

## Keeping Up With Kelp

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Project Description	
Title of Project	Keeping Up With Kelp
Project Start Date	10/4/2018
Fieldwork Start Date	10/4/2018
Fieldwork End Date	7/1/2019
Project End Date	10/3/2019
Primary Fieldwork Location	United States
Fieldwork Location #2	Chile
Fieldwork Location #3	Norway
Fieldwork Latitude	42.330
Fieldwork Longitude	-70.891
The primary focus you've chosen for your project is:	Storytelling
The secondary focus of your project (if applicable) is:	Research
Lens	Our Changing Planet
What is the Discipline/Field of Study for the project?	Communication; Ecology; Environmental Sciences; Environmental Studies; Marine & Freshwater Biology; Multidisciplinary Sciences; Social Sciences, Interdisciplinary
If applicable discipline/s to your project are not on the list above, please enter them below:	
Project Summary	As environmental problems escalate across the globe, solving complex environmental issues not only requires public awareness, but also public action and involvement. With high quality communication to a more diverse audience, scientists are beginning to bridge the gap between research and society. The scientists featured in this project are globally distributed kelp ecologists eager to share our experiences as field researchers in Chile, Norway, and Boston. Using a short documentary as a case study, our goal is to quantify how specific media elements inspire action for citizen science campaigns. We will shift the standard model of communication away from jargon-filled abstracts and towards visual storytelling and personal narratives that humanize scientists and their work. We will utilize a national panel survey to investigate audience response to our documentary in order to quantify the effectiveness behind our call to action. These surveys will allow us

to identify specific factors of our documentary that resonate with our audience. We will disseminate our research by holding workshops at the 2020 Ocean Sciences conference, publishing papers in open-access journals, and sharing our experiences on various online media outlets as pilots to develop future outreach opportunities beyond the scope of this grant. Our ultimate goal is to motivate audiences to take action through highlighting the citizen within the scientist and the scientist in every citizen.

Do you or your Team Members already have any media commitments or interest for this project? This includes media commitments already held by your home institution or other funding bodies.

No

Please describe your special qualifications, certifications, or credentials relevant to this project.

PI Byrnes is an assistant professor at the University of Massachusetts Boston where he has worked for five years. There his lab focuses on the consequences of human impacts in coastal ecosystems from local to global scales. PI Byrnes has a long history in science communication, first as an ocean science blogger since 2003, and now a writer at Deep Sea News. He was an active participant in Science Online and helped as one of the co-organizers of the Science Online Oceans conference. In 2011, he helped to co-found the #SciFund Challenge, an organization dedicated to motivating scientists to do outreach via crowdfunding. From 2011-2013, #SciFund ran three rounds of crowdfunding challenges raising \$252,811 from 3,904 donors funding 159 projects. During this time, #SciFund began to develop online outreach training workshops which continue to this day as part of #SciFund's non-profit operations. From this work, Byrnes and colleagues integrated surveys to mesh with success metrics in order to determine the efficacy of engagement efforts in science crowdfunding (Byrnes et al. 2014). Starting in 2013, PI Byrnes worked with colleagues to develop Floating Forests, an online kelp forest citizen science project, to both build a 30 year global giant kelp database as well as promote kelp forest research. The first version of the platform finished with over 3 million classifications after two years, and Byrnes and colleagues have recently relaunched a redesigned version of the platform as part of a four-year NASA program to seamlessly link Landsat data into online citizen science projects which funds co-investigator Rosenthal, a student in PI Byrnes's lab. Last, PI Byrnes is the organizer for the Kelp Ecosystem Ecology Network (<http://kelpecosystems.org>), an international network of kelp forest scientists using common techniques for biodiversity observations and experiments in kelp forests across the planet. International collaborators on this grant are KEEN members with whom PI Byrnes has worked directly. Co-investigator Shaughnessy, a student in PI Byrnes's lab, has worked in Chile to train local scientists in KEEN methods as part of the project.

