



## **Community Climate Change Education**

**By the Community Climate Change Fellows**

*Edited by Marna Hauk & Elizabeth Pickett*

*Illustrated by Susan Chung*

# **A MOSAIC**

*of approaches*

The stories, approaches, dedication and passion represented in the work of these wonderful leaders is awe-inspiring and proof that building community resiliency is possible and necessary to address the challenges presented by climate change.

– Pepe Marcos-Iga, Ph.D., COO of Western National Parks Association, and Board Chair, North American Association of Environmental Education

In my work in West Oakland, California, I found that Indigenous people, especially our elders, as well as women, children, and low-income communities are at risk for *double exposure* (Boillat & Berkes, 2013) stemming from issues connected to systemic oppression and global warming. *Community Climate Change Education: A Mosaic of Approaches* is an inspiring example of visionary educators, organizations, policy makers, and concerned global citizens coming together to ensure proactive community engagement to avert the climate crisis. This book demonstrates the amazing potential rooted in our local urban agriculture, community organizing, the preservation of indigenous biocultural knowledge, and the conservation of collective agency. This book holds in its pages a rare gem, the promise of hope.

– Mandisa Amber Wood, M.A., M.F.A., Director of Rancho Paloma Negra; and Sustainability Researcher, Napa College, Faculty member, artist, educator, artist, healer, and community food justice advocate

As an environmental educator and program director for over fifteen years, I have seen the devastating effects of climate change at coastal sites first hand. Climate change and climate resilience education is the next and most important topic for environmental education. Our society is in dire need of education on climate change issues. Teaching people about their integral connection to the world, including their role in climate change and resilient response, is the key to the earth's continued survival. Use this important book to galvanize environmental education empowering community action to reduce vulnerability and increase climate resilience.

– Parker McMullen-Bushman, Education Director, Chincoteague Bay Field Station, Virginia, and Task Force Chair - National Association for Interpretation's Diversity and Inclusion Taskforce

This stunning collection offers readers an incredibly comprehensive and detailed picture of climate activism in diverse educational and community contexts. What makes it so valuable is how the vignettes and reports from the field work together to suggest what can and should be done wherever one works and lives. However big you're thinking about climate change, this will help you think bigger.

– David Greenwood, Canada Research Chair in Environmental Education, Co-author of *Place-Based Education in the Global Age: Local Diversity*

# **Community Climate Change Education: A Mosaic of Approaches**

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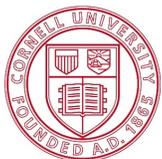
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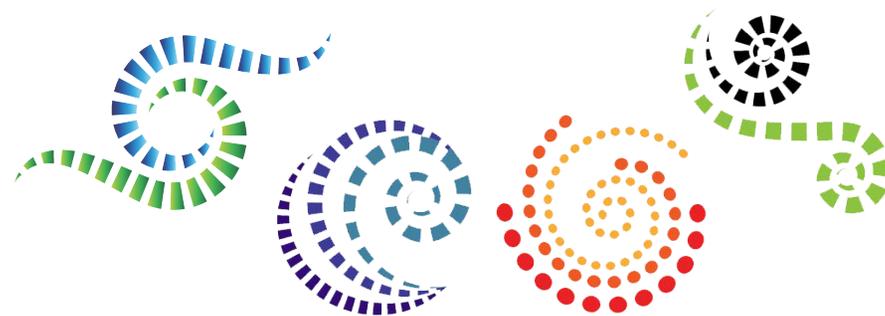
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## Foreword

In fall 2016, as reports of yet another temperature record being broken numbed my thoughts, the NY Times ran an article on climate migrants in Ningxia Province in northern China. Forced by drought to leave their ancestral homes, families were resettled in new apartments surrounding by the desert sand. They had no jobs, no gardens, no green. My immediate thought was: what is the role of environmental education in a displaced community that has lost a way of life and even a means of surviving?

This drew me to thoughts of other displaced communities. I fear for the Bangladeshis vulnerable to disastrous typhoons. Alaskan Natives recently voted to build a completely new village as they saw their ancestral home encroached on by the sea. Coastal residents of Virginia whose conservative identities lead them to question climate change, are watching as their shorelines erode and water encroaches on their streets. But displacement is not limited to climate change. In my work with EECapacity, I visited “reentry” communities whose citizens were seeking ways to welcome back and reintegrate men who had spent years in prison. One ex-prisoner talked about the green jobs he created to employ his reentry peers and another showed me the community garden where he mentored younger men so that they might escape the displacement he had experienced.

In 2010, when I wrote the proposal to fund EECapacity, my thinking focused on a different news event—the fact that the number of people living in cities had surpassed the number living in rural areas. How should environmental education address these changing demographics? I had observed how people in New York and other cities were “reclaiming” their right to nature through “reclaiming” the broken places in their neighborhoods. While standing next to a raised bed with pigeon peas and amaranth in Manhattan’s Lower East Side, I listened to middle school students and Bangladeshi immigrants tell the story of transforming a former bus parking lot into a community garden. A young woman invited me to join her on an evening row along the lower Bronx River. Her youth organization Rocking the Boat is part of a network of over 60 community organizations reclaiming a river that 30 years earlier one could cross by skipping from one dumped refrigerator to another, and a neighborhood where in the early 1970s 90% of the housing had been abandoned or set on fire. And in Cape Flats townships in South Africa, I had been given a tour of Edith Stephens Wetland Preserve, where young people were working to preserve an extremely rare fern-like plant and where gangs from the surrounding community had met to hold “peace talks.”



Three findings emerged from my visits to these and similar civic ecology sites in the U.S. and internationally. First, environmental learning was a big part of community gardening, river cleanups, and managing plant communities in urban parks. But the leaders of these programs did not see themselves as environmental educators. They saw their role as fostering youth (and sometimes community) development and the environmental activities were a means toward their youth development goal. Although they may have been fostering environmentally sound behaviors among youth and their families, this was happening almost by accident—as a byproduct of gaining communication and academic skills or forming tighter family and community bonds. The second finding: people in cities, including people of color and people living in low income neighborhoods, were leading efforts to reclaim nature *and* their communities. And third, environmental stewardship and learning could be a means to address issues of poverty, displacement, and even gang violence.

EECapacity drew on these findings. Our goal was to find answers to the question: How can the field of environmental education continue its long-standing tradition of changing to address societal changes? Or more specifically: How can environmental education evolve to reflect the fact that the majority of the world's citizens, and 80% of the US population, live in cities?

To address the challenge of creating environmental learning opportunities in cities, we used a social innovation model. Social innovations are distinguished from technological innovations in that they specifically contribute to a public good—like in education, health, or environmental management. Importantly for EECapacity, they also create new social networks that can continue to contribute to the public good beyond producing a single innovation. We can think of social innovations as: “new ideas (products, services and models) that simultaneously meet social needs and create new social relationships or collaborations. In other words, they are innovations that are both good for society and enhance society’s capacity to act.”

Not only do innovations create new social relationships or collaboration, they are created when people holding diverse perspectives come together to share their views. For this reason, EECapacity sought to build opportunities for environmental educators and youth/community development professionals, like the ones I had come to know in New York, Cape Flats, and other cities, to exchange ideas about their practices. Over a period of five years, EECapacity workshops, online courses and professional learning communities, grants to states, and fellowship programs created opportunities for diverse groups of professionals to share their resources, their ideas, and their environmental and community work with youth and adults.

Our approach reflected not only the real world environmental education and related practices I had observed in cities, but also changing university culture of which I am a part. What once were colleges or departments of fisheries, forestry and wildlife now are interdisciplinary groups of faculty representing the ecological and social sciences and humanities. (I work in such a department at Cornell.) Calls for research funding at Cornell and elsewhere require cross-disciplinary collaborations. Scholars see environmental problems as inseparable from social problems, and new terms like social-ecological systems resilience replace older labels like ecosystem management. Further, scholarship to address complex social-ecological or so-called “wicked” problems is becoming trans-disciplinary, where researchers from multiple disciplines and sectors devise collaborative ways not necessarily to solve, but to “re-solve” problems on an ongoing basis. In short, university departments are acting like “trading zones” for the exchange of ideas in their attempts to address critical problems facing our Planet.

The Community Climate Change Fellows embodies EECapacity’s vision of creating “trading zones” for the exchange of ideas, resources, and practices to address critical issues facing environmental education. Yet the fellows expanded this vision in two important ways. First, the fellows’ professional identities were much broader than simply environmental educator and youth and community development professional. As you read the chapters that follow, you will meet a fellow who is a bird conservationist in Nayarit Mexico, an aquarium educator in Monterrey CA, an elementary school teacher in Austin TX, a landscape architect and artist in Vancouver BC, and a musician and sound engineer in Boston MA. Second, whereas EECapacity focused largely on urban environmental education, the fellows expanded our work to specifically address climate change education and action.

Similar to managing invasive species, growing food to feed a growing population, and changing environmental behaviors, there is not one best way to approach climate change. Climate change is a wicked problem that calls for trans-disciplinary approaches that bridge disciplines and sectors—like the non-profit, education, and government sectors represented by the Climate Change Fellows. Climate change will not be solved—but we can seek to “re-solve” it on an ongoing basis, learning from each other and from our successes and our mistakes. And resolving climate change requires thousands of small innovations, like the projects reported by the fellows in this book.

There is much to impress the reader of this compendium. Inspiration, hope, creativity, and commitment to name a few. But what struck me from my role as the leader of the EECapacity project is our fellows’ embodiment of two components of the definition of social innovation.



Photo by Alex Russ

The fellows not only created new *processes, products, and practices* that address the ability of local communities to address climate change. They also increased the *capacity* of themselves, their local communities, and the field of environmental education to *act*. We see this at the local level through the work of fellows like Maria Talero, who created community weaving circles that continue to discuss ways to address climate change in Denver. Or through the work of Veronica Kyle, who uses the theme of migration—of African Americans to Chicago and of monarch butterflies to Mexico—to bring together urban parishioners, community gardeners, and nature lovers. Looking more broadly at our group of 26 fellows from Mexico, the US and Canada, Cornell PhD researcher Yue Li documented network formation using social network analysis—how the fellows became sources of ideas and resources for each other. Although not formally documented, the personal and emotional bonds forged by the fellows have become obvious to all of us who have interacted with them—bonds that can sustain the hope and support needed to address a future impacted by climate change. And through this publication and their

presentations at national conferences, the fellows are enhancing the ability of the field of environmental education to address climate change.

The communities the fellows live and work in do not seem so totally devoid of hope as that of the climate change migrants living in the midst of the Ningxia desert. But communities everywhere are vulnerable—our collective future is uncertain. And governments in many communities and countries are promising NOT to act. Or if they do act, it may be to *adapt* to climate change in order to continue our current life styles—by building elevated roads in Miami Beach or paving ski slopes with synthetic snow. These efforts ignore the imperative to *mitigate* our negative impacts on our Planet and on our communities. The imperative for environmental education as we move into climate change is not to simply jump on board with climate adaptation, however important that is. Rather, it is to ensure that any needed learning and action for climate adaptation is consistent our foundational principles of fostering ecosystem wellbeing, and community wellbeing. A number of adaptation strategies, including those based on ecosystem principles and that involve community stakeholders, simultaneously address mitigation. These efforts, and those of our community climate change fellows, provide guidance for environmental education as it moves into increasingly stormy waters.

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16 November, 2016



*Photo by Alex Russ*

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## **Prelude to the Community Climate Change Fellowship's eBook, *A Mosaic of Approaches***

Leadership. Passion. Commitment. Camaraderie. Creativity. Impact. Words can't say enough about the talented group of leaders who came together in June, 2014, as part of the first Community Climate Change Fellowship program to address climate change at the community level. Selected through a highly competitive review process, the Fellows knew that their challenge was daunting, given that climate change is, as President Obama describes, "the one issue that will define the contours of this century more dramatically than any other."

These Fellows represented diversity in every sense of the word: They came from formal and nonformal backgrounds; from rural, suburban, and urban areas; and from multiple disciplines. And they represented a range of races, ethnicities, geographic regions, ages, and approaches. They also shared a willingness to work together with an array of partners—including "out of the box" collaborators—to create change at all levels.

This book represents their collective work—stories about what community change looks like and how it plays out in neighborhoods and cities across North America. From using technology and music, to growing verdant community gardens, to incorporating indigenous ways of knowing, the Fellows demonstrate our individual and collective power. They show us that every single person can do something to help build community resiliency, reduce energy use, address environmental and social issues simultaneously, and join forces to create a brighter future.

I have been honored to be a part of this program from the start and look forward to following the careers of this inaugural class of Community Climate Change Fellows as they continue to foster innovation and change. And we hope that their stories will help provide ideas and inspiration to everyone working to tackle the greatest environmental challenge of our time.



### ***Judy Braus***

Executive Director, NAAEE  
Co-Founder of the Community Climate Change Fellowship Program

October 2016  
Washington, D.C.

# Introduction to Community Climate Change Education: A Mosaic of Approaches

*Marna Hauk and Elizabeth Pickett, Editors*

Social scientists tell us that people are more likely to feel motivated and hopeful enough to take action when they aren't starting from scratch, and when they feel like there is already movement toward a goal, progress made, and momentum (Susan Hassol, Climate Change Communication).

This book offers that in regard to climate change: Hope. Optimism. Motivation. Courage. There is movement. There is progress being made. There is momentum. People are acting, and they are doing so in creative, innovative, brilliant, collaborative, and effective ways.

For some, climate change can be difficult to discuss or address because its drivers are made of a tangled web of human perspectives, behaviors, values, habits, and patterns— all of which are continuously and complexly interacting with the non-human life forms and biophysical processes that comprise and inhabit this planet. Even more, its impacts are diverse— affecting land, water, air, plant and animal life, as well as human lives, lifestyles, geographies, food, water, and well-being.

If that's not complicated enough, new records are hit every day that could paralyze us into overwhelm if we let them:

The last 11 consecutive months have set new monthly high-temperature records, meaning they are the warmest ever

recorded. In September 2016, the arctic sea ice annual minimum tied the second lowest extent on record, and the annual season of sea ice has already shrunk by 7 weeks, further reducing the breeding and feeding capabilities of polar bears— what some would call the poster child for climate change imagery, impacts, and sense of loss and urgency. On the urban and human front, several megacities with populations greater than 10 million people have recently been measured as sinking faster than



*Community Climate Change Fellowship Staff and Fellows, Ottawa, Canada - October 2014*

seas are rising, making them especially vulnerable to sea level rise and flooding from the ever-growing size of storms and hurricanes. (All from NASA)

Yet, even with the complexity, enormity, and urgency of climate change and its current or predicted effects, there is progress being made. There is momentum. There is hope. Educators, community leaders and change makers, activists, artists, musicians, academicians, conservationists, economists, natural resource professionals, business leaders, entrepreneurs, cultural creatives, and more— from many sectors and geographies and using diverse approaches— are mobilizing their expertise and passion into action, with real-life and real-time progress. This book introduces you to 26 such people whose climate change work is addressing local-to-global scales. It also provides an overview of the diverse ways that environmental education can intersect with and increase the efficacy of climate change action.

However, like climate change itself, climate change action has the potential to suffer from a lack of coherent, systems level thinking.

What is unique about this book is that the individuals, projects, and material presented are the fruits of an effort to bring together local leaders in the field of community-based climate change action and environmental education— from Canada to Mexico and from Hawaii to the Atlantic coasts of North America— to develop a vision for joint action and mutual support as they implement their place-based projects.

The initiative, EECapacity's Community Climate Change (CCC) Fellowship, began in 2014 as an 8-month pilot program. Fellows first converged in Shepherdstown, West Virginia to exchange ideas, information, and resources. Partners in EECapacity, including Cornell University, the North American Association for Environmental Education (NAAEE), U.S. EPA, and EEExchange provided learning opportunities to expand, grow, and inform the fellows' individual projects and capacity. These ranged from refining project approaches and developing fundraising skills to receiving coaching on the creation of 1-

minute elevator speeches to succinctly communicate project goals. In addition to the wealth of expertise and insight offered by the organizers during the week together, fellows made use of numerous structured and unstructured opportunities to mix, mingle, and collaborate to generate cross-pollinated project plans, new collaborations, and a connected pathway forward.

Following the initial training that included Shepherdstown and a re-convergence in Ottawa, Canada at the annual NAAEE conference, five competitive mini-grants were

awarded to fellows whose projects were field-ready and well-positioned to make significant impacts. Most of the fellows continued to remain actively engaged and supportive of each other well beyond the initial 8-month program, leading to the early conversations about a legacy project. Fellow meetings, webinars, mutual support, and information exchange via active social media continued the momentum, and NAAEE and



*A day in the life of a community climate change fellow, Ottawa, October 2014*

EECapacity found funding for all fellows to extend the fellowship to support attendance at the 2015 annual conference. In 2015 in San Diego, California, converging again at the subsequent annual NAAEE conference, fellows decided to proceed on a project that would capture and communicate the bounties of the fellowship, the individuals and projects it catalyzed and supported, and the community of community climate change professionals it created. This book is that legacy project.

In this book, we provide overviews of how various fields can intersect with climate change education and action, detail the CCC programs themselves to provide inspiration and examples to others in the field, and share vignettes written by the fellows about the experience of belonging to this community of visionaries and exchanging mutual support. We hope that the personal, professional, and communal lessons learned and ideas generated will serve others who are also working to address climate change.

Now, over three years later, the CCC Fellowship community continues to nurture ongoing energy toward effective and inspiring climate change action— a testament to the strength of the bonds formed and our vision of mutual support and wisdom-sharing. The momentum not only continues building for the projects themselves, but also for the rippling cultures these projects spurred: through social innovation, farmer networks, and indigenous story and organizing; through climate change film festivals and womyn's intergenerational, mentored climate justice and climate action social incubators; by sparking young people in multiple cities to take action fixing

bikes; celebrating and protecting the dark sky; marching on Washington; co-designing sustainable futures in urban metroplexes; climate oasis gardens in the desert diverting lawn water into vibrant learning and teaching food systems; changing public classrooms into ocean experientials and story-gathering research laboratories; galvanizing environmental volunteers into climate communicators and solar power advocates; supporting faith communities to organize climate resilience; reclaiming inner city waste land as commons for food forests; nurturing

urban youth as tree planters; leveraging ecotourism for avian sanctuaries; and launching tropical forest fire prevention campaigns to reduce downstream impacts.

Against the barriers of distraction, lack of support, multiple-project overwhelm, and the general un- or underfunded nature of these initiatives, the CCC Fellowship sustained a rippling revolution of social innovation spiraling in a mosaic'd network across context and place. The committed EE Capacity staff continues to encourage and support us in new and continued initiatives. The gifts continue as teams research how to prevent burnout in climate change

organizers and as we wrap up the stories and sharing of our many successes, sojourns, and learnings to support the next generation of community climate visionaries.

### Final thoughts....

In a time that calls us to clarity, to connection, and to action. In a time when we are charged with thinking outside the scope of our own bubble of time and place, called outside our generation and



called by the future, we wonder how we can help generate a future of flourishing, as well as a present moment of well-being and of justice. We are also called to attend to the planetary, and our empathy, concern, and love for the world stirs within. Joanna Macy calls this opportunity the moment of The Great Turning. The stories in this book are stories of the Great Turning. They are not just stories about particular people in particular places collaborating on particular projects. Though they are also such stories. These are stories of patterns of awakening and surging towards flourishing.

These stories of resurgence form a mosaic. The tessellating patterns shot through these twenty-six stories of community climate change education, climate resilience, climate justice, and climate resistance include approaches to action. They also describe processes and patterns for sustaining those involved with these actions in over sixty accounts. We hope you find here patterns and lines in the mosaic that inspire you. Read the project stories, with themes running through, and find your way into the heart of this resurgence. Take in the vignettes to remember how connected you are as you spark and reach out, right where you are. All these projects started as wild imaginings and jump off synchronicities. We invite you into this resurgence, your own wild-hearted contribution growing still. Seek the inspiration and sustenance for your own part and the call of your community in this time of the Great Turning, holding in our hearts this call for flourishing.

## **Acknowledgments**

We'd like to acknowledge the brilliant and generous work of so many who helped generate and edit this e-book manuscript and its engaging content. The rich gifts of the Climate Change Fellows, who each authored material, is at the heart of this work. Thanks to Adam Ratner, Jennifer Hubbard-Sánchez, Michelle Eckman, Tara Hostnik, and Trevor Hance for developing the original story structure. Additional thanks to Adam Ratner, Anne Umali Ferguson, Jason Davis, Elizabeth

Pickett, Elvia Rodriguez Ochoa, Jennifer Hubbard-Sánchez, Laura Mack, Marna Hauk, Maria Talero, Michelle Eckman, Susan Chung, and Tara Hostnik for authoring theme pages, longer vignettes, and articles. Thanks also to the team of seven fellows who developed the article and resource on avoiding burnout and sustaining effective climate communication included here. CCC Fellow Michelle Eckman helped generate content, had promotional postcards printed, and worked collaboratively to elicit some of the stories. Michelle Eckman and Anne Umali Ferguson met with Marna Hauk for the last half-year of the project, and along with Elizabeth Pickett and Marna Hauk worked on gathering and theming the vignettes. Anne Umali Ferguson additionally provided creative coaching, organizational logistical coordination, and vision throughout. Elvia Rodriguez Ochoa helped organize the launch. Two of Marna's students provided indispensable help in manuscript preparation. Rachel Kippen, a graduate scholar in Environmental Studies at Prescott, edited the manuscript, groomed the vignettes, and augmented some of the theme content. Another Prescott graduate scholar, in Education, Mandy Leetch, categorized the vignettes and provided insightful editing of some of the longer articles, and served as beautifying wizard for the final ebook. We thank everyone for their generous, tireless, and creative inspiration and collaboration.

Big hugs and thank you's to Judy Braus, Marianne Krasny, Jose Pepe Marcos-Iga, and Anne Umali Ferguson along with NAAEE, Cornell, and EE Capacity staff including Lori Mann and Drew Price for providing this opportunity and for encouraging us and sustaining us in this fellowship experience spanning three years. Thanks to our additional teachers and presenters, including Akiima Price, Andy Robinson, Kelly Macias, Keya Chatterjee, Peter Rafle, and Yue Li. A shout out to the insightful researchers at New Knowledge, including Shelley Stern, Rupu Gupta, and John Fraser.

Elizabeth Pickett and Marna Hauk envisioned the volume structure and content elicitation. Marna was responsible for

coordinating manuscript elicitation, for manuscript editing and arrangement, for original content development, and for visual treatments and structures. Susan Chung, our co-design illustrator, gave generously of her creative time and spirit, traveling from B.C. to Port Townsend for a multi-day climate change drawing fest on some sunny days in August 2016 with Marna and Elizabeth. The partnership that arose for Elizabeth and Marna around the creating and coordination of this manuscript inspired the article and workshop on “Surfacing

Unheard Voices,” a deepening friendship, and has inspired a vision for future climate change writing facilitation. So this ebook, in its making, has been a further embodiment of the creative synergies, collaboration, mutual inspiration, and momentum of the Community Climate Change Fellowship itself. For this, we are very grateful. May it spark and inspire further community-based climate change action and creativity on the land where you find yourself thriving.



*Photo by Elizabeth Pickett*



*Community Climate Change Fellows, June 2014, Shepardstown, West Virginia*

# Climate Change Fellowship Overview

By EECapacity

In 2014, EECapacity, a partnership between the U.S. EPA, Cornell University, NAAEE, and EEEExchange, piloted the Community Climate Change Fellowship. The eight-month program engaged 26 individuals across North America to address climate change with projects in their local communities.

Fellows were selected based on key criteria such as experience in environmental education, community development, and creative climate change solutions. Each fellow designed a Community EE Action Project using an innovative education strategy to tackle a community climate change problem. Each project was linked to EPA priorities such as improving air quality, protecting America's waters, and working towards a sustainable future.

Projects ranged from a Climate Change 101 course for college-aged students in Frankfort, Kentucky to an education program focused on how to grow food in hotter, drier land in Albuquerque, New Mexico. Fellows attended a five-day intensive workshop to promote leadership and professional development, participated in exclusive webinars to encourage

innovation, and had the opportunity to attend the 2014 NAAEE Annual Conference to network with others in the field.

In 2015, EECapacity supported small grants for the CCC Fellows. These innovative projects ranged from kickstarting a community climate change film series in Denver, Colorado, to helping area citizens connect with local environmental organizations, to launching a Project-based Online Learning Community (POLC) in drought-stricken Los Angeles, collaborating with the city's 96 Neighborhood Councils to evaluate and report on community water conservation project outputs and outcomes. The CCC Fellows are also working as a Professional Learning Community to create a product that will showcase the variety of strategies and methods used to address climate change at the community level.

The Fellows have online profiles at the following location:  
<http://www.eecapacity.net/activities/ccf-fellowship/2014-ccf-fellows>

*This article is adapted from <https://naaee.org/our-work/programs/climate-change-fellowship>*

*The Community Climate Change Fellowship was exactly what my organization needed to achieve our mission. The fellowship built my capacity as a director of a nonprofit organization. The tools and trainings I received during the leadership workshop in Shepherdstown, West Virginia were powerful. I have utilized the strategic communications skills gained for the purposes of educating and training others, as well as securing funding for my fellowship project, "Energy Efficiency to Mitigate Climate Change and Ocean Acidification." In addition, the insights, strategies, and materials I received during the fellowship allowed me to properly serve as a member of the California Environmental Literacy Task Force in 2014. I was able to provide advice and share cutting-edge strategies that I learned through the fellowship to help develop a fundraising plan for the California Environmental Literacy Blueprint.*

*—Rocío Lozano-Knowlton, Executive Director, MERITO Foundation; 2014 CCC Fellow*





**Community Climate Change Education**

***Themes & Stories***

**A MOSAIC**

*of approaches*

# Art and Education



## Art and Public Education Campaigns *Community Climate Change Fellow - Susan Chung*

### **Youth Storyboard the Future**

“No city is governable if it does not grow citizens who feel it to be theirs.” - Paul Goodman

Break out the pens and draw, doodle, describe a desired life. Dialogue with your neighbors and cartoon your future. And let

the drawings become the design criteria for new communities. Art is a powerful tool for seeing into the future. Climate change educators are using art to help youth create a new community narrative, to co-design their future. As spoken word transform into drawings, youth claim ownership of the illustrated goals, and a commitment to see it become reality.

## Related Content

### Stories

- Climate Courage
- Dark Sky Festival
- LA Neighborhoods
- Malama Kai Youth Action
- Women's Ecosocial Incubator
- Youth Co-Design

### Vignettes

- Culture Creation
- Inspiration
- Storytelling
- Youth Action

### Articles

- About Co-Design
- Surfacing Unheard Voices



## Resources

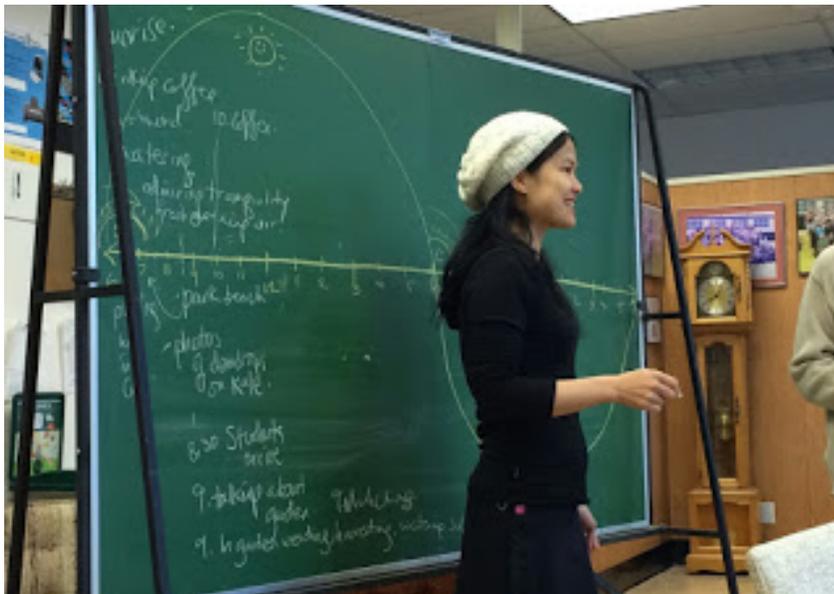
- Tedx Talk about including youth in planning:  
<https://www.youtube.com/watch?v=jBeU0K0B2yc>
- Including young people in co-designing their spaces  
<http://youthmanual.blogspot.ca/>
- Fresh Eyes: Including Youth in planning  
<http://plannersweb.com/1995/07/fresh-eyes/>
- Youth-led conferences  
<http://primeearth.org/projects/pie/>  
<http://vsb-sustainabilityconference.com/>



## Youth Co-Designing Climate Resilience CCC Fellow – Susan Chung

### **Background**

Susan holds a B.Sc. in Biology, a B.Ed., and an M.Ed. in Science Education. She is a science teacher with the Vancouver Board of Education, an informal educator, a member of the Camosun Bog Restoration Group, is affiliated with the Institute for Environmental Learning and the Pacific Spirit Park Society, and is a co-design artist with the Co-Design Group. Susan connects youth to their place by inviting them to visualize themselves as organisms co-designing a new ecosystem. Susan has twenty years of experience as a science educator and as a co-design artist. In the past five years, Susan has integrated ecological education into Stanley King's co-design process so that youth may respond to climate change through the art of co-design.



