CV
Natalie Summers
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CURRENT POSITION

October 2024-current – Researcher at NTNU Department of Biology

I am currently working as a researcher at the department of Biology at NTNU. I am working on publishing peer reviewed research done through MoniTare, a project funded by the Norwegian Research Council to monitor kelp-farm biomass, growth, health and biofouling using optical sensors. In addition, I am working as support to PhDs and researchers working with underwater hyperspectral imaging while working on publication of my 3rd PhD manuscript.

EDUCATION

June 2024- PhD candidate at NTNU Department of Biology

Title "Identification, mapping, and photobiology of Arctic macro- and microalgae using ROV-UHI"

Primary supervisor: Prof. Geir Johnsen

My research focuses on mapping and identifying macro and microalgae using a novel mini remotely operated vehicle carrying an underwater hyperspectral imager. In addition, I used a combination of methods to measure eco-physiological responses of macroalgae during the Polar Night and microalgae growing on the underside of the ice in spring. My thesis has been approved, and I will be defending on the 6th of June. My PhD aimed at bringing the gap between technology and biology funded by the Nansen Legacy project (https://arvenetternansen.com/about-us/) as well as being part of NTNU's centre of excellence for Autonomous Marine operations and Systems (AMOS 2013-2023, https://www.ntnu.edu/amos).

Teaching duties:

I have been assistant teaching several bachelor and graduate level courses that have included lectures, group work as well as field trips. In addition, I acted as course leader for "Enabling Technology" course for 1 semester which involved organising lectures and guest lecturers, organising a 5-day field trip with multiple different sensors carrying platforms as well as setting and correcting the exam.

May 2019- Master's of Marine Biology -University of Hawaii at Manoa, USA

Thesis title: Biogeography of the upper bathyal of the Pacific Ocean

Advisor: Dr Les Watling

My research focused on the biogeography of deep-sea corals on oceanic islands and seamounts. I looked at the distribution of sea octocorals in the Pacific Ocean, defining biogeographical units.

Teaching duties:

During my study, I was teaching assistant for the Marine ecology and evolution laboratory courses. During my last semester (Spring 2019), I became coordinator of the lab course.

November 2015 - Intensive course "Ecology and Conservation of Oceanic Islands and Seamounts"

The Facultad Ciencias del Mar, Universidad Católica del Norte (Coquimbo, Chile)

October 2012 – Master's of applied science (Marine Biology)

James Cook University (JCU) - Townsville, Australia

January 2010 – Bachelor of science: biology and biochemistry

University of Reunion Island - Saint-Denis, Reunion Island

McGill University- Montreal, Canada, Exchange student during the third year (2008/2009) of bachelor's degree

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SKILLS

- *Leadership and organisational:* I have organised and led field courses at NTNU and UNIS that have included coordinating instruments and other teachers. I have also coordinated field trips at for labs at the University of Hawaii. Additionally, I was one of the primary project coordinators for the Voluntary Marine Conservation Area project and responsible for organising monitoring trips and supervising interns and volunteers.
- *Grant application*: During my PhD, I also co-wrote and received a grant from the Norwegian Research Council to conduct work on macroalgae in Ny-Ålesund. Previously, I have been involved in grant writing as part of my responsibilities as project coordinator at Reef Conservation.
- *Writing*: I have published several articles in peer review journals in addition to my PhD thesis. I have also published several articles about my PhD research aimed at readers with non-scientific background in order to reach a wider audience. Additionally, as part of my responsibilities at Reef Conservation, I have been involved in creating material for workshops and public events show casing our conservation work.
- *Computer-literate*: competent with Microsoft Office (Word, Excel, PowerPoint), statistic software R used during my PhD and MS thesis. I have also used ArcMap and QGIS for my MS thesis analysing the distribution of deep-sea corals as well as comparing existing biogeographic classification schemes
- *Languages:* fluent speaking and writing in English and French.

MOST RECENT RESEARCH AND WORK EXPERIENCE

January-February 2024
Biologist – visiting scientist to the phytoplankton lab in Wimereux and participation on International Bottom Trawl Survey (IBTS) French cruise.

