

# HENRY THOMAS CRAWFORD

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Bachelor's of Science Environmental Science • Minor Biology • Minor Art

## EDUCATION

### **UNIVERSITY OF BRITISH COLUMBIA**

**Vancouver, BC, Canada**

**Jan 2021 – Present**

- Department of Earth, Ocean, and Atmospheric Sciences
- Degree: M.Sc. Geological Science

### **UNIVERSITY OF DENVER**

**Denver, CO**

**Sept 2014- June 2018**

- College of Natural Sciences & Mathematics
- Degree: B.S. Environmental Science / Minors: Biological Sciences, Art (photography) / 212.00 credits
- Dean's List: Spring 2015, Autumn 2017, Autumn 2018, Winter 2018, Spring 2018.

### **UNIVERSITY OF OTAGO**

**Dunedin, New Zealand**

**July 2016- Dec 2016**

- Conducted water column samples on the *Polaris II* research vessel in Otago Harbor, South Pacific.
- Outdoor leadership & teaching

### **SIMSBURY HIGH SCHOOL**

**Simsbury, CT**

**2010-2014**

- Honor Roll; SHS Track & Field; Crew Team; Future Business Leaders of America

## EMPLOYMENT

### **U.S. NATIONAL PARK SERVICE PARTNER/ GUEST SCIENTIST: GEOLOGIC HAZARDS**

**Lakewood, CO**

**Oct. 2019- Present**

- Geologic Hazards Specialist with the Washington Support Office of Natural Resource Stewardship & Science: Geologic Resources Division; Position run through Environmental Stewards as a Geoscientist-in-the-Park under Americorps.
- Provide geomorphology and hazards related technical assistance to 419 NPS units, including multi-day field work and instillation of scientific monitoring equipment to evaluate risk to rockfall or landslide activity.
- Provide coastal geomorphology and climate change related technical assistance to 118 NPS coastal units on the topics of climate change adaptation, vulnerability, sea level rise, and erosion concerns. Detailed review of coastal engineering designs and their potential impact to adjacent natural, cultural, and infrastructure resources.
- Assisting NEPA process and review for an Environmental Impact Statement reviewing a shoreline management plan at Cape Hatteras National Seashore. The project involves numerous stakeholders and a broad list of potential impacts to consider.
- Training in photogrammetric data collects and use of Agisoft Metashape Pro to generate and optimize three-dimensional point clouds.
- Risk rating for rockfall and landslide potential along sections of El Portal Rd, Yosemite Valley to inform park management decisions. This work uses the Unstable Slope Management Program protocol to consistently rate risk along transportation corridors.
- Research quantifying the extent of historic rockfall along Old Coulterville Rd, Yosemite Valley. This project aims to estimate a volumetric production of rockfall along cut-bank slopes analogous to El Portal Rd.

# HENRY T. CRAWFORD

## U.S. NATIONAL PARK SERVICE PARTNER / GUEST SCIENTIST: COASTAL HAZARDS

Lakewood, CO

July 2018- 2019

- Coastal Hazard Specialist with the Washington Support Office of Natural Resource Stewardship & Science: Geologic Resources Division; Position run through Environmental Stewards as a Geoscientist-in-the-Park under Americorps.
- Provided coastal geomorphology and climate change adaptation related technical assistance to 16 NPS units directly, and 118 NPS units indirectly. This work included detailed review of coastal engineering designs and their potential impact to adjacent natural, cultural, and infrastructure resources; briefed parks on future climate change and sea level rise predictions for their region; identifying opportunities for climate change adaptation in shoreline management activities; interpreted and applied climate change science and policy to inform management and funding decisions.
- Formulated ten long-term projects addressing sea level rise and sediment management in coastal and ocean parks. Each project brief included the project background, importance to management, description, steps, timeline, potential barriers, and signs of success.
- Wrote and updated articles on the NPS coastal geology [webpage](#): [Coastal Sediments-Parent Material](#), [Coastal Processes](#), [Coastal Geohazards](#), [Coastal Engineering](#).
- Analysis of pre and post Hurricane Florence aerial imagery to identify resource areas impacted by overwash and assist the on-the-ground incident response team at Cape Lookout National Seashore.
- Assisted in photogrammetric data collection documenting a *Meade Stenomylus* fossil and the Southwest Quarry on Carnegie Hill at Agate Fossil Beds National Monument..
- Installed three crack propagation meters, campbell scientific tripod, and data logger, as well as analyzed rockfall hazard on recreational trails within Zion National Park.
- Installed a crack propagation meter and analyzed rock fall hazards at backcountry campsites in Grand Teton National Park.
- Site visits to Golden Gate National Recreation Area to assess coastal geomorphology and erosion concerns related to sea level rise and implementation of coastal infrastructure.