In 2010, Susan received Architecture Canada's Foundation Bursary as coauthor of the Youth Manual for Sustainable Design (Stanley King and Susan Chung). For her work in youth engagement through co-design, she won the 2011 Royal Architectural Institute of Canada Advocate for Architecture award. In 2013, she co-founded the Social Art of Architecture for Youth Society of British Columbia. In 2014, Growing Up Boulder used the Youth Manual to engage young people in design participation in Boulder, Colorado. Susan is also a nature interpreter who conducts teacher training for the Camosun Bog Restoration Group.

### **Project Description**

Susan's climate change project involved equipping young people to collaboratively design their own communities through the process of co-design. The ecological challenges due to urbanization requires an unprecedented collaborative effort from architects, engineers, and landscape architects—a charrette of epic proportions. It's also an educational challenge for teachers to prepare youth for the future. The design solution lies not in buildings, energy efficient cars, or gadgets, but the redesign and re-imagining of a life.

Susan conducts co-design training for youth so they may have the tools to engage other youth to storyboard a future that does not have to include carbon. She teaches them to facilitate dialogue with the tip of a felt pen. The collaborative dreams and sketches of like-minded youth will draw new ecologies.

I engage youth to co-design spaces they will inherit. Presently I am assisting students with developmental disabilities to co-design their future school garden space. We are coordinating with Fresh Roots, a nonprofit organization with experience in urban agriculture. The VSB Transition Team for Low Incidence Students seek to include students with developmental disabilities in the design process to co-design, and build a

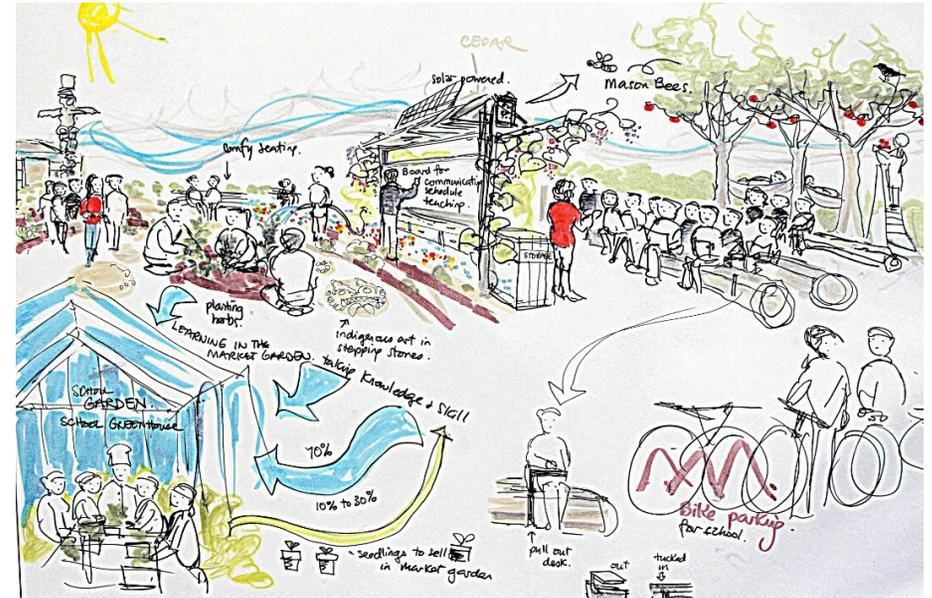
market garden. Co-design will provide drawing facilitation for staff, students as well as training youth artists from the school to co-design this garden for their peers.

### **Additional Climate Change Action & Education Resources**

- Fresh Roots had heard of the co-design work and as they coordinated with the school:  
<http://freshroots.ca/>  
<http://vsb.bc.ca>

### **Value Offered to the Community**

Through co-design dialogue, many different community members can rehearse their social interactions and have a youth artist draw these interactions as a rehearsal. This rehearsal forms the design criteria for future planning. There is an amazing energy during a co-design session where peoplespeak their dreams for a space. As spoken word gets



turned into drawings, participants claim ownership of the illustrated goals, and a commitment to see it become reality.

### **Project Link**

*The Youth Manual for Sustainable Design*, By Stanley King and Susan Chung

<http://youthmanual.blogspot.ca/>

This website includes a manual for including youth in planning. This manual does not require drawing ability but gives a lesson plan for how facilitators can guide youth to draw their future.

### **Keywords**

Sector Keywords: Community Organizations – K-12 Schools – Civic Action

Approach Keywords: Innovation and Social Innovation – Youth Investment/Empowerment – Consultative – Communication Models – Building Community Networks – Gardening – Co-Design Dialogue

# Communicating Climate Change



## Climate Change Communication and Social Psychology *Community Climate Change Fellow - Maria Talero*

Climate change communication poses many psychological challenges, and advocates and educators are eager for a deeper understanding of the social, psychological and cognitive barriers that get in the way of the public's ability to absorb the urgency of the climate crisis.

A primary challenge has to do with basic psychological responses that render a primarily information-driven approach (i.e. "let's get the science out there") much less effective than we would hope. For example, if I happen to notice that my neighbor doesn't recycle it might be tempting to assume that person is apathetic when it comes to environmental issues; that

they simply don't know or care very much, and that the solution is to give that person information about climate science to make them care. But researchers like Renee Lertzman from the Cardiff School of Social Sciences argue that it is a myth that individual inaction on climate is simply due to apathy. Instead, she argues, people may simply feel paralyzed by the size and complexity of the problem. Just as it doesn't work to bombard a client with facts and information about how their behavior is harmful in a private therapeutic setting, we should not assume that this strategy is effective on a society-wide scale.

The most compelling and important insight that social psychology has to offer to climate communicators is this: it is a mistake to frame climate communication around a model of human beings as fully rational, information-driven beings who need only to properly understand what climate scientists are saying in order to start taking appropriate action.

Instead, we should be cognizant of the many ways in which human beings are inherently prone to contradictory, biased and emotion-laden thinking that predisposes us to filter the world around us in order to fit our pre-existing beliefs.

We should also recognize that we are deeply social beings, and that our individual beliefs, values and commitments are heavily influenced by the social norms of the 'in-groups' to which we belong to - for example, our families of origin, our local communities, and the local, professional and political groups with which we identify.

Organizations all over the world are now focusing their efforts on developing climate communication strategies and principles that are consistent with research and evidence from the field of social psychology. This is yielding a rich bounty of recommendations, but also creating a grab-bag situation where conflicting or insufficiently-tested advice abounds.

What's our best strategy as climate communicators and educators, then? Pay attention, read widely and look for the best evidence-based resources we can get our hands on.



## Related Content

### Stories

- Bird Observatory Project
- Climate Courage
- Climate Stories Project
- Dark Sky Festival
- Digital Travel in Canada
- Faith in Place in Chicago
- Global Kids Organizing
- LA Neighborhoods
- Marine Mammal Volunteers
- Mass Audubon Initiative
- Science on the Sphere
- Youth Co-Design

### Vignettes

- Culture Creation
- Inspiration
- Mutual Learning
- Networking
- Professional Capacities
- Storytelling

### Articles

- About Co-Design
- Communities of Practice
- EEPro as Digital Community
- Surfacing Unheard Voices

## Resources

- Renee Lertzman: <http://reneelertzman.com/the-myth-of-apathy/>
- Center for Research on Environmental Decisions (CRED): <http://guide.cred.columbia.edu/guide/sec3.html>
- Climate Outreach: <http://climateoutreach.org/>
- Climate Outreach's "The Uncertainty Handbook": <http://climateoutreach.org/resources/uncertainty-handbook/>
- Cultural Cognition Project (Yale University): <http://www.culturalcognition.net/>
- Yale Program on Climate Change Communication: <http://climatecommunication.yale.edu/>
- Common Cause Foundation: <http://valuesandframes.org/>
- Public Interest Research Centre (PIRC), Climate Change Communication Advisory Group (CCCAG): <http://publicinterest.org.uk/ccag/>





## Climate Courage Education and Organizing in Denver, Colorado

*CCC Fellow – Maria Talero*

### **Background**

Maria Talero, Ph.D., is the founder of Climate Courage Education and Organizing. She is a Denver-based, Colombian-born, independent community climate change educator. She develops tools and practices that foster psychological resilience, effective communication and courageous engagement on climate change. She works closely with groups to create custom-tailored workshops and trainings that support the evolution of their members' awareness and involvement on climate change. She draws on a wide spectrum of practices and activities—including movement, meditation, audio-visual resources, small-group work, and other creative tools and props—to create positive, energizing educational environments that catalyze hope, inspiration and new levels of commitment.



In her work, she draws on her academic research in an interdisciplinary area called embodied cognition, which holds that minds are embodied: that our perceptions, thoughts and beliefs are deeply dependent on what we DO—on what kind of activities (physical, social, cultural) we engage in in our everyday lives.

Maria's key goals include:

- Developing new approaches to climate change communication that foster self-efficacy (the sense that 'I really can make a difference') and hope
- Creating easily replicable models that feature social connection and human warmth
- Fostering 'opinion leadership' (where ordinary people help influence and shape the opinions of climate change with their friends and family) and organic, citizen-led initiatives
- Growing and diversifying the climate movement 'beyond the choir'

### **Project Description**

My idea for my fellowship project came from noticing a significant gap in the way we are seeking greater public involvement on climate change. Many organizations seek to encourage engagement through "simple and painless" action steps and calls to reduce one's consumer footprint, but few are poised to help facilitate grassroots, community-level climate change dialogue and citizen-led engagement. Recycling and reducing one's carbon footprint are important steps to take, but many people intuitively sense a mismatch between the size of the problem and these 'solutions' that are directed to single individuals. I believe this leads to a sense of hopelessness and

despair, which can lead people to turn away from the problem and push it onto the 'back burner' as they cope with the demands of everyday life.

To address this gap, and as the first part of my CCC Fellowship through EE Capacity, I have been leading a pilot community group called the Climate Courage Resilience Circle, which features hands-on, interactive group learning and discussion as well as strategies for cultivating psychological resilience in the face of climate change. The goal of the pilot group is to generate a roadmap, and eventually a template, for building inspired, courageous, citizen-led micro-communities ready to confront the climate crisis. As part of this phase of my project, I researched and test activities for a training program to help community volunteers lead successful, inspiring, values-based climate change conversations, which helped me launch "phase two" of my project (below).

In 2015, with the help of a CCC Fellowship Mini-Grant, I launched the second phase of my project, a pilot model for grassroots community engagement on climate change, using film and video combined with peer-to-peer interaction and small-group dialogue. Volunteers for this pilot community climate change film forum (called Community Climate Courage: A Film/Discussion/Action Forum) came from my Phase One community group. They helped to plan and organize the events and to guide the small-group dialogue as "Conversation Hosts." We hosted two very successful film forums, with attendance of 110-150 people at each event.

In 2016, my goal is to build on the success of the pilot events to continue to field-test and optimize my model, and to launch an online "toolkit" that can be used by others nationwide to replicate our success in their communities. I am reaching out to my network around the country to recruit interested groups to help field-test the model, and I will continue to offer it here in the Denver, CO area, with the goal of establishing a robust



Community Climate Courage network forged around the goals of psychological resilience, social connection and warmth, and citizen-led, community-based engagement on climate change.

### ***Successes and Best Practices***

One big success has been the level of public interest in my 'phase two' Community Climate Change Film Forum events (these events rocked the house with unheard-of audience sizes!). This was especially important to me because my research in embodied cognition and philosophy leads me to believe that human beings are deeply motivated and inspired by the experience of bottom-up social collaboration. By "bottom-up" in this context I am referring to "not top-down" - not prescribed by experts, non-profits, leaders, campaigners or organizations. I believe that our most powerful wellsprings of hope and inspiration on climate change are currently - for the most part - locked up within the hearts of citizens who feel powerless and overwhelmed by the issue. And I believe that giving people a safe, supportive structure in which they can have rewarding



social dialogue that sparks ideas for action is a potent source of healing for these feelings of powerlessness.

At our pilot events, the results were unmistakable. We took care that at the end of the film, no "expert voice" would intervene, and so our discussion format guided participants in turning directly to each other to exchange impressions and ideas. The built-up emotions and energy that come from watching a powerful documentary discharged itself directly into these conversations: our venue vibrated with social energy as the discussion continued and the conversations deepened. Participants formed connections, exchanged ideas, and share their contact information with each other to launch impromptu "micro-networks" for further action.

In fact, in order to more fully capture the social energy mobilized by our project, I decided to add a culminating, community-weaving event to the pilot series (we called it a "Deep Networking Party") in which we recruited our community

members into much stronger and more deliberate networking circles and launched an online communication platform (through "Loomio") to help us build more relationships among our participants. The success of this "extra" event (excellent

attendance, very few no-shows, very strong and enthusiastic participation throughout the 3-hour program, and 8 new micro-networks launched) is a clear indicator that the project has "found its groove" and that we are answering a deep unmet community need for a forum that supports powerful and inspiring social, grassroots, connection on climate change.

### ***Lessons Learned***

My biggest lesson is that I need to develop a way of measuring and quantifying the extraordinary levels of public engagement that my project has generated. The survey tools we used were simple and generic, and they have not succeeded in capturing the many indicators of higher-level forms of engagement - beyond attendance and enthusiasm - that emerged. People came up to me after every event to express their heartfelt appreciation for what they had just experienced, and to say how much they think, "there is a need for this." People brought friends and family with them, they stayed afterwards to keep talking with those around them, and they shared our event on social media and by word of mouth. They donated money, and lots of it. We raised a total of \$1,797 by asking for donations at three of the five events, enough to crowd-fund approximately four more film forum events. And most importantly of all, they formed citizen micro-networks: exchanging contact information and launching new collaborations and projects. However, I ran all five events in the pilot series without incorporating specific questions into our surveys to document and quantify these micro-networks. I simply hadn't realized how important and valuable it would be for me to capture and quantify these results, and I need to learn how to do this for the next phase of my project.

### ***Additional Climate Change Action & Education Resources***

- Climate Outreach (formerly COIN): <http://climateoutreach.org/>
- Climate Access: [http://www.climateaccess.org/about\\_us](http://www.climateaccess.org/about_us)
- The Cultural Cognition Project at Yale Law School: <http://www.culturalcognition.net/>
- Climate Communication Science: <https://www.climatecommunication.org>
- eco-America: see esp. their "Let's Talk Climate" Guide: <http://ecoamerica.org/>
- Yale Project on Climate Change Communication: <http://environment.yale.edu/climate-communication/>
- Climate Advocacy Lab: <http://climateadvocacylab.org/>
- Common Cause Foundation: <http://valuesandframes.org>

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- Kari Marie Norgaard: *Living in denial: why even people who believe in climate change do nothing about it*. MIT, 2011.

### ***Project Links***

Website: <http://climatecourage.cc>  
Video documenting Project Phase 2 (Beta) – "Community Climate Courage: A Film Discussion and Action Forum": [https://www.youtube.com/watch?v=kC1Wm\\_bRxuY&feature=youtu.be](https://www.youtube.com/watch?v=kC1Wm_bRxuY&feature=youtu.be)

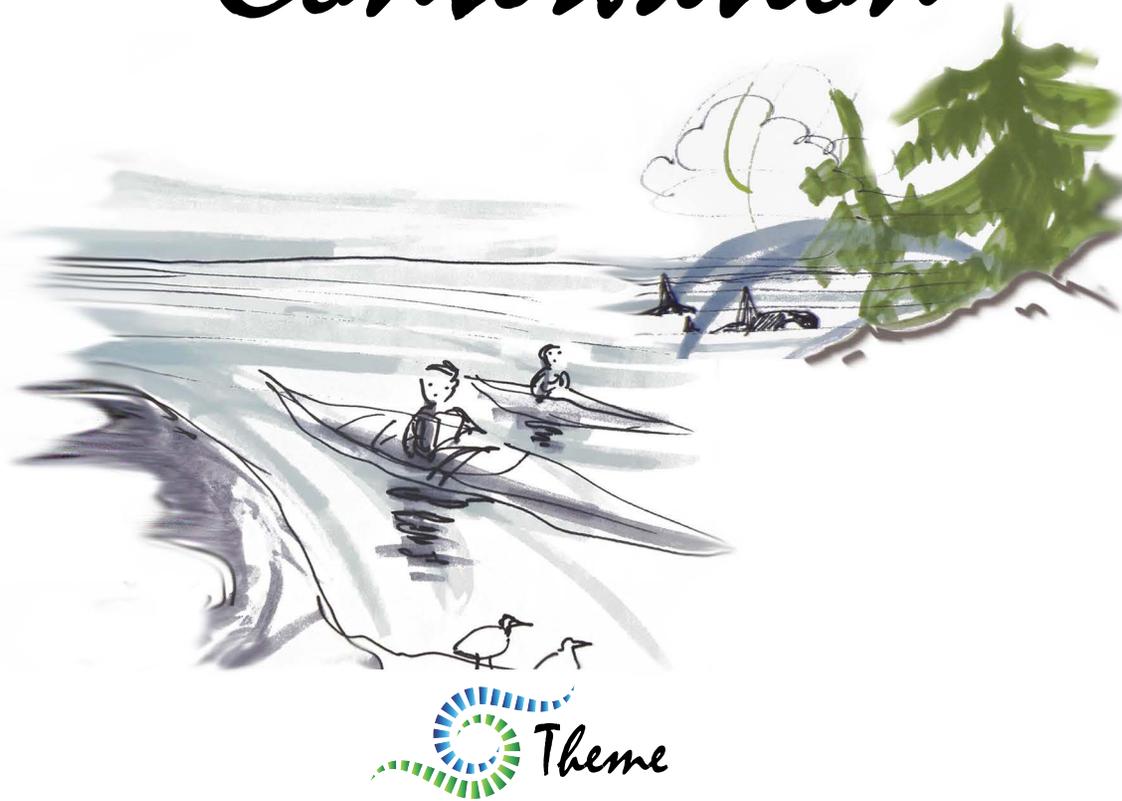
### ***Keywords***

Sector Keywords: Science or Nature Center – Community Organizations – Nonformal Education – Faith Organizations – Civic Action

Approach Keywords: Innovation and Social Innovation – Culture Creation – Consultative – Communication Models – Creating a Model – Building Community Networks – Uses or Makes Film/Video/Media

Additional Keywords: Psychology of Climate Change Communication – Cultural Cognition – Cognitive Framing – In- Groups – Opinion Leadership – Self-Efficacy

# Conservation



## Conservation and Natural Resources Management

*Community Climate Change Fellow - Elizabeth Pickett*

The fields of conservation and natural resource management are heavily impacted by climate change. Strategies for resource management and protection are experiencing dramatic shifts due to climate change-caused variations in environmental conditions. These variations include notable changes to spawning/breeding/pupping seasons and available habitat, water quality and availability, distribution

of species growth patterns (species moving in and out of jurisdictional boundaries), times and locations that an area is safe for public use, hunting, fishing, and recreation, and more. To adapt to this, policies, practices, and priorities are having to be responsive to existing and anticipated changes. Whether in the management of forestry operations, public trails, agricultural operations, recreational areas, parks and protected areas,

conservation projects, or any other landscape or watershed feature and its connected plant, animal, and human interactions, climate change is becoming an important consideration in conservation and natural resource management planning, practices, outreach efforts, and ongoing practitioner education.

To this end, natural resource practitioners are in the challenging position of needing to be both a *student* of climate change in order to consider its impacts on the very landscape, waters, habitats, or species they are stewarding, and *teacher* of climate change, in order to provide information and education to the people with whom they work to coordinate adaptive strategies for their professional goals, activities, and mandates.

## Related Content

### Stories

- Bird Observatory Project
- CCEd in Aboriginal Communities
- Dark Sky Festival
- Desert Oasis Garden
- Digital Travel in Canada
- Experiential Marine Science
- LA Neighborhoods
- Malama Kai Youth Action
- Marine Mammal Volunteers
- Mass Audubon Initiatives
- Youth Climate Job Training

### Vignettes

- Storytelling
- Youth Action

## Resources

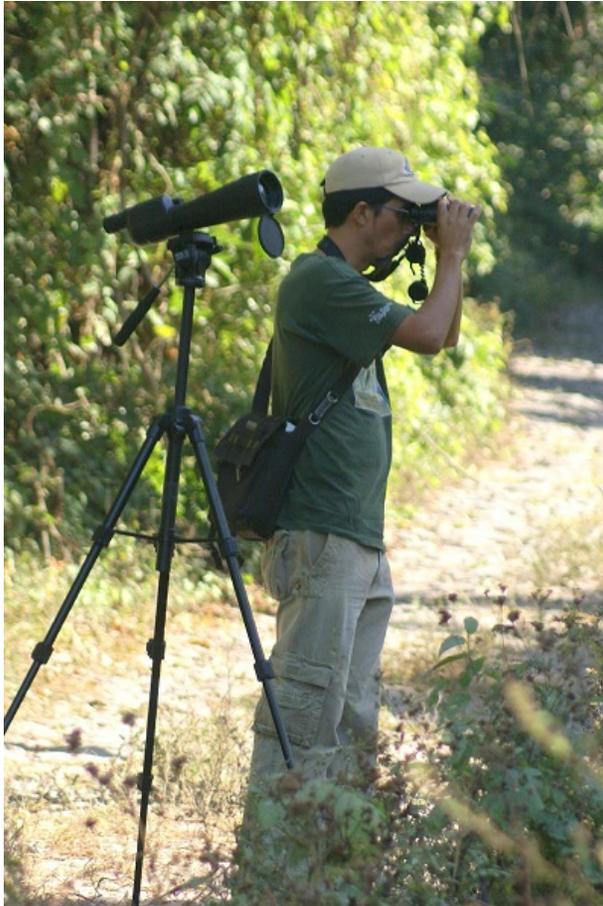
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- Climate Smart Agriculture [www.climatesmartagriculture.org/en](http://www.climatesmartagriculture.org/en)
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**Community-Based Bird Conservation  
Model and Climate Change Curriculum  
CCC Fellow – Luis Morales**

**Background**

Luis studied Marine Biology at Universidad del Mar in Puerto Angel, Oaxaca (Mexico) with a major in coral-reef ecology. During his bachelor studies he was awarded by Cornell University with a Tropical Marine Ecology fellowship in the year 2000. More recently (2012) he was awarded by the US Forest Service's international program Wings Across the Americas for a four-month bird-banding internship at the Klamath Bird



Observatory in southern Oregon. His work experience has been oriented towards environmental education and conservation.

Luis has worked in multiple sectors including governmental, private, academic, and social initiatives. Luis is currently the Executive Director of the San Pancho Bird Observatory (SPBO), a conservation oriented non-profit organization based in San Francisco, Nayarit, Mexico. As part of his job, Luis helps develop SPBO's programs as well as leads birding tours for national and international tourists.

As a result of Luis' work in the Banderas Bay region, the Birding San Pancho Network has established long-term partnerships with dozens of communities, hundreds of people from different businesses, non-profit organizations, government agencies, and stakeholders both locally and internationally.

Luis is an active member of the Partners in Flight Regional Conservation Business Plan for Western Mexico, which allows for collaboration between multiple organizations to develop integrated strategies to conserve priority habitats and species.

**Project Description**

As part of the CCC fellowship program I developed a two-stage project: 1) Integrated climate change into the curriculum of an existing program developed with a grant provided by the Rotary International Foundation called "Building Capacity for Bird Conservation in Western Mexico"; and 2) The much more challenging project of starting to develop a community-based bird conservation model. It includes the creation of infrastructure to foster ecotourism as well as the formation of international collaborations for common issues around EE, climate change, and sustainability.

As a result of stage one, over 100 participants ages 13-47 (target group) at seven coastal communities during eight months (September 2014- March 2015) received training on bird identification, nature guiding, and monitoring techniques.

Climate change was naturally addressed and participants in general cared about the consequences of climate change on birds and other wildlife and assimilated climate change (global warming) as a common concern. Climate change was relatively easy to relate to changes in weather patterns and increasingly damaging tropical storms over the last years.

Using birds as indicators of changes in the environment was a common exercise that allowed participants to develop a stronger sense of connection with their natural environment and developing a deeper appreciation in scope of the value of wild birds and nature for healthier communities, economy, and ecosystems.

The second stage relates organically and complements the first as we started to develop infrastructure for a community-based bird habitat conservation model, which benefits the local community of San Francisco (San Pancho), Nayarit Mexico. The infrastructure for ecotourism and conservation developed and maintained by SPBO with the help of the local community include:

1) Jardín Comunitario Lado Silvestre (Wildside Community Garden): a garden created and sustained by the neighborhood of Agua Escondida in San Pancho. The 400 m<sup>2</sup> (about 4000 square feet) garden includes:

- Picnic tables for ecotourism and community use
- Food garden with fruit trees and other seasonal edibles
- A plant nursery for habitat restoration plants and hummingbird-friendly shrubs
- Bird feeders and baths.

Local community women organized themselves and gather in the garden to make crafts inspired in the local bird fauna. Some of them do it for fun or therapy, others for an extra income to

their families. Their bird-art is offered to birders who visit the lodge and community garden, at farmers' markets and other community events.

With their purchase, visitors support the local economy also helping to close the cycle of conservation since a portion of the sales revenue goes directly into conservation leases to protect land (from bird poaching and wildlife extraction). This purchase helps local people care more about birds, birders, and habitat, and their community's well-being as they feel motivated by economic incentives, empowered for a more active and "greener" community and hopeful of maintaining and expanding our conservation outcomes for the well-being of the current generations and the ones to come.

2) Habitat Natural Lodge: a three-bedroom guesthouse next to the community garden. This private business partnership with SPBO is supporting our conservation strategy while catering for a growing bird-watching market and developing new services and products oriented to community-sustainability.



After a challenging negotiation with the owners and tons of community effort, the house (which was abandoned for several years) was turned into a lodge to host birders and SPBO collaborators.

The place also hosts a gallery and info center for SPBO which proudly displays the bird related arts and crafts made by locals and information on local wildlife and nature activities. Natural Habitat Lodge is an example of how a business can also benefit an NGO and support conservation.

3) Sendero Capomo: Adjacent to the community garden and lodge SPBO maintains a three mile nature-trail system that is currently protecting 35 acres (14 hectares) of tropical forest. This effort is possible thanks to the support of the local community and visitors through a conservation easement with the owners of three parcels.