Total Project Budget:

\$50,000.00

## Project Leader Information

Project Leader Name	Jarrett Byrnes
Salutation	Dr.
Country or Area of Primary Citizenship	United States
Country or Area of Citizenship #2	

**Country or Area of Citizenship #3**

Country of Primary Residency United States

If you are a citizen or resident of the United States, please indicate your race/ethnicity. White

Date of Birth 8/11/1978

Gender Identity Male

Current Position or Job Title Assistant Professor

Institution/Organization University of Massachusetts Boston

Department Department of Biology

Primary Language English

What other languages, if any, do you use for professional communication?

Additional languages (if applicable):

Highest Degree Awarded Ph.D.

Department/Major Population Biology

Year Awarded 2008

School UC Davis

Degree Awarded #2 M.Sc.

Department/Major Population Biology

Year Awarded 2003

School UC Davis

Degree Awarded #3 B.Sc.

Department/Major Biology

Year Awarded 2001

School Brown University

If awarded, will you accept grant funds to your personal bank account (individual) or through an affiliated institution? Institution

**Project Details**

## Background and Relevance

In today's globalized society, we have quickly come to realize that making an impact as scientists means much more than simply conducting experimental research and publishing relevant papers (Safford et al. 2017, Simis et al. 2016). As environmental problems escalate across the globe, solving increasingly complex issues not only requires public awareness, but also public action and involvement. Traditional approaches to the transfer of scientific knowledge are adapting with higher quality communication to a more diverse audience. However, the complexity of environmental issues demand adaptation in the tools used to communicate the urgency of environmental conservation. A new and evolving media landscape has made it possible for scientists and science communicators to captivate audiences beyond academia in approachable and inclusive ways (Groffman et al. 2010).

Platforms such as Youtube, Facebook, and Podcasts have equipped scientists with the outlets necessary for communicating their research in a compelling manner to an extensive audience. Due to the disjointed nature of the multimedia terrain, these endeavors require research to understand specific drivers behind successful communication. For example, researchers striving to enhance diversity in STEM utilize data from YouTube analytics to adapt videos in a way that fosters public interest (Gil, 2017). Identifying specific drivers can be complicated, as the data is often confounded by individual experiences. Perception Surveys are a common method for establishing specific baseline characteristics of multiple audiences and can help to quantify change in perception on a variety of topics e.g., climate change awareness (Lee, 2015). Unfortunately, most surveys are not designed to recruit and mobilize citizen science. Using innovative methodologies, we propose to depict our stories as kelp ecologists as an initial case study to investigate the question: what about kelp research resonates and what mobilizes public involvement?

Recent studies have shown that scientific narratives that highlight learning beyond the classroom and personal stories regarding "what it takes to be a scientist" can be a more effective way of encouraging action than traditional research narratives (Groffman et al 2010, Gil 2017, Safford et al. 2017). Careers focused on bridging the gap between science and society, coupled with citizen science programs, are vital to the growth and ultimate success of future conservation and environmental stewardship efforts. Understanding of, not merely interest in, the environment and its invaluable ecosystem services are essential to public participation in these efforts.

Using a short documentary as a case study, our goal is to quantify how specific media elements inspire action for citizen science campaigns. We will shift the standard model of communication away from jargon-filled abstracts and towards visual storytelling and personal narratives that humanize scientists and their work. In the past, many scientists relied on the knowledge deficit model to guide their scientific communication efforts. A growing body of research suggests that the deficit model is based on several false assumptions, chiefly the assumption that the public is poorly informed (Ko, 2016, Simis et al., 2016). The internet has made access to information trivial for much of the world. Public perception of science is more strongly affected by values, emotions, and trust than by concrete scientific knowledge (Baram-Tsabari & Osborne, 2015). By encouraging involvement over rote learning we hope to move beyond the deficit model and forge new paradigms of communication. Our aim is a call to action for citizen science involvement within our audience. In order to quantify the effectiveness behind this call to action, we will use carefully developed perception surveys to disseminate pre-and post- participant views of scientists and citizen science opportunities.

