

# BRYN MAWR

COLLEGE

June 21, 2018

Judith Swift, Director  
124 Coastal Institute  
URI Bay Campus  
Narragansett, RI 02882

Dear Judith Swift:

Bryn Mawr College desires to enroll in the North Atlantic Coast (NAC) Cooperative Ecosystems Study Unit (CESU) as a new partner institution. The administration of Bryn Mawr College has read the CESU agreement, and agrees to support the CESU mission and goals and fulfill the roles and responsibilities of a nonfederal partner, as described in the CESU agreement.

Our application packet is organized into nine sub-sections addressing all the requirements as described on the new member application.


Please do not hesitate to contact Dr. Thomas J. Mozdzer, Associate Professor of Biology, or Dr. Nona C. Smith, Director of Sponsored Research, with any questions.

We thank you for your consideration of our application

Sincerely,



Thomas J. Mozdzer



Nona C. Smith

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Additional information in support of Bryn Mawr College's application to join the North Atlantic Coast Cooperative Ecosystem Studies Unit

### 1. Participating Departments

- **Department of Biology** - <https://www.brynmawr.edu/biology/>
  - **Dr. Thomas Mozdzer** –*Ecologist* –Areas of expertise include: wetland ecology, invasive species, restoration ecology, invasive species management, plant ecophysiology, biogeochemistry, carbon cycling, nutrient cycling, measurement of greenhouse gas fluxes, “Blue Carbon”/ecosystem carbon inventories, ecosystem resilience, evolutionary ecology, and global change ecology with a focus on sea level rise, nutrient enrichment, rising concentrations of carbon dioxide, and rapid evolutionary processes.
  - **Dr. Sydne Record** – Computational ecologist – biodiversity and the ecosystem services response to global change, field-based ecology, statistics, and computer modeling to processes of biodiversity across spatiotemporal scales.
- **Department of Geology** – <https://www.brynmawr.edu/geology/>
  - **Dr. Don Barber** - Sedimentology, Geochemistry, and Near-surface Geophysics — applied to Quaternary paleoclimatology, sea-level change, coastal geomorphology and geoarchaeology.
  - **Dr. Katherine Marengo** - Paleocology, Paleobiology, Ichnology, and Sedimentology/Stratigraphy
  - **Dr. Pedro Marengo** - Geochemistry, Paleobiology, Paleontology
  - **Dr. Arlo Weil** - Structural Geology, Geophysics, Paleomagnetism, and Tectonics
  - **Dr. Selby Cull-Hearth** - Mineralogy, Planetary Geology, Acid Mine Drainage, Environmental Mineralogy and Geochemistry
- **Department of Environmental Studies** - <https://www.brynmawr.edu/environmentalstudies>
  - **Dr. Victor Donnay** - Chaotic properties of dynamical systems. Math and Science Education. Linking Mathematics Education to issues of Sustainability.
- **Department of Anthropology** - <https://www.brynmawr.edu/anthropology/>
  - **Dr. Casey Barrier** - Pre-industrial food-producing and agricultural groups in North America
  - **Dr. Maja Seselj** - Biological anthropology; the evolution of the modern human pattern of growth and development

### 2. College Demographics

Bryn Mawr College opened its doors in 1885 for the express purpose of providing women with an education of the highest quality, previously available only to men. Today, the College comprises an undergraduate liberal arts college for women with 1,325 students and two co-educational graduate schools, the Graduate School of Arts and Sciences, which offers small Ph.D. programs in selected areas, including the STEM fields of chemistry, math, and physics, and the Graduate School of Social Work and Social Research. Among our undergraduate population, 16% come

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from low-income households (as indicated by Pell grant eligibility), 18% are first-generation college students, 33% identify as students of color, and 31% are international.

Bryn Mawr is committed to and has been notably successful in encouraging young women to major and pursue graduate study and careers in STEM disciplines in which they have historically been underrepresented. From 2013-2015, 28% of the degrees awarded to Bryn Mawr students were in STEM, as compared to the national average of 10% for women. In 2016, 17% of Bryn Mawr degrees awarded to black students and 26% of degrees awarded to Latina students were in STEM, compared to 8% and 9% nationally. Moreover, Bryn Mawr ranked 10th among all *US News and World Report* liberal arts institutions in the percentage of graduates who go on to earn doctorates in STEM fields. In addition, the medical school acceptance rate for Bryn Mawr students is 57% (data from 2012-2016) as compared to the national average of 40%.