Some of the conservation outcomes of this community-based conservation effort are:

- (i) Allowing the restoration and growth of 35 acres of tropical forest.
- (ii) Successfully preventing the illegal poaching of native birds and wildlife extraction.
- (iii) Strengthening the local community by providing in situ employment opportunities for local youth as nature guides (beneficiaries from SPBO's Capacity-building program).
- (iv) Increasing ecotourism opportunities in the area, serving as a demonstration site for other communities to adapt the model to their own natural sites.
- (v) Serving as a research station and monitoring site for studies on bird migration and connectivity.
- (vi) Offering the opportunity for locals and visitors to approach and learn nature.



### ***Helpful Resources and Community Partners***

The Rotary Foundation and Rotary District 5110 of Oregon and northern California awarded a Humanitarian Grant of \$12,000 to fund an international capacity building project that was successfully completed in partnership with San Pancho Bird Observatory in Nayarit Mexico and the Klamath Bird Observatory based in Ashland (Oregon, USA). The Rotary Club of Ashland, collaborating with the Jaltemba Bay Rotary Club of Mexico and supported by Shasta Valley, Bend High Desert, and Cottage Grove Rotary Clubs of District 5110, initially promoted this project and provided the funding required to receive matching awards from Rotary District 5110 and The Rotary Foundation.

This grant allowed the implementation of a project focused on bird conservation and sustainable community development that reached over 100 participants (ages 12-47) at the community centers of seven coastal communities of the southern Nayarit coast: PEACE at Punta de Mita, La Casa Clu at San Ignacio, Entreamigos at San Pancho, Casa de los Niños at Lo de Marcos, Valor para Soñar at Villa Morelos, Amigos de Jaltemba at La Peñita, and Cambiando Vidas at Chacala, Nayarit.

### ***Successes and Best Practices***

Some of the outstanding participants were provided with equipment and they have been able to start guiding birding trips at their local communities as well as continuing conservation efforts at their local communities.

Some communities have started to develop informative signs for their existing nature trails and some have expressed their interest in creating new natural protected areas with nature trails in them for ecotourism use envisioning a long-term conservation effort.

### ***Lessons Learned***

The process of developing international grants like this one is a very complex and fascinating process that requires a lot of patience in dealing with people with a wide variety of backgrounds, multiple unexpected situations, accounting for expenses that are not or could not be included within the project, and often adapting the project to many changing scenarios from the conditions and circumstances of the communities or other administrative decisions from the multiple local and international partner organizations outside of our control. Adaptation and developing a timely communication skillset was critical to the success and completion of the project.

The Rotary International Foundation (RIF) funded this project. RIF has a very effective and powerful matching system that

enables local Rotary Clubs and their associated individuals and organizations to have a huge positive impact in communities worldwide and its sustainability principles should be taken into consideration when applying for grants regarding community development grants. I widely recommend organizations or individuals to approach your local Rotary Club as this can be a great way to connect with members at other clubs and have the opportunity to participate in this type of collaborative efforts. It is important that during the application process or before, organizations or individuals searching for funds through RIF can count with other matching sources that can ensure that the project leaders are being paid for their work since often Rotary grants have some restrictions and opportunities for funding of salaries are limited and there is a considerable amount of reporting involved.

### ***Value to the Community***

Since most families in the region have an economy that depends on tourism and there is a general need of increasing and diversifying their sources of revenue, SPBO's educational and community development approach really helped to allow locals to participate at the capacity-building workshops. This led to an increased awareness regarding local environmental issues as well as the appreciation of locals and their unique diversity of bird and habitats.

Developing a hands-on community-based conservation action plan by which people can be part of the change they want to see in their communities is empowering, it gives people hope for a better life and creates the perfect scenario to assimilate important issues like climate change adaptation and community resilience.

Thanks to each and all of the CCC fellows, to the EECapacity-NAAEE team for such an amazing support and inspiration!

**Project Link**

[www.birdingsanpancho.net](http://www.birdingsanpancho.net)

**Keywords**

Sector Keywords: Science or Nature Center –  
Community Organizations – Nonformal Education  
Approach Keywords: Youth Investment/Empowerment –  
Nature Experience or Immersion – Building Community  
Networks – Watersheds – Resource Management  
Additional Keywords: Bird Conservation – Bird Observatory  
– Migratory Connectivity – Ecotourism – Scientific  
Monitoring – Community-Based Conservation Model





## The Power of the Night in Climate Change Action: The Dark Sky Festival in the Sequoia National Park

*CCC Fellow – Tara Hostnik*

### **Background**

Tara Hostnik graduated from Saint Michael's College in 2007 with a degree in Biology and has worked for ten years as an outdoor educator and wilderness guide. Since 2011 she has managed the Sequoia Field Institute in Sequoia and Kings Canyon National Parks and is responsible for the expansion, planning and evaluation of various educational and outdoor experiences including astronomy, living history, night hikes and birding. As a certified yoga instructor and experienced backpacker, Tara has also guided several multi-day trips in the Sierra wilderness and teaches yoga at the local lodge. During the past three years she has designed and executed the largest event in Sequoia and Kings Canyon, the Dark Sky Festival, which provides a diversity of experiences for park visitors over a three-day event. From telescope viewings, music under the stars, science talks, water rockets and other astronomy-themed programs, the Festival aims to both celebrate the night and teach its participants about the preservation of dark skies.

### **Project Description**

Sequoia and Kings Canyon National Parks are home to the largest trees in the world, the Giant Sequoias. They also contain the tallest peak in the contiguous United States, 838,000 acres of designated wilderness, two nationally recognized Wild and Scenic rivers, one of the deepest canyons in North America, over 800 miles of hiking trails, over 275 caves, and wildlife such as bear, lions and condors. Another important feature is a spectacular night sky far from city lights and dark enough to see the Milky Way, Andromeda Galaxy and thousands of stars



during clear, moon-less nights.

The Dark Sky Festival project is an attempt to capture the immense beauty of the night sky in Sequoia and Kings Canyon National Parks. The Sequoia Parks Conservancy, the major cooperating association for these National Parks, is incredibly active in interpretation, education and promoting stewardship. In

2014, the Festival attracted over 2,000 experienced astronomers, Park employees, local and foreign visitors, astronomical societies, science educators and more. The first ever Festival included activities such as water rocket launches, City Dark film showings, ranger walks and talks, nightscape photography workshops and artwork, kids' activities, junior ranger programs, astronaut and NASA speakers such as Dr. Story Musgrave, demonstrations by local experts, and even a Saturday evening Star Party with telescopes.

Increasing climate change literacy in the Central Valley of California is another aspect of this Festival. Shaped like a bowl, pollutants such as ozone, carbon monoxide, and particulate matter get trapped, leading to the worst air polluted cities in our

nation. As a result, adjacent Sequoia and Kings Canyon National Park have the worst air quality of any other National Park! The Central Valley also exemplifies most of the urban and suburban areas in our nation, with ever increasing light pollution affecting our health, the wildlife, and our ability to enjoy the stars and other celestial objects.



The Dark Sky Festival engages the public and enthusiasts in the topic of astronomy and uses this exciting platform to increase awareness of the importance of healthy skies, from the quality of the air to the darkness of the night. Hopefully, attendees of past and future Festivals will learn how to protect skies in their communities and pledge action to help achieve a healthier atmosphere.

We hope to progress the Festival each year to better achieve our goals and look for new ways to engage

participants in the topic of astronomy. The National Park Service will be celebrating its Centennial in 2016 and one of the goals of interpretation in the Parks is to experiment with and use 21st century and new techniques to connect the public to their Parks. The Dark Sky Festival is certainly attempting to match this Park Service goal. The 2016 dates are set for August 5-7 and will

highlight astronaut Jose Hernandez, a star party with the Kern Astronomical Society, and various speakers from JPL and other educational institutions.

### ***Helpful Resources and Community Partners***

My major community partner is the Sequoia Parks Conservancy, also my employer. Each national park has an association whose primary function is to sell educational materials such as books to park visitors. Many associations also perform education programs to the public. As a Manager in our Education Department, I was looking for new ways to teach the public about the value of night sky preservation and was inspired by the work of the Astronomical Society of the Pacific, that teaches local educators how to interpret astronomy to their audience. Kevin Poe, a night sky tour guide and teacher for ASP, helped inspire the idea behind the Dark Sky Festival by his own experience organizing a similar event in Bryce Canyon National Park. It was there that I learned how national parks all across our country host astronomy festivals. Kevin Poe was a speaker at our 2015 Festival and Suzie Gurton of ASP spoke at

both the 2014 and 2015 festivals.

Another valuable resources for this event was getting to know the local astronomical associations such as Kern Astronomical Society. Many clubs are more than excited to share their astronomy equipment and knowledge with the general public and Festivals are a great way for them to attract new members. Funding for this project primarily came from the Sequoia Parks Conservancy although many volunteers for the Festival, such as speakers, donated their travel and time to the Festival. In 2015, Celestron Telescopes donated two telescopes and staff for our event. They plan on returning in 2016.

NASA has been another valuable partner. You can apply for an astronaut and/or education staff to attend your special event and we have used this option during both Festivals so far. Local educational institutions such as JPL, planetariums, college campuses, and even high schools have also been contacted to make this event successful.



The National Park Service (NPS) is an essential partner. We collaborate with NPS on this and many other projects. Making sure we are maintaining a positive relationship with NPS is valuable to us and helps our event succeed as many rangers are out giving programs and helping to advertise and organize the Festival.

### ***Successes and Best Practices***

Maintaining positive relationships with volunteers and partners is of utmost importance. Our Festival could not run without volunteers and making sure they feel respected, useful, and appreciated is necessary. We give each volunteer a gift bag filled with goodies and a t-shirt for their time, a thank you card after the event, and recognition on our website. For astronomical clubs such as KAS, I attend their meetings and try to be active in their group to maintain good communication and messaging. Prioritizing positive, clear and frequent communication with our primary partner, the NPS is also important. We allow them to be part of the planning process to ensure this is a collaborative event and to allow for unexpected barriers to be presented (such as space, staff, equipment, and resource availability).

One difficult surprise was how some of the NPS management staff felt they were left out of the planning process even though it was of value for us to make this a collaborative event. It was our understanding that NPS was being asked to work with us and we were unaware some members of their staff felt the way they did. To account for this, we are making sure they feel ownership of this even throughout the planning process.

We have had some great feedback over the years from not only visitors but also the speakers. We know this since many returned or plan on returning for future Dark Sky Festivals. This event has also allowed staff of the Sequoia Parks Conservancy from other departments to be more involved with educational

programming, giving our organization more opportunities to work together as a team!

### ***Lessons Learned***

Participating in the Community Climate Change Fellows project helped me recognize the importance of setting goals, establishing funding projections, recognizing target audiences, and implementing effective communication strategies. Networking with other project leaders helped me think creatively, feel supported, and offered new insights in how to lead a major project like this.

### ***Value to the Community***

Organizing a special event or Festival that targets some specific preservation goal (not necessarily Dark Skies), but perhaps beach conservation, celebrating a local park, a wild animal (like wolves), or outdoor activity (such as climbing or yoga) is very valuable to a community. It could promote a healthy lifestyle, highlight and advertise the use of a place (like a national, state or local park), and allow groups within a community to collaborate or network. For example, the Kern Astronomical Society can now collaborate with Astronomical Society of the Pacific for other projects, etc. This kind of event is an attractive way to teach the general public about a conservation subject. For example, the general public might not solely want to attend a lecture on night sky preservation, but they may be more excited to hear an astronaut's who touches on this subject briefly in his presentation. People could also be inspired by listening to the symphony perform under the night sky where stars are visible and realize how awesome darkness is! Sometimes, I think we need to put a fun twist on the things we want to teach people about. We need to draw in the crowd first with something fun, teach them second, and leave them inspired towards CHANGE in their communities third.



### **Resource Links**

[climate.nasa.gov](http://climate.nasa.gov)  
[noaa.gov/climate](http://noaa.gov/climate)  
<http://www.afguonline.org/>

### **Project Links**

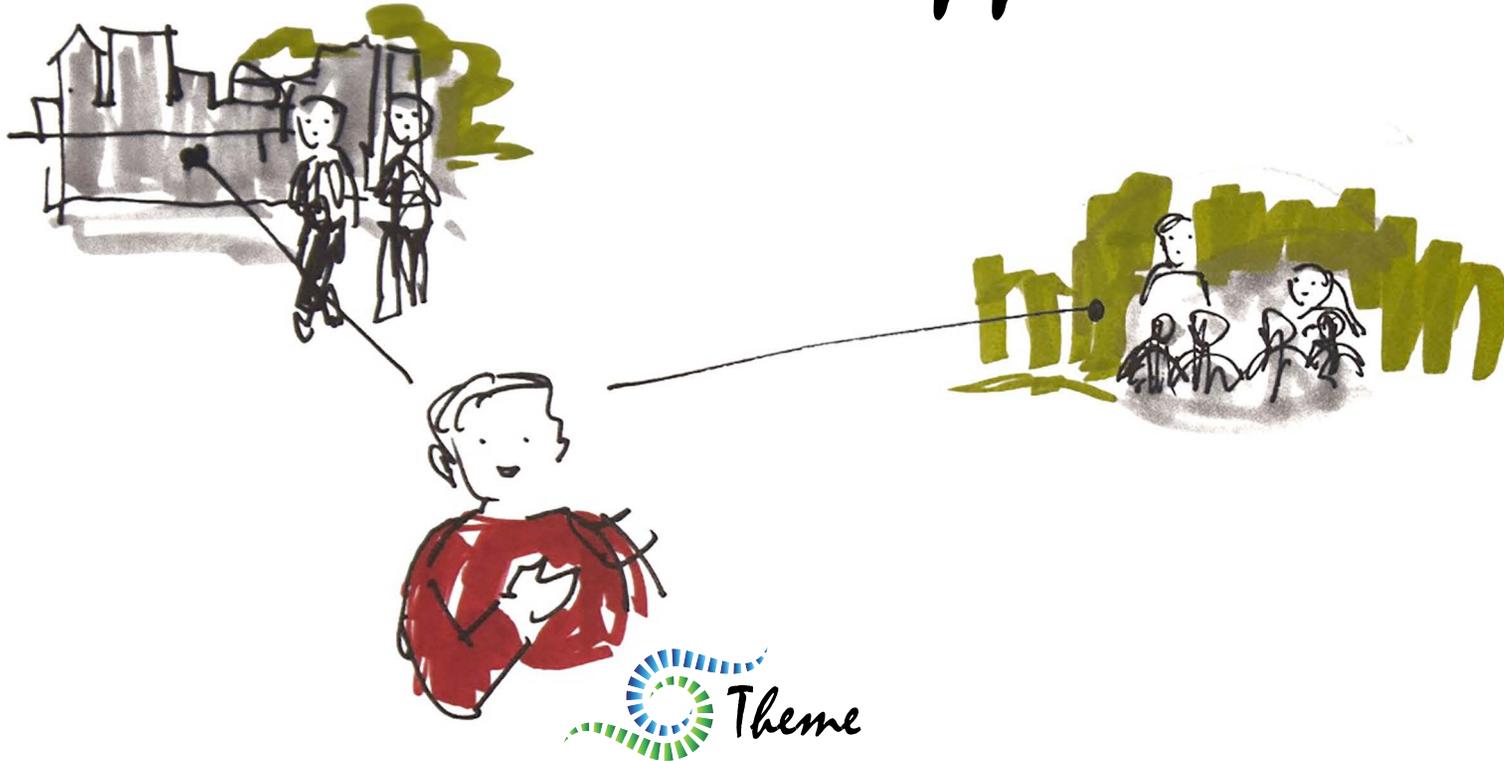
Sequoia Parks Conservancy:  
<http://www.sequoiaparksconservancy.org/>  
Dark Sky Festival page:  
<http://www.exploresequoiakingscanyon.com/>  
Sequoia National Park: [www.nps.gov/seki](http://www.nps.gov/seki)

Kern Astronomical Society: [www.kernastro.org](http://www.kernastro.org)  
Astronomical Society of the Pacific: [www.astrosociety.org](http://www.astrosociety.org)

### **Keywords**

Sector Keywords: Nonformal Education – Parks  
Approach Keywords: Nature Experience or Immersion  
– Building Community Networks – Resource  
Management Additional Keywords: Astronomy –  
Festival or Event Organization

# Consultative Approaches



## Consultative Approaches

*Community Climate Change Fellow - Marna Hauk*

Another strategy in the community climate change mosaic of approaches is consultative engagement. Consultants are able to concentrate practice and expertise and offer coaching and guidance across multiple organizations. Consultant approaches offer the benefit of a fresh perspective, new to all players in a given organization or context. At time having a consultant's insight,

perceived as a neutral party or expert, can dissolve internal barriers or political friction for change adoption. Consultants can provide a seasoned perspective, informed by a depth of knowledge in the field. Organizations, in effect, can leverage consulting to instantly access a deep bench of expertise, which can be a worthwhile investment with a complex

topic such as climate change. Consultants can also offer limited duration project leadership for pilots and planning. Consultants cross-pollinate vibrant practices across organizations, rapidly proliferating emerging innovations and success strategies. Due to this powerful web-working point of view across organizations and community initiative, consultants can also effectively spark and bridge cross-organizational coalitions.

Another consultative approach in the community climate change action mosaic is the opportunity to serve as an internal consultant. As a consultant inside of an organization, organizers and educators can catalyze a center of excellence and inject a depth of attention for community climate change concerns into existing organizations, including those that might not traditionally see themselves as climate change actors. Passionate internal consultants can sustain attention inside an organization, building networks within communities

## Related Content

### *Stories*

- Bird Observatory Project
- Climate Courage
- Climate Resilient Food Systems
- Climate Stories Project
- Inuit Collaborations
- LA Neighborhoods
- Women's Ecosocial Incubator

### *Vignettes*

- Fundraising
- Mutual Learning
- Networking
- Professional Capacities
- Storytelling

### *Articles*

- Open Space Technology
- Research on CC Educators
- Surfacing Unheard Voices



*Image from Climate Stories Project*

## Resources

- Beautiful Solutions for “This Changes Everything” - Inspired by Naomi Klein’s book - curated climate change related community solutions and strategies site: <https://solutions.thischangeeverything.org/>
- Maine Adaptation Toolkit for Consultants - <http://maine.gov/dep/sustainability/climate/adaptation-toolkit/consultant.html>
- *Tools of Engagement: A Toolkit for Engaging People in Conservation* (Audubon, 2011) from <http://web4.audubon.org/educate/toolkit/toolkit.php>
- Ayers, Forsyth, Community Based Adaptation to Climate Change. Retrieved from [http://eprints.lse.ac.uk/24188/1/Ayers\\_Forsyth\\_Community\\_based\\_adaptation\\_to\\_climate\\_change\\_2009.pdf](http://eprints.lse.ac.uk/24188/1/Ayers_Forsyth_Community_based_adaptation_to_climate_change_2009.pdf)
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Keya Chatterjee, Climate Action Network National Conservation Training Center, Summer 2014



## Catalyzing Climate-Responsive Food Systems

*CCC Fellow – Jacob Park*

### **Background**

Jacob Park is Professor of Strategy, Innovation, and Entrepreneurship at Green Mountain College in Vermont (USA) specializing in social and environmental innovation, entrepreneurship, and management with a special expertise/interest in emerging economies in Asia-Pacific, Africa, and Caribbean regions.



Recipient of the 2015 U.S. Environmental Protection Agency (Region 1) Environmental Merit Award for his climate change science teaching and educational engagement activities, Jacob

serves as the UNEP Global Environment Outlook 6 Regional Coordinating Lead Author (North America), Lead Author for the United Nations Millennium Ecosystem Assessment Initiative, Expert Reviewer for the Intergovernmental Panel on Climate Change's Fourth Assessment Report, and the Renewable Energy and Adaptation to Climate Technologies Investment Committee member of Africa Enterprise Challenge Fund, Nairobi, Kenya-based \$150 million sustainable investment fund.

Jacob works primarily as an academic scholar who specializes in business-society and global environmental/climate change governance issues. Jacob also has extensive experience working collaboratively/in partnership with business/private sector, civil society/NGO groups, and governmental (including UN/international organizations).

### **Project Description and Insights**

As an academic scholar and international policy analyst who have been studying climate change as a policy and business management concern for the past twenty years, I have noticed with growing alarm increasing evidence for climate change-induced agricultural and food system fragility in the U.S. (particularly in states like California) and global context.

As a CCC project fellow, I decided to try to better understand and to raise awareness of the relationship between climate change and agriculture/food system among farmers and other community-based stakeholders. My research/writing on the relationship between climate change and agriculture/food system was an important part of my work as the Coordinating Lead Author (North America) for the UN Environment Program Global Environment Outlook project (<http://www.unep.org/geo>).

Some of key insights and conclusions from my CCC fellowship/research include:

FIRST, despite a wide range of climate change and agriculture/food system research efforts that is currently underway in the U.S., there is still limited scientific research being done on the potential impacts of climate-induced biotic stressors and extreme events within the context of bioregions (i.e. not just at the national or state level).

SECOND, the scientific literature assessing the impact of climate change on agriculture largely focuses on relatively simple assessments of the impact of changing temperature, precipitation patterns, and CO2 elevation on crop yield, with inadequate attention to the consequences of extreme weather events and limited evaluation of adaptive responses by farmers and other agriculture/food producers.

This is particularly the case of small-scale family-owning farming enterprises which are more economically vulnerable to climate change due to tight profit margins that hinder their ability to respond to risk

THIRD, there is a critical need in the U.S. to improve its understanding of how food production and distribution can be more effectively governed so that economically vulnerable farmers and the food insecure communities do not bear the disproportionate burden of the climate change-related risks to agricultural and food supply chains. Because agricultural and food products are increasingly produced and traded in a global market that has been traditionally reliant on cheap transportation and labor as well as predictable weather patterns, extreme weather events and other associated climate change risks might intensify the vulnerabilities of the U.S. transportation infrastructure.



### ***Helpful Resources and Community Partners***

Although the focus of my engagement activities initially targeted farmers and food system stakeholders in Vermont and in the New England region, for a number of reasons (some expected and some unexpected), my CCC fellowship/project lead to a close partnership and engagement work with Kingston, Jamaica-based Jamaica Rural Economy and Ecosystems Adapting to Climate Change (<https://www.usaid.gov/documents/1862/jamaica-reeach>) which works to advance climate smart agricultural practices with farmers/small scale food producers in collaboration with the U.S. Agency for International Development.

### ***Project Link***

For my overall climate change education efforts, including my work on behalf of the CCC fellowship/project, I received the 2015 Environmental Protection Agency (Region 1)

Environmental Merit Award, located at

<https://www.epa.gov/environmental-merit-awards-new-england/2015-environmental-merit-award-recipients#Individual>

### ***Keywords***

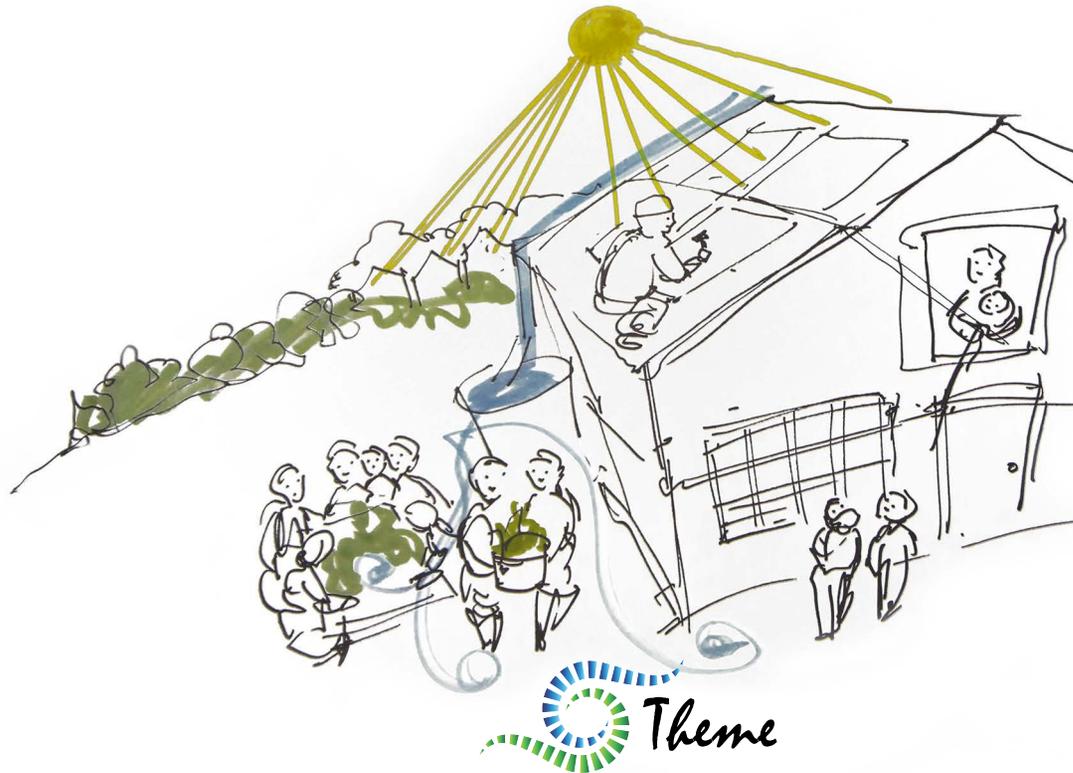
Sector Keywords: Community Organizations – International Organizations – UN Environmental Programme

Approach Keywords: Innovation and Social Innovation – Train the Trainer – Creating a Model – Building Community Networks – Resource Management



*Photo by Karen Temple-Beamish*

# Climate Justice



## Environmental Justice and Climate Justice

*Community Climate Change Fellows - Marna Hauk and Michelle Eckman*

The movement for environmental justice attends to the intersections of structural discrimination and inequity across dimensions of race, class, culture, and public health. It relates to justice in access to clean water, air, and resources and the chronic patterns of increased risk of toxic exposure that communities of color and communities living in poverty face.

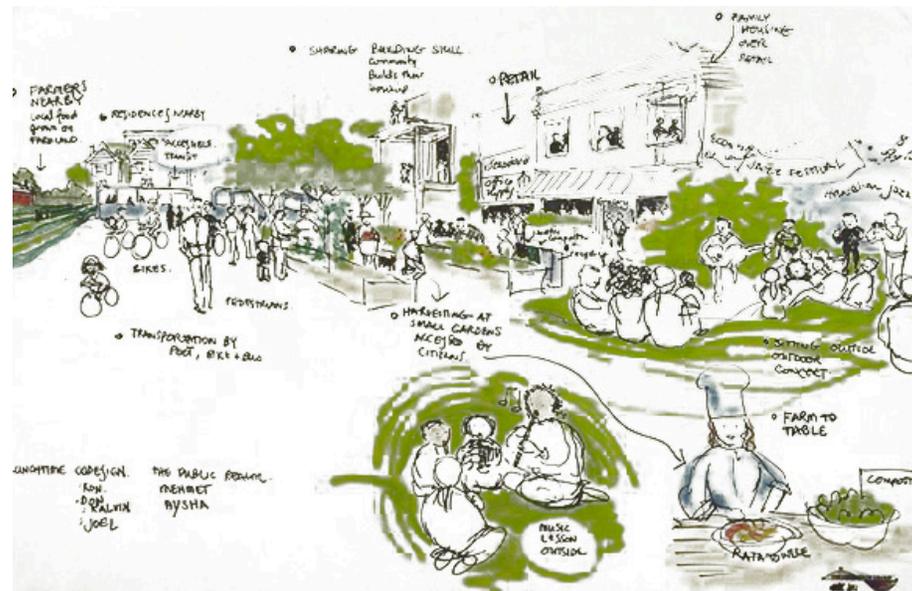
Hot spots for environmental justice have included education and action against urban incineration in communities of color, creative student protests against polluted air near schools, reclamation of blighted urban lands as community gardens, and the structural dimensions of the diabetes crisis. Environmental justice educators use place-based “toxic tours” and multi-speaker site visits to bring the issues

of environmental justice into focus. Taylor (2000) argued that environmental justice was more effective than environmentalism or environmental education at speaking to issues of concern for communities of color and galvanizing action. Concepts that relate to environmental justice and climate change include: just sustainability, environmental health, and climate justice.