## PINPOINTING NUTRIENT LOADING: A STUDY OF INFLOW STREAMS / UNDERGRADUTE RESEARCH PROJECT

McCall, ID

March 2017- 2019

- Recipient of the University of Denver Summer Research Grant (2017); Recipient of the Perce H. Shelton and Glados A. Pospisil Shelton Foundation Advised Fund from the Idaho Community Foundation (2018).
- Self-proposed research project on Big Payette Lake, Idaho supervised by Dr. Hillary Hamman of the University of Denver. The project purpose was to gather baseline information on the health of six tributary streams entering Payette Lake, McCall, Idaho to better understand the water quality entering the lake and identify sources of nutrient loading.
- Developed methodology, organized and analyzed data, and conducted weekly stream health measurements: discharge, pH, temperature, conductivity, orthophosphate, ammonia, nitrite, and dissolved oxygen.
- Initiated a public presentation to the town of McCall, ID and presented a poster at the 2018 DU Undergraduate Scholarship & Research Symposium.
- Additional funding from Idaho Community Foundation, and assistance from the Idaho Department of Environmental Quality allowed the project to continue independently of the University of Denver.
- Management of new field technician occurred during summer of 2018 to support the longitudinal study.

## FIELD QUARTER / UNIVERSITY OF DENVER

Southwest USA, Baja Mexico, Nicaragua

Sep 2017-Nov 2017

- Extracted sediment cores for paleo-climatic analysis (Grand Mesa, Colorado).
- Surveyed plant traits and defined ecosystems using flora as an index (Chiricahua Mountains, Arizona).
- Observed and documented human ecology and impacts of tourism on developing coastal

# HENRY T. CRAWFORD

regions (Rivas Department, Nicaragua).

- Designed and implemented an index for determining the distribution and classification of beach litter on both the Sea of Cortez and the Pacific Ocean coastline (Baja California, Mexico). The established methods for this project have been used in following years in hopes of collecting enough data for future publication.
- Significant ability to function in a group while in changing settings and environments over a ten week period.

## **SOILS LAB ASSISTANT**

**DU Department of Geography & the Environment**  
**Denver, CO**

**Jan 2016-June 2016**

- Prepared, tested, and managed data on soil samples in a laboratory setting.
- Assistant for a graduate research project.

## **CORAL REEF ECOLOGY LAB**

**Cozumel, Mexico**

**March 2017**

- 11 hours of dive time, including night diving; observing and discussing coral reef ecology.

## **ALPINE CLUB / OFFICER, GUIDE & PHOTOGRAPHER**

**University of Denver**

**2016- 2018**

- Strong organization, communication and leadership skills; Over 300 active club members.
- Coordinated and led rock climbing, camping, hiking, biking, and skiing excursions of over 30 students.
- Photographer for trips; documentation and publicity.

## **CERTIFICATIONS & TRAINING**

**PHOTOGRAMMETRY/ AGISOFT METASHAPE PRO** (Nov. 2019; Lakewood, CO)

- United States Geological Survey (USGS) UAS Project Office course taught by Tom Noble.
- Data acquisition techniques for ground based and airborne photogrammetric collects.
- Data processing, optimization, and error reduction using Agisoft Metashape Pro.