- Visit the phytoplankton lab at Wimereux, learn how they use the CytoSense (flow cytometry methods)
- Part of the “hydro” team on the cruise tasked with deploying zooplankton nets, CTD sensor, collecting water samples and running the bench top CytoSense

May 2022
Teacher and biologist – UNIS course on primary production and AMOS fieldwork for the observation pyramid in Svalbard

- Teaching lectures on microalgae and photosynthesis for the Primary Production course at UNIS
- Help in the co-ordinate and organisation of the field course in Ny-Ålesund for the Primary Production course
- Collaborate with the AMOS (Autonomous Marine Operation and System) team during the filed course. Where the participants of the course were tasked with the ground truthing and collection of biological data for the technology.
- Work with the marine technologist to successfully implement the observation pyramid

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February 2021 and April 2021
Biologist/PhD candidate – R/V Kronprins Haakon, Nansen Legacy Q1 and Q2 seasonal cruises

- Conducting my own research as part of a multidisciplinary team. Collecting, filtering and analysing ice algae (ice cores) and phytoplankton samples. Use PhytoPam for *in-vivo* photosynthesis measurements, filtering seawater for pigment analysis in the lab and fixing samples in Glutaraldehyde to analyse using CytoSense
- During Q2 (April-May), using a mini-ROV carrying an underwater hyperspectral imager to study ice algae. This was done in collaboration with researchers from the Department of marine technology, NTNU

October 2020
Biologist/PhD candidate – Identification and mapping of marine microplastics and macroalgae, Ny Ålesund, Svalbard

- Conducting my own research for my PhD with funding from the Norwegian Research Council.
- Collecting macroalgae and conducting measurements to study the photobiology of macroalgae in October (considered the end of the light season).
- Assisting my colleague in collecting microplastic from Kongsfjorden

January 2020
Biologist/PhD candidate – R/V Helmer Hansen, Polar Night Cruise

- Collecting, filtering and analysing phytoplankton samples. Use PhytoPam for *in-vivo* photosynthesis measurements, filtering seawater for HPLC analysis in the lab and fixing samples in Glutaraldehyde to analyse using CytoSense.

July 2019-August 2019
Biological technician - **University of Hawaii Manoa, Department of Biology**
Working on deep Sea Octocoral biogeography:

- Preparing for R/V Falkor Cruise: Deep Sea Coral Diversity at Emperor Seamount
- Assisting with daily jobs such as annotating, log keeping, and processing of geological samples collected with ROV SuBastien during the cruise

September 2017
Biologist/graduate student – R/V Falkor Cruise: "Unravelling Ancient Sea Level Secrets" (Schmidt Ocean Institute)
Biologist on the research vessel R/V Falkor of the Schmidt Ocean Research Institute

- Collecting and processing Mesophotic Octocorals (With the use of ROV SuBastien)
- Assisting with daily jobs such as annotating using "squidle" programme, log keeping, and processing of geological samples collected with ROV SuBastien

July 2015-July 2016
project coordinator - REEF Conservation (Mauritius, Indian Ocean)-

- Coordinator for setting up projects in Bel Ombre working with the coastal resorts
- Ecosystem and biodiversity survey of the lagoon(s) including threats
- Strengthening partnership with local hotels through training and development of sensitisation tools
- Sensitisation and training of community, hotel staff and other users

- Development of sensitisation and education material to use in schools and hotels
- Setting up a snorkel trail
- Writing reports and proposal for additional sponsors
- Support when needed to all other projects run by Reef Conservation

June 2012-July 2015
PROJECT COORDINATOR - REEF Conservation (Mauritius, Indian Ocean)

- Voluntary Marine Conservation Area project run by the NGO
- Responsible for implementing research and monitoring projects for coral reefs and other eco-systems. These include coral reef monitoring, sea grass monitoring, studies on sedimentation and coral recruitment
- Responsible for data analysis and reporting of results
- Writing regular progress reports and final reports for sponsors
- Presenting results to sponsors, community and other staff members
- Manage volunteers and interns
- Assist with education and sensitization
- Prepared a lagoon monitoring manual for community

March 2015
team member for impact study of ship grounding - SCOTT shipping on behalf Raphael Fishing Company (RFC) - St Brandon

- Impact of the grounding of fishing vessel Kha Yang on the southern tip of St Brandon
- Archipelago
- Rapid assessment of the marine biodiversity of the southern tip of St Brandon

GRANTS, AWARDS, FELLOWSHIP

October 2022 – Travel grant to attend Ocean Optics conference from Nansen Legacy
Presented my research on using a mini-ROV carrying an underwater hyperspectral imager to study ice algae.