## Goals and Objectives

Our goal is to build off of our existing projects to extend our capacity

for enrichment. Through a tight, well-polished presentation paired with perception surveys and rigorous analytical statistics, we will demystify a set of kelp ecologists in an effort to build meaningful connections with viewers. Our project is set within a specific environmental realm: kelp forest ecology. As a vital nursery habitat that provides numerous ecosystem services, recent estimates indicate that one third of the world's kelp forests are in decline (Krumhansl et al. 2016). The scientists featured in this project are kelp ecologists eager to share our experiences as field researchers, exploring our sites in Chile, Norway, and Boston. The Byrnes Lab is also leading the NASA funded citizen science project Floating Forests. Floating Forests works with citizen science to build a 30 year record of global change in kelps and engage the public with kelp forest science. As collaborators and science communicators, the members of this project are not just interested in building an awareness of kelp forest conservation, but also in identifying a narrative to better inspire people to engage in citizen science.

We are lucky to have National Geographic actor, Evan Hall, as host and narrator to our documentary. Stemming from a wide variety of backgrounds, the other members of this proposal share the common ambition to build careers in environmental conservation and science communication. In highlighting the camaraderie and connectedness of field researchers, we hope the audience could see themselves joining us in the field to do what we do, too. Our approach to communication will be through the lens of an inquisitive fellow amateur (Evan) in a style similar to the new Netflix docu-series "Somebody Feed Phil". Our goal is not just to show scientists as the heroes of a narrative, but to present our team more as a friendly entrypoint into science. We hypothesize that while more traditional nature footage might encourage respect and inspiration for a topic, it does not harness future scientific involvement from viewers. In depicting the citizen behind each scientist, participants will have an easier time bridging their mental gap between science and society. Because of our varying skill set and transdisciplinary training we are excited to tackle all angles of this project. As a result of our pre-established projects we are confident in our abilities to build off of a pre-existing baseline to advance current and future research.

## Methodology Details

This project is a data driven investigation of underutilized strategies for scientific communication. We will work with film producers to create a short (<7 minute) documentary primarily geared towards adults who are at least 20 years old with bachelor's degree at most. We are targeting this demographic because we are interested in inspiring action in communities that might not necessarily recognize their potential access to science opportunities (Lee, Miller, and Januszyk, 2014). Our documentary will emphasize the human elements of field research, including person-person interactions between researchers and a non-scientist. The content of this documentary will be geared towards showing the day-to-day lives of marine scientists who research kelp, with a focus on both fieldwork and the scientists themselves. The communication goal of this documentary is to present marine ecology as a viable avenue for community engagement and even as a future career path. Through candid interviews with kelp scientists and strategic storytelling, a non-scientist will guide the audience through the process of becoming a kelp researcher. There will be a significant emphasis on the circuitous paths taken by many established researchers as a means to make the field more approachable, particularly for individuals with a bachelor's degree that did not continue to graduate school.

By surveying viewer's reactions we will be able to quantify both the level of change affected by this documentary as well as the specific aspects that were most effective. We will also assess the willingness of scientists to adapt to new forms of communication. In disseminating

our results we will host a workshop for scientists to learn from this research, and will follow up one year later with a survey in which we ask workshop attendees to self report whether they implemented any changes to their approach to communication. This will be a secondary analysis due to uncertainty about participation levels of the proposed workshop and survey.

The efficacy of our presentation will be quantified in two ways: a survey and a call to action. The purpose of the survey is twofold: first, to measure the documentary's effect on viewer's change in perception of science/scientists/entering the field and second, to assess specific strengths and weaknesses behind presentation strategies. The call to action encourages users to become involved in citizen science campaigns and is measured in a follow up survey.

