. June 23-25, 2015.

Clarkston, B.E. and Garza, C. (talk) *Creating Tomorrow's Ocean Science Leaders.* MARINE Oceans Colloquium. Moss Landing, California. April 18, 2015.

Clarkston, B.E. and Gilley, B. (poster) *Collaborative testing: evidence of learning in a controlled in–class study of undergraduate students*. Society for the Advancement of Biology Education Research. Minneapolis, Minnesota. July 11–14, 2013.

Clarkston, B.E. and Gilley, B. (poster) *Collaborative testing: evidence of learning in a controlled in–class study of undergraduate students*. Western Conference on Science Education. London, Ontario. July 9–11, 2013.

Gilley, B. and **Clarkston, B.E.** (poster) *Does collaborative testing (a.k.a. group testing, team–based testing) increase students' retention of concepts?* Geological Society of America, Charlotte, North Carolina. Nov. 4–7, 2012.

Clarkston, B.E. and Saunders, G.W. (talk) *Systematics of select members of the Kallymeniaceae (Rhodophyta) in Canada.* Canadian Society of Ecology and Evolution, Banff Centre, AB. May 12–15, 2011.

Clarkston, B.E. and Saunders, G.W. (talk) *Comparing COI and UPA as DNA barcode markers for delimiting species of marine red algae.* Phycological Society of America, University of Hawaii at Manoa, Honolulu, HI, USA. July 17–23, 2009.

Clarkston, B.E. and Saunders, G.W. (talk) *A comparison of DNA barcode markers for species discrimination in marine red algae.* North East Algal Symposium, University of Massachusetts Amherst, Amherst, MA, USA. April 17–19, 2009. **Student Oral Presentation Award –$500.**

PRESENTATIONS: PROFESSIONAL WORKSHOPS & CLASSES

I designed, adapted materials for, and delivered all listed workshops, unless otherwise stated.

Raincoast Education Society, Tofino B.C.
Seaweeds of the West Coast (07.2014)

A 3-day field-based workshop for the general public hosted by Raincoast Education Society in Tofino, B.C. Introduced the general public to seaweeds, their biology, diversity, ecology, current and historical relationship to people, and conservation, with overarching goal to enrich the participants' connection to the marine world.

Website: http://raincoasteducation.org/education-programs/courses/seaweeds-west-coast

Bamfield Marine Sciences Centre, Bamfield B.C.
Coastal Science and Interpretation for Wilderness Guides (05.2014)

A 3-day field-based workshop at the Bamfield Marine Sciences Centre, intended for wilderness guides, counselors and other recreation professionals. I delivered current scientific information about marine and terrestrial biodiversity in a naturalist and interpretation framework along with educational activities applicable for their profession.

Bamfield Marine Sciences Centre, Bamfield B.C.
Terrestrial and Marine Field Skills for Undergraduates (02.2014)

Two 3-day field-based workshops at the Bamfield Marine Sciences Centre that trained undergraduate science students in practical field skills in a remote wilderness setting as well as included sessions on careers, resume and CV writing, and information on how to pursue graduate school. I adapted and delivered materials from a previous workshop.

Simon Fraser University, Burnaby B.C.
Effective Feedback on Students' Writing (01.2014)

An interactive 75–minute workshop about giving effective feedback on students' written work for the Simon Fraser University TA/TM Day, a professional development event for Teaching Assistants and Tutor Markers.

University of British Columbia, Vancouver B.C.
Writing Effective Clicker Questions (05.2013)

A 90–minute professional development workshop for UBC faculty, post–docs and staff about creating questions for "clickers" (wireless personal response technology) that facilitate and demonstrate learning in students.

University of British Columbia, Vancouver B.C.
Effective Peer Instruction Using Clickers (05.2012)

Collaborated with physics education researchers to prepare and deliver an interactive professional development workshop for biology faculty on implementing effective peer instruction.