August 2021 – Mobility grant from Nansen Legacy
Analyse phytoplankton and ice algae samples using an imaging flow cytometry (CytoSense)

October 2020 – Arctic Field Grant, Norwegian Research Council (project number 318210)
Identification and mapping of marine microplastics and macroalgae, Ny Ålesund, Svalbard

August 2016- May 2019 – University of Hawaii Graduate assistantship
Teaching assistantship at University of Hawaii through the department of Biology teaching BIOL 265L Evolution and Ecology (Lab) and BIOL 301L Marine Evolution and Ecology (Lab)

June 2016 – Mauritius Research Council Small Scale Research and Innovation Grant Scheme
Project Title: Nation-wide survey of coral bleaching due to temperature stress caused by the El-Nino effect

June 2016 – Travel grants to attend the International Coral Reef Symposium in Hawaii
Travel grant from International Coral Reef Symposium
Travel Grant from WIOMSA (MARG III)
Sponsorship from Outrigger resorts (accommodation)

October 2015 – Travel grant to present at the Western Indian Ocean Marine Science

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Association (WIOMSA) in South Africa

Travel Grant from WIOMSA conference organisers

PUBLICATIONS

Peer reviewed journals

Summers N, Fragoso G, Johnson G, (2023) Photophysiologically active green, red, and brown macroalgae living in the Arctic Polar Night. Scientific reports

Summers N, Johnson G, Mogstad A, Løvås H, Fragoso G; Berge J (2022) Underwater Hyperspectral Imaging of Arctic Macroalgal Habitats during the Polar Night Using a Novel Mini-ROV-UHI Portable System. Remote Sensing

Summers N, Watling L (2021) Biogeography of the Upper Bathyal of the Pacific Ocean. Progress in Oceanography

Elliott J, Patterson M, Summers N, Miternique C, Montocchio E, Vitry E (2016) How does the proliferation of the coral-killing sponge *Terpios hoshinota* affect benthic community structure on coral reefs? Coral Reefs 35:1083-1095

Elliott J, Patterson M, Vitry E, Summers N, Miternique C (2015) Morphological plasticity allows coral to actively overgrow the aggressive sponge *Terpios hoshinota* (Mauritius, Southwestern Indian Ocean). Marine Biodiversity 4:489-493

Conferences

Summers N (2022) Underwater hyperspectral imaging used for measuring light availability and algae biomass under sea ice during the spring bloom in the Arctic. Ocean Optics, Vietnam

Summers N, Watling L (2018) Biogeography of the upper bathyal of the Pacific Ocean. Presentation at the 15th Deep-Sea Biology Symposium, Monterey, CA, USA

Summers N, Young K, Baissac P, Mitternique C, Montocchio E (2016) Comparison of different voluntary management models for wise use coastal conservation in high usage areas. Poster 13th International Coral Reef Symposium, Hawaii

Summers N, Miternique C, Montocchio E (2015) Community perception of the state and use of marine resources in a coastal village in Mauritius. Presentation at WIOMSA 9th Scientific Symposium, Port Edward, South Africa

Science communication

Profile in “Women in Polar Science“ 2023 https://womeninpolarscience.org/100-polar-women-101-125/

Summers, Natalie Maria (2023) Investigating algae in the Arctic with enabling technology.

Summers, Natalie; Bremnes, Jens Einar; Assmy, Philipp; Ludvigsen, Martin. (2021) Mixing production deep into the ocean (sciencenorway.no) .

Summers, Natalie; Bremnes, Jens Einar; Assmy, Philipp; Ludvigsen, Martin. (2021) Spring is in the air (forskning.no).

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Summers, Natalie. (2020) Using technology to map ice algae. NTNU – TekNat
Summers, Natalie. (2020) Nansen Legacy Portrait.
Summers N, Miternique C, Young, K (2014) Lagoon Monitoring: an easy guide. Reef Conservation