Participants will complete a survey before viewing the documentary. This survey will establish baseline attitudes towards science and towards scientists. After completing this survey, participants will be given a link to view the documentary. Three days after viewing the documentary, as suggested by the Center for Survey Research, a follow-up survey will be administered to assess their response to the documentary and any new citizen science involvement. Survey questions will be designed to assess how the documentary changed the viewer's perception of the field, the researchers involved, and the accessibility of participation in field research. We will also delve into specific elements of the documentary through directed survey questions regarding viewer response to said elements. We will design the survey in consultation with the Center for Survey Research at UMass Boston (<https://www.umb.edu/csr>). Survey questions will line up with direct elements of the documentary to allow us to define what aspects are effective. We define efficacy of our documentary as the degree to which it positively changes the viewer's perception of research and accessibility of the scientific field, quantified by results from the pre and post viewing surveys. By quantifying perception change and gathering participant demography, we will be able to determine which aspects of the documentary are most effective at presenting scientists in a positive light and how this is influenced by viewer demographics.

## Methodology Justification

Ultimately the goal of any scientific communication to the public should be to establish a relationship between scientist and the citizen in order to elicit active involvement, not simply to communicate facts (Wynne, 1986). Our survey will measure this to some degree, but actual changes in behavior would provide more compelling evidence. We will quantify behavior change by providing a list of citizen science opportunities that participants can become involved with at the upon the initial documentary viewing (e.g., <https://www.zooniverse.org/>, <http://oceansanctuaries.org/wordpress/citizen-science-projects/>). The post viewing survey will include participant self-reporting about any efforts they may have made to become involved with one of these projects. This post viewing survey will allows us to quantify external change in participant's actions as a result of our presentation.

PI Byrnes previous work on how science crowdfunding success requires connecting with broad audiences via outreach (Byrnes et al. 2012) has shown that survey techniques can effectively quantify metrics of engagement, in that case as a predictor of science crowdfunding success. We will consult with the Center of Survey Research (CSR) at University of Massachusetts Boston to draft and finalize pre and post viewing surveys. This approach will strengthen the results of our survey; one common limitation of similar research is a logistical constraint on collecting pre-viewing baseline data (Gil, 2017). These projects are restricted to self reported "perception change", which introduces a host of confounding factors such as culture-specific interpretation (Lee et al. 2015). We will overcome this limitation with CSR provided access to survey administration companies that will allow national distribution of



Please summarize and describe the relevant outputs you expect to produce (e.g., book, website, magazine story, map, documentary, speaking series, multimedia campaign). Include the changes you expect to result from these outputs and specify who/what will benefit. Explain how you intend to inspire the specified audience to enact beneficial changes in awareness, attitudes, or behaviors.

How do you plan to disseminate your work, and to whom? Note, National Geographic Society cannot promise that grant results will be published on any National Geographic media platform.

our documentary, as well as linked pre/post-viewing evaluations. Using a survey company with national reach guarantees access to wide diversity of communities within our demographic constraints. In addition this survey administration company will ensure that we receive 250 complete sets of responses, at a minimum. This number reflects the quote provided by the CSR. As we work with the CSR we will frame our pre and post and survey questions in order to seek exemption from the Institutional Review Board (IRB) at the University of Massachusetts Boston for our developed surveys as to be able to share our results publicly and to not infringe in personal identifiers of our participants.

We will produce a short video documentary and measure its efficacy as a method of scientific communication using a two part survey. Results from the survey will be published in an open-access journal as well as presented in a workshop at the joint 2020 Ocean Sciences meeting of the American Geophysical Union (AGU), the Association for the Sciences of Limnology and Oceanography (ASLO), and The Oceanography Society (TOS).

We will produce the documentary with the goal of inspiring action for citizen science campaigns through connecting the audience with the scientists behind kelp forest research. We will highlight the broad spectrum of work involved in being a marine scientist and its capacity to resonate with various audiences, of diverse backgrounds. By spotlighting our individual stories as career scientists coupled with our research and Evan's storytelling skills, we aim to inspire broadened interest in the marine sciences.