Climate justice in particular highlights how the populations who are most at risk for climate change effects are often the ones who have used the least resources to create the crises. For example, Hunts Point in the South Bronx, NY is home to one of the largest landfills in the U.S., exposing low-income residents to air-borne toxins as a result of the emissions from the vehicles depositing thousands of tons of trash on a daily basis. Yet the majority of the waste that has been and continues to be dumped

at this waste facility was not generated by the local residents, it came from residents throughout the city. A 2009 NYU (Restrepo and Zimmerman, 2009) study cites that the rate of death from asthma is approximately 3 times higher and for hospitalization, 5 times higher, in the Bronx compared to the national average.

Investment of time, money and attention in the most vulnerable communities is arguably the more effective intervention. Climate justice brings clarity to the structural dimensions of climate change, and it argues that community-based action can be incredibly effective at taking action on the environmental justice dimensions of climate change. Education for just sustainability arises at the intersection of ecology, environment, and equity (Agyeman, Bullard, and Evans, 2003; Crouch and Agyeman, 2004). Climate justice educational approaches range across a spectrum of engagement (Hauk, 2015).



## Related Content

### *Stories*

- Bird Observatory Project
- Bringing it Home Kentucky
- CCEd in Aboriginal Communities
- Climate Resilient Food Systems
- Climate Stories Project
- Community Food Networks
- Faith in Place in Chicago
- Global Kids Organizing
- Inuit Collaborations
- Malam Kai Youth Action
- Open Lands CC Gardens
- Public School CC Curriculum
- Women's Ecosocial Incubator
- Youth Climate Job Training

### *Vignettes*

- Preventing Burnout

### *Articles*

- Surfacing Unheard Voices



*Youth activists speaking for  
Human Rights Activists Project (HRAP)  
Photo by Jatna Ramirez*

## Resources

- *A People's Curriculum for the Earth: Teaching Climate Change and the Environmental Crisis* (2014) - Bigelow & Swinehart, Rethinking Schools  
<http://www.rethinkingschools.org/proddetails.asp?ID=9780942961577>
- Climate Justice Education Materials (2012) - Martinez, Brown University Master's Project -  
<https://sites.google.com/a/brown.edu/ejeheducation/environmental-justice-educational-materials/climate-justice-education-materials>
- *Everybody's Movement: Environmental Justice and Climate Change* - Environmental Support Center (2009)  
<http://www.racialequitytools.org/resourcefiles/ESCeverybodysmovement.pdf>
- How to Construct an Environmental Justice Lesson Plan - Cabrales, Chang, Fried, & Mukti (2014) -  
<http://pitweb.pitzer.edu/redfordconservancy/wp-content/uploads/sites/6/2015/01/EJ-Lesson-Plan-web.pdf>
- NAACP's Teaching Intersectionality and Environmental Justice in Our Classrooms & Environmental Justice Classroom Resource Guide  
<http://action.naacp.org/page/-/Climate/Teaching%20Intersectionality%20and%20Environmental%20Justice%20in%20Our%20Classrooms%20FINAL.pdf>
- National Institute of Environmental Health Sciences - Educator Resources  
<http://www.niehs.nih.gov/health/scied/teachers/>
- Principles of Environmental Justice:  
<http://www.ejnet.org/ej/principles.html>
- Climate Justice Education Spectrum of Inclusive Resilience (Hauk, 2015): Poster (<http://tinyurl.com/cj-ed-spectrum-15>) and Handout (<http://tinyurl.com/cj-ed-spectrum-handout-15>) as PDFs
- Toxic Tour Example, LA Progressive Article, retrieved from <https://www.laprogressive.com/toxic-tour/>

- See also the Theme of Public Engagement and Civic Ecology

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## Global Kids Organizing for Climate Justice

*CCC Fellow – Jatna Ramierez*

### **Background**

Jatna Ramirez is the Senior Trainer/Human Rights Specialist at Global Kids, a nonprofit educational and youth development organization working to empower youth from underserved communities to become leaders in their local and global communities. Global Kids operates in-school and out-of-school time programs in Washington, D.C. and New York City, where Jatna lives and works.

Jatna migrated to the United State from the Dominican Republic when she was 12 years-old. She has been passionate about social justice and human rights since she was very young. In addition to her work in education and youth development, she has experience in community organizing, which is incorporated in her work at Global Kids.

Jatna was relatively new to the field of climate change education when she joined the fellowship, and attests that she learned much through the project. The fellowship empowered her to mobilize her passion and eagerness to be an effective leader and support her community of students on their journey to become climate activists.

### **Project Description**

At Global Kids, I co-direct the Human Rights Activist Project Program (HRAP). This program serves as a platform for New York City high school students to take action on issues affecting their local and global community. For the past five years, our students have identified climate change as the most pressing

issue of our time and have developed various climate justice campaigns. For my fellowship project, I am supporting my students' climate change education campaign. This is a student led campaign that calls on NYC to mandate climate change education in grades K-12. Having worked on climate change with high school students for a few years, we realized that most students did not have a clear understanding of what climate change is, how it is impacting peoples' lives and the solutions that can be implemented to tackle it. Once they learn how climate change is a human rights issue they became passionate about it. Our students also realized that their peers, who were not part of HRAP, did not know enough about climate change to take individual or collective action.



### **Helpful Resources and Community Partners**

We have worked and partnered with the NYC Department of Education Sustainability Department, which connects various organizations throughout the city. In addition to that, the timing of my project coincided with the People's Climate March. The People's Climate March required rigorous community organizing and led to the formation of a strong network of hundreds of local

and national organizations working to combat climate change and environmental injustice. We were able to join this network and movement that is still present in NYC and continues to push the city to become an environmental sustainable city.

### ***Successes and Best Practices***

One of the biggest successes of the project has been having a strong cohort and core leaders who have continued to work on the climate education campaign. These are high school



students who are conscious about our environment and climate and who make personal and collective decisions with the future our environment at heart. They are educating and inspiring their friends and family to do the same. They are going off to college to study environmental education, political science and international affairs. As an NAAEE project, I can't think of a better outcome than having educated and empowering youth from underserved communities to be sustainability leaders.

### ***Lessons Learned***

As part of my project, I conducted an intensive climate change and environmental justice intensive summer program for 16 high school students. In retrospect, I wish we had had the capacity to extend this opportunity to a larger group of students. Out of those 16 students, eight remained engaged and very active in the program throughout the rest of the school year. I think that if we had a bigger group, we also would've had more students involve in our school-year program.

### ***Value to the Community***

There are tons of reasons to do a community climate change program. This experience helps for personal growth, it helps you connect to your community and help your community. Although climate change is a global problem, the actions that we take at a local level matter and building community matters. Our communities hold the power to make changes that will move us towards a more sustainable future.

### ***Additional Climate Change Action & Education Resources***

- 350.org
- <http://www.sustainaware.net/campaign>
- Film on the fashion industry and injustice: The True Cost
- <http://hrap.globalkids.org>
- <https://www.facebook.com/gkhrap/>

### ***Project Link***

<http://globalkids.org>

### ***Keywords***

Sector Keywords: K-12 Schools – After-School Programs – Nonformal Education – Civic Action  
Approach Keywords: Youth Investment/Empowerment – Environmental Justice – Public Education Campaigns

# Gardens and Greening



## Gardens and Greening: Sites of Community Climate Change Education and Action

*Community Climate Change Fellows - Elvia Rodriguez Ochoa and Marna Hawk*

“Learning gardens generate a ...whole systems solution...connecting learning with eating, growing with harvesting, caring with consuming...[to form a] nexus of interconnectedness.” – Williams & Brown, 2012, p. 139  
Gardening is one of the most fun and rewarding ways that we

can steward the land around us, connect to nature, and create a resilient future. Creating and sustaining community gardens, however, can involve a lot of hard work. School yards are important institutions that help provide cohesiveness in our communities. What if we could transform them into spaces that provide students, their families and the broader community with opportunities

for active play and physical education, outdoor learning and environmental literacy, while significantly contributing to the effective management of stormwater? What if we could then encourage local residents to adapt some of these same practices at home? Further, what role do local governments and nonprofits play in helping to create and sustain community gardens?

During this time when community food resilience is a top concern, particularly given the challenges of a changing climate, neighbors, communities, and schools are organizing together and growing new solutions. Community gardens, schoolyard greening, and urban food systems can all contribute to community climate resilience. Distributed urban gardening, garden-based environmental and sustainability education, Fighting food waste, and organizing local food networks all can help generate distributive justice and mitigate climate change.

Water-saving through school learning gardens in New Mexico, building sustainable food systems in Columbus Ohio inspired by botanical gardens, and collaborative community garden and schoolyard projects in Chicago all exemplify these vibrant strategies.

## Related Content

### Stories

- Bringing it Home Kentucky
- Climate Resilient Food Systems
- Community Food Networks
- Desert Oasis Garden
- Faith in Place in Chicago
- Open Lands CC Gardens
- Youth Climate Job Training

## Resources

### Urban Gardening

- Denver Urban Gardens: <https://dug.org/>
- American Community Gardener Association: <https://communitygarden.org/>
- Greening of Detroit <http://www.greeningofdetroit.com/>
- <http://www.openlands.org/gardenkeepers>

### School yard Greening

- <http://www.openlands.org/space-to-grow>
- <https://greenschoolyardnetwork.org/>
- [http://www.ecoschools.com/KeyOrgs/KeyOrgs\\_wSidebar.html](http://www.ecoschools.com/KeyOrgs/KeyOrgs_wSidebar.html)
- <http://www.childrenandnature.org/initiatives/schoolyards/>



*Photo by Elizabeth Pickett*



## Open Lands Climate Change Gardening in Chicago and an Urban Web of Green

*CCC Fellow – Elvia Rodriguez Ochoa*

### **Background**

Elvia Rodriguez Ochoa is a multi-disciplinary artist, educator and administrator with over 20 years of experience working in nonprofit community settings. As a lifelong city resident, Elvia enjoys visiting the diverse neighborhoods that make up Chicago and learning about the impact each ethnic group has in shaping this dynamic region. She also believes the happiest



communities are the ones where residents train and engage in local politics with the same fervor they have for our city sports teams. More information is available at [openlands.org/staff](http://openlands.org/staff).

### **The Project**

At the time of my application to be an EE Capacity Fellow, Openlands had shifted its work model to create a “web of green” in Chicago communities by focusing our Neighborhood, School and Forestry programs in one place to have a greater impact. The pilot community was Chicago Lawn, a predominantly Latino neighborhood which is a heat island and also prone to flooding located in the city’s southwest side. In 2014, Openlands, in partnership with Healthy Schools Campaign worked with a neighborhood elementary school, Morrill Math and Science Academy, to transform their campus as part of the Space to Grow program. The changes included adding rain catchment capacity underneath a new turf field, creating an outdoor classroom with an edible school garden and installing native plants, shrubs and trees in several areas. The Space to Grow program is in place in six schools in Chicago with the plan of converting a total of 34 schoolyards over the course of five years to meet several environmental and health goals. A year later, Openlands Treekeeper program went back into Chicago Lawn to plant trees on residential parkways including some directly across the street from Morrill with additional trees planted in nearby parks as additional water management that would also provide shade in summer to mitigate the heat island effect.

As part of my EE Capacity project I proposed to help develop neighborhood green space in Chicago Lawn in addition to the schoolyard and parkway areas, with the idea that any community gardens created would explicitly include water conservation principles in their management as well as serve as a hub for presenting these principles for adoption at home. Our short-term goal for the proposal was to have thriving garden

sites that are not reliant on city supplied water. For the long term we wanted to see a reduction of impact from flooding incidents related to rainstorms, greater water conservation in homes, and a wider acceptance of the message of wise water use in order to protect one of our Great Lakes.

During the time of the fellowship my proposal shifted to focus on the need for materials and programs to be accessible in multiple languages. It felt incomplete to try bringing additional programs into a community if we were not addressing the complexity of communication. Openlands long-term goal is to have workshops and materials in English, Spanish, Polish, and Chinese. Our team did develop and present bilingual workshops (English/Spanish) at Morrill about storm water management which explained the benefits of the Space to Grow schoolyard improvements as a pilot. The bilingual workshops have now been used at other schools in the program.

I have multiple roles within Space to Grow; assisting with asset mapping around the schools in order to connect any existing community organizations to the school program; developing and translating content for the workshops; presenting on native plants as part of the stormwater workshops in English or Spanish depending on the audience; leading tours of the improved schoolyards in Spanish for community residents on the days of our workshops; and communicating with Spanish speaking residents as part of our community engagement.

### **Connections**

I have enjoyed being part of this program because of all the Fellows, it has helped me expand my thinking on the impact of the work we do individually. Having the opportunity to know about all the work happening from Canada, across the US and in Mexico brings me great hope. It also gives me an opportunity to connect beyond the region in which I work. As a result of this fellowship I am actively engaged in creating three organizational

partnerships with other fellows. This includes working with Veronica Kyle at Faith in Place to have a deeper impact on the Chicago region, connecting with Luis Morales at San Pancho Bird Observatory in Nayarit to connect Openlands Birds in My Neighborhood program to their program around parent/child engagement in Spanish, and connecting with Margie Simon de Ortiz at CICEANA in Mexico City around community engagement and environmental issues in a major metropolis.

### **Keywords**

Sector Keywords: Green Spaces – Urban Gardens – Native plants – Stormwater

Approach Keywords: Youth Investment/Empowerment – Culture Creation – Intergenerational – Consultative – Building Community Networks – Public Education Campaigns





## Climate Change Gardening at the Desert Garden at Albuquerque Academy

*CCC Fellow – Karen Temple-Beamish*

### **Background**

Karen Temple-Beamish teaches 8th grade Earth Systems Science and Biology with an Ecology emphasis at Albuquerque Academy. She is also the Sustainability Director for her school and the Director of the Desert Oasis Teaching Garden.



Karen has a Master's degree in environmental science and has taught for 20 years. As a member of the Environmental Education Association of New Mexico, she has been sharing her passion with students in her own community and seeks to share her knowledge with people both near and far. She has

travelled to Costa Rica, Japan and Canada to learn and contribute. She will soon be traveling to the Arctic with the Polartrec program to study the carbon balance in permafrost as it heats and dries due to climate change. Karen is a 2015 NOAA

Climate Steward. In addition, she received the 2013 Presidential Award for Excellence in Science Teaching.

### **Project Description**

Growing food and teaching about sustainable agriculture has been a passion for Karen for many years. She wanted to have farm-scale food production on her campus to feed students organic, healthy produce. However, Karen's school is located in a high desert climate that receives only six to ten inches of precipitation each year with campus soil that is lacking organic matter and highly compacted. Karen became inspired to grow food using the principles of water conservation, soil building, pollinator protection and biodiversity that she learned about from Gary Nabhan's book, "Growing Food in a Hotter, Drier Land." Karen, with the help of her team, created the Desert Oasis Teaching (DOT) Garden to provide her community with the skills they need to be resilient in the face of climate uncertainty.

### **Helpful Resources and Community Partners**

The DOT Garden has been supported with both funding and outreach opportunities from Albuquerque's Water Authority. The team has received water rebates to help build out the gardens as well as help pay for a garden manager salary. In addition, the team provides water smart gardening classes that are set up and funded by the water authority. The team has received a large grant from the electric utility to build the DOT Garden's welcome center, which will help interpret the mission and goals of the garden, as well as invite people to participate in its workshops and learn/work days. The team has partnered with the local extension office to hold workshops, market and educate the community. The team created an advisory board to help further integrate the garden opportunities into the community.

### ***Successes and Best Practices***

Teamwork has been the main reason that the garden has been successful. Bringing together people with different strengths and taking the time to communicate all of the wonderful things that the team does has been essential in getting the school's administration to help the team move forward. Money was expended to hire a professional to design the garden, a design which allows the team to show people the vision and the progress. Parents of students were recruited to help with some of the really big efforts like the Earth Works, which needs to be done for the welcome center.

### ***Lessons Learned***

The team needed to focus more quickly on fund raising. We are six months out of running out money for our garden manager and without her we will not be able to continue. We have been so busy with building the garden and creating the educational materials and programs that we have not identified funders that will help us keep the ball rolling.

### ***Program Value***

A quote from a student tells it all! The student exclaimed “I believe Garden Day is one of the most important uses of our time in BioE, and this recent adventure explained why. Our use of teamwork—for example, when my group was planting, we all had different duties—one of us was writing the names of the plant (Missouri Evening Primrose) while the two other members sprinkled the seeds into the six packs of dirt. This not only taught teamwork, but also gives us real-life skills in gardening and making dirt. In another garden activity we cleaned discarded irrigation tape, which made me reflect on how something seemingly ugly and useless can still be transformed into a work of art like the baskets we will make with the tape. I think Garden Day is one of the most important elements in our course study, as it reinforces what we learn inside the classroom and make it applicable in the real world.”



*Photo by Karen Temple-Beamish*

### **Project Links**

[gettingthepicture.info](http://gettingthepicture.info)

<http://www.thedotgarden.org/>

<https://www.facebook.com/TheDesertOasisTeachingGarden>

<https://www.youtube.com/watch?v=WiNI6INAyTE>

### **Keywords**

Sector Keywords: University – Community Organizations –

K-12 Schools – After-School Programs

Approach Keywords: Science Dimension – Youth

Investment/Empowerment – Intergenerational – Super

Teacher / Teacher / Leader – Building Community Networks –

Gardening



*Photo by Karen Temple-Beamish*



*A bee hotel at the DOT Garden  
Photo by Karen Temple-Beamish*



## Climate Change and Food Systems: Building Community Networks and Capacity

*CCC Fellow – Nicole Jackson*

### **Background**

Nicole is an environmental educator and worked during the CCC Fellowship as an Educator and Camp Coordinator at Franklin Park Conservatory and Botanical Gardens. Her duties included creating, planning, and implementing garden adult education and school programs for grades pre K-12. She also managed high school interns and coordinated summer camps



that focus on butterflies, environmental education, horticulture, and botany. She received her Bachelor of Science degree in Natural Resources from The Ohio State University in 2011. She majored in Parks, Recreation & Tourism and her studies focused on Environmental Education and Interpretation, which allowed her to learn more about topics such as environmental stewardship, environmental literacy, and capacity building. After college, Nicole was determined to find more opportunities relating to connecting her community to nature and the environment.

Since 2012, Nicole has taken a few non-credit online courses through Cornell University's Civic Ecology Lab. Some of the topics included Urban Environmental Education, Environmental Education in faith-based communities, and capacity building. Some of her other endeavors included creating a bird conservation action plan as a youth fellow through TogetherGreen, participating in the 2013 Natural Leaders Legacy Camp of the Children & Nature Network, and receiving a scholarship to attend the 2013 North American Association of Environmental Education conference in Baltimore, Maryland. These opportunities were made available to her because of her great networking skills. Connecting people to each other and the environment has always been a passion of Nicole's and she wants to continue helping others in her community become better environmental stewards. In 2013, Nicole was selected to be a fellow for the Outdoor Afro Leadership Team. The mission of Outdoor Afro is to get more people of color connected to the outdoors and nature. Fifteen members were selected from major cities across the U.S., including Ohio, which has been chosen for the first time since the team was created in 2009. Nicole's hobbies include birding, hiking, and leading informal environmental education programs.

### ***Participating Together***

Being a part of this fellowship has helped me in so many ways. I learned so much about what I can do as an individual and what more can be done as a group when doing this work. Since receiving the training for my community project, attending the conference in Ottawa, Canada showed me what could be accomplished on a community and national level. Conferences can be very exhausting, but I find my inspiration not from the lectures or presentations, but from the individual conversations I have after a session or workshop. I think that's where the magic happens! Fellows like Jennifer, Trevor, and Karen have done great work with their projects and those stood out to me because of their hard work, enthusiastic spirits, caring hearts and relationship building skills. Climate change education can be very challenging especially when others don't see the bigger picture of how the world is being affected on a local level. This topic can be very overwhelming, but the important thing I think as an environmental educator is to remember to take care of yourself and connect with people who are willing to fight the good fight with you. As long as you have a good support system you can accomplish so much more than if you were to do it alone. It only takes a few to put things into view.

### ***The Project***

My project is focused on climate change and food systems. In 2010, around one-third of the food produced in the United States was not consumed, and ended up being thrown away. Food waste is the main source of garbage in landfills and producing the food we throw away generates more greenhouse gases than most entire countries do. In addition, the impact of climate change on food production can already be seen, and will worsen as climate change progresses. First, slow-onset changes in mean temperature and precipitation patterns are putting downward pressure on average global yields. Added to this are crop losses resulting from more frequent and intense extreme weather events. With cities growing bigger and climate change affecting food access for many around the globe, this

concerning information will continue to hinder families financially.

My action plan consists of putting on a community forum to get feedback from residents, urban farmers, and community leaders regarding their thoughts and concerns about climate change and how it's affecting food access. From the feedback, my team and I will develop a list of climate change adaptation strategies for urban agriculture to present to local government officials and policy makers.

I will then create and implement monthly community activities and workshops to show how reducing food waste could ease the effects of climate change in urban environments. Topics covered include climate change, food production, food waste, and the food transportation system (i.e. harvesting, distribution, packaging, etc.) With this program, I hope to teach my community about the importance of resilient cities, sustainable communities, and learning how to reduce food waste in the home.

### ***Project Link***

<http://www.fpconservatory.org/>

### ***Keywords***

Sector Keywords: Green Spaces – Urban Gardens – Nonformal Education

Approach Keywords: Public Education Campaigns – Building Community Networks

# Indigenous Approaches



## Indigenous Approaches to Community Climate Change Education

*Community Climate Change Fellows - Elizabeth Pickett and Marna Hauk*

### Community Approaches

Indigenous communities are leaders in organizing community-based approaches to climate change. Elder traditions of community-based education and action respond effectively to emergent needs focusing on collective action and impact, an important approach due to the nature of climate change

impacts. Additionally, indigenous knowledge and traditional ecological knowledge provide practices, long-term adaptation insights, and observational science insight into the scale and scope of change and how to respond. “Indigenous knowledge and ways of knowing are recognized as complex knowledge systems with an adaptive integrity of their own” that can serve “as a catalyst

for educational renewal” (Kawagley & Barnhardt, 2006, p. 29).

### **Challenging Contexts**

Indigenous peoples, lands, and resources face myriad climate change impacts and vulnerabilities that threaten and undermine ways of life that have persisted for centuries, and in many cases longer. This occurs on top of complex social and environmental histories that also challenge numerous indigenous populations. Traditional lifeways are reliant on seasonal cycles of anticipated harvests and predictable water flows (Turner & Clifton, 2007). As climate change disrupts the intertwined plant signals for harvest, disruptions in food webs ensue. As a climate justice issue, many indigenous communities are disproportionately affected by impacts of a changing climate relative to carbon output. Historical relocation to marginal lands further endangers communities. Already, sea level rise and changing precipitation patterns are causing displacements. This is particularly difficult for the sensitive entwinements of place, culture, and ecology that are the hallmark of many indigenous systems.

### **Indigenous Science, Adaptation, and Leadership**

Indigenous knowledge, science, and lifeways can lead the way in practices for a post-carbon future. Indigenous peoples are experts across several scales of climate change disruptions (Kimmerer, 2014). Oral history traditions spanning thousands of years can offer strategies for adaptation and transformation (Turner & Clifton, 2007). “Indigenous people have lived through environmental collapse on local and regional levels since the beginning of colonialism” (Simpson, 2013). Further, indigenous peoples in their diverse local settings have implemented extensive adaptation and mitigation strategies to past climate variability and other environmental change and challenges, some beyond the current predicted models of change (Turner & Clifton, 2007). Indigenous knowledge has extensive and vital application opportunities for local to global efforts working to prepare for and reduce climate change impacts.

Tribes and indigenous groups in many places are leaders in halting climate denial and carbon damage practices while

demonstrating and sustaining cultures and lifeways based on adaptive insight. Indigenous science insights are critical in the climate science arena. As some environmental educators have noted, it is important to include and also not appropriate indigenous leadership and insight. It is important to understand that indigenous worldviews and decolonizing approaches appropriately unsettle Eurocentric planetary consciousness and Western hierarchical, separation-oriented, individualistic-construct, expeditionary, and acquisitive distortions and deep structures that have generated the current state of imbalance (Grande, 2015; Tuck & McKenzie, 2015, pp. 50-51). Land-based rather than place-based pedagogies can reflect this shift and inform educational approaches. Indigenous ways of knowing model systems of reciprocity important for community climate change responses (Kimmerer, 2014).

### **Education Approaches**

Integrating and leading with strategies that are rich with local content and planned in collaboration with local people offers a time-tested, grounded, sustainable, and collective way forward. Environmental educators can play an important intermediary among youth, communities, and decision-makers by developing curricula, experiences, signage, talking points, and materials that lead with and integrate indigenous experience, perspectives, and voices.

The indigenous dimension of community climate change included CCC Fellow projects in community organizing in climate change education and action for the Mi'kmaq. They touched on how elder storytellers can carry insights and experiences across different communities. Working with indigenous youth in nature-immersive experiential education using STEAM (arts and science integration) prove effective community climate change education strategies, too. Insights about culturally relevant climate change education strategies are critical to the success of indigenous climate change and climate justice projects.

## Related Content

### Stories

- CCEd in Aboriginal Communities
- Inuit Collaborations
- Malama Kai Youth Action

### Vignettes

- Culture Creation
- Inspiration
- Mutual Learning
- Storytelling

### Articles

- Surfacing Unheard Voices

### Resources

- North of 60 Project, a Video Tapestry of Climate Change Stories - <http://n60.co/>
- Arctic Climate Impact Assessment. Cambridge University Press, 2005. Available online at <http://amap.no/acia/>.
- Barnhardt & Kawagley, 2005, Alaska - <http://www.dinecollege.edu/cdte/docs/Barnhardt-Kawagley.pdf>
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- Indigenous Peoples' Biocultural Climate Change Assessment Initiative: <http://ipcca.info>
- International Work Group for Indigenous Affairs: <http://iwgia.org>
- UN Permanent Forum on Indigenous Issues: <http://www.un.org/esa/socdev/unpfii/>
- United Nations Environment Programme: <http://www.unep.org/>



## Collaborating with Inuit Peoples on Climate Change Impacts and Environmental Education

*CCC Fellow – Carlos Velazquez*

### **Background**

Carlos Velazquez, an Otomi Indian, is a retired Mechanical Engineer, recipient of the Environmental Educators of North Carolina Outstanding Partnership Award, Environmental Educator of the Year from Wake County, NC, and winner of the NAAEE 2011 Rosa Parks and Grace Lee Boggs Environment Award. He is the former director of the Department of Natural Resources and Environmental Affairs of the Southern Cherokee Nation. Mr. Velazquez has worked with environmental groups in Alaska and Canada, and in China as a project engineer, where he met with the Chinese Environmental Department. Mr.



Velazquez was the first westerner to give a talk on Preserving the Environment and the Ways of China's Minorities, at Dalian University, in mainland China.

### **Project**

While living for months in the newly formed Canadian



Territory of Nunavut, Mr. Velazquez was invited to learn about the lives and environmental conditions of the Inuit people, sharing some of the work being done by U.S. state, federal, and environmental agencies to protect the environment. Carlos is currently in correspondence with members of the Sustainable Development Department in the Nunavut Territory. Currently, Carlos works with the North Carolina Environmental Educators (EENC), the Center for Human-Earth Restoration (CHER), and the Raleigh Parks Recreational and Cultural Resources. Many of his lectures are listed on Google under Carlos Velazquez Inuit.