Our successful 17-year partnership with the Posse Foundation has helped us to identify, admit, and provide supports for students from urban high schools with academic and leadership potential who do not demonstrate the standard admissions' profile for a highly ranked college. The Posse Foundation extends to these students the opportunity to pursue personal and academic excellence by placing them in supportive, multicultural teams—Posses—of 10 students. In 2013 Bryn Mawr became the first college or university to host an all-women's STEM Posse, in addition to traditional Posse cohorts, to help underrepresented students persist and excel in science and math. The College now hosts 80 Posse Scholars on campus in any given year.

### 3. Facilities

- Facilities: Each faculty member is assigned their own research laboratory and is provided a personal computer from the college every 4 years. In addition, the college has the following shared resources:
  - 1000 square foot greenhouse for research use only
  - 1 Subaru Outback (Biology Department vehicle)
  - 2 Chevrolet Suburban (Geology Department vehicles)
  - Two 14 foot Jon Boats
- Major Scientific Equipment: The following equipment
  - Picarro G2201-I Cavity Ringdown Dual Carbon Isotope Mass Spectrometer to measure analyzer  $\delta^{13}\text{C}$  measurements for both  $\text{CO}_2$  and  $\text{CH}_4$  in gas and solid samples samples.
  - Costech ECS 4010 analyzer for elemental content of C & N
  - Los Gatos Research Ultraportable Greenhouse Gas Analyzer
  - LiCor 6400XT Infrared Gas Analyzer
  - Six 15 square foot outdoor  $\text{CO}_2$  controlled chambers
  - Two Percival 36-HO growth chambers

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- Agilent 7500 series ICP-MS for measurement of major and trace elements, housed in the Geochemistry Laboratory Suite
- Mettler Toledo XP56 Microbalance, housed in dedicated weighing room within the Geochemistry Laboratory Suite
- Retsch MixerMill MM 400 and Retsch Cyclone Mill TWISTER for rapid sample processing.
- Dionex Ion Chromatograph, Geochemistry Laboratory Suite

#### 4. Previous Experience

Bryn Mawr College PI Thomas J Mozdzer has had 4 grants from National Science Foundation grants and 1 grant from Maryland Sea Grant over the past five years. These awards focused on understanding the effects of nutrient pollution, near future concentrations of carbon dioxide, sea level rise, and invasive species on ecosystem resilience, carbon cycling, and ecosystem function. These awards provide land managers data needed to improve invasive species management (specifically, non-native *Phragmites australis* in wetland ecosystems) and are used to create models to predict the response of coastal wetlands to multiple interacting global change factors (e.g. sea level rise, nutrient pollution, invasive species, and elevated concentrations of CO<sub>2</sub>).

Bryn Mawr College PI Anne Jensen has had three National Science Foundation Grants over the last 4 years that involved research in the North Pole area of Alaska and Native American lands.

Bryn Mawr College PI Don Barber had a grant from the National Science Foundation for collaborative work exploring Sea Level Rise and Salt Marsh Response

Bryn Mawr College PI Arlo Weil had a grant from the National Science Foundation for Collaborative Research exploring Interrelations between foreland deformation, flat slab subduction and crustal architecture.

#### 5. Current Agreements and/or Relationship

Dr. Mozdzer has been in intermittent conversation with US FWS since 2012. Dr. Mozdzer is currently putting together a project to evaluate the effects of herbicide treatment on ecosystem resilience.

Dr. Mozdzer has an active grant from the National Science Foundation (2016-2021) evaluating the long term response of coastal wetlands to environmental changes.

Dr. Mozdzer has a Research Scientist appointment with the Smithsonian Institution and collaborates with federal research scientists to evaluate the effects of sea level rise, nutrient pollution, elevated carbon dioxide concentrations, and invasive species on the Chesapeake Bay.

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Bryn Mawr College PI Arlo Weil has a grant from the National Science Foundation for collaborative research on Fold form, strain and Mechanics at the Whaleback Anticline.

### 6. Commitment

Bryn Mawr College will accept a limited overhead rate of 17.5% and cost items to which the rate is applicable for activities conducted through the CESU, including research, technical assistance, and educational services.

### 7. Technical Representative

Dr. Thomas Mozdzer has been designated as the Technical Representative. Dr. Mozdzer will serve on the CESU steering committee, participate in CESU annual/semi-annual partner meetings, and facilitate internal and external communication, promotion, and will respond to CESU correspondence and administrative actions.

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Associate Professor of Biology  
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Bryn Mawr, PA, 19010  
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email: tmozdzer@brynmawr.edu

### 8. Agreements

As the technical representative, Dr. Mozdzer agrees to relay agency-specific research, technical assistance, and educational needs and associated funding opportunities to other organizational members at Bryn Mawr College including both faculty and students.

### 9. Endorsement

Bryn Mawr College agrees to fulfill the roles and responsibilities of a nonfederal partner, as described in the CESU agreement



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