

COASTAL & OCEAN **RESOURCES INC.**

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SARAH E. COOK
M.Sc., R.P.Bio

SPECIALTIES:

- **intertidal and subtidal classification systems**
- **habitat mapping**
- **benthic ecology**

EDUCATION:

B.Sc. Biology (Co-op), Honours, with distinction, University of Victoria (1999)
M.Sc. Biology, University of Victoria (2005)

WORK EXPERIENCE:

January 2014 - present	ShoreZone Program Manager and Senior Biologist , MER Coastal and Ocean Resources
March 2006 – January 2014	Senior Biologist , Benthos Consulting (self-employed)
May 2003 – October 2008	Project Biologist , Archipelago Marine Research Ltd., Marine Environmental Services Division
2000-2003	Data Technician/Underwater Video Classifier , Archipelago Marine Research Ltd., Dockside Monitoring Program and Marine Environmental Services Division
1999 – 2000	Stream Team Member , Veins of Life Watershed Society
1999	Biologist , Panterra Educational and Cultural Programs

GEOGRAPHIC EXPERIENCE:

Pacific Northwest (Oregon, Washington State, British Columbia), Alaska, Canadian Arctic, East Coast of Canada, The Great Lakes and the Caribbean.

EXPERTISE

Benthic Environments

Ms. Cook has extensive experience in identification of organisms and classification of habitats (including both physical and biological attributes) in marine benthic environments ranging from intertidal to nearshore to deep subtidal (500m+). She carried out her M.Sc. research on the ecology of the glass sponge reefs on the continental shelf of British Columbia which have since been proposed as Marine Protected Areas. She has experience with video taken by towed underwater camera systems (such as the Seabed Imaging and Mapping System (SIMS), Remote Operated Vehicles (ROVs), Automated Underwater Vehicles (AUVs) as well as still photography. Projects completed include monitoring and assessment of health of glass sponge reefs in Georgia Strait, deep-water coral and sponge surveys of Bowie Seamount, classification of benthic epifauna present at newly discovered cold seeps (carbonate mounds) in Hecate Strait as well as numerous surveys for ports, harbours, pipelines and other building projects.

Habitat Classification

Ms. Cook has worked on numerous projects to combine physical and biological attributes to characterize the habitats of a given area. These characterizations have been used in planning for environmental assessment processes, permitting processes, planning for protected areas and fisheries inventories. The most extensive of these is the ShoreZone program, an aerial imaging and classification system. Ms. Cook has been involved in the development and use of the ShoreZone system for over 10 years and has viewed and classified thousands of kilometers of shoreline.

Underwater Monitoring Program Design

Using her experience with video classification systems and benthic habitat characterizations, Ms. Cook has been involved in the design and creation of monitoring systems for benthic habitats in potentially impacted areas, such as aquaculture farms and ocean dumping sites. This has involved desktop studies to identify indicator species, the set-up of a structured, repeatable classification systems as well as the creation and delivery of training workshops to potential service providers.

Project Management

Ms. Cook spent 5 years as an independent contractor during which she managed over 30 projects including budget and time tracking, communication with clients, subcontractors and stakeholders and timely delivery of products. She currently manages the ShoreZone programs in the CORI office, co-ordinating between all levels of staff and ensuring projects are completed in a timely and cost-effective manner.

Training

Ms. Cook has experience training and supervising new employees in underwater and aerial classification systems. She designed and conducted several training workshops as well as a series of DVD tutorials on the use of a structured classification system for hard seabed aquaculture site monitoring.

Field Surveys

Ms. Cook has conducted shoreline surveys of intertidal and nearshore habitats in remote locations including the Yukon-Kuskokwim Delta region and Norton Sound in Alaska. These surveys were flown in helicopters at low altitude. Ms. Cook is responsible for taking high-resolution still photos of the beach and for providing audio commentary on observations of the biotic community (species composition, distribution). Ms. Cook also has experience with surveying the nearshore benthic environment using Remote Operated Vehicles (ROVs), including survey design, giving direction to the ROV and boat operators and keeping detailed field notes. She has also conducted underwater surveys using a towed camera system in more shallow-water habitats.

Environmental Sensitivity Index (ESI) Mapping

Ms. Cook has reviewed and updated the Biological and Human Use components of the ESI maps for St. Lawrence Island. This work included liaising with experts from various governmental agencies and reviewing existing data sources for birds, mammals, invertebrates and benthic habitats to synthesize information on species/habitats in that region that would be sensitive to an oil spill.

Report Preparation

Ms. Cook has participated in the preparation of proposals field survey summaries, technical manuals, marine mammal observation reports and ShoreZone summary reports. This involved data collation and summarization, including the preparation of appropriate tables and figures to illustrate trends and observations.