**AMERICAN RED CROSS- FIRST AID/CPR/AED** (2018-2020; Denver, CO).

**PADI OPEN WATER SCUBA DIVER** (March 2017; Denver, CO)

- Ability to SCUBA dive with proper safety and management techniques

**AIARE LEVEL 1 AVALANCHE SAFTEY** (January 2016; Leadville, CO)

- Recognize, plan and prepare for avalanche terrain; Apply companion rescue.

**WILDERNESS FIRST AID ADULT & CHILD CPR** (2015-2017; Denver, CO)

- NOLS Wilderness Medicine Institute; Care for ill and injured while in remote locations.

## **ADDITIONAL**

- FEMA IS-100.C: Introduction to the Incident Command System
- FEMA IS-200.C: Basic Incident Command System for Initial Response
- Personal Resiliency Training (May 2019; Lakewood, CO)
- Ethics Training (May 2019; Lakewood, CO)

# HENRY T. CRAWFORD

## AWARDS

- 2020 [Segal AmeriCorps Education Award](#) (\$6,195) to be used for further education.
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- Recipient of the Perce H. Shelton and Glados A. Pospisil Shelton Foundation Advised Fund from the Idaho Community Foundation (2018)
- Recipient of the University of Denver Summer Research Grant (2017)
- University of Denver Dean's List: Spring 2015, Autumn 2017, Autumn 2018, Winter 2018, Spring 2018

## WORKSHOPS & CONFERENCES

- U.S. National Park Service Climate Change Response Program Annual Workshop (Nov. 5-7th, 2018, Fort Collins, CO)
- U.S. National Park Service Water Resources Division Ocean and Coastal Branch, Ocean & Coastal Issues Prioritization Workshop (November 14th-15th, 2018, Fort Collins, CO).
- Cape Hatteras National Seashore Shoreline Management & NEPA Pathway Workshop (October 14-18, 2019)
- 2020 Natural Hazards Workshop (CU Boulder Natural Hazards Center; July 9-11, 2018, Broomfield CO)
- 2019 Natural Hazards Workshop (CU Boulder Natural Hazards Center; July 14-17, 2019, Broomfield CO)
- 2018 University of Denver Undergraduate Scholarship & Research Symposium.

## PUBLISHED WORK/PRESENTATIONS:

Crawford, H., J. Poole, H. Hamann. Pinpointing Nutrient Loading: A study of Inflow Streams. Poster presented at: University of Denver Undergraduate Scholarship & Research Symposium; 2018 May 9; Denver, CO.

Crawford, H., J. Poole, H. Hamann. Pinpointing Nutrient Loading: A study of Inflow Streams. Presentation given at: McCall Public Library; 2017 August; McCall, ID.

*(in press)* Crawford, H., R. Beavers, J. Hungerford, D. Kriebel. Yellowstone National Park & United States Naval Academy Partnership: Student Designs for Improved Shoreline Access at Lake Yellowstone Hotel. U.S. National Park Service; Intermountain Region Resource Stewardship and Science; Crossroads-in-Science; 2020 January; Lakewood, CO.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Geohazards*. U.S. National Park Service. Retrieved from <https://www.nps.gov/subjects/geology/coastal-geohazards.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Geohazards- Dangerous Currents*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/coastal-geohazards-dangerous-currents.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Geohazards- Landslides, Slumps & Block Fall*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/coastal-geohazards-landslides-slumps-block-fall.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Geohazards- Nuisance Flooding*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/coastal-geohazards-nuisance-flooding.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Geohazards-Seiches*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/coastal-geohazards-seiches.htm>.

# HENRY T. CRAWFORD

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Geohazards- Storm Hazards*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/coastal-geohazards-storm-hazards.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Geohazards- Storm Surges*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/coastal-geohazards-storm-surges.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Geohazards- Tsunamis*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/coastal-geohazards-tsunamis.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Engineering in the Coastal Environment*. U.S. National Park Service. Retrieved from <https://www.nps.gov/subjects/geology/engineering-the-coastal-environment.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Engineering—Natural and Nature-based Features*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/natural-and-nature-based-features.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Engineering—Redesign, Relocation, and Abandonment*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/adaptation-redesign-relocation-and-abandonment.htm>.

