



TEACHERS AND RESEARCHERS
EXPLORING AND COLLABORATING



Welcome!

PolarTREC Meet and Greet Webinar

Program & Project Overview for 2019-2020

PolarTREC Staff



Janet Warburton

PolarTREC PI &
Project Manager



Judy Fahnestock

PolarTREC
Project Coordinator



Ronnie Owens

Web Developer



Helen Wiggins

Executive Director



Zeb Polly

Systems Administrator



Joed Polly

Video Production

...with help from the entire staff at ARCUS

What is ARCUS?

ARCUS (Arctic Research Consortium of the United States) is a non-profit corporation consisting of institutions operated for educational, professional, or scientific purposes. ARCUS provides leadership in advancing knowledge and understanding of the Polar Regions through a variety of programs and outreach endeavors.

ARCUS is based in Fairbanks, Alaska and works with primarily arctic scientists around the world to facilitate interdisciplinary collaboration, outreach and education within and outside the science community.



25 Years of Connecting Arctic Research

www.arcus.org

Support and Funding



We are pending funding by the National Science Foundation Office of Polar Programs for the 2019-20 season.



We are administered by the Arctic Research Consortium of the United States, a non-profit member consortium based in Fairbanks, Alaska. www.arcus.org



Arctic logistics support (including teacher travel, clothing, and equipment provided by Polar Field Services or PFS).



Antarctic logistics support (including teacher travel, clothing, and equipment provided by Antarctic Support Contractor ASC)

...With other support and funding provided for specific projects on a situational basis.

Our vision is to create and sustain a successful approach to professional development in the polar regions, fostering enthusiasm and awareness to inspire the next generation of scientists and a STEM-literate public.

We will do this by:

- ✓Improving educators' STEM content knowledge of the Polar Regions and transfer to their learning setting
- ✓Increasing educators' knowledge and use of STEM practices with their students in their learning setting
- ✓Building educators' STEM identity
- ✓Increasing the STEM collaborations between formal and informal educators
- ✓Increasing students understanding and engagement in the polar regions and interest in polar-related STEM careers
- ✓Developing long-term professional relationships between the education and research communities



2019-2020 Projects & Participants

Why PolarTREC?
(1 min)

Pitch yourself in 1 minute!