### **Keywords**

Sector Keywords: Community Organizations – Climate Change Impacts

Approach Keywords: Indigenous Dimension – Building Community Networks



## Culturally Responsive Climate Change Education: Organizing and Supporting Aboriginal Communities

*CCC Fellow – Nadine Lefort*

### **Background**

Nadine grew up skipping stones, climbing trees, and playing in lighthouses on Cape Breton Island in eastern Canada. She didn't realize it at the time, but that strong relationship with nature would strongly influence her life. She studied ecology and environmental education, with a focus on ways to foster relationships with nature through deep ecology practices. She spent several years managing a province-wide Environmental Education Program in British Columbia. She has worked with First Nations communities across Canada to develop culturally relevant learning tools that integrate traditional ecological



knowledge and science that foster (re)connection with culture and our environment. She is currently Education and Outreach Coordinator with the Mi'kmaq Environmental Learning Centre in Eskasoni First Nation. She develops programs and resources that share and promote Mi'kmaq traditional knowledge on environmental sustainability. She sits on the board of the Canadian Network for Environmental Education and Communication, as well as a local environmental organization. She spends her free time with her family on hiking trails, on beaches, and playing in their backyard.

### **The Project**

It is important for everyone to understand climate and people's role within it, however, climate change education is not always accessible for Aboriginal learners, even though Aboriginal communities are especially vulnerable to the impacts of climate change. Climate change education is already established as an important community need, so the goal of this project was to help individuals in Mi'kmaq communities understand the science of climate change, how human activities influence climate, and how individuals can take culturally-relevant action to mitigate the damage of climate change and make their communities more resilient to changing climate.

This project:

- Consulted with Elders, youth, educators, science experts, and community organizations to determine relevant content and context of a climate change education project.
- Developed a climate change curriculum package based on existing activities and lesson plans, integrating local traditional knowledge and examples of climate change issues and actions.
- Developed a workshop on climate change for community organizations to better understand climate change and to commit to hands-on climate change action.

- Followed up with schools and community organizations to support climate change actions in the community.

By early 2016, the project completed a curriculum package with activities and lesson plans, which was made available to teachers in Mi'kmaq schools (through Mi'kmaw Kinamatnewey), and schools in the Cape Breton Victoria and Straight Regional School Boards, as well as three completed community workshops engaging local organizations and businesses in climate change education and action.

Throughout this project, we saw more citizens engaged in environmental action in their communities through individual, organization, and local government changes to reduce ecological footprints and become more resilient to climate change. We saw Mi'kmaq communities become regional leaders in community climate change action.

### ***Project Link***

<http://www.melcentre.ca/>

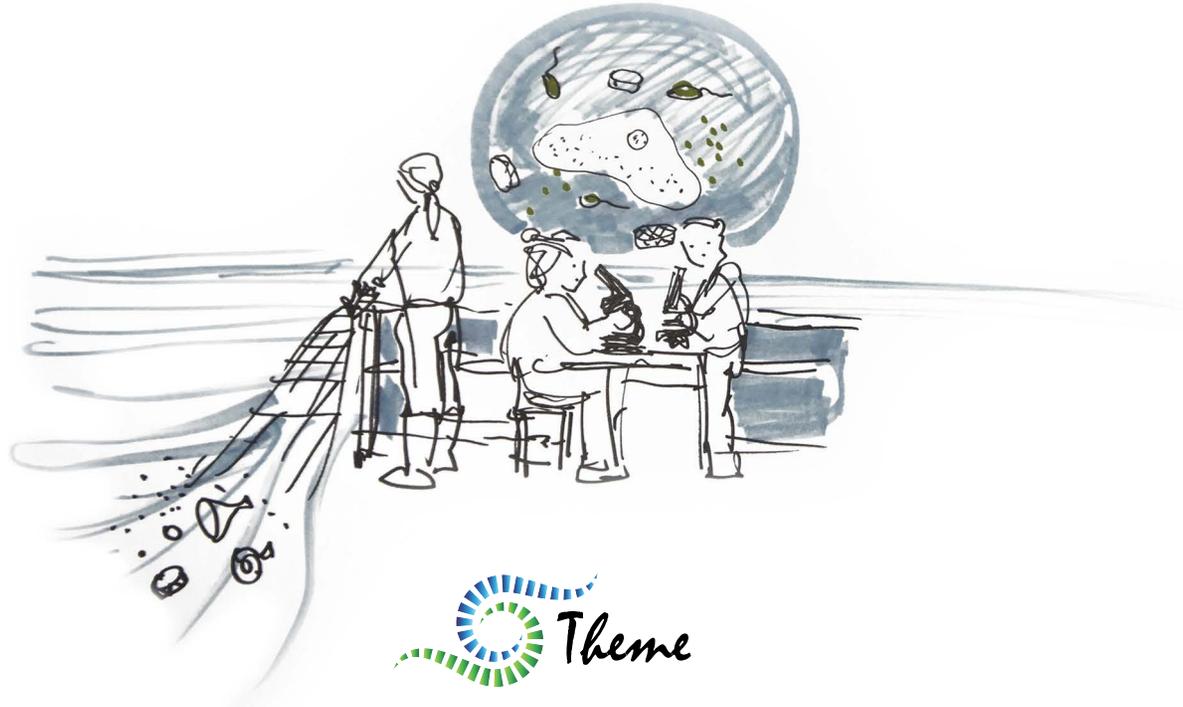
Please visit our sister organization, the Unama'ki Institute of Natural Resources.

### ***Keywords***

Sector Keywords: Aboriginal Communities – Climate Change Impacts – Public School Curricular Design – Community Workshops – Indigenous Science – Culturally Responsive Environmental Education – Environmental Sustainability  
Approach Keywords: Indigenous Dimension – Building Community Networks – Public Education Campaigns – Natural Resource Management



# Marine Climate Change



## Climate Change and the Marine Environment

*Community Climate Change Fellow - Adam Ratner*

From the air we breathe to the food we eat, regardless of where we live, we are all connected to the ocean. By recognizing the connection between human practices and their impacts on marine life and habitats, we can do a better job of leaving the oceans in good shape for the next generation.

Effects of climate change on marine environments  
Climate change is altering the marine environment in various ways. Due to water's higher heat capacity than air, approximately 90% of the excess atmospheric heat associated with greenhouse gas emissions since 1970 has been absorbed by the ocean (Glecker et al., 2016). This rise in ocean temperatures can have dramatic impact on

animal migrations and prey distribution, shifts in suitable habitat for specific animals, and sea level rise taking away beach habitat for various marine life. In addition to changes in temperature, the oceans ability to take in excess carbon dioxide is causing an increase in the acidity of the ocean, hindering the growth and life expectancy of numerous marine creatures.

### **Climate change education opportunities**

Given our interconnectedness to the ocean, we are provided with an opportunity to engage our communities around climate change using a topic that has a great degree of relevance to our audiences. Similar to nature immersion and other approaches, working with audiences around the marine environment provides opportunities to connect with nature, but also showcase a visible change over time due to the effects of climate change. How do we capture this passion and attention for the marine environment and motivate behavior change around actions people can take to reduce their carbon footprint? What opportunities already exist around the country?

### **Related Content**

#### *Stories*

- Experiential Marine Science
- Malama Kai Youth Action
- Marine Mammal Volunteers

#### **Resources**

- Glecker, P.J, et. al. (2016, Jan.). Industrial-era global ocean heat uptake doubles in recent decades. *Nature Climate Change*.



*Photo by Elizabeth Pickett*



## Experiential Marine Science and Climate Change Education

*CCC Fellow – Rocío Lozano-Knowlton*

### **Background**

Rocío Lozano-Knowlton is the Director of the MERITO Foundation ([www.meritofoundation.org](http://www.meritofoundation.org)), a not for profit organization dedicated to protect the ocean by facilitating education, conservation and citizen science opportunities to multicultural youth and communities. The organization also strives to motivate diverse youth to pursue STEM careers that relate to the ocean or the environment. Rocío has a B. Sc. in Oceanography from UABC in Mexico, and a M. Sc. in Marine Resource Protection from Herriot Watt University in Scotland. Prior to co-founding the MERITO Foundation in 2014, Rocío worked for NOAA Channel Islands National Marine Sanctuary as the MERITO Program Coordinator for ten years providing bilingual (English/Spanish) ocean conservation education and outreach services to over 8,000 culturally diverse and economically unprivileged students. Rocío's co-developed the MERITO Academy Curriculum; has coordinated and led hundreds of island, coastal and watershed field experiences for students, trained over 250 teachers on Earth and ocean science during professional development workshops; has raised over a million dollars for environmental education programs' by landing critical federal grants and eliciting in-kind contributions. Rocío currently also works as the liaison and coordinator for NOAA International Marine Protected Areas Capacity Building Program in South Korea. Prior to living in California, Rocío worked for conservation organizations in Baja, Mexico while she co-owned and directed Baja Quest, an ecotourism and SCUBA diving business from 1996-2004. Rocío is an outdoor enthusiast who loves to travel, SCUBA dive, see the world, and with her family strives to live in an environmentally sustainable manner.

Many human actions are threatening marine environments by changing the abiotic factors that sustain marine ecosystems. The MERITO Foundation focuses on addressing Urban Runoff, Unsustainable Fishing practices, Marine Debris, Climate Change and Ocean acidification. Through our CCC Project titled 'Energy Efficiency to Mitigate Climate Change and Ocean Acidification' (aka EECCOA), we have been able to empower teachers and their students to mitigate the two unprecedented environmental issues of our time; Climate Change and Ocean Acidification. This is due to the excessive human produced carbon dioxide being trapped in our atmosphere that is changing not only our global climate but also the chemistry of our oceans!



*Photo by Azucena Yzquierdo*

### **Project Description**

EECCOA is a project-based science education program of the MERITO Foundation that provides energy, climate and ocean literacy services and products to 8th – 12th grade teachers and their students in Ventura or Santa Barbara Counties. EECCOA

empowers students to address climate change and ocean acidification by providing them the tools to research, design and innovate Energy Efficiency or other sustainability models their schools can adopt, or develop Ocean Acidification (OA) awareness campaigns that inform their communities. Rocío Lozano-Knowlton came up with the idea after noticing that after many years of offering and providing free of cost earth and ocean science curriculum, experiences in nature and incorporating conservation topics to thousands of students at more than 25 schools, hardly any changes in the infrastructure, waste, and water management within many of the schools had occurred. The carbon footprint was the same or larger in most schools. Rocío hopes that if there are new ways to address the use of energy, water, and management of waste, and that if the new behaviors are proposed by the students, students will take ownership of them, parents will cherish them, and administrators will more likely adopt them.

### ***Services and Products Developed and Providing***

1) The EECCOA Activity Guide: A compilation of 20 lesson plans that illustrate energy, climate and ocean literacy and address Climate Change and Ocean Acidification aligned to academic standards and over 50 supporting online resources with hands-on activities, experiments and supporting information for students to develop their EECCOA project proposals for their schools to reduce their carbon footprints while implementing the 3 dimensions of the Next Generation of Science Standards.

2) EECCOA Professional Development Workshops (EECCOA-PD); The eight participating teachers of the 2015-2016 school year have received printed and digital copies of the EECCOA Activity guide; training on the lesson plans, lectures from expert scientists and supporting materials during the EECCOA PD Workshops of Nov. 13, 2015, and Feb. 4-5, 2016.

3) Meaningful Field Experiences for Students. The participating schools are receiving sponsorship for students bus transportation and instruction by MERITO Foundation staff for EECCOA field experiences during which students implement hands-on activities related to sustainability, watershed education, and ocean acidification.

4) EECCOA Students' Challenge. Students interested have entered a project-based challenge in teams of three to six students to develop proposals to reduce the carbon footprint of their school and mitigate climate change, ocean acidification, reduce the cost of utilities, and make their school a healthier place. Projects have to be specific, measurable, attainable, and realistic. There are four tiers of projects from which teams of students can choose:

- 4.1) Design and propose a method to reduce their school's energy use and utilities' costs,
- 4.2) Design and propose a method to reduce the potable water use of their school campus,
- 4.3) Design and propose a method to increase recycling and reduce waste production at the school site, or
- 4.4) Design of an effective community outreach project to increase public awareness regarding Ocean Acidification that increases the understanding of the issue in the community (town) where they live and promote specific individual actions that can collectively mitigate the issue.

Students authors of the top 12 projects for each category receive prizes that range from SCUBA certification courses; sponsorship of field-studies, cash or other equivalent to the discretion of educators and their school districts.

5) EECCOA Students' Summit:

A judging panel composed of engineers, environmentalists, scientists, educators and sustainability experts will review all

projects, select best five of each of the eight participating schools. On June 2016, the best five teams of each participating school will present their projects to a wider audience that will include peers, family members, city council members, school board members, school administrators and the media. A keynote speaker will kick off the event. Best three in each project category will receive prizes, and we hope schools will adopt their proposals.

#### 6) Other Incentives:

The educators who participated in the workshops are teaching and testing the lesson plans. They mentor their students on their projects and will receive stipends.

### ***Involvement and Partnerships***

The lead organization of the project is the MERITO Foundation directed by Rocío Lozano-Knowlton working with 8 science teachers from 8 schools, of 5 school districts in five cities among two counties. The teachers combined are teaching the EECCOA activity guide and involving in the EECCOA Challenge (students' projects) to 700 7th-12th grade students.

Rocío is leading the effort with support from an array of consultants and partners, including CCC Fellow Laura Mack, as the projects' Sustainability Specialist; two curriculum developers, one intern, one external evaluator, one volunteer, and our board of directors.

The EECCOA 2015-2016 is being sponsored by NOAA-B-WET, EPA, and NAAEE. The teachers time is sponsored by the school districts. Important in kind contributors include NOAA Channel Islands National Marine Sanctuary, NOAA Weather Service, Ph. D. Gretchen Hoffman Lab for OA, UCSB, Jean Michael's Cousteau Ocean Futures Society, and NOAA Climate Office.

### ***Project Outcomes***

The highlights so far are, firstly, the Nov 13, 2016 and Feb. 4-5, 2016 Professional Development Workshops. They went fantastic!

Secondly, presenting at all eight schools, three to five presentations per day using NOAA Magic Planet, a 3-D display to demonstrate atmospheric and ocean processes. I co-developed a script with my intern, Azcena Yzquierdo who is about to finish B. Sc. in applied physics. We enjoyed taking the \$36K gadget to each school and seeing the face of awe of the students when we show El Niño effect, lights at night, CO2 concentrations, ocean currents, etc.

Thirdly, my intern. The best ever. She is perhaps the best person I have worked with in years. She is so interested, committed, intelligent and honest. I am very proud of her.

### ***Other Developments***

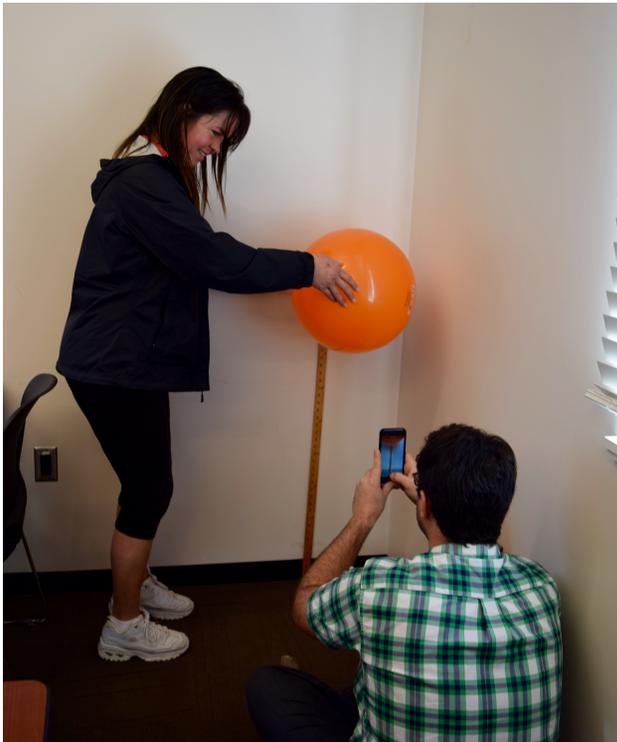
The adoption of curricular lesson plans by teachers at public schools that address climate change from an Earth system approach that is practical, that meets all academic standards the teachers are required to teach, but also provide students with the how to make a difference every day. Each year, each teacher will teach these lessons to an average of 150 students per year.

The pride of students experienced by students as they are developing solutions that are specific, measurable, attainable and realistic, and the opportunity to shine and get some cash. The EECCOA Challenge may open window of career opportunities to students, aside from changing individual behaviors.

The feasibility and momentum created by scientifically sound proposals made by students to reduce their school's carbon

footprint. School administrators may feel pressured to change some things at their school, and once they see the advantages, they can continue to improve reducing the schools energy or water use. Presently, on average, one high school spends \$30,000 in electricity per month. The average cost per Kilowatt is \$10/hr, which is  $3000\text{Kw/hr} \times 8\text{-}9 \text{ hours/day} \times 200 \text{ days per year}$ . That is huge!

I have not completed all tasks in the yearlong project. Therefore, I may still need to face the biggest lesson learned. I hope not. For now, the labor hours required for this project were dramatically underestimated for the Project Manager. I have worked many more hours than I am compensated for unfortunately.



*Photo by Azucena Yzquierdo*

For example, the labor/time to plan, search, select, adapt, and align 20 lesson plans was a very intense and time consuming task. Sadly also as a project lead to be the soldier reminding and guiding all participants and sub-vendors and consultants to do their tasks honestly and honorably, it is not fun.

I do it because I understand ocean-atmosphere interactions, and what causes climate change, and how can be mitigated, but many people either don't really understand it, and most think is overwhelming and too late to do anything about it. Through this project, me and my partners can help teachers be better tooled to academically teach Climate literacy to potentially thousands of students, how CC happens, and they can help students visualize how can we stop it now, in a tangible and collective manner. Students will own their project ideas, and therefore will follow them with more fidelity than if imposed. Administrators will hopefully see that many schools across USA are doing it, and they need to follow. For me as an individual, I want to see I influenced changes that are making a difference in my lifetime, for my personal satisfaction and for the safety of my children who will suffer otherwise the consequences of several very irresponsible generations.

### ***EECCOA Web Resources***

#### ***Carbon Calculators***

- Inquiry to Student Environmental Action (I2SEA) Project of University of Gothenburg (Sweden) and Stanford University (USA) promotes international collaboration among secondary school and university students as they learn about, discuss, and envision solutions to shared environmental challenges. They offer the following free, interactive digital learning tools relating to marine and environmental sciences
- Our Carbon Footprint Calculator engages students to explore how much carbon dioxide is produced in their daily lives, focusing in particular on things that students can

control. The calculator, calibrated for every country around the world as well as US state and Canadian province, provides direct feedback on the impact of personal choices and is extensively documented making it a truly scientific classroom tool.

- The International Student Carbon Footprint Challenge. After students measure their individual carbon footprints, teachers submit class data that we post on the ISCFC world map. Students then join several parallel online discussions using a familiar post and comment micro-blog format, thinking through their emissions with their peers around the world, and envisioning personal and societal solutions to decrease them.

### **Other Carbon Calculators**

<http://www.nature.org/greenliving/carboncalculator/>  
<http://www3.epa.gov/carbon-footprint-calculator/> (simple and provides one with pie charts at the end)  
<http://coolclimate.berkeley.edu/calculator>

### **Samples for Students' Action Projects**

- # Earth to Paris campaign: videos, photos due Nov 22:  
<http://www.earthtoparis.org/>
- NOAA Climate Stewards Education Project: project support apps due Nov 22:  
<http://oceanservice.noaa.gov/education/climate-stewards/>
- Using media to raise awareness of Ocean Acidification:  
<http://action3630.com/action-research-fires-up-teens-tackling-ocean-acidification/>

### **Climate Literacy**

CLEAN (Climate Literacy and Energy Awareness Network): A collection of 600+ free and ready to use on line resources reviewed by educators and scientists (project funded by NSF) -  
→ <http://cleanet.org/index.html>

### **Atmospheric Circulation**

[https://climate.ncsu.edu/edu/k12/.atmosphere\\_circulation](https://climate.ncsu.edu/edu/k12/.atmosphere_circulation)  
[http://earthobservatory.nasa.gov/Features/OceanClimate/ocean-atmos\\_chem.php](http://earthobservatory.nasa.gov/Features/OceanClimate/ocean-atmos_chem.php)  
<https://www.learner.org/courses/envsci/unit/text.php?unit=28secNum=6>  
Video: <https://www.youtube.com/watch?v=Ye45DGkqUkE>

### **What we know now about Climate Change?**

<http://whatwewknow.aaas.org/>  
<http://www.climatechange.gc.ca/default.asp?lang=en&n=20A201A3-1>

### **Videos**

<https://www.youtube.com/watch?v=95TtXYjOEv4>  
[https://www.youtube.com/watch?v=dC\\_2WXYORGA](https://www.youtube.com/watch?v=dC_2WXYORGA)

### **Carbon cycle**

<http://www.visionlearning.com/en/library/Earth-Science/6/The-Carbon-Cycle/95>  
[http://www.esrl.noaa.gov/research/themes/carbon/Carbon Simulator](http://www.esrl.noaa.gov/research/themes/carbon/Carbon_Simulator)  
<https://www.learner.org/courses/envsci/interactives/carbon/>

### **Ocean Literacy**

Ocean Circulation  
[https://oceanservice.noaa.gov/education/tutorial\\_currents/welcome.html](https://oceanservice.noaa.gov/education/tutorial_currents/welcome.html)  
<https://science.howstuffworks.com/environmental/earth/oceanography/ocean-current.html>

### **Great Conveyor Belt Videos**

<https://education.nationalgeographic.com/media/ocean-currents-and-climate/>  
\*Recommend this video as it uses a roller coaster analogy

## **Simulators Experiments**

- <http://www.inquiryinaction.org/classroomactivities/activity.php?id=39>  
Can be modified by “fresh water” and food colored blue “salt water” instead of syrup and oil to help students visualize density in action.  
[https://www.beloit.edu/sepm/Water\\_Works/density\\_currents.html](https://www.beloit.edu/sepm/Water_Works/density_currents.html)
- Our Acidifying Ocean virtual laboratory: Students learn about the causes and consequences of ocean acidification and conduct an experiment to test the impact of a decrease in pH on the development of sea urchin larvae.
- Virtual Marine Scientist is a second virtual laboratory where the students play the role of a Ph.D student studying the impact of climate change and ocean acidification on mussels’ population. They develop their own hypothesis to test experimentally, apply for funding and design their own experiment that tests their hypothesis in our virtual wet lab.
- The “Ocean Acidification: So What?” interactive talk allows students to communicate asynchronously with Dr. Sam Dupont, our project co-Director and ocean acidification scientist. This presentation starts where Our Acidifying Ocean ends; he guides the students to place the results from the virtual lab in a global context, exploring the biological and societal implications. Each class receives a private copy of the presentation that they can watch at their own pace and ask questions for the scientist.  
<https://ocean.si.edu/ocean-acidification>

## **Greening Schools**

- Green School Alliance, the largest NGO that connects schools with resources such as carbon and environmental calculators, environmental lesson plans, ideas for teachers on how to start green (or Blue-Green ☺) Clubs, collaborate with other schools around the globe, and empower students and their teachers to green their schools → [www.greenschoolalliance.org](http://www.greenschoolalliance.org)

- California Green Schools Initiative → <http://greenschools.net>  
Similar to above but not as extensive but specific to California and endorsed by CDE
- Grades of Green: An NGO that provides free on-line resources for teachers and students to green their schools in Southern California - [www.gradesofgreen.org](http://www.gradesofgreen.org)

## **Project Links**

<http://www.meritofoundation.org/services/eccoa/>  
<https://www.facebook.com/MERITOFoundation>

## **Keywords**

Sector Keywords: Community Organizations – K-12 Schools  
Approach Keywords: Science Dimension – Youth Investment/ Empowerment – Culture Creation – Environmental Justice – Train the Trainer – Building Community Networks, Marine – Watersheds – Resource Management – Green schools – Climate literacy



*Understanding Ocean Acidification at Hoffman's Lab.  
Photo by Azucena Yzquierdo*



## Incorporating Climate Change into Education Training at The Marine Mammal Center

*CCC Fellow – Adam Ratner*

### **Background**

Adam Ratner is the Guest Experience Manager at The Marine Mammal Center, the world's largest marine mammal hospital and education facility. The Center is responsible for rescuing, rehabilitating and releasing an average of 600-800 sick and injured seals and sea lions each year. At the same time, it provides over 100,000 visitors a year the opportunity to visit the hospital and see the patients and their care, as well as how they can help keep marine mammals and the oceans safe. Adam oversees the visitor and education operations, including training and managing 130 education volunteers, and managing tours, classroom programming, and exhibits. Within the education programs, three sustainability initiatives are consistently highlighted and emphasized: climate change, ocean trash, and sustainable seafood. Partnering with local and national organizations, such as the Bay Area Climate Literacy Collaborative, the National Network of Ocean and Climate Change Interpretation (NNOCCI), the Monterey Bay Seafood Watch Program, and the Bay Area Sustainable Seafood Alliance, the Center leverages the great working happening in the San Francisco Bay Area and nationwide with people's love for marine mammals to help inspire environmental stewardship.

Before the Marine Mammal Center, Adam utilized his marine biology and psychology background to study animal behavior in labs around the county, focusing on bird hearing and speech, and fish learning and memory (before deciding that he no longer liked birds because all they do is bite and talk back).

### **Project Description**

The Climate Change Education Initiative at The Marine Mammal Center brings climate change into the conversation. Utilizing the sick and injured marine mammal patients at the hospital as a vehicle to communicate, the Center can engage guests around the science of climate change, the effects it is having on animals, ecosystems and people, and what people can do in their own lives and communities to help curb carbon pollution.

So often with climate change, the effects communicated today are abstract and foreign to the everyday member of the public. By highlighting marine mammals suffering direct consequences of changes in their ocean environment (and Californian's "backyard"), the Center can bring climate change to the forefront of the conversation and connect the community to the ocean ecosystem. The Center was able to secure grant funding for the project through the generous support of the California Coastal Commission Whale Tail program in March 2015 to begin and grow this initiative.



*Adam Ratner Presenting at a National Networks for Ocean and Climate Change Interpretation(NNOCCI) workshop*

Through a system of training classes focusing on climate change science and communication, the Center introduces hundreds of adult and youth education volunteers and staff each year to the science of climate change, providing them with tools for interpreting the science to audiences of all ages, and techniques to guide guests to identify solution-based actions to reduce their carbon footprint and become better environmental stewards. The “train the trainers” program allows the Center to reach tens of thousands of people each year and is easily replicable by other organizations, using the tools created from this program. This project builds upon the system of the National Network of Ocean and Climate Change Interpretation (NNOCCI) which provides staff and volunteers at zoos and aquariums around the country with climate change science direct from the climate scientists and scientifically-tested communication strategies from social psychologists to guide visitors toward strategies to reduce their fossil fuel use. Bringing together experts from different fields of science, communication,



*The Marine Mammal Center is the World's largest marine mammal hospital and education facility © David Wakely*

and social psychology allows us to build messages that are powerful and relatable, leading to stewardship in our communities, while being consistent across numerous organizations around the country. Leveraging The Marine Mammal Center as an NAAEE partner, the training classes enhance the ability of front line staff, volunteers, and community leaders to communicate about climate change effectively to the guests of the Center, and at other environmental organizations in the Bay area and beyond. The training offerings address numerous critical areas, such as opportunities for the community to participate in continuing education on ocean health and climate change; giving dedicated, environmentally-focused individuals in the community the tools to become successful non-formal educators, creating informed citizens, and fostering an appreciation for volunteerism and community involvement.

Through the project, in addition to the conversations had at the Center, the Center wanted to have a digital presence and create tools that can be used by the community. One of the most exciting elements of the initiative was the development of a climate change animated short, in collaboration with the California College of the Arts and Bret Parker of Pixar Animation Studios. Utilizing animation students, under the direction of Bret Parker, the animated short highlights the science of climate change and effects on marine mammals in a way that can be engaging for both kids and adults. The video will be launched in April 2016, along with new Online web content, and is available at: [Climate Change at The Marine Mammal Center](#).