Using the results of our pre- and post-viewing survey we will quantify change in the perception of science and the efficacy of our call to action. These results will be published in an open access academic journal. By using data from our surveys to define what makes a documentary well-received by various audiences we will unlock opportunities for building techniques that will teach others how to effectively translate one's own research to the public arena. This sharing of techniques between scientists is ultimately to the benefit of nonscientists; lessons learned from this research have implications spanning the breadth STEM fields.

By explicitly defining what makes a documentary well-received by various audiences it is our hope to provide a stable framework that would ensure a successful campaign for to scientists communicate a specific message in the most proficient and effective manner. These methods can be shared globally and adapted to various cultural values. Our approach to this unique opportunity, and embedded solution, lies in humanizing science and coupling experimental research with a personal story. It is not only our audience that will benefit from the connections made with our documentary, but other scientists who will be able to apply our findings to effectively demystify their work, not just within the realm of marine sciences.

The communities and institutions that can benefit from our project are widespread. We can further amplify the impact of this work by distilling our results into a set of communication guidelines to be shared across multiple channels of communication. In addition to a publication of our findings, results will be shared in a pilot workshop at the 2020 Ocean Sciences meeting with plans to expand to the Communicating Science Convention, Science Communication Camp, and the American Association for the Advancement of Science. PI Jarrett Byrnes and team member Isaac Rosenthal have participated in AGU citizen science sessions in the past as part of Floating Forests; it is an ideal forum for disseminating our message to an exceptionally diverse group of scientists and professionals. Team member Sean McNally has also worked with AGU sessions as a science communication intern with ASLO

and helped coordinate three sessions at the most recent Ocean Sciences meeting in February 2018.

Our workshop will be developed in conjunction with the Ocean Sciences Student Early Career Workshop. This workshop tends to have 50-80 graduate student and early career scientist participants. To ensure we receive the most engagement we will partner with Bob Chen (University of Massachusetts Boston, ASLO Board Member) and Hayley Schiebel (Suffolk University, Coordinator for Early Career Student Workshops). With this grouped knowledge, content of the proposed workshop will focus on specific communication strategies that can be employed across a wide range of scientific disciplines in order to improve the relationship between scientists and the public. The workshop will last three hours and represent a culmination of our results in an informative and interactive panel style presentation. We will present the documentary, providing pre-and post-surveys as an activity. We will then discuss our results, moving through the video step-by-step to discuss what worked and what didn't as measured through our surveys.

Following our initial panel we will split participants into groups where members will discuss building their own science narrative in and-but-therefore storytelling style. As facilitators we will work with groups and randomly chose narratives to be presented to the rest of the workshop participants. We will provide input on these narratives for how they can improve. This setting has the advantage of encouraging dialogue between scientists from different institutions and the potential to cultivate collaborations across disciplines. It is our hope to provide a stable framework that would ensure a successful campaign for scientists to communicate a specific message in the most proficient and effective manner. In order to determine long term impacts of this work, workshop attendees will be asked to report any adjustments they make in their scientific communication efforts in a survey we will administer after one year.

We will disseminate our research beyond workshops and publications by utilizing PI Jarrett Byrnes' established online media presence. We will post our work both at the Floating Forests blog (<http://blog.floatingforests.org>) as well as highlights on Deep Sea News. Deep Sea News is an online news outlet whose mission is "Demystifying and humanizing science in an open conversation that instills passion, awe, and responsibility for the oceans". Deep Sea News' goals align directly with this project in that the platform focuses significant energy into encouraging the public to crave ocean exploration and knowledge. Deep Sea News authors regularly publish work on science communication (e.g., McClain 2017, Bik and Goldstein 2013). We will also leverage Jarrett Byrnes' pre-established Twitter followers as an engaged audience in a campaign to raise awareness about our research and the publications/workshops being held to share our findings. This platform allows us to share our results and experiences dynamically as the project develops.