Name

Organization

Location

Primary Job

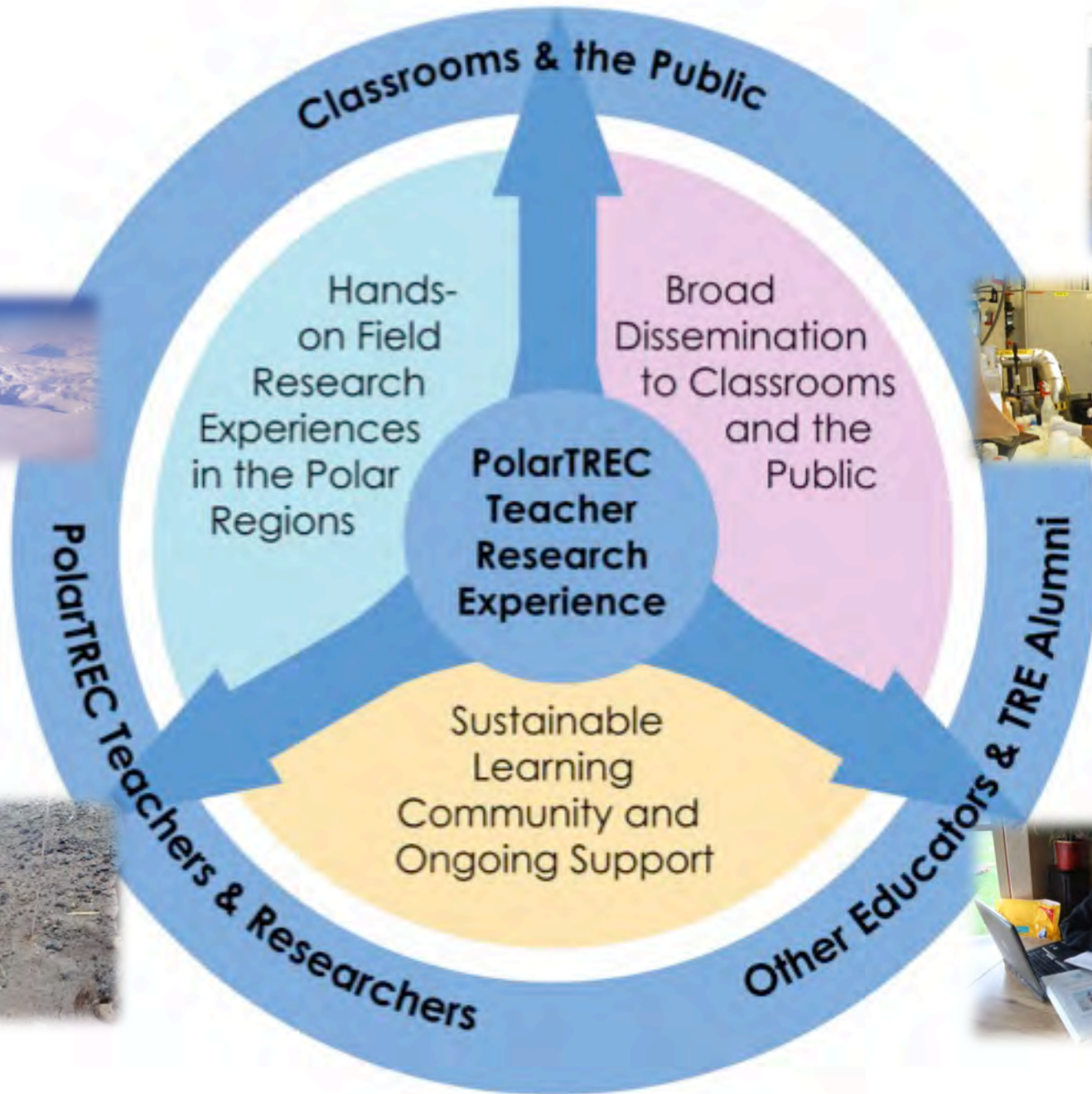
Research project that you are going on and/or researching





TEACHERS AND RESEARCHERS
EXPLORING AND COLLABORATING

What to Expect



Hopes for PolarTREC

- Support the integration of research and education
- Convey research experience to K-12 students and/or their teachers and to broader audiences
- Develop STEM focused, inquiry-based activities for students that integrated NGSS
- Create collaborations and networks between educators and researchers; formal and informal educators
- Provide valuable professional development
- Improve polar focused outreach, education, broader impacts



Expectations: Pre, During, Post Expedition

PolarTREC Teacher Participation Timeline

- **Apply, Selection & Match**
- **PolarTREC Orientation**
- **Partner Teacher & Cohort Collaboration**
- **Education and Outreach Planning**
- **Pre-Field Visits with Research Team**
- **Pre-Expedition Logistics & Evaluation**
 - Content Pre-Test & Instructional Survey
 - Pre-Field Team Logistics Call
 - Cohort Outreach/Logistics Webinar
- **Field Research Experience**
 - Daily Online Journaling
 - Host PolarConnect Events
 - Q&A Interactions with Students
- **Post-Expedition Follow-up & Evaluation**
 - Evaluation Requirements
 - Post-Field Team Logistics Call
 - Seasonal Webinar with Cohort
 - Adminster Student Pre-Survey
 - Cohort Partership Activities
- **Post-Expedition Education and Outreach**
 - Publish STEM Experience Report
 - Researcher Visit to Classroom
 - Design Original Lesson
 - Refine Existing Lessons
 - Attend Professional Meetings
 - Collate Teacher Portfolio
 - Submit Learning Resources
- **Summative Follow-up & Evaluation**
 - Adminster Student Post-Survey
 - Content Post-Test & Instructional Survey
 - Seasonal Webinars
 - Year End Webinar with Cohort
- **PolarTREC Sustainability Activities**
 - Co-Lead Teacher Trainings
 - Partner Teacher for New Cohort
 - Reviewer on Selection Committee
 - Leadership in PolarTREC Network
 - Liaise in Partner STEM Initiatives
 - Compete for State/Regional Awards