Crawford H., R. Beavers, J. Wood. (2019). *Coastal Sediments-Parent Materials*. U.S. National Park Service. Retrieved from <https://www.nps.gov/articles/coastal-sediments-parent-material.htm>.

## ADDITIONAL INFORMATION

### **INTERESTS**

- Dynamic Processes, Interdisciplinary approaches
- Photogrammetry and Remote Sensing
- Climate change and associated impacts
- Photography, Research documentation
- Outdoor recreation and adventure sports (\*resume available upon request).

### **SKILLS**

- Writing and articulation of scientific information
- Photogrammetry; Agisoft Metashape Pro
- Basic use of ArcGIS suite
- Digital image processing including image acquisition with cameras and video
- Able to work well in the field; adapt to new settings and communicate with the team.
- Backcountry travel in remote locations.

### **LANGUAGES**

- Native language: English
- Conversational in Spanish

### **ABROAD TRAVEL**

- New Zealand South Island, Kenya, Costa Rica, Nicaragua, Mexico, US Sonoran Desert, Belize, Baja Peninsula, Australia, China
- Confident adapting to different climates & cultures for extended periods of time.
- Self-sufficient and able to problem solve in unfamiliar settings.

# HENRY T. CRAWFORD

- Broad first hand perspective on global systems, politics, and environmental impacts.

## COURSEWORK

PHYS1111 General Physics I and Lab  
PHYS1112 General Physics II and Lab  
PHYS1113 General Physics III and Lab

MATH1951 Calculus I  
MATH152 Calculus II

GEOG1202 Environmental Systems Hydrology  
GEOG2101 Environmental Systems Weather  
GEOG3010 Geographic Information Analysis  
GEOG1203 Environmental Systems Landforms  
GEOG1410 People, Places and Landscapes  
GEOG2700 Contemporary Environmental Issues  
GEOG3600 Meteorology  
GEOG2100 Introduction to Geographic Information Systems GIS  
GEOG3550 Topics in Physical Geography  
Paleoenvironmental Field Methods  
GEOG3930 Cultural Geography Seminar Nicaragua  
Development Dilemmas  
GEOL2400 Geology and Ecology of the Southwest

ENVI288 Global Marine Systems  
ENVI2660 Environmental History of Sonora and Baja Mexico  
ENVI3000 Environmental Law

ARTS1015 Experiences in the Visual Arts  
ARTS1100 2D Approaches  
ARTS1250 Drawing  
ARTS2515 Introduction to Ceramics  
ARTS3245 Printmaking Workshop  
ARTS3455 Photography Workshop

CHEM1010 General Chemistry  
CHEM1240 General Chemistry Lab  
CHEM2240 Introduction to Environmental Chemistry  
CHEM2451 Organic Chemistry I  
CHEM2461 Organic Chemistry I Lab

BIOL1011 Evolution Heredity and Biodiversity  
BIOL1021 Evolution Heredity and Biodiversity Lab  
BIOL2010 General Ecology  
BIOL2011 General Ecology Lab  
BIOL2050 Conservation Biology  
BIOL2051 Conservation Biology Lab  
BIOL2090 Biostatistics  
BIOL3700 Topics in Ecology Case Studies  
BIOL3988 Freshwater Ecology  
BIOL1010 Physiological Systems  
BIOL1020 Physiological Systems Lab  
BIOL3010 Evolution and Speciation  
BIOL3010 Evolution and Speciation  
BIOL3044 Coral Reef Ecology  
BIOL3045 Coral Reef Ecology Lab

SPAN1001 Beginning Spanish  
SPAN1002 Beginning Spanish  
SPAN1003 Beginning Spanish

PHIL2120 Nature and Limits of Human Knowledge  
PSYC1001 Foundation of Psychological Science

ABRE Teaching and Learning in the Outdoors  
ABRE2988 Maori Society

MUPR Classical Guitar  
MUPR2210 Piano

WRIT1133 Writing and Research  
ASEM2589 Thinking