**How will you evaluate your work and results?  
Please list the indicators you will use to  
monitor progress toward your goal(s).**

Upon receiving funding we will immediately begin production of the documentary, starting in late Fall in Boston Harbor and Norway with Chile following in January. This will allow us up to 6 months for filming and production of the documentary, which inherently must be done in conjunction with ongoing field research timelines. Once a rough-cut of the documentary is provided, within 4 months of receiving funding we will provide preliminary survey questions and begin development with CSR. Our goal is to distribute pre-viewing surveys by the summer of 2019. Post-viewing surveys will be distributed three days after participant viewing.

Proposed Timeline of Work \*Assuming Funding Begins Fall 2018\*  
-Fall 2018 - Narrative storyboarding, Filming of Boston and Norway field



experiences with Evan

- Spring 2019 - Chile field work and filming, Survey development with CSR, Start of video post production
- Summer 2019 - Finalized video production, Distribution of survey, Survey analysis, Manuscript development
- Fall 2019 - Continued Manuscript development, Workshop submission,
- Winter 2020 - Workshop presentation at Ocean Sciences

The success of the documentary as a tool for scientific communication will be evaluated through both primary and secondary indicators. The main indicator that we believe speaks to our pilot the most and shows we have met its goal is the culmination of our results disseminated through a workshop hosted at the February 16th-20th 2020 Ocean Sciences Meeting in San Diego. To meet this goal we will evaluate the project based off of various administrative metrics - i.e. timeline and how productive was the survey, and through our the creation of our post survey recommendation framework.

After receiving responses to our surveys we will evaluate efficacy of the project through a number of primary and supporting indicators:

Primary Indicators (Milestones):

- Completion of documentary
- Delivery of 250 survey responses
- Manuscript completion
- Submission to open access PLoS Platform with preprint on arXiv
- Workshop submitted
- Hosting of Workshop

Supporting Indicators of Long term Effects:

- Post workshop scientist survey to assess implementation of framework by workshop attendees
- Number of citations post publication
- Number of YouTube Views

## External Capacity Development

The nature of the results of our project lend way to opportunities that incorporate what we have learned into future community outreach. We anticipate contributing to the development of citizen science projects including Floating Forests, a NASA funded collaboration between a non profit organization (The Zooniverse) and researchers from several academic institutions both in the United States and abroad in which citizen scientists classify kelp forests in Landsat satellite images. Effective communication is critical to online citizen science efforts and this would be a timely contribution to this rapidly growing field. Community engagement within any sphere of conservation is reliant on outreach linking with social science techniques to disseminate complex topics to the public. Engagement efforts can fall flat when trust in the scientists disseminating information is not cultivated within the community. Through establishing the most effective way to encourage connections between experts and society, involvement becomes much more tangible.

We are excited to share our products with science communication experts, including Founder and Executive Director of the Rwanda Wildlife Conservation Association, and winner of the 2017 National Geographic Society Award for Leadership in Conservation, Olivier Nsengimana (see letter of support in supplemental materials). Olivier's novel outreach programs in Rwanda pair community members with veterinarians for the rehabilitation and conservation of endangered species such as the Grey Crowned Crane. Olivier believes the implications of our work extend further than the University of Massachusetts Boston, and even the United States. He would like to use our findings in the development of programs, tailored to Rwandan

media, to develop unique and culturally inclusive strategies in making a case for nature. The institutions that can benefit from our project are widespread and by translating our results into a plan of action in the proposed workshop and publication, we see the reach of our results extending far beyond the grant itself.

## Works Cited

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Krumhansl, K.A., et al. (2016). Global patterns of kelp forest change over the past half-century. *Proceedings of the National Academy of Sciences of the United States of America*, 113(48), 13785-13790.

Gil, M. (2017). YouTube videos of 'research in action' foster diverse public interest in science. *Ideas in Ecology and Evolution*. 10, 27-36. doi:10.4033/iee.2017.10.6.f

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Ko, H. (2016). In science communication, why does the idea of a public deficit always return? *Public Understanding of Science*, 25(4), 460-464. <https://doi.org/10.1177/0963662516629748>

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Wynne B. (1986). Misunderstood misunderstandings: social identities and public uptake of science. *Public Underst Sci*, 1, 281-304.