Canadian Society of Ecology and Evolution, Banff Alberta
Symposium on Women Entering Ecology and Evolution Today (05.2011)

Organized a symposium for the Canadian Society on Ecology and Evolution conference, which included selecting speakers, fundraising and managing a $3000 budget and producing content for the website.

MEMBERSHIPS

Council on Undergraduate Research	*2015–current*
American Association of Colleges & Universities	*2015–current*
American Geophyscial Union	*2015–current*
Society for the Advancement of Chicanos & Native Americans in Science	*2015–current*
California Native Plant Society	*2015–current*
Nature Vancouver	*2013–current*
Society for the Advancement of Biology Education Research	*2013–2015*
Learning Specialists Association of Canada	*2013–2015*
National Association of Biology Teachers	*2010–2013*
Western Society of Naturalists	*2010–2012*
Barcode of Life Network	*2006–2012*
Centre for Environmental and Molecular Algal Research	*2005–2012*
North East Algal Society	*2006–2011*
Phycological Society of America	*2007–2011*
Diver's Alert Network	*2007–2013*
Canadian Society of Ecology and Evolution	*2008, 2011*

TECHNICAL SKILLS & CERTIFICATIONS

Small Vessel Operator Proficiency (SVOP) certificate	*2014*
Marine Emergency Duties certificate, Level A3(MEDA3)	*2014*
Restricted Operator Certificate–Marine (ROC–M)	*2014*
Marine Basic First Aid, Level C CPR	*2014 (Current)*
DAN Oxygen First Aid for SCUBA Diving Injuries	*2010–2013*
WHMIS safety course	*2009 (Current)*
Class V Driver's License (California)	*1996 (Current)*
Advanced SCUBA certification	*2005 (Current)*
Pleasure Craft Operator's Card	*2003 (Current)*
Open Water SCUBA certification	*2002 (Current)*

Research Skills: Biodiversity assessment, collection on a small and large–scale, DNA extraction, gel electrophoresis, PCR, DNA sequencing, data analysis and management for DNA barcoding and phylogenetics, microscopy, taxonomy.

APPENDIX
INVITED PRESENTATIONS

Oysters, Authors and Ales Sept. 2014 http://bamfieldcommunity.ca/2014/09/oysters-authors-ale-5/

Seaweeds are 'way cool' because... Beaty Biodiversity Museum, University of British Columbia, Nov. 4, 2012. talk: https://www.youtube.com/watch?v=ceS9egsncok; slides: http://slidesha.re/1pklMK7

Bamfield Marine Sciences Centre: A Student's Perspective. Bamfield Marine Sciences Centre, 40th Anniversary Event. Sept. 2012.

PUBLICATIONS FOR A POPULAR AUDIENCE

Coastal Classroom (11.2014)
Photo essay for Torch, the University of Victoria Alumni magazine about the Bamfield Marine Sciences Centre http://issuu.com/uvic_torch_alumni_magazine/docs/2014_autumn/30

Looking Closely Around the Forest (11.2013)
blog post and book pdf: http://www.bridgetteclarkston.com/print-childrens-book/

BC Science Students Search for Seaweeds. *Northwest Dive News* (09.2007) Reprinted here: http://www.tahtsadivecharters.com/seaweed_BC.html

INTERVIEWS, AWARDS AND MENTIONS

Eye of the Beholder. *UBC Faculty of Science article* (07.2014)
Story about art inspired by science featuring my photography http://science.ubc.ca/feature/art.

Director Tim Burton gets Seaweed Namesake. *CBC article and television interview* (05.2010)
Story describing a new species discovered during my PhD, featured nationally and on other media outlets such as Discovery Channel. http://bit.ly/1kxPB9F.

Separated at Birth? Weird Seaweed and Tim Burton. *CBC Maritime Noon.* May 2010. http://bit.ly/RjW5xl. Radio interview.

Nature Photography Award, **1st Place Botany & 2nd Place Natural History.** *Vancouver Natural History Society (Nature Vancouver).* Feb. 2014. http://bit.ly/1pkmMhp.