PUBLICATIONS & PRESENTATIONS

- Cook, S.E.**, Schoch, C.S. and Vander Schaaf, D. 2015. Mapping Blue Carbon in South Slough NERR Using ShoreZone. Poster Presentation, Coastal and Estuarine Research Federation Conference, Portland, Oregon.
- Cook, S.E.**, Schoch, C.S., Vander Schaaf, D. and Cornu, C. 2015. Mapping Blue Carbon in South Slough National Estuarine Research Reserve Using ShoreZone. Oral Presentation, American Fisheries Society Conference, Portland, Oregon.
- Harper, J.R, Bornhold, B.D., **Cook, S.E.**, McCullough, D., Morris, M., Kopeck, K., Bernhardt, W. 2012. Nearshore Habitat Mapping in Foxe Basin, Canadian Arctic. Oral Presentation, GEOHAB'12 Conference, Orcas Island, Washington State, U.S.A.
- Barrie, J.V., **Cook, S.E.** and Conway, K.W. 2011. Cold seeps and benthic habitat on the Pacific margin of Canada. *Continental Shelf Research* 31(2): S85 – S92.
- Cook, S.E.**, Conway, K.W. and Burd, B. 2008. Status of the glass sponge reefs in the Georgia Basin. *Marine Environmental Research* 66: S80 – S86.
- Cook, S.E.**, Conway, K.W. and Barrie, J.V. 2008. Use of Video Classification Techniques to Describe and map Sponge Reef Habitat on the Continental Shelf of British Columbia, Canada. Oral Presentation, GEOHAB'08 Conference, Alaska Department of Fish and Game, Sitka, Alaska.
- Cook, S.E.** and Barrie, J.V. 2008. Epifauna and infauna associated with shallow cold seeps and carbonate mounds in Hecate Strait, British Columbia, Canada. Poster Presentation, GEOHAB'08 Conference, Alaska Department of Fish and Game, Sitka, Alaska.
- Anderson, H. and **Cook, S.E.** 2007. Deltaport Third Berth (DP3) East Causeway and Log Removal/Saltmarsh Restoration Compensation Habitat Monitoring: Fish and Infaunal Sampling Results April 2007. Prepared for the Vancouver Port Authority, Vancouver, Canada.
- Cook, S.E.** and Barrie, J.V. 2007. Faunal Associations with Carbonate Mounds and Cold Seeps in Hecate Strait, British Columbia, Canada. Poster Presentation, GEOHAB'07 Conference, Institute for Research and Development (IRD), Noumea, New Caledonia.
- Cook, S.E.**, Bornhold, B., Harper, J. and Kopeck, K. 2007. Habitat Mapping of the Sidney, B.C. Waterfront Using Acoustic and Bideo Imaging Techniques. Poster Presentation, Pacific Estuarine Research Society Conference, University of Victoria, Victoria, Canada.
- Bornhold, B., **Cook, S.E.** and Harper, J. 2006. Sidney Waterfront Habitat Mapping. Prepared for the City of Sidney.
- Emmett, B., Thuringer, P., **Cook, S.E.** and Burd, B. 2006. Evaluation of Hard Seabed Monitoring Phase 2: Development of ROV Video Survey and Data Classification Protocols. Prepared for the BC Aquaculture Research and Development Committee.
- Conway, K.W., Barrie, J.V., Sargent, E.D., Krautter, M. and **Cook, S.E.** 2006. Sponge reefs on the western Canadian continental shelf: Multibeam survey results from Queen Charlotte and Georgia Basins. Poster Presentation, GEOHAB'06 Conference, Marine Geological and Biological Habitat Mapping Conference, British Geological Survey, Edinburgh, U.K.
- Cook, S.E.** 2005. Ecology of the Hexactinellid sponge reefs on the Western Canadian continental shelf. Masters thesis, University of Victoria, Victoria, Canada.
- Cook, S.E.**, Conway, K.W., Barrie, J.V. and Krautter, M. 2005. Habitat Mapping of Hexactinosidan Sponge Reefs Using Video and Multibeam Bathymetry. Poster Presentation, GeoHab '05 Conference, Marine Geological and Biological Habitat Mapping Conference, Institute of Ocean Sciences, Sidney, Canada.
- Cook, S.E.** 2005. Ecology of Globally Unique Hexactinosidan Sponge Reefs on the Western Canadian Continental Shelf. Oral Presentation, Annual Benthic Marine Ecology Conference, Virginia Institute of Marine Sciences, Williamsburg, U.S.A.