- 1 week in Alaska for Orientation - March 2019
- 3-4 webinars related to the program
- 1-2 pre-field logistics phone calls
- 3-6 weeks in the field, plus associated travel
- Personal time for technology training and practice
- Personal time for learning/reading on science
- Outreach activities before/after the expedition
- PolarTREC program requirements and evaluation

Educator Commitments

Educator Orientation

Researcher Commitments

Requirements

Educator Role in the Team

ARCUS support for researchers

Expectations: Pre, During, Post Expedition

- Technology Training
- E&O Planning
- Polar Science Overviews
- Safety & Logistics
- Cohort Team Building
- Hands-on Practice
- Science Field Trips

Time	Activity	Facilitator
1:30 pm	PolarTREC Website Overview <ul style="list-style-type: none"> • Different views • Logging into the website • Options as a logged in user • Personal profiles • Project Pages • Teacher's Advisor • Program Requirements 	Brittany Owens
1:45 pm	Hands-On Technology Training Activity: Log into the PolarTREC website, become familiar with user home page and check-out program requirements. Practice logging in with email & login with phone. Review tasks 1-9 on checklist. Goal: By the end of this activity you have completed and reviewed task 1-9 in checklist. You are also have completed task 10 in checklist. Continued Work: Fill and read Alumni expectations journal at week out model. Make note of exceptional models. Group A: Kari, Eric, Tim, Jani, Inmaculada, David (not present) Group B: Du, Karen, Rebecca, Arnie (not present) Group C: Cora, Kelly, Sandra, Mikaela, Shariya (not present)	
2:00 pm	Communicating from the Field: What is Realistic for Me? This is a focus of recording from the field.	Jenni Worthington
2:15 pm	Journaling to Communicate Science and Excitement	Jenni Worthington
2:30 pm	Alumni Highlight Ask your journal entry your own.	John Wood PolarTREC Alumni
2:45 pm	Field Communications, Alumni Words of Advice	PolarTREC Alumni
3:15 pm	Break	
3:30 pm	PolarTREC Website Overview: Journaling <ul style="list-style-type: none"> • Posting a journal entry. 	Brittany Owens
4:15 pm	Hands-On Technology Training Activity: Break into small groups. Log into the Virtual Base Camp (VBC) and post the journal entry you wrote this right before. Use workspace formulating to enforce the list.	

Educator Commitments

Educator Orientation

Researcher Commitments

Requirements

Educator Role in the Team

ARCUS support for researchers



Expectations: Pre, During, Post Expedition

PolarTREC Teacher Participation Timeline

- **Apply, Selection & Match**
- **Meet & Greet/Expectations Webinar**
- **PolarTREC Team Networking**
- **Assist in E&O Planning**
- **Pre-Expedition**
 - Pre-Field Team Logistics Call
 - Coordination with Logistics Personnel
 - Pre-Field Site Visits
- **Field Research Experience**
 - Vetting science content in journals
 - Host PolarConnect Events
 - Assist Q&A Interactions with Students
- **Post-Expedition**
 - Evaluation Requirements
 - Post-Field Team Logistics Call
 - Seasonal Webinar with Cohort
 - Post-Field Site Visit
 - Vetting science content of STEM Report
 - Vetting science content in lessons
 - Attend Professional Meetings
- **Summative Follow-up & Evaluation**
 - Year End Webinar with Cohort
 - Yearly Alumni Survey
- **PolarTREC Sustainability Activities**
 - Write journal paper/article
 - Reviewer on Selection Committee
 - Leadership in PolarTREC Network
 - Apply to host more teachers