"Portfolio"

Byrnes Lab Web Page: <http://byrneslab.net/>

Twitter: <https://twitter.com/jebyrnes>

DeepSea News Author Page: <http://www.deepseanews.com/about/dr-jarrett-byrnes/>

Alejandro Perez-Matus Web Page: <http://subelab.cl/>

Twitter: <https://twitter.com/subelab?lang=en>

Floating Forests:

<https://www.zooniverse.org/projects/zooiniverse/floating-forests>

Kelp Ecosystem Ecology Network: <http://www.kelpecosystems.org/>

SciFund Website: <https://scifundchallenge.org/>

#### Team Member Publications Relevant to Current Proposal:

Byrnes, J.E., Ranganathan, J., Walker, B.L.E., and Faulkes, Z. (2014). To crowdfund research, scientists must build an audience for their work. PLoS ONE 9(12), 1-29.

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Perez-Matus, A. et al. (2017). Temperate rocky subtidal reef community reveals human impacts across the entire food web. Marine Ecology Progress Series, 567, 1-16.

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## Project Members

Provide information for other individuals whose roles are critical to the proposed project, including local collaborator(s) if you are working in a country other than your own. You can include up to five people.

Note: Please DO NOT list yourself as a team member.

Search

Last Name	First Name	Institution	Local Collaborator?
Hall	Evan	National Geographic	Yes
McNally	Sean	University of Massachusetts, Boston	Yes
Pérez-Matus	Alejandro	Pontifical Catholic University of Chile: Estación Costera de Investigaciones Marinas	No
Rosenthal	Isaac	University of Massachusetts, Boston	Yes
Shaughnessy	Brianna	University of Massachusetts Boston	Yes

Showing 1 to 5 of 5 Entries

## Budget Details

Please enter the budget information you are requesting from NGS below, fitting items as closely as possible into the categories provided. To begin, click [Generate Budget](#) (the approximate start and end dates for your project are pre-filled). Please click [HERE](#) to read all Budget Restrictions & Guidelines before completing. Utilize the comments field to elaborate on each entry, as requested per the guidelines. If you are not requesting funds for a particular budget category, please leave the field blank. Enter all amounts rounded to the nearest US dollar, with no punctuation or symbols (example: 5200).

Parent Category	Grantee Budget Category	2018	2019	Total	Justification
Travel	Airfare	\$0.00	\$4,850.00	\$4850.00	3 Round trip airfare to Chile and 3 round trip to Norway January and September (estimated cost \$600 per person for Norway and \$900 per person for Chile (Source: kayak.com) Airfare for two graduate students covered under current internal graduate funding opportunities.
Travel	Vehicle Rental and Maintenance	\$600.00	\$600.00	\$1200.00	Vehicle rental for gear transport at \$500 per site per week with \$100 gas per site per week (Source: kayak.com)
Travel	Other Transportation	\$0.00	\$0.00	\$0.00	
Lodging/Food	Lodging	\$1,975.00	\$1,975.00	\$3950.00	Lodging for members and production company at Chile and Norway sites. Total 7 days/each trip at ~\$80/night Chile and \$100/night Norway
Lodging/Food	Food	\$1,500.00	\$1,500.00	\$3000.00	Subsistence for team members and production company for Chile and Norway sites at \$42/day/person
Equipment/Lab	Equipment & Supplies	\$2,017.50	\$2,017.50	\$4035.00	Equipment lease: Boat rental and fuel for film crew for 6 field days total \$2400 at an industry average of \$400 per charter. Dive gear and insurance for Evan: \$500 each trip = \$1000 Service contract repair = \$635
Equipment/Lab	Laboratory Costs	\$0.00	\$0.00	\$0.00	
Equipment/Lab	Laboratory Tests	\$0.00	\$0.00	\$0.00	
Compensation	Applicant and Team Members Compensation	\$4,458.00	\$4,458.00	\$8916.00	20% compensation to team member Evan Hall
Compensation	Assistants and Consultants Compensation	\$4,542.00	\$4,542.00	\$9084.00	Includes sub award contract to production company.
Evaluation	Measurement and Evaluation	\$0.00	\$8,500.00	\$8500.00	\$8500 for survey Disbursement and analysis as quoted by Center for Survey Research.
Other	Institutional Overhead	\$2,710.00	\$2,710.00	\$5420.00	MTDC 15% indirect cost
Other	Miscellaneous	\$0.00	\$1,045.00	\$1045.00	Dr. Buskirk (Director at Center for Survey Research) as compensation for preparation of survey.
	SubTotal	\$17802.50	\$32197.50	\$50000.00	