### ***Helpful Resources and Community Partners***

The project includes numerous community partners. First and foremost is The Marine Mammal Center, which provides the facility and volunteer corps to engage the community around the topic of climate change. The Marine Mammal Center is a non-profit and receives over 80% of its funding from private donations, and depends on rich engaging stories of our marine

mammal patients and conservation work to raise funds for our work. This particular climate change project was aided with support of a grant from the California Coastal Commission's Whale Tail Program in March 2015 to cover the expenses related to staff time and development of an animated video that would serve as a resource for trainings, community presentations and online.

The animated video component was built upon a previous partnership with the California College of the Arts. In 2013, Adam had the opportunity to sit down and talk with an animation professor about the role of animation in education and it became quickly apparent that the professors in the Animation Department want real-life experiences for their students in animation, in part for the experience itself, but also to highlight the various career fields within animation outside of Hollywood. This became a win-win for both The Marine Mammal Center and the California College of the Arts as the college created a course that those students could take and create an animated short to be used for The Marine Mammal Center. The first video, Domoic Acid Attack, provided a visual representation of harmful algae responsible for hundreds of sick California sea lions. The toxin, which accumulates up the food chain and causes neurological damage, had been a tough concept to communicate, but through the use of animation was able to be told through a story that is engaging and informative for all ages. Through the Climate Change Education Initiative, the Center wanted to do the same for climate change and again approached the California College of the Arts and they were excited to offer two more semesters of courses for their students based around this new animation.

Lastly, much of the ability to communicate comfortably and confidently around the science of climate change and the best practices for communicating it came from partnerships with the National Network of Ocean and Climate Change Interpretation (NNOCCI). NNOCCI has brought together over 100 zoos,

aquariums and nature centers with social psychologists at Frameworks Institutes and climate scientists at Woods Hole Oceanographic Institute to craft messaging that can lead to productive, creative and solution-focused discourse around climate change. Frameworks Institute has developed numerous metaphors and a strategic framing model for communicating climate change that has been scientifically tested and shown to be effective. Outside of the initial trainings and communication, the network of alumni around the country has and continues to provide both an emotional and cognitive partner and collaborator on climate change initiatives.



*Dr. Whizzlepuff and Assistant: Characters from an animated short related to climate change and marine mammals © The Marine Mammal Center and California College of the Arts*

### ***Project Successes and Best Practices***

Over the course of the one year grant, The Marine Mammal center included climate training and messaging into numerous programs and resources for our volunteers, visitors to the Center, and visitors to our website. In total, 395 people participated in a climate change lecture or training hosted by the Center. We believe an additional 17,980 visitors were engaged in climate change science by one of our trained education staff members or volunteers. An additional 916 members of the public participated in family-friendly programming highlighting climate change at The Marine Mammal Center.

Throughout the project, we also conducted pre and post questionnaires on training participants to gain a better sense of the program's effectiveness on changing knowledge, attitudes and behaviors related to climate change. Using a 20 question survey before the training or lecture began, and then the same survey two months following the session, we were able to identify significant increases in numerous areas for past training participants. Results revealed that all participants increased the percent of correct answers on the climate change knowledge section of the questionnaire following the survey (average of 36% on the pre-questionnaire versus 70% on the post-questionnaire). Participants also ranked their understanding of climate change and its effects on the environment and marine organisms 23% higher on the post-questionnaire than the pre-questionnaire. Behavior change was more difficult to measure, and reliant on self-reporting, but in some behavior categories (i.e. increases in carpooling, using solar energy, and composting), increases were observed between the pre and post surveys.

The focus on climate change and communication with local and national partners has also led to increased collaboration and joint initiatives with other organizations. Shortly after the project began, The Marine Mammal Center was approached to help form a new San Francisco Bay Area collaborative focusing on

climate change, the Bay Area Climate Literacy Collaborative. The collaborative continues to grow and now includes over 30 environmental education organizations working on providing climate trainings to a wide range of educators across the Bay Area, connecting educators with the local impacts and science of climate change and piloting joint sustainability projects. This continues to expand the reach of The Marine Mammal Center's work and provide pathways for visitors to those organizations to build on their climate knowledge, and ensure consistency of messaging related to climate science, impacts, and solutions.

### ***Lessons Learned***

One of the biggest barriers originally was having our volunteers and staff members feel comfortable with communicating climate change and the perceived fear of climate denial or the public's disinterest in climate change. This was eventually tackled in two ways. The first was utilizing studies of the zoo and aquarium field by the Ocean Project and Association of Zoos and Aquariums that identified that 70% of visitors to zoos and aquariums viewed climate change as the most important environmental issue in the world, and 75% of visitors believed that zoos and aquariums should make recommendations for how the public can protect the environment. By showcasing there is a want from the audience (maybe not explicitly at times, but when asked), this helped our staff and volunteers feel more comfortable incorporating it into their conversations and not feel like they are forcing an unwanted topic of conversation. The second was a series of resources, trainings and materials to help them feel comfortable with the key messages of climate science and effects on marine mammals. This allowed our volunteers and staff to feel like they didn't need to be climate scientists or experts on all things climate science, but could speak to the marine mammal patients at the hospital and risks they face. All of the volunteers and staff were also encouraged to always feel comfortable not knowing the answers and to provide a way to connect the guests with a more knowledgeable staff (through either a radio that volunteers could use to reach

and Education Staff), or in some cases depending on the question, contact information of one of the climate scientists in the NNOCCI program.

### ***Value to the Community***

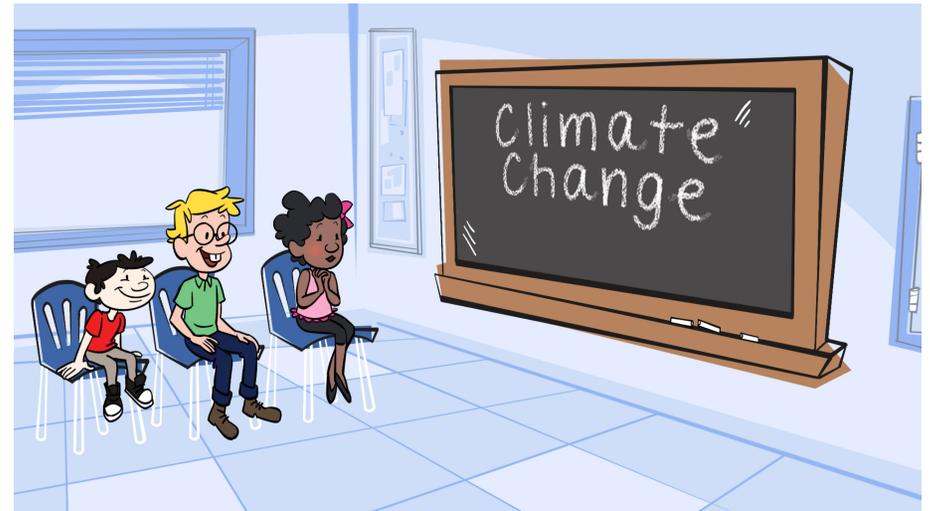
One of the biggest assets from this program has been the ability for a wide range of individuals to communicate climate change science in a way that is understood, well received, and acted upon by a wide range of audiences. By working with social psychologists on tested metaphors such as the Heat Trapping Blanket and Rampant Versus Regular Carbon Dioxide, the Center has been able to simplify the science and frame the information around common values to have a big impact. Through the train the trainer's model, key center staff were able to share experiences and knowledge that can empower hundreds of volunteers and other staff to share climate change in their conversations, exponentially increasing the message's reach. Given the large volunteer involvement, the Center also empowered hundreds of passionate individuals that outside of their roles at The Marine Mammal Center could share their new knowledge and skills with their friends, families and other community organizations they are involved in.

Working with students at the California College of the Arts, not only did the Center develop an animated resource that is available to everyone (and wouldn't have been possible without the expertise and professional work of the Animation Department), but we also engaged a group that hadn't been previously engaged in the climate change conversation. The merging of arts and science has provided a new network to include in the climate discussion and also provided much needed tool to engage audiences of all ages around such a complex problem.

### ***Additional Climate Change Action & Education Resources***

A major component of the work of the National Network of Ocean and Climate Change Interpretation (and the backbone of the communication strategy used in this educational initiative) utilized the work of Frameworks Institute and their research into framing climate change messages. All of their resources are available online at: Frameworks Institute Guide to Climate Change and the Ocean.

For those worried about climate denial, there is a wonderful online course available for free from the University of Queensland called Making Sense of Climate Denial. It is self-paced through YouTube videos and connects you directly with climate scientists from around the world. For more information, check out: Making Sense of Climate Denial.



*Climate Change: Characters from an animated short related to climate change and marine mammals © The Marine Mammal Center and California College of the Arts*

## **Project Links**

Frameworks Institute Guide to Climate Change and the Ocean:

<http://www.frameworksinstitute.org/climate-change-and-the-ocean.html>

[www.MarineMammalCenter.org](http://www.MarineMammalCenter.org)

<http://www.nnocci.org/>

Climate Change Animated Short Released April 2016:

<https://www.youtube.com/watch?v=dBTy4JfJUQM>

## **Keywords**

Sector Keywords: Museum – Science or Nature Center – Community Organizations – Nonformal Education – Zoos/ Aquariums

Approach Keywords: Train the Trainer – Communication Models – Creating a Model – Building Community Networks – Marine – Uses or Makes Film/Video/Media – Public Education Campaigns



*Visitors to The Marine Mammal Center can see patients undergoing rehabilitation and learn how they can become environmental and ocean stewards © The Marine Mammal Center*

# Nature Immersion



## Nature Immersion and Experience

*Community Climate Change Fellow - Elizabeth Pickett*

“What we have seen through these trainings is that by immersing and connecting the participants to natural environments, they become inspired. Inspired to tell other people about their experiences, inspired to act in their local communities, and inspired to work together for a common cause.” (Prokosch & Rawlins, 2012)

### **Nature Immersion**

Nature immersion and meaningful outdoor experiences can be simple yet powerful modalities for environmental education. Through time spent outside, students have the opportunity to connect with the natural world through wonder, play, creativity, and investigation, allowing for personal outdoor experiences and memories to create a

foundation for care and connection to nature. Numerous in-school, extracurricular, and park-based programs utilize this type of methodology to guide their students/participants toward environmental stewardship and scientific understanding, as well as to allow them time to deeply connect to their surrounding environs. Many view nature immersion as an essential yet under-provided aspect of healthy child development, as prior to industrialization humans did the bulk of their learning in this manner. This type of learning capitalizes on the innate tendency for diverse students (ie. young children, adult nature park visitors, etc.) to use all the senses to notice the natural world, providing “teachable moments” as winds blow and bees land on flowers. Experiencing the elements and processes of nature firsthand also invites students to learn through investigation, and can provide a platform for teachers to integrate additional scientific, place-based, or cultural information into the outdoor experience. Nature immersion and outdoor experiential learning programs range from unstructured to more structured, depending on the specific goals of the program.

### **Climate Change Education Approaches with Nature Immersion**

The nature immersion approach to climate change education rests on a foundation of care and connection students have developed toward their landscape, watershed, coast, etc. to inspire additional learning and action to steward or safeguard it. Climate change education can be a natural addition to nature immersion/experiential environmental education when opportunities are provided for the localized outdoor experience and understanding to scale up toward global changes, impacts, and local-to-global solutions.

Climate change concepts are being integrated into the nature immersion style of environmental education through numerous means. The opportunities for connecting nature immersion to climate science or action are as diverse as the types of programs that utilize nature experiences in their teaching. Some methods include:

- Climate change topics are topics of reflection and discussion after students have had unstructured or semi-structured time to play in and connect to nature. Once a place-based understanding or appreciation is developed, students are often concerned and intrigued to learn about how the environs they have come to know will be impacted (or already have changed) because of climate change.
- Students are supported to visit and compare healthy and degraded areas to see, smell, and feel the difference among sites of varied degradation/health or raw/developed for themselves.
- Students are supported to track changes over time or to think through and notice any pressure or challenging influence on the system they are observing.

Nature immersion practitioners and providers often report that students and park visitors who have had the opportunity to personally connect with nature more intuitively understand the levity of climate change impacts and are often willing to take personal action.

### **Related Content**

#### *Stories*

- Bird Observatory Project
- Dark Sky Festival
- Experiential Marine Science
- Malama Kai Youth Action

### **Resources**

- Aldo Leopold Climate Science Center - <http://aldoleopoldnaturecenter.org/climate-science-center/>
- Children and Nature Network. <http://www.childrenandnature.org/>
- Dunlap, J., & Kellert, S. R. (2012). *Companions in wonder: Children and adults exploring nature together*. Cambridge, MA: MIT Press.

- Shulins, N. (2014, April 25). Fighting climate change through nature connectedness. *Huffington Post*. Retrieved from [http://www.huffingtonpost.com/2014/04/25/nature-connectedness-clim\\_n\\_5214761.html](http://www.huffingtonpost.com/2014/04/25/nature-connectedness-clim_n_5214761.html)
- Sobel, D. (1996). *Beyond ecophobia. Reclaiming the heart in nature education*. Great Barrington, MA: Orion Society.



Photo by Elizabeth Pickett



## Malama Kai Foundation Youth Programs for Community Climate Change Action

*CCC Fellow – Elizabeth Pickett*

### **Background**

Elizabeth Pickett is the Executive Director of Hawai'i Wildfire Management Organization (HWMO), where she began working in 2008 after completing her graduate work at the Yale School of Forestry. Elizabeth works with HWMO staff and collaborators to lead projects with the goal of increasing wildfire awareness and preparedness in Hawai'i. These include developing the first-ever statewide fire history map and database, assessing wildfire hazards for every community in Hawai'i, working to develop and implement community wildfire protection plans, co-developing the Pacific Fire Exchange, and implementing numerous fuels reduction and outreach projects. Wildfire is a novel and increasing issue in Hawai'i, due to invasive species, increased human access to fire prone areas, climate change, and drought.

Elizabeth also works for Malama Kai Foundation, where she co-coordinates an after school place-based, outdoor experiential, environmental education and substance abuse prevention program for middle school youth. The program name is Ocean Warriors, and has expanded from one cohort per year at one school to five cohorts of students per year at two schools on Hawai'i Island.



### **Project Description**

Working for two nonprofit organizations in Hawai'i, I had been looking for two things: 1) a way to integrate the two types of work I do while also promoting greater climate change awareness in our community, and 2) incorporate some new aspects that felt missing in my busy life, like art and music.

To achieve these two goals, I decided to coordinate a community event at a local theater that would involve both of my organizations (led by and starring the youth in my program) and invite other organizations and local artists to perform and present, as well.

First I developed a new curriculum for the year for our afterschool program that braided our place-based, cultural, and environmental topics together toward an understanding of climate change. Part of the students' experience was to do service learning projects for local organizations. Students then developed the program for the community event based on what they learned throughout the year, and invited the partner organizations to attend and present their work and provide the public information as well as opportunities to get involved. One of the partner organizations was the other one that I work for.

Concurrently, I invited local artists to participate in the event and explained that the theme was climate change causes, impacts, and local ways to get involved. Poets and artists agreed to participate and created work based on the climate change and action themes.

We held the event in April 2015. The students led most of the presentations in the first act and the invited local organizations presented about their related work in the second act. Perry and art was woven throughout the entire show. The local organizations also tabled at the theater before, during, and after

the show to provide informational resources and to enlist community volunteers in conservation, community garden, and land/ocean/watershed protection efforts.

### ***Helpful Resources and Community Partners***

There was both personal and professional value in completing this project. Professionally, the project brought together numerous organizations who work together often, but had never before focused together on climate change as a collaborative issue. Personally, I was able to tie together my two jobs and my love of art and music into one seamless focus, project, and experience.

### ***Successes and Best Practices***

We have learned that when youth lead an educational event in the community, adults listen. They are neutral messengers, and the audience is inclined to listen and support them in ways that they wouldn't if the messenger were a scientist of adult.

### ***Lessons Learned***

I would have provided a bit more structure to the students as they developed the event, as they were great at remembering and presenting the knowledge they had acquired about climate change throughout the year, but needed more support in

organizing the event. At the last minute I stepped in and pulled the whole thing together because the students were nervous to complete various components that they had previously signed up for.

### ***Value to the Community***

There is tremendous value in bringing together local organizations to provide the community with a one stop shop opportunity to learn about volunteer opportunities. Adding on to that information the motivation provided by students explaining the science and worldly value behind those efforts just seals the deal in terms of catalyzing adult community member enthusiasm and interest.

### ***Project Link***

[hawaiiwildfire.org](http://hawaiiwildfire.org)

### ***Keywords***

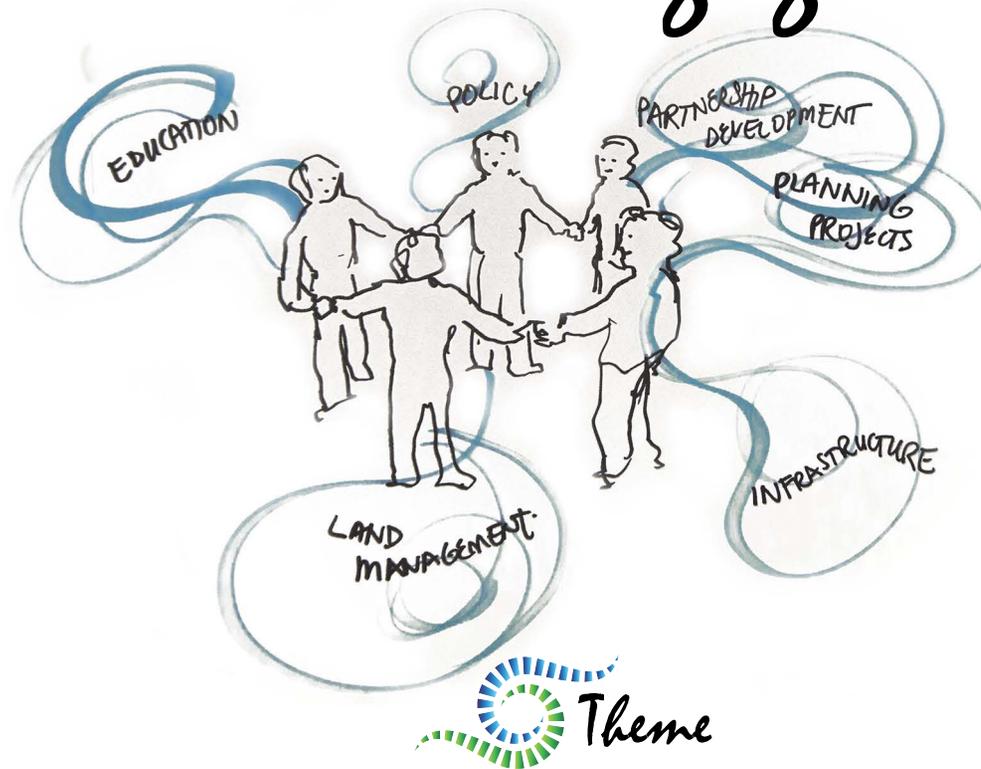
Sector Keywords: Community Organizations – K-12 Schools – After-School Programs – Nonformal Education

Approach Keywords: Science Dimension – Innovation and Social Innovation – Youth Investment/Empowerment – Nature Experience or Immersion – Creating a Model – Resource Management – Art-Making – Public Education Campaigns



*Photo by Elizabeth Pickett*

# Public Engagement



## Public Engagement and Civic Action in Community Climate Change

*Community Climate Change Fellow - Marna Hauk*

“Given the severity of the problem of climate change, and the time lag in the climate system that commits the world to significant changes in climate in the near future, many acknowledge that the public has an important role to play in reducing emissions and adapting to impacts.” (Wolf, 2011, p. 121)

**Public engagement, civic action, and climate change.** Solving the various problems associated with climate change requires more than the efforts of experts, scientists, and regulators; the solutions are dependent on the actions of the individuals that collectively come together in communities. As Moser (2006) notes, the very words ‘communication’ and

'community' share Latin derivation from the two roots "*com*" meaning 'together' and "*munia*" meaning 'public duties'.

There is an abundance of examples all over the world of how communities worked together at a grassroots level to create change. Certainly, most people can think of moments in history when a few strong voices motivated many to become major movements; Gandhi, Tubman, Chavez, Carson are names that might come to mind. These voices educated, they communicated. They motivated people to come together as activists for an issue or problem they wished to solve. Effective solutions to climate change, just as any other problem facing humankind, require community engagement and civic action.

Whether through public events, community climate organizing in neighborhoods, coalitional work with peer organizations, or public information and action campaigns, communities are rising up to reduce greenhouse gas emissions and build resilience to climate change impacts where they live, with their neighbors.

Environmental educators who are motivated to become agents of change in their communities will find here some approaches and models of public engagement that they can incorporate into their work.

### **How do we publically engage for climate change action?:**

#### **Environmental behaviors**

Based on extensive literature, Stern (2000) identifies four types of environmentally significant behaviors:

1. Environmental activism (e.g., taking part in a demonstration)
2. Non-activist behaviors in the public sphere (e.g., signing a petition or joining an environmental organization)
3. Private sphere environmentalism (i.e., the purchase, use, and disposal of personal or household goods)
4. Professional or organizational decision making (e.g., a designer chooses to use sustainable materials in her products; a banker invests only in ethical firms)

The first two types of behaviors are considered "public sphere", or civic actions, as contrasted with the latter two which are private sphere actions, those an individual does in the course of their daily life. All four of these behaviors are important, and collectively have the potential to make significant impact in the areas of mitigation and resilience.

#### **Environmental education, social capital, and civic engagement**

The work of environmental educators is to educate their audience about the natural world with the ultimate goal of moving their audience to positive environmental action. Environmental educators that are effective have social capital with their audience, meaning that their audience views the educator and/or the organization they represent as a meaningful and credible resource; these educators can use this social capital as a means to build civic engagement and action in their communities, thus increasing the network of 'social capitalists' working together for the common goal of climate change mitigation and/or resilience.

Civic engagement activities may play important roles in developing environmentally literate citizens; including students, families, and adults. Through issue investigations, environmental education provides a unique vehicle with which to connect people to their community and their world. While historically environmental education programs have sought to increase ties between people and places, often these programs focus on environmental outcomes or building 'natural capital' as opposed to 'social capital'. Social capital emphasizes civic engagement through collective action and may be represented as a society's ability to solve complex problems, such as environmental problems. By seeking to increase civic engagement and sense of place through an interdisciplinary approach, both formal and non-formal education communities might also play an important role in increasing social capital.

## Related Content

### Stories

- Bringing it Home Kentucky
- CCEd in Aboriginal Communities
- Climate Courage
- Dark Sky Festival
- Digital Travel in Canada
- Faith in Place in Chicago
- Global Kids Organizing
- LA Neighborhoods
- Mass Audubon Initiatives
- Open Lands CC Garden
- Women's Ecosocial Incubator
- Youth Co-Design



Photo from Neighborhood Council Sustainability Alliance,  
September 28, 2015

### Vignettes

- Culture Creation
- Fundraising
- Networking
- Storytelling

### Articles

- About Co-Design
- Open Space Technology
- Surfacing Unheard Voices

### Resources

- Caruana, Vincent. (2014). Civic action for sustainable futures: what role for adult environmental education? *Dissertation*, Faculty of Education, University of Malta. <https://www.um.edu.mt/library/oar/handle/123456789/10196>
- Krasny, Marianne E., Leigh Kalbacker, Richard C. Stedman & Alex Russ, Environmental Education Research (2013): Measuring social capital among youth: applications in environmental education. *Environmental Education Research*, DOI:10.1080/13504622.2013.843647. <http://dx.doi.org/10.1080/13504622.2013.843647>
- Moser, Susanne. (2006). Communicating Climate Change - Motivating Civic Action: Opportunity for Democratic Renewal? Paper presented at the conference on "Climate Change Politics in North America," Woodrow Wilson International Center for Scholars, Washington, DC, May 18-19, 2006. [www.wilsoncenter.org/ecsp](http://www.wilsoncenter.org/ecsp)
- Stern, P. (2000). "Toward a coherent theory of environmentally significant behavior," *Journal of Social Issues*, vol 56, pp 407-424.
- Wolf, Johanna. "Ecological Citizenship as Public Engagement with Climate Change." *Engaging the Public With Climate Change*. Whitmarsh, Lorraine, Saffron O'Neill, and Irene Lorenzoni, eds. London: Earthscan Ltd, 2011. 120-138. Print.



## Faith in Place and Culturally Relevant Community Climate Resurgence: Training CC Educators Across Community Faith Networks in Chicago *CCC Fellow – Veronica Kyle*

### **Background**

Veronica Kyle spent the past 35+ years in many parts of the US as well as Southern Africa and the Caribbean working on community development/human capacity programs and projects, many of which she developed. Creating projects that provide people with the tools to be better caregivers for the earth while building their human capacity has been her primary objective. For the past 6 years, She has worked as



Congregational Outreach Director for Faith In Place, engaging communities across Illinois on issues related to sustainability; water, energy, food/land use, environmental policy and advocacy. Veronica was a Toyota TogetherGreen fellow. She presently serves on the Illinois Vital Land Working Group and is an Environmental Justice Commissioner for the State of Illinois.

### **The Project**

Faith in Place and Covenant United Church of Christ (CUCC) joined forces with the After working as an environmentalist in many parts of the world and especially in urban settings, I was convinced that many people still do not know what climate change is, nor are they convinced that it exists. Even the very vocabulary that is often associated with climate change - carbon

footprint, CO2 emissions, adaptation, biofuels, carbon sequestration, greenhouse effect and the like - are not a part of the conversations that are taking place in the communities I engage with regularly. I am a firm believer in the motto, “if we ‘really’ knew better, we’d do better.”

Chicago Botanical Garden’s Connect Project to engage the 3,000 member African American community of the CUCC in understanding climate change and taking personal and collective responsibility to lessen its impact.

I developed a project that engages community and congregational leaders (youth and adults) in both the African-American and Latino communities across Chicago to become Climate Change Educators (CCE). The project focused on educating community leaders from both groups on the definition and implications of climate change, the contrasting opinions about its reality, as well as the strong evidence of its existence.

This is a highly-collaborative and diverse project; many people from different organizations and congregations come together to help us successfully reach and include multiple generations, interests, perspectives and backgrounds. To ensure success, there are many programs and activities woven into this project, including the establishment of a CUCC Green Team, creation of a native plant garden near the Youth Church Building, planting and harvesting a local, church-owned Congregation-supported Agriculture Program, signing petitions and posting them on social media sites to encourage our state legislators to pass the Clean Jobs Bill, intergenerational discussion groups, Green Movie matinees, green drink meet-ups, speaker forums, and local artist-led workshops.

Cultural relevancy is at the forefront of the project; it is important that this work speaks with and to the communities involved. My hope is that communities will benefit from engaging with

“ecological ambassadors” from their own communities. It’s about trusting the messenger. As such, the CCE were trained to facilitate and implement group discussions on the effects of climate change on their perspective communities/neighborhoods and how they can begin to make both individual and communal behavior changes to offset the impact of climate change.

### ***Story Circle Events***

The Green Team hosted numerous story circle events, using the Chicago Botanical Garden’s Connect Migration Stories tool to highlight the migration stories of their members, young and old alike. The stories were then linked to the effects of climate change on both human habitats and the natural habitats of other species like the monarch butterfly. The similarities of African-American migration and that of the monarch was the thread that ultimately connected the community to thinking about how to be better stewards of nature for the next generation.

### ***Workshops***

Faith in Place sponsored workshops where members of CUCC and their Green Team hosted numerous workshops to educate the community about climate change and the environment, the importance of native gardening to human and environmental health, and how to be better stewards and advocated for the environment.

### ***Description of Approach***

Faith in Place partners with congregations on environmental initiatives, meeting each faith partner “where they are” on their journey to be better stewards of the Earth, beginning with low hanging fruit and getting deeper into subject matter education and engagement from there.

To ensure a holistic methodology to climate change interpretation, our approach involves having each faith partner

create a Green (Ministry) Team whose members plan and implement *culturally relevant* educational activities. Here some of the ways we moved the Covenant UCC community toward climate change awareness and individual and collective change.

1. Faith in Place worked with the CUCC Green Team with the concept of first just “tabling.” The team set up a table in the narthex that was filled with relevant environmental handouts and demonstrations around particular climate change issues. Tabling included using the Connect Collage Tool to teach folks about the effects of climate change on the food we eat, the water we drink, water sources, how we dispose of our waste/recycling, gardening (food and native) composting and the like.
2. At our Tabling Events, participants learned how to sign petitions and send them to their legislators regarding climate change and clean jobs, how to use environmentally friendly and homemade cleaning solutions, native plants and seeds giveaways and celebrating the accomplishments of other local faith partners, like Vernon Park Church of God. Vernon Park Mother Carr Congregation supported the Agriculture Program with a generous \$10,000 donation. It was during the Connect Project that several CUCC members also joined the CSA.
3. In addition to the Connect Migration Stories Tools from both the Connect toolkit and Faith in Place’s Migration & Me toolkit. Through “story circles,” we invited and often pre-selected folks to share their families’ migration stories about coming to Chicago. The migration stories tools were an excellent way to gather people to not only share their stories in a relaxed and affirming setting, but to make the connection to the plight of the Monarch butterfly and other species and how climate change affects all of us and our natural habitats.

4. We then moved to more challenging “in your face” type of climate change education through our “Green Movie” events. It was in these events that we were able to introduce the community to some pretty heavy and challenging topics surrounding climate change and the environment. We showed documentaries such as TAPPED, What’s On Your Plate, Trashed, Flow and other movies to engage all ages in the education of these issues.

“A picture is worth a thousand words”—and nothing showcases an issue like a full-screen movie theatre experience. At these events, environmental topics, like water, waste, food and climate change, were introduced to hundreds of congregational and community members. Afterwards the floor was open for discussions and Q&A. At the events, the CUCC Green Team served healthy snacks and drinks not made from high fructose corn syrup and other artificial ingredients.

At our events, the Green Team also had tables filled with handouts of the subject matter.

5. We sponsored workshops and invited local environmental experts to share, teach and engage the community in topics such basic Climate Change 101 (using the Connect Tool, Climate Jeopardy), what are rain barrels, rain gardens, composting, recycling, planting a garden, etc. and what they each have to do with climate change.

6. Finally, we organized hands-on intergenerational activities such as tree planting, working at a local CSA farm, planting a native garden on the church grounds, recycling and advocating for clean air and clean jobs, at the annual outdoor Bar-b-que and Business Expo. This last step was actually physical engagement in activities to reduce and/or reverse some of the damaging effects of climate change in our community and surrounding areas.

Faith in Place has a lending library of movies, books and environmental educational supplies that congregational green teams can borrow to support their green initiatives.

In conclusion this case study with the collaboration of Faith in Place and Covenant UCC was a journey in testing the theory that if Climate Change was introduced to any community (of faith) in a culturally sensitive way that people would “get it” and change in behavior would occur.

Through the African American Bible study tool, CUCC Green Team Ministry was able to educate the members on the impact of CC on the African-American community. The bible study also helped to support the notion that how we respond to climate change as people of faith is important.

### ***Helpful Resources and Community Partners***

Chicago Botanical Gardens’ CONNECT Tools (Climate Jeopardy, Create Your Own Visual Collages, Climate Change 101 Workshop, Climate-Community Connections: Garden Landscaping, Migration Stories) were pivotal in the success of this project. We had established a relationship with the Gardens. The Vernon Park Church of God was a vital partner in this project. This relationship formed as a result of my TogetherGreen Fellowship project where I worked with this congregation to develop a pollinator garden, the result of which was the formation of a CSA.

### ***Successes and Best Practices***

This project was a labor of love, especially because this was work with my own congregation; I had a personal investment in a successful outcome. So many of the church’s practices changed as a result of participation in this project, including reduction in water use, use of biodegradable materials, and reduction in food waste. The change has been systemic; there are 43 ministries at CUCC and all of them have ceased

purchasing water bottles for their events and Recycling Religiously! Reaching out to these ministries was a massive undertaking, as it was not possible to use sermon time or to make meetings with 43 different committees. Our most successful approaches to reach out to all of these ministries were the Green Movie and tabling at various congregational events.

All of this was possible because of the willingness of the passion and commitment of the CUCC fellowship, particularly on the part of Velma Pate. We were also very fortunate to receive a generous grant from the Chicago Botanical Garden. I must also note that this project is still ongoing and other congregations are hearing about it; we hope to spread this program to other

### **Project Link**

[www.faithinplace.org](http://www.faithinplace.org)

### **Additional Climate Change Action & Education Resources**

- Climate Change and African- American Bible Study: National Council of Churches-Eco Justice Program:  
<http://nccecojustice.org/resources>

### **Keywords**

Faith-Based – Youth Investment/Empowerment – Culture Creation – Intergenerational – Consultative – Building Community Networks – Public Education Campaigns



*Veronica with other environmental educational leaders in creative envisioning for community climate change projects at CCC Fellowship Training, Shepardstown, Virginia*



## Empowering LA Neighborhoods for Collective Climate Action

CCC Fellow – Laura Mack

### Background



Laura Mack is the founding Executive Director of the Neighborhood Council Sustainability Alliance, a Los Angeles-based nonprofit organization and initiative of Social and Environmental Entrepreneurs (SEE), a 501(c)(3) public charity.

The Neighborhood Council Sustainability Alliance helps Angelenos do a

better job of protecting natural resources for the future and preserving their communities in the face of a changing climate, while uniting community leaders and partner organizations to enhance quality of life across Los Angeles.

### The Project

Long before I took personal action on climate change, I had ample evidence that it was real, and that it was urgent. After all, I was an Emergency Manager who saw firsthand how disasters were increasing in frequency and severity due to climate change. I knew how they devastated the lives of co-workers and friends.

And I was married to a JPL earth scientist. One day, my normally cheerful husband came home in a deep funk. He had just left a meeting in which he learned that Arctic ice was melting at a much faster rate than any of his colleagues had imagined.

We had a young daughter at home. With this dire new report, the climate crisis suddenly felt very personal and threatening.

At the time, I was helping people respond to climate and other disasters, but I wasn't sure how I could help protect my own daughter's future.

Then I heard about new research from UCLA that for the first time showed how our changing climate might impact LA – neighborhood by neighborhood. I learned that my own community would face real and tangible challenges, such as sea level rise impairing emergency access to our area, and increased wildfire threats. And I saw an opportunity to act. I joined my Neighborhood Council – groups of LA civilians who are empowered to improve their communities – and formed a committee to address the local threats of climate change.

Naively, I assumed it would be easy to obtain resources and support from the City of Los Angeles or other neighborhood councils in LA. It soon became clear, however, that most councils were working in silos, if at all, on pressing environmental issues. Meanwhile, the City was so big and dispersed that tapping into local government and nonprofit resources was unwieldy.

In 2014, a colleague recommended I apply for the NAAEE Community Climate Change fellowship program. For my CCC project, I decided to form the Neighborhood Council Sustainability Alliance (NCSA), with the goal to bring together and support community leaders and partner organizations, and

accelerate environmental sustainability and climate resilience across the city.

From 2014 to 2015, with the support of the CCC fellowship program, I launched and developed a NCSA network that today includes 100 neighborhood councils, 450 community leaders, and multiple partner organizations. The NCSA also formalized a governance structure and a fiscal sponsorship agreement, and secured grant funding. And we facilitated a series of community programs and initiatives that included a sustainable city visioning event with CCC fellow Susan Chung, as well as a NAAEE-sponsored Project-based Online Learning Community for sharing of drought action and water conservation resources across LA communities. 2016 is off to an equally exciting start!

With guidance from Rupu Gupta of New Knowledge Organization on communicating our program outcomes, the NCSA was named as one of 20 nonprofit organizations in LA County as a semi-finalist in Social Venture Partners' Social Innovation Fast Pitch program.

The NCSA is also grateful to have been selected to pilot a new program that addresses the challenge that urban households are responsible for approximately half of the world's carbon emissions, and yet are difficult to motivate to personal action on this issue.

Our goal is to empower households to reduce both their carbon and water footprints by 25% or more, and implement simple strategies to make their communities more resilient to climate and other disruptions, through proven social learning and community engagement practices.



The NCSA will tap its network of community organizations to pilot the program with 240 households, on 30 neighborhood blocks in LA, over the next year. Our plan is to then evaluate pilot results, and refine and scale up the program until a social change tipping point of 15% of residents in three LA communities is reached. We look forward to sharing our results and lessons learned!

### **Project Links**

<http://ncsa.nationbuilder.com/>  
<http://empowerla.org/NCSA>  
Facebook:  
[facebook.com/neighborhoodcouncilsustainabilityalliance](https://www.facebook.com/neighborhoodcouncilsustainabilityalliance)  
Twitter: @LA\_NCSA

### **Keywords**

Sector Keywords: Community Organizations – Nonformal Education  
Approach Keywords: Civic Action – Social Innovation – Culture Creation – Environmental Justice – Building Community Networks – Gardening – Watersheds – Resource Management – Art-Making – Public Education Campaigns

# Climate Change Science



## The Science Dimensions of Climate Change Education

*Community Climate Change Fellow - Michelle Eckman*

Whatever the age of the learner, climate science informs community-based climate change action. In some sectors, there is still active resistance to the idea that climate change is underway. Resources from NOAA and the links below can help share the basic patterns of the complex dynamics of climate change in simple language. Some educators find empowering learners as science inquirers

to be a powerful way to engage with climate change action. Part of the project can involve science discovery learning approaches and experiments. Further, climate science learning can build bridges, galvanize data collection networks, empower youth action, and support learners getting into the field for for immersive science learning.

Climate science is the backbone of community-based climate change action, yet there exists a widespread lack of understanding about the science of global warming and climate change. While research demonstrates that a person's scientific knowledge in and of itself is not a predictor of climate change action, it is still important that EE practitioners have a sound understanding of climate change mechanics. This allows practitioners the ability to share the basic patterns of the complex dynamics of climate change in simple language with audiences of any age. Some educators find that science-based programs are powerful ways to move motivated learners to climate change action.

In these pages, you will find stories of our Community Climate Change Fellows' work that have integrated the science of climate change into their projects. In some cases, the science of climate change supported a larger community project, in other cases, making the science of climate change clear and understandable to their audience was the explicit goal of the project. Several projects also supported field learning in climate science for youth. We hope the stories, vignettes, and resources we share in this chapter are helpful in your climate change literacy efforts.

## **Related Content**

### *Stories*

- Biking to Climate Repair
- Bird Observatory Project
- Bring it Home Kentucky
- Climate Courage
- COOL Earth Schools
- Experiential Marine Science
- Malama Kai Youth Action
- Marine Mammal Volunteers
- Mass Audubon Initiatives
- Science on the Sphere

## **Resources**

- CLEAN (Climate Literacy and Energy Awareness Network): A collection of 600+ free and ready to use on line resources reviewed by educators and scientists (project funded by NSF). <http://cleanet.org/>
- U.S. EPA's Climate Change site <https://www3.epa.gov/climatechange/> - contains everything from scientific background on why our climate is changing so rapidly, carbon calculators to help users learn how they can minimize their personal carbon emissions, and includes links to Spanish versions of the content
- U.S. NOAA's Science and Information for a Climate-Smart Nation: <https://www.climate.gov/> - tons of links to tools and information about climate science, including global maps and trends, atmospheric and oceanographic circulation, sea level rise, and human responses to climate change.

## ***Common Misconceptions about Climate Change***

- <http://cires.colorado.edu/education/outreach/climateCommunication/CC%20Misconceptions%20Handout.pdf>
- <http://beyondpenguins.nsd.org/issue/column.php?date=June2008&departmentid=professional&columnid=professional!misconceptions>
- <http://beyondpenguins.nsd.org/issue/column.php?date=June2010&departmentid=professional&columnid=professional!misconceptions>
- <http://www.pewclimate.org/science-impacts/realities-vs-misconceptions>



## Building a Network of “Science on the Sphere” Theaters for Climate Change Education in Mexico

*CCC Fellow – Margie Simon de Ortiz*

### **Background**

Margie Simon de Ortiz has ample experience in the management of environmental education and communication programs, sustainable development, solid and hazardous waste management consulting, urban and regional planning, policy and institutional analysis, project management and administrative support, and fundraising and management of these funds for non-profit organizations. During her time as CICEANA’s Director, the organization has directly benefited more than 6,000,000 persons through its many programs. CICEANA has developed a rooftop botanical garden at its headquarters that is recognized by the Secretary of the Environment (SEMARNAT), since the year 2002, as an UMA (environmentally managed space). In addition, during her period as Director, CICEANA has received various distinctions, the last three from SEMARNAT through The Center for Environmental Education and Capacity Building (CECADESU). They include; The National Prize for Environmental Merit in the category of environmental communication (2012); an honorable mention for the National Prize for Environmental Merit in the environmental education category (2011), and the accreditation of CICEANA as a Quality Center for Environmental Education (2010), for receiving the highest national evaluation in the five aspects of the model for evaluation and accreditation employed by CECADESU in the evaluation process.

### **The Project**

In the past four years, 15 climate theaters have been built in various locations throughout Mexico. Several more are in the process of being built. All of them contain the "science on a





sphere,” technology developed by NASA and NOAA. This includes a round projecting screen of 2 meters in diameter and all the necessary equipment to project in a 360 degree view. These theaters have the capability to showcase over 300 presentations developed by the aforementioned organizations on a variety of topics relating to climate change. They can also project a view of the earth in real time (15 minutes delay), as they are connected to a worldwide satellite system. Currently, each theater is run as a separate entity, with varying success and results. There is little consistency in content, logistics, management of the project, and staffing.

Funding is haphazard due to its reliance on political will and donations. This project strove to develop a network to better manage these programs, sharing content, supervision, and funding. Specific goals included:

- Development of content and didactic material for the education program
- Developing and carrying out a management plan for hiring, training and supervising each center’s staff with a centralized management team
- Initiating the program for all classes of visitors
- Exploring the possibilities of, and obtain funding for this project
- Obtaining more partners for this project
- Insuring the continuity of this project in an unsure and ever-changing political and financial environment.

***Project Link***

<http://ciceana.org.mx/>

# Social Innovation



## Social Innovation and Innovation for Community Climate Change Action

*Community Climate Change Fellow - Marna Hauk*

“Complex urban relationships, including organisational networks, facilitate contact between individuals and groups, support sharing of information and contribute to the development of collective capacity to mobilize in order to benefit more fully from the diversity of opportunities presented within the city.” (Soltesova, Brown, Dayal, & Dodman, 2014)

### **Climate Change Innovation**

Communities are innovating solutions for climate change (Biello, 2014). Cities and local communities are at the pulse point of innovation with resources such as diverse communities, sufficient density for synergies, and emergent needs due to the sometimes intense vulnerability of the population.

Biomimicry's Janine Benyus (2014) emphasizes that innovative approaches to carbon farming and sequestration, along with appropriate mitigation and adaptation, can reverse climate change. Climate change innovation can include incubators, new networks, community enterprise development, and novel approaches and synergies for these.

### **Incubating New Endeavors**

What does climate change innovation look like? In some communities, forming novel networks of stakeholders to innovate products and networks can move the community agenda forward. The use of regenerative design to support social incubators of groups of innovators to form climate resilience startups is making strides in Oregon (Women's Ecosocial Incubator). Other business innovation can include tying new business growth with climate resilience strategies, such as ecotourism and bird sanctuaries in Mexico's Banderas Bay Region (Bird Observatory Project) or in UN projects in Jamaica (Climate Resilient Food Systems). Technological innovation in community climate change projects can also be expressed through leveraging emerging technologies in service to community needs: the use of 360 science learning theaters with climate science (Science on the Sphere).

### **Innovating Networks**

Extending already existing networks to innovate in their areas of concern can be a high leverage approach, as seen in a Los Angeles neighborhood association "going solar" (LA Neighborhoods). Innovation can mean combining approaches, such as environmental education and firefighting with youth nature immersion (Malama Kai Youth Action) or connecting faculty at colleges with elementary students for climate change innovation research (Biking to Climate Repair). Innovation in Community Climate Change education can also mean creative use of metaphors, such as inspiring climate change action through looking at intergenerational migration patterns inspired by the migration paths of butterflies (Faith in Place in Chicago).

### **Questions to Inspire...**

How could your project also generate a source of novel connection or community revenue?

How could you apply biomimicry to innovate a climate sequestering project?

What's already underway in your community - are there groups you could collaborate with?

How could you or your project connect with one or more other projects with whom you wouldn't usually collaborate?

### **Related Content**

#### *Stories*

- Biking to Climate Repair
- Climate Courage
- Climate Resilient Food Systems
- Climate Stories Project
- Community Food Networks
- COOL Earth Schools
- Women's Ecosocial Incubator
- Youth Co-Design

#### *Vignettes*

- Culture Creation
- Fundraising
- Inspiration
- Mutual Learning
- Networking
- Professional Capacities
- Storytelling

#### *Articles*

- Communities of Practice
- EEPro as Digital Community
- Open Space Technology
- Surfacing Unheard Voices



## Resources

- Benyus, J. M. (2014). How does nature manage carbon emissions? [Web video]. Let's reverse climate change together [Web page]. Biomimicry 3.8. Retrieved from <http://biomimicry.net/your-challenge-natures-solutions/>
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- Pelling, M. (2011). *Adaptation to climate change: From resilience to transformation*. New York, NY: Routledge.
- Soltesova, K., Brown, A., Dayal, A., & Dodman, D. (2014). Community participation in urban adaptation to climate change: Potentials and limits for community-based adaptation approaches. In E. L. F. Schipper, et al (Eds.), *Community-based adaptation to climate change: Scaling it up* (pp. 214-225). New York, NY: Earthscan/Routledge.



## Somewhere Over the Rainbow: Women Empowering Climate Action Network as a Social Incubator for Climate Justice and Gaian Resilience

*CCC Fellow – Marna Hauk*

### **Background**

Marna Hauk, Ph.D. is a Postdoctoral Scholar at Prescott College in Sustainability Education and serves as faculty and founder of the Institute for Earth Regenerative Studies in Portland, Oregon in the Pacific Cascadia Bioregion, innovating adult learning programs at the confluence of creativity, eco-restoration, and the living wisdom traditions ([www.earthregenerative.org](http://www.earthregenerative.org)). She mentors graduate students in climate change education, biomimicry, permaculture and science education, and regenerative design, as well as sustainability innovation and ecopreneurship. At the Institute, Dr. Hauk has developed the Women Empowering Climate Action Network (WE-CAN), an ecosocial



incubator nurturing mentored cohorts of community climate change action visionary-activists and their projects ([www.earthregenerative.org/wecan](http://www.earthregenerative.org/wecan)). She also works with Moonifest the nonprofit to fund micro-grants for women, the arts, and earth regeneration ([www.moonifest.org](http://www.moonifest.org)). Dr. Hauk has over seventy peer-reviewed publications and presentations in the emerging fields of regenerative design learning, creativity and innovation, project-based learning, ecofeminist climate action, land-based wisdom learning, sustainability education, systems biomimicry, environmental and climate justice, arts-based research, and advanced research methodologies.

### **Project Description**

The United Nations has identified working with women on community climate change initiatives is a highly effective strategy and a high priority. Women Empowered for Climate Action Network (WE-CAN) nurtures women action visionaries to unleash a next generation of climate change leadership and grassroots projects in our community. We have developed and are delivering a mentored, year-long action learning model piloted in Fall 2015 through Summer 2016 nurturing women and queer women in community based climate change action, climate resilience, and climate justice projects in the Portland, Oregon area. This includes cross-pollinating synergies between arts-based activists, permaculture and regenerative designers, and ecopreneurs. Think eco-incubator and mentor match meets climate crisis and agile leadership. A hive of hives for mutual support and action.

### **The Opportunities**

There are elder generations of second-wave feminist activists and culture mothers living throughout the region, and an up and coming generation of women and womyn concerned about climate change. How can we connect intergenerationally, leveraging and mixing the support and savvy of elder visionary activists to remove barriers from the next generation activists?

How can land-based, long-term women's sustainability projects help inform urban startups, culture, and action? How can we mix rural and urban endeavors? How can we link efforts to stop pipeline encroachment on land-based sustainability communities, community start-up and healing initiatives, and culture-making? How to mix art, innovation, and bootstrapped, small endeavors to nurture a matrix of connection and action across cultures and communities? How can we remove barriers to unleash the community organizing power and culture-making skills of women and womyn?

***Design and Development of the Ecosocial Incubator:  
Removing Barriers and Nurturing Strengths and Relational  
Support in Curricular Innovation***

WE-CAN twinned climate resilience psychology with small business and nonprofit incubator strategies, leveraging social capital models of community resilience and community development to inform the unique curricular blend. Women and queer women have brilliant ideas about how to move the culture to a deeper place of connective resilience, yet these same visionaries often face hidden hurdles of internalized oppression.



*WE-CAN Participant 02, E. Zionts, 2016*

This program catalyzes women into visionary-activists. We support women with strengths-based approaches in a program that carves out time for realizing and developing their visions. We use feminist and ecofeminist pedagogical approaches and Joanna Macy's *The Work that Reconnects* applied to climate change challenges by using Macy and Johnstone's (2012) *Active Hope: How to Face the Mess We're In Without Going Crazy* for key readings and personal processes. We also leverage the Business Canvas, ecopreneurship development, and social incubator processes and practices to support each visionary-activist conducting needs assessment, asset mapping, user experience design to develop participant/client personas, chasm crossing models for cultural change framing and product/program development, and social media and launch plans wrapped into a pitch refinement process. WE-CAN accelerates visionary-activists catalyzing community climate change resilience.

### ***Participant and Mentor Recruitment and Nurture***

Another dimension of the program is the matching of experienced mentors with the social incubator participants. Each project visionary-activist is matched with a mentor and meets monthly to get support and encouragement for their unique project. This 1:1 attention is a great augmentation to the online weekly check-ins and monthly meetings of the core incubator of facilitators and visionary-activists. The year-long maiden cohort program concluded with a celebration and a pitch-fest with the mentors supporting the visionary-activists in their launch plans.



*Climate project visionary-activists use collage to catalyze regenerative futures.*



### ***Associated Community Programming***

During this pilot year, by holding information sessions and community movie screenings of films with discussions, such as “Arise: The Movie,” we modeled, discussed, summoned, and took inspiration from women visionary leaders in climate resilience projects. In addition to storyboarding and developing video pitches for their own projects, the WE-CAN social incubator participants also developed a slate of final community programs to share their climate change action initiatives with the community. This included *Active Hope* experiential workshops on Earth Day at a local farm as well as a slate of activities at a womyn’s summer festival. These offerings included climate change soul collage workshops for introverted activism at a summer womyn’s music festival, banner making workshops for climate change actions from recycled plastic, distributing action resource sheets for the community, and sharing on a panel about their experiences with the social incubator WE-CAN project to inspire others to take action.

### ***An Emergentist, Ecosocial Incubator Form***

By incorporating breaking research (Hauk, Gaia E/mergent, 2014), the WE-CAN program design adapted a currently popular social learning and project-based accelerator model, the social incubator, into an ecologically and bioculturally responsive form: the ecosocial incubator form. The ecosocial incubator form (Hauk, 2014, 2015) included use of “deep green enterprise” (Hauk & Mitten, 2012) approaches that combine ecopreneuring, biomimicry, deep biomimicry (Mathews, 2011), regenerative design, permaculture, and social permaculture with research-based program management approaches (Jordan, deGraaf, & deGraaf, 2005) and small business development vibrant practices [including Osterwalder & Pigneur’s (2010) business canvas and Moore (2014)’s research on product/program innovation].

The ecosocial incubator form supported each visionary-activist to conduct needs assessment, asset mapping, user experience design to develop participant/client personas, chasm-crossing models for cultural change framing and product/program development, and social media and launch plans wrapped into a pitch refinement process. At every step of the process, ecosocial dimensions of context, place, land, and ecosocial community needs extended the often anthropocentric project incubation practices into ecosocial incubation. Additionally, the

approach was emergentist, applying emergence and complexivist leadership in innovation (Goldstein, Hazy, & Lichtenstein, 2010), and structuring in creative and open spaces for creative emergence. Participants self-organized and selected different climate change and climate justice topics they would research and present on, to emergently co-design the “curriculum.”

### ***Projects Being Eco-Incubated***

This unique mixture of ecosocial incubator, feminist consciousness-raising, ecofeminist embedment, queer land herstorical resourcery, arts-based regenerative education, and metadiscursion within circles of emergent support and innovation for visionary-activism informed by climate justice and Gaian resilience have all combined to bring to life the earth regenerative wisdom learning findings from the women’s land and women-led expeditionary research. The daughter projects in the WE-CAN ecosocial incubator include climate soul collage workshops for introverted activism; community organizing with teens to develop rites of passage for climate change and permaculture action; designing and planting acres of carbon-sequestering food forests in a Southern Oregon climate sanctuary; installation of solar panels and anti-pipeline activism on a rural women’s land; concept phase development of a climate food gardening collective; and organizing a women’s



eco-music festival with climate change and climate justice programming.

### ***Community Climate Change Ecosocial Incubator Research – and Next Steps***

Another dimension of the WE-CAN success is the willingness of consenting participants to share their stories and journals of the process of incubating their projects and for the mentors to share their insights so that the program can leverage this research to find out more about how to nurture effective visionary-activist, ecofeminist community organizing for community climate justice and resilience. This might also make virtual programming possible. I am currently conducting post-experience data collection and synthesis activities, based on coaching and conversation with John Fraser from New Knowledge. Stay tuned as the adventure unfolds.... We are happy to share our successes and look forward to future collaborations.

As with permaculture models of sharing surplus, the WE-CAN program has produced not only launch-ready climate change, resilience, and justice projects, and research findings for future program enhancement, but also has shared information with larger networks and catalyzed more visionary-activists, consonant with a meta-finding of my doctoral research, about nurturing and catalyzing and spawning daughter-circles of regenerative ecosocial creativity (Hauk, 2014, pp. 433-438). Our community outreach and events leveraged the work of women visionary leaders in climate resilience projects, organic and community farming and food sovereignty action, indigenous eco-restoration projects, and queer womyn's land sustainability culture-ways. The final celebration of the WE-CAN program similarly shared out the rich intersectional liberation to catalyze granddaughter projects in an autopoietic regeneration of the wild, landed, ecosocially embedded thriving and creative cultures and programs.