- Reading applications & interviews to select an educator for your team
- 2-3 webinars related to the program
- Pre-post field logistics phone calls
- Fielding prep questions from participants
- Commitment to working with educator in the field
- Vetting science content of products
- Outreach activities before/after the expedition
- PolarTREC evaluation components

Educator Commitments

Educator Orientation

Researcher Commitments

Requirements

Educator Role in the Team

ARCUS support for researchers

Expectations: Pre, During, Post Expedition

2012 PolarTREC Program Requirements
With Additional Recommendations for a Successful Research Experience

PolarTREC is meant to build ongoing, collaborative relationships between educators and polar researchers. The PolarTREC program is designed to facilitate this relationship and provide support for the relationship to grow and become independently sustainable.

One component of successful relationships is collaboration and understanding of each partner. We strive to have teachers and researchers working together as much as possible before, during, and after the polar field experience. Therefore, teachers and researchers selected for PolarTREC are expected to participate in a number of specific program requirements throughout the experience.

ARCUS uses the PolarTREC program requirements in a number of ways, including tracking participation in the program, evaluating the impacts of the program, and collecting data to report to the National Science Foundation, apply for further funding, provide data and information to researchers, publish papers and articles and much more. **Timely completion of program requirements and the PolarTREC Evaluation is integral to the continued funding and support for the PolarTREC program.** You must contact the PolarTREC Project Managers if you have questions or concerns related to the completion of the program requirements.

Upon successful completion of the program requirements, teachers and researchers will be recognized with a certificate of PolarTREC Participation and Program Completion. In addition, teachers will be rewarded one day of substitute reimbursement for a day of a professional development activity of their choice. Please let us know if there are other ways we can recognize your successful participation in the program (letters of support, references, college credit, etc.).

The following list briefly outlines the PolarTREC program requirements for both teachers and researchers. The list also includes recommendations for a successful research experience. While these are not program requirements, they come from years of program management and advice from past teachers and researchers on how to make the experience successful.

If you have any questions or concerns regarding these requirements, please contact Janet Warburton or Sarah Crowley, PolarTREC Project Managers, at info@polar-trec.com or 907-474-1400.

IMPORTANT INFORMATION FOR TEACHERS: Starting in January 2011 most program requirements will be tracked online using your profile page on the PolarTREC website. PolarTREC teachers are responsible for tracking and uploading their own program requirements as they complete them.

Instructions for updating or uploading program requirements:
 1) Log in to the PolarTREC website. Press the "Edit" tab.
 2) Check off program requirements that have been completed.
 3) Upload related documents (if applicable).
 4) Make sure to press "Save" at the bottom of the page!

After you update or upload a program requirement an automatic e-mail will be sent to the PolarTREC Project Managers who are tracking your progress.

Program Requirements	Teachers		Researchers	
	Other Recommendations	Program Requirements	Other Recommendations	Program Requirements
DURING THE EXPEDITION				
<ul style="list-style-type: none"> Participate as an active member of the field research team During the field experience, post daily journal entries and photos online Respond to "Ask the Team" Questions online, seek assistance from research team as needed 	<ul style="list-style-type: none"> Balance your roles of teacher, research team member, and specialist Communicate, be safe, remain flexible, have fun! Contact PolarTREC Project Managers if any problems arise Use multimedia tools for interviews, sounds from the field, and creating podcasts or videos as another tool for documenting your experience Connect to classrooms through interactive channels such as PolarConnect live events when possible 	<ul style="list-style-type: none"> Provide mentoring, training and support for the teacher while serving as a member of your team Provide information and/or assist teachers in answering questions from the public that are posted on the Visual Base Camp 	<ul style="list-style-type: none"> Contact PolarTREC Project Managers if any problems arise Recognize that teachers are required to communicate their experience from the field to the public as well as participate in actual research. Help them balance these duties Collaborate with the PolarTREC teacher as they post daily online field journal entries and connect to classrooms from the field and connect with classrooms from the field Help the teacher connect to classrooms through interactive communication channels such as PolarConnect, when possible 	
IMMEDIATELY FOLLOWING THE EXPEDITION				
<ul style="list-style-type: none"> Remember to take adequate time to reflect on the classroom Make sure your administrator sends an invoice to ARCUS for substitute reimbursement Return any borrowed gear or equipment to the logistics providers 		<ul style="list-style-type: none"> Participate in the Post-Field Debriefing Call Follow up with PolarTREC and logistics providers to ensure that fiscal responsibilities related to the research experience have been received 	<ul style="list-style-type: none"> Check in with your mentor, ensure they and continue communication and collaboration 	