## Other Funding Sources

Please list the amounts of support already received for this project from individuals or institutions other than the National Geographic Society (up to 3). If you have more than three additional sources please list the three main sources of funding. Please list each current funding source by clicking the "New" button and filling in pertinent information.

Search

Funding Source

Category

Amount Received

No Data Available

Showing 0 to 0 of 0 Entries

## Expected Outputs

To assist National Geographic in better understanding the goals of your project, please individually add and categorize the results and outputs your project is setting out to achieve. These results should be summarized in the Project Details tab of your application and you will be expected to report back on these results at the time of your final report, if you receive funding.

**Please select "New" below to create an expected result/output.**

Search

Category	Result	Description (Details)	#
Documentation, Products, or Publications	Short Film	Video documentary portraying interactions between kelp scientists and non scientists in the field	1
Documentation, Products, or Publications	Professional Journal	Scientific communication framework published in an open source journal detailing results and conclusions from survey administered to viewers.	1
New or Improved Understanding	Understanding of Human/Nature Interaction	Science Communications Workshop at 2020 Ocean Sciences meeting of the American Geophysical Union (AGU), the Association for the Sciences of Limnology and Oceanography (ASLO), and The Oceanography Society (TOS)	1
New or Improved Understanding	Understanding of Human/Nature Interaction	Potential perception change through pre-and post-surveys for monitoring efficacy of communication.	250

Showing 1 to 4 of 4 Entries

## Attachments

Please upload a C.V. or Resume (required).

To upload, download the file from your device to your computer, press Choose File to select the appropriate file, and press Upload.

No.	File Name	-	Created Date
1	<u>Resume-Byrnes_CV.pages.pdf</u>	Project Leader Jarrett Byrnes' Curriculum Vitae	04/04/2018

#### Image Upload 1

No.	File Name	-	Created Date
1	<u>Image1-CSRLetterOfSupport2018.pdf</u>	Center for Survey Research Letter of Support	04/04/2018
2	<u>Image1-Letter of Support NIVA.PDF</u>	Dr. Trine Bekkby Letter of Support	04/04/2018

#### Image Upload 2

No.	File Name	-	Created Date
1	<u>Image2-Group.png</u>	Team Members	04/04/2018

#### Ethical Certification

National Geographic Society has zero tolerance for bribery and corruption, and complies with all applicable laws prohibiting such conduct including the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act. Grantees may not: offer or give anything of value to a government official or any other person as an incentive to, or in exchange or as a reward for, obtaining an improper advantage for National Geographic; or give, offer, solicit or accept anything of value that is intended to induce the recipient to violate his/her duty of loyalty to his/her employer. All licenses, permits and other government permissions or approvals required to carry out a grant must be obtained through the lawful, legitimate process of the country where the grant activity occurs.

Yes

National Geographic Society complies with all embargos and sanctions established by the

Yes



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By submitting this application, I represent that I am in compliance with the ethical standards and codes of practice for my discipline, and specifically the requirements for projects relating to human or animal subjects. I further agree that I practice the National Geographic Society's internal values including honesty, fairness and transparency . Lastly, I agree that the National Geographic Society may share details about the project at the time of award.

Yes

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