### ***Project Link***

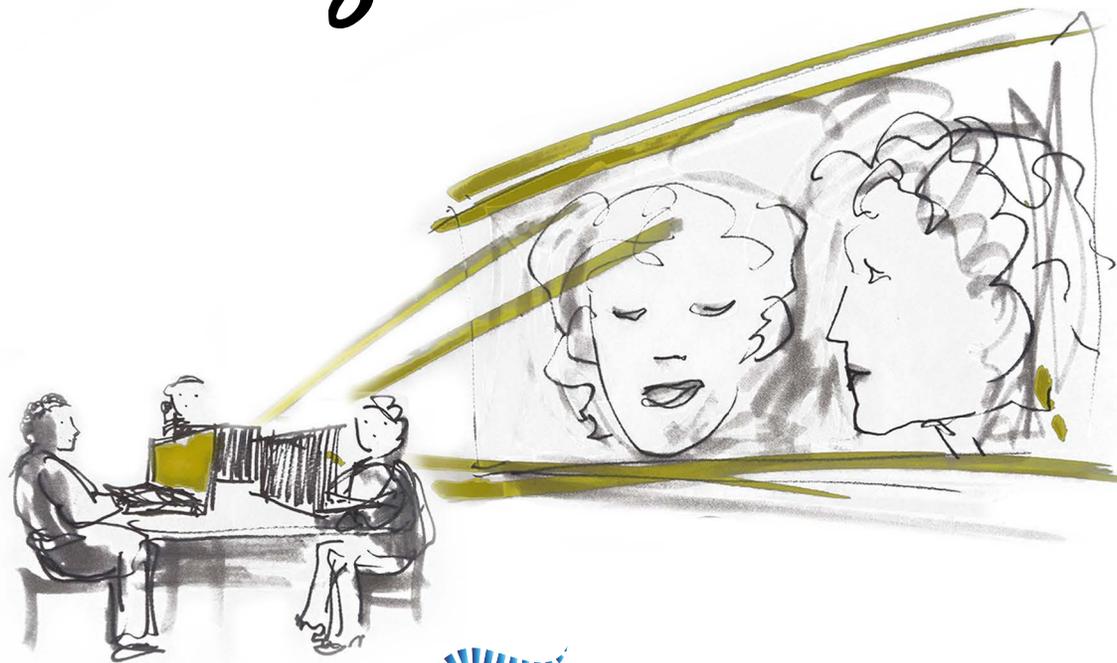
[www.earthregenerative.org/wecan/](http://www.earthregenerative.org/wecan/)

### ***Keywords***

Sector Keywords: Nonformal Education  
Approach Keywords: Intergenerational – Innovation and Social Innovation – Culture Creation – Environmental Justice – Train the Trainer – Consultative – Creating a Model – Building Community Networks



# Digital Media



## Storytelling and Digital Media in Climate Change Education

*Community Climate Change Fellow - Adam Ratner and Jason Davis*

Stories and storytelling are essential components of effective climate change education. Sharing stories about personal and community observations and responses transforms climate change from an abstract scientific idea into shared, direct experience. Bringing stories into education helps students build vital connections between climate change and their own lives and encourages

creative solutions to climate change. The creative use of digital media can help bring climate change education to life. Given the wide array of tools available, educators and students can develop engaging videos, digital storytelling projects, podcasts, or games to help students and audiences engage more deeply with the issue of climate change

The type of digital media projects you choose to develop will be influenced by your budget, skills, time, or staff. Projects can range from extremely simple, such as posts to a Facebook page, to professionally produced videos and interactive websites. It is important to recognize that it is not necessary to produce professional-quality media projects to further your climate education goals – student or visitor-produced digital media can be a fantastic way to engage diverse audiences with climate change.

Below are two digital media-related examples from Community Climate Change Education projects:



*Scene from an animated short related to climate change and marine mammals © The Marine Mammal Center and California College of the Arts*

At The Marine Mammal Center in California staff educate guests about the impact of climate change on marine mammals, such as seals and sea lions. However, it is often difficult for guests to visualize these impacts, including sea level rise and warmer water temperatures that have occurred over many decades.. Education staff at the Center were looking for a way to create an engaging visitor experience around these themes. They began a unique partnership with the California College of the Arts in which animation students under the direction of a Pixar animator teamed with marine biologists and educators at The Marine

Mammal Center to animate a video highlighting the science of climate change, its impacts on seals and sea lions, and how people can take action to reduce their carbon footprint. This 6.5 minute animated short, *A Word With Dr. Whizzlepuff: Climate Change*, is now used with school and youth groups, adults and volunteers, and on The Marine Mammal Center website to share the story in a visually compelling way, highlighting hard-to-see issues in our atmosphere and in the ocean.

Climate Stories Project is an educational and artistic forum for sharing stories about personal and community responses to climate change. Students from a wide variety of educational settings learn how to prepare, carry out, and record audio or video interviews with local and remote community members about their observations of and responses to climate change. Students edit the interviews and share them via the Climate Stories Project website or via social media. Students also develop creative media projects using the interviews, such as podcasts, digital storytelling projects, and musical compositions. Jason Davis, the director of Climate Stories Project, has written and recorded several original pieces using interviews recorded in Anchorage and Shishmaref, Alaska, locales already hard-hit by climate change.

### **Related Content**

#### *Stories*

- Climate Courage
- Climate Stories Project
- Digital Travel in Canada
- Marine Mammal Volunteers
- Science on the Sphere
- Youth Co-Design

#### *Vignettes*

- Culture Creation
- Inspiration
- Professional Capacities
- Storytelling

## Articles

- Communities of Practice
- EEPro as Digital Community
- Surfacing Unheard Voices

## Resources

There are many useful tools, websites, and other resources available to aid educators in effectively using digital media. Here is a selection of some for you to investigate:

- Climate Change in the Age of Media, a UMass Lowell project that helps teachers integrate digital media into climate change education:  
[http://cleanet.org/cced\\_media/index.html](http://cleanet.org/cced_media/index.html)
- Storycorps, a NPR-affiliated project that features a wide range of personal and student-recorded interviews:  
<https://storycorps.org/>
- Audacity, a free audio editing application:  
<http://www.audacityteam.org/download/>
- Climate Visuals, scientifically tested visuals to help tell the story of climate change impacts:  
[www.climatevisuals.org](http://www.climatevisuals.org)
- NASA Climate Change for Kids, interactive games and videos designed for kids to learn about climate:  
<http://climatekids.nasa.gov/>
- Storytelling Links
- Climate Stories Project [www.climatestoriesproject.org](http://www.climatestoriesproject.org)
- Climate Generation [www.climategen.org](http://www.climategen.org)
- Climate Voices [www.climatevoices.org](http://www.climatevoices.org)
- Climate Outreach [www.climateoutreach.org](http://www.climateoutreach.org)
- Storycorps [www.storycorps.org](http://www.storycorps.org)

## Keywords

Video – Film – Storytelling – Media – Animation



*A student from California College of the Arts develops animated characters for a video on climate change ©California College of the Arts*



## Listening to Climate Change: The Climate Stories Project

CCC Fellow – Jason Davis

### Background

Jason Davis is a musician, music teacher, ESL teacher, and environmental educator. He founded the Climate Stories Project in Boston, Massachusetts.

### About the Project

Climate Stories Project is an educational and artistic forum for sharing stories about personal and community responses to climate change. There is a strong need for individuals and



communities to engage with climate change as a personal and local issue, rather than only as an abstract scientific idea.

As a musician, I first had the idea for the project by listening to pieces by composer Steve Reich that featured segments of recorded interviews. I began recording audio interviews of people speaking about their responses to climate change and have written and performed several pieces of music featuring these interviews.

Over the past year, I have

been working with high school and college students to teach interviewing skills and set up and record interviews with local and remote community members about their responses to climate change. So far, I have worked with students at high schools in Maine, Connecticut, and Alaska, as well as college students in Oregon, Massachusetts, and Ottawa.

All of the Climate Stories Project education workshops have been successful. Students have developed important interviewing and communication skills and have learned to relate to climate change on a personal and community level.



### Project Links

[www.climateoutreach.org](http://www.climateoutreach.org)  
[www.climatestoriesproject.org](http://www.climatestoriesproject.org)

### Keywords

Sector Keywords: University – Community Organizations – Schools  
Approach Keywords: Youth Investment/Empowerment – Culture Creation – Environmental Justice – Intergenerational – Communication Models – Creating a Model – Stories – Indigenous Dimension – Uses or Makes Film/Video/Media – Art-Making



## Concepting Digital Products on Climate Resilience in Canada

*CCC Fellow – Roy Jantzen*



My Community Climate Change Action Project was to create a digital product for summer recreational tourism visitors who enter the Yukon on the Alaska Highway by vehicle, aimed at educating them about climate change impacts along the Alaska Highway corridor. Geological, ecological, climate and cultural changes would be used to tell a story of climate impacts and alterations happening in the north.

The idea of resilience is about resisting damage and recovering from disturbance. My project was not directly aimed at resilience but rather at interpretation. Through an interpretive storyline, my idea was to help travelers recognize change and disturbances to the landscape. Using that information, they were encouraged to make a change in their own lives to help reduce their climate impacts.

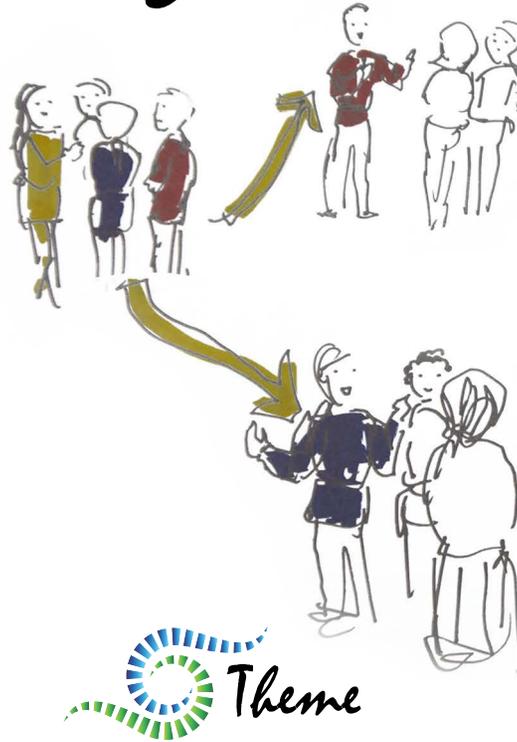
The digital product I had planned for my project was designed to make someone's vehicle window a frame to tell a story about climate change. The project plan was then to actively engage travelers in that story by encouraging them to get out and experience key features and unique attributes on their Alaska Highway journey through the Yukon.

### **Keywords**

Sector Keywords: Technology – Resilience – Interpretive Signs – Travel

Approach Keywords: Stories – Public Education Campaigns

# Training The Trainer



## Teachers as Leaders and Training the Trainer for Community Climate Change

*Community Climate Change Fellow - Marna Hauk*

Community-based work often involves informed, concerned, and activated community members who catalyze and inspire others to action, including the action of catalyzing still more others. In a word, the most effective climate change teaching is contagious!

### **Teachers as Leaders and Change Agents**

Sometimes these catalysts are themselves teachers. Teachers in public schools have a long and honored history as catalysts inspiring change. Teachers are well-positioned to help learners translate climate science fact and regional context into community project actions with local relevance & connective power.

In addition to teachers leading community climate change action, another successful pattern in the community climate change mosaic is train the trainer programs. Community organizations, many with public outreach, leverage the power of networks to set up train the trainer style programs for community climate change action.

## Related Content

### Stories

- Climate Courage
- Climate Resilient Food Systems
- Climate Stories Project
- COOL Earth Schools
- Experiential Marine Science
- Marine Mammal Volunteers
- Women's Ecosocial Incubator
- Youth Co-Design

### Vignettes

- Inspiration
- Preventing Burnout
- Professional Capacities
- Storytelling
- Youth Action

### Articles

- Research on CC Educators
- Surfacing Unheard Voices

### Resources

- Active Hope: Resources for “The Great Turning” - <http://www.activehope.info/> (Macy & Johnstone, 2012)
- Climate Change Education (Krasny, Chew, Hauk, & DuBois, 2016) – Pages 35 – 43 from <https://naaee.org/sites/default/files/euee.pdf>





## Developing Climate Change Curriculum with Common Ground High School

*CCC Fellow – Michelle Eckman*

### **Background**

Michelle Eckman is Director of Education at the Connecticut Audubon Society. In her role at CAS, she creates and implements the education strategies of the organization, for school and non-school programs, and ensures they align with the mission, conservation and advocacy work, of the CAS. She



works to help audiences meet their curricular and recreational objectives. She has worked in conservation her entire career, starting as an avian field biologist, shifting to environmental educator, and now as a non-profit administrator.

### **The Project**

I am working with Common Ground High School, an environmental science magnet school in New Haven, CT to develop climate change curriculum that serves as the project-based work associated with various courses at the school. The idea came to me after many years of side conversations with staff at this and other schools about the lack of climate change lesson plans that are easily accessible and help meet their curriculum requirements in courses beyond the traditional science courses. There is a great need for resources for teachers because few teachers receive the appropriate pre-service training to adequately address climate change comfortably in their classrooms, access to professional development workshops about climate change is not equitable across all schools in the state, and the comfort level of teachers with the dynamic breadth of climate change as a topic is low. While progress on this project has been slow, I am working with teachers at Common Ground to develop comprehensive lesson plans that both teach students about various issues about climate change while engaging them in solutions-based activities. In the previous school year, I worked with two environmental justice teachers to develop three lesson plans for their year-long course. I had the opportunity to be present for all of the lesson plan implementations, and another fellow, Jason Davis, was able to work with this class on his Climate Stories project.

I have been working with Common Ground in various capacities in the past three years. Their staff is heavily involved in the environmental education efforts in the state, and we have worked together to plan and implement two statewide environmental education conferences (2014 and 2015). I chose Common Ground because of their dedication to providing inner city youth with environmental leadership opportunities in their local and global communities. Common Ground is willing to try new things, and are the perfect partner to be the "test kitchen"

for new approaches. Their philosophy of education makes them a tremendous educational resource. We have not been able to obtain any outside funding to support this effort; CAS has been supporting my work with Common Ground.

### ***Successes and Best Practices***

I have been fortunate to live near a number of my fellow Fellows, and have been able to integrate their programs into my work with Common Ground. Jatnna Ramirez's project, Sustainaware, was renewed for another year (2015) and we collaborated on a CT-based Sustainaware program. Three students from Common Ground participated in this week-long climate justice leadership training program. Jason Davis' Climate Stories project was one of the lesson plans we integrated into Common Ground's environmental justice class.

### ***Lessons Learned***

While Common Ground is a wonderful school to work with, they put a lot of demands on their teaching staff. Their staff participates in many professional development workshops and other programs; therefore their time is quite limited. The slowness of progress is largely due to the very limited time they have to work with me to develop curriculum. The lesson plans that we are creating are not simply content-based; they are largely action-oriented projects. Therefore, there is more time, effort and focus required to properly align the project with expected skill building requirements.

This is the benefit of not having funding to support our efforts; we are not beholden to a foundation or outside funder to complete our project at a certain time. On the other hand, that probably is also contributing to the progress being so slow.

### ***Value to the Community***

Our mutual goal is to have a series of lesson plans that other high schools in the state can use in their various courses. While most traditional high schools do not have courses in

environmental justice and biodiversity, there are social studies and biology courses where the climate change lesson plans could easily fit. We want to succeed in our efforts because climate change is the most pressing issue of our time. CAS and Common Ground follow the approach best defined by the discipline of civic ecology - people learn by doing; it is the action that matters. If we can develop a model that high school teachers can implement with relative comfort and ease, then we believe we have a greater chance of building climate literacy in our state.



### ***Additional Climate Change Action & Education Resources***

- <http://climatecommunication.yale.edu/about/>
- <http://umich.edu/~snre492/cases.html>
- <https://pangea.stanford.edu/programs/outreach/climatechange/>
- <http://www.climategen.org/>
- <http://www.eecapacity.net/fellows/michelle-eckman>

### ***Keywords***

Sector Keywords: Science or Nature Center – K-12 Schools – Nonformal Education

Approach Keywords: Science Dimension – Innovation and Social Innovation – Youth Investment/Empowerment – Environmental Justice – Creating a Model – Curriculum



## **Biking Our Way to Climate Repair at Laurel Mountain Elementary School in Austin, Texas**

***CCC Fellow – Trevor Hance***

### ***Background***

Trevor manages a 5 acre wildspace preserve, which district students have converted into an outdoor learning laboratory, complete with trails, a restored prairie, a rainwater harvesting shelter that serves as a classroom and helps sustain our ponds through the Texas summers, a butterfly habitat, and game cameras to track wildlife. Using constructivist learning theory, Trevor give students an opportunity to better connect with the world around them to gain a sense of true self and place as they move into the typically challenging teenage years. Trevor does not teach his students anything, but instead gives them every opportunity to learn.

### ***The Project***

Last year, my first grade daughter wanted to bike to school. We live five miles from school, and have to cross a busy frontage road intersection for a six-lane highway. I was nervous, but we practiced on a few Sundays, and in May, started biking to school. She (and I!) loved it, but, I quickly noticed that although I work at what would be considered a successful public school in a very good location (at the end of a dead end street), we didn't have many bike riders --- but do have a 20 to 30 minute wait time in the car rider line before/after school. My daughter and I wanted to change that. I decided to work on a grant to get some used bicycles and have my students rebuild them, use them for science experiments (physics/energy stuff) primarily, art (where they design decals for our bicycles), physical education (where they'll use the bicycles to teach second grade students how to ride bicycles, and finally, math, where the students have conducted the first half of a study to determine the carbon

footprint impact that might result as we build interest and momentum for bicycling to campus. We're seeing a change in attitude towards bicycling, awareness of fossil fuel "waste," and an interest in spending more time being proactive about living a cleaner life. Finally, every grant I apply for has to include a service component, so, students who don't own a bicycle can "earn" one through participation in this project, and the rest we will donate out to high-need communities and schools. Fifth grade rocks, doesn't it!





My first partner is EE Capacity, who provided the largest portion of the grant. I'm eternally grateful for the relationships I've developed with the organization. The other big partner is a local co-op called the Yellow Bike Project, whose mission is "to put bicycles on the streets of Austin and Central Texas by operating community bike shops, teaching bike mechanics and maintenance, and acting as a local bike advocacy group." YBP donated the 50 used bicycles and helped us purchase 16 tool kits at a discounted price to make sure that our schoolhouse-bike shop stays in business long after this first-year effort is finished. Another wonderful partner is the Texas Medical Association and local physician, who provided a discount-and-match for us to get 100 bicycle helmets so that these bicycles each have a helmet and so that our PE classes have helmets for students who learn to ride at school, this year and in the future. Finally, the teachers at my campus think I'm a little crazy for taking on projects like this, but they are supportive, and participate, and I include them as my "most local" community

partner. Kids learn! Kids love to learn! Kids love to learn and want to learn more! I win!

Managing 150 kids, 50 bicycles and a public school schedule is pretty tough. I probably wouldn't have taken on 50 bicycles in the first year, but, we're plowing through and we will meet our full distribution by the end of the school year. Another setback is that one of my fellow teachers had breast cancer in the fall so she was out for a few months, which slowed down some of the momentum for a while. The good news is she's back, and healthy, and looks great. We are blessed.

First of all, it is FUN! Second, each bicycle we turn back into circulation will have touched at least ten lives (nine students working on it, plus the recipient), and there is no telling who else will wind up with the bike in the future. It's a simple, lowest level, non-political, service-oriented way to get people to make a change towards sustainability, and one that puts smiles on faces as they make the change.

### ***Project Link***

University of Texas Environmental Science  
Institute.<http://www.esi.utexas.edu/>

### ***Keywords***

Sector Keywords: Community Organizations – K-12 Schools – Nonformal Education

Approach Keywords: Science Dimension – Youth Investment/ Empowerment – Nature Experience or Immersion, Environmental Justice – Super Teacher / Teacher / Leader – Building Community Networks

Additional Keywords: Public Schools – Bicycling – Carbon Footprint – Health – Community – Constructivist Learning Theory – Project-Based Learning – Place-Based Learning – Service Learning

# Empowering Youth



## Youth Investment and Empowerment

*Community Climate Change Fellow - Elizabeth Pickett and Marna Hauk*

*“... I don’t have to talk about climate change at the dinner table for my children to know all about it... I don’t have to indoctrinate them, even if I wanted to. Climate change is in the air now. It is embedded in the culture they are growing up in. It is mentioned in movies, on television, by celebrities. Young people aren’t deniers. Youth is always the answer.”*

*Dr. Michael Oppenheimer, Princeton Professor and Climate Scientist*

In classrooms, parks, zoos, through traditional, digital, and social media, and almost everywhere the youth of today look or visit, news of climate change or its many impacts abound. The youth of today have grown up with more of a global awareness than any other generation in history, and this awareness and integrated, assumed knowing includes a powerful sense of urgency about climate change. Youth are developing an acute understanding of the plethora of attitudes, behaviors, and decisions that created the conditions that have and continue to lead to climate change, and are rethinking and redesigning their decisions and priorities accordingly. The youth of today are being supported by educators and activists to get outside and garden to produce clean, local, and transportation-free food...to walk or ride bikes instead of relying on vehicles...to march on Washington D.C. or in the streets of urban areas across the continent... to become the educators themselves by holding community events, teaching the adults and decision-makers in their own communities about climate change, local-to-global linkages, and action solutions. Youth are finding their sense of identity and purpose through climate change action, and through the re-envisioning of energy, food, transportation, and community. More than half of the CCC projects involved a youth dimension, through action, visioning, protest, connection, solution building, science learning, immersion, restoration, and the arts.



## Related Content

### Stories:

- Biking to Climate Repair
- COOL Earth Schools
- Global Kids Organizing
- Malama Kai Youth Action
- Public School CC Curriculum
- Youth Climate Job Training
- Youth Co-Design

### Vignettes:

- Youth Action

### Articles:

- About Co-Design

## Resources

- Taking it Global (2007) – Youth and Climate Change: Taking it Global, from [http://tig.phpwebhosting.com/guidetoaction/Climate\\_Guide\\_to\\_Action\\_en.pdf](http://tig.phpwebhosting.com/guidetoaction/Climate_Guide_to_Action_en.pdf)
- UNICEF – Youth in Action on Climate Change: Inspiration from Around the World (2013) [http://www.unicef.org/education/files/Publication\\_Youth\\_in\\_Action\\_on\\_Climate\\_Change\\_Inspirations\\_from\\_Around\\_the\\_World\\_English.pdf](http://www.unicef.org/education/files/Publication_Youth_in_Action_on_Climate_Change_Inspirations_from_Around_the_World_English.pdf)
- Red Cross – Youth Action Today <http://www.ifrc.org/en/what-we-do/youth/youth-resources/publications/>
- <http://www.ifrc.org/en/what-we-do/youth/youth-action/adapting-to-climate-change-and-addressing-catastrophes/>
- Climate Co-Lab Youth Action on Climate Change 2014 - <http://climatecolab.org/plans/-/plans/contests/2014/youth-action-on-climate-change>
- UN (2013) – Youth and Climate Change Report - <http://www.un.org/esa/socdev/documents/youth/factsheets/youth-climatechange.pdf>



## Bringing it Home: Galvanizing College-Age Students in the Big Picture of Climate Change

*CCC Fellow – Jennifer Hubbard- Sánchez*

### **Background**

Jennifer Hubbard-Sánchez serves as the State Specialist for Sustainable Programs and the Director for the Center of Environmental Education at Kentucky State University (KSU) in Frankfort, KY. KSU is Kentucky's only historically black (HBCU), Land Grant institution. Jennifer holds an MS Degree in Environmental Studies, an MA Degree in Mexican Anthropological Studies from the Universidad de las Américas in Puebla, Mexico, and a BA in Spanish from Saint Michael's College in Colchester, VT. Her work at KSU focuses on creating and implementing sustainability and environmental education for diverse and multilingual audiences so that all people can have access to culturally relevant ways to live greener, healthier lives, while appreciating and learning more about the physical environment that sustains us. Her main environmental interest is climate change and how it encompasses all other environmental issues we collectively face. Jennifer serves as Vice Chair for the KY Association for Environmental Education, co-leader of the Kentucky Environmental Education Consortium, a member of the leadership team of the Southeastern Environmental Education Alliance, and is a member of the NOAA Climate Stewards Education Project.



### **The Project**

Because I work at a University, it makes sense that my efforts would be directed not only to the general Kentucky community through Cooperative Extension, but also to the students that we serve on a regular basis here at our institution. Through several trainings and classes that I was asked to teach for students here on campus about climate change, it became more and more apparent that KSU students were hungry for solutions to make their campus more sustainable and to educate the public on climate change issues. Students started coming by my office more frequently and asking me to support them in efforts to "green" our campus, and an amazing partnership was born. Serendipitously, as we began our work together, the announcement for the CCC Fellowship came out and, upon urging of Kentucky State University students and colleagues, I decided to apply. The focus of the KSU project was, and remains, to engage and empower college-age students in the big picture of climate change and allow them to answer the following questions for themselves and then for others: What is climate change? What causes it? What can we do about it here at KSU?

Over the last couple of years, it has given me immense pleasure to work with the Kentucky State University (KSU) Green Society, KSU's chapter of Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS), and other students to develop more awareness and action on our campus about climate change. Participating students at KSU have received in-depth trainings on climate change basics, either in their undergraduate courses I've been asked to guest-lecture in, or through workshops we've conducted outside of the formal classroom. Additionally, five KSU students have been trained in the Project Learning Tree Southeastern Forests and Climate change curriculum. Through these efforts, KSU students have designed and conducted several climate literacy and awareness campaigns for the campus and Frankfort communities. Shortly

after receiving the fellowship (which we at KSU consider a part of the institution and not just belonging to one individual), we were contacted by a representative of the Frankfort Climate Action Network (CAN) to inquire about co-hosting a viewing of *Disruption: Climate. Change.* on KSU's campus. In October, 2014, students prepared and hosted a movie screening for over 50 members of the campus and Frankfort community, complete with guest speakers and a student question and answer panel. Another student-led effort involved students handing out reusable shopping bags with a logo they created featuring tips for reducing individual carbon footprint at campus welcome week, Earth Day 2015, and other campus and community events. One of our heftiest efforts was to start a fully-functioning recycling program on campus. After two years of working with KSU facilities, administration, student groups, etc., we were able to secure support for these dedicated students to purchase recycling bins for each office on campus, as well as to convince facilities to purchase recycling dumpsters that were strategically placed around campus. In the fall of 2015, after spending several early morning hours with students distributing recycle bins to offices and preparing and executing an educational campaign, KSU was finally recycling.

We, the students and I, continue to monitor those efforts and work together to be sure that all parties involved are doing their part to make it a complete success. Another major effort that has resulted from this fellowship is KSU's hosting of the 2016 ReForest Frankfort event, which was held on April 2, 2016, on our campus. In its eighth year, ReForest intends to do just that—bring together hundreds of community volunteers to plant trees in open green spaces in our city. When we were approached about this effort, I consulted with the students and they were immediately engaged and eager to host this event for the first time on a University campus. Since the summer of 2015, students have been attending all of the planning meetings and have had a voice in the execution of the event. Over 2,500 trees were planted at KSU by over 800 members of the campus and

local community, an endeavor that our students will be able to witness for decades to come. What began as a fellowship with the goal of implementing climate literacy education and awareness campaigns for students on our University campus has successfully evolved into a wave of action that has drastically altered our University's footprint and heightened student, faculty, and staff awareness of climate change and other environmental issues.



**JOIN US FOR 2016 REFOREST FRANKFORT  
AT KENTUCKY STATE UNIVERSITY**

**SATURDAY, APRIL 2, 2016**  
**9:00 a.m. - 1:30 p.m.**

Re4est 4K Run for the Trees begins at 8:00 a.m.

Hosted on a university campus for the first time, we will plant 2,500 trees and enjoy educational exhibits, live music, free food, and trees to take home!  
This is a rain or shine family event.

T-shirt to the 1<sup>st</sup> 500 participants

For more information, please contact:  
Lorri Grueber, Frankfort City Arborist  
at lgrueber@frankfort.ky.gov / (502) 682-1914

To volunteer, contact:  
Jennifer Hubbard-Sánchez  
at jennifer.sanchez@kysu.edu / (502) 597-5813  
or Irma Johnson at irma.johnson@kysu.edu

Want to design next year's event t-shirt?  
Contact Becky Bishop at dougbeckybishop@gmail.com  
to learn more.



### ***Helpful Resources***

Our community partner for the fellowship was and still is the KY Association for Environmental Education (KAEE). KAEE has been a wonderful support for this initiative- providing students with guidance and leadership throughout all of our efforts. The Executive Director, Ashley Hoffman, has served the student initiatives by reviewing materials and acting as consultant on the projects, as well as linking them to other opportunities. One example is through the Kentucky State Environmental Education Consortium funded through