Educator Commitments

Educator Orientation

Researcher Commitments

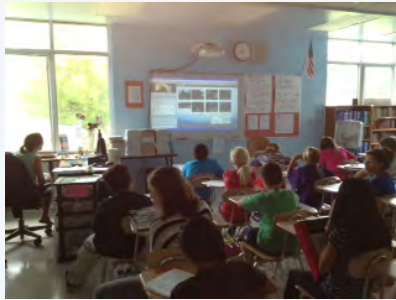
Requirements

Educator Role in the Team

ARCUS support for researchers

- Detailed program requirements and recommendations for before, during, and after the expedition
- Educators have “deliverables”; need the support/communication with the research teams
- Program requirements are important to our tracking, reporting, and continuation of the program

Expectations: Pre, During, Post Expedition

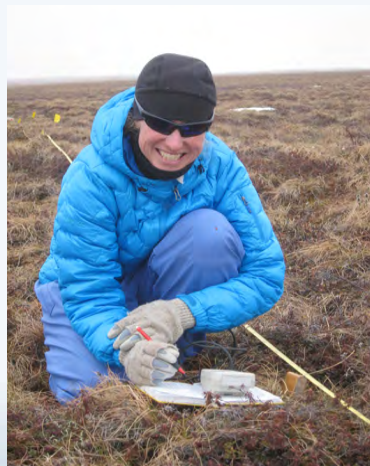


Educator Commitments

Educator Orientation

Researcher Commitments

Requirements



Educator Role in the Team

ARCUS support for researchers



Educator Role in the Team



Polar Gigantism in Antarctica

★ Overview Journals Photos Resources

What Are They Doing?

Since the first expeditions to the poles, scientists have compiled a long list of polar taxa that have unusually large body sizes. This phenomenon is known as polar gigantism, and biologists have proposed many hypotheses to explain it. The most broadly-accepted idea is the 'oxygen hypothesis,' which states that polar gigantism stems from a combination of high oxygen availability in the ocean and low metabolic rates because of the extreme cold temperatures. In combination, these two factors are thought to allow animals to be giants by making it comparatively easy to get enough oxygen from the environment to support large bodies. The links between body size, environmental oxygen availability, and performance have been used to argue that as marine and aquatic environments warm, giants will be among the first to disappear. We are looking at these tradeoffs and the validity of the size-vulnerability hypothesis using Antarctic pycnogonids (sea spiders), which contain spectacular examples of polar gigantism.

Where Are They?

The team is based in McMurdo Station, Antarctica. McMurdo Station is on Ross Island, a volcanic island (with the... will take i

Ex

Map

Project Information

Dates: 1 October 2016 to 15 November 2016
Location: McMurdo Station, Antarctica
Project Funded Title: C Body size, oxygen, and vi change in Antarctic Pyc

Meet the Te

Teacher - Timothy I

Researcher - Art W

Researcher - Amy N

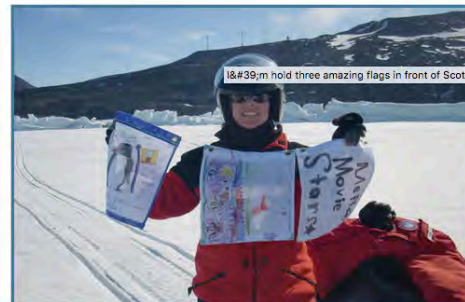
er - Bret T

28 January 2016 Weddell Seal Eyes

★ Overview Journals

Journal Photos

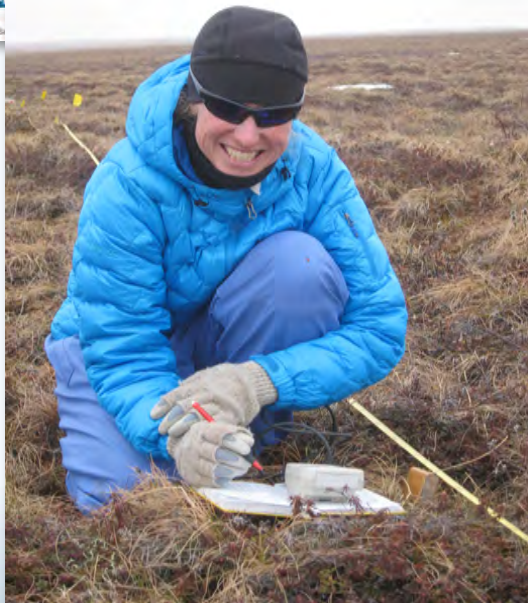
This journal is brought to you by...



I'm hold three amazing flags in front of Scott Base. Photo credit: Alex Eilers

- Michelle Wright and her 2nd grade class at Riverwood Elementary School
- Bilderback Home school
- Mefford's movie stars at Bon Lin Elementary School

I snv with my little - I mean - BIG eyes!



Public Relations Officer

Pre-Field Momentum

In-Field Journaling/Q&A

Capturing the Science

Outreach Campaigns

PolarConnect

Leading by Example

Field Assistant/

Graduate Student

Learning Science

Translating Science

Hands-on in All Aspects

Balancing the Two

Pre-Field Communication

Mid-Field Check-in

www.polar-trec.com

Expectations: Pre, During, Post Expedition

Educator Commitments

Educator Orientation

Researcher Commitments

Requirements

Educator Role in the Team

ARCUS support for researchers

- E&O planning strategies
- Pre-Post Field Site Visit Funding
- Seamless integration of participant logistics
- Prep and Follow-up Mgmt
- Dedicated outreach staffing
- Additional professional training and networking



Travel Support

- We have a limited amount of funding to support pre- or post- field collaborations between educators and researchers
- Please consider:
 - Educator Visit to Lab or Researcher's Institution
 - Researcher Visit to Educator's School or Classroom
 - Data Workshop or Preparatory Meeting
 - Team Conference Presentation

Logistics Support

Polar Field Services

Arctic logistics support (including teacher travel, clothing, and equipment provided by PFS).

Individualized

Coordinated

Flexible

ASC

Antarctic logistics support (including educator travel, clothing, and equipment provided by Antarctic Support Contractor ASC)

Begins Early

Thorough Follow-up

...With other support and funding provided for specific projects on a situational basis.

How to Succeed

Communicate

Expectations, instruction, outreach plans, problems/praise to ARCUS

Practice, Practice, Practice

Do your homework as a participant so when you get to the field, it's second nature.

Be Flexible

Plans change moment to moment, be prepared

Research comes first

In the field, be an excellent research assistant and be a sponge. Not all field work is sexy or easy!

Make safe sacrifices to meet goals

Sleep, fun, comfort, status/authority

Bring your unique skills to the team

Readiness to lend a hand, humor, special skill/strength, positive attitude



TEACHERS AND RESEARCHERS
EXPLORING AND COLLABORATING

Thank You for Participating in PolarTREC!

We're excited to work with you this year!

For Questions & More Information:

info@polartrec.com

907-474-1600

www.polartrec.com

@polartrec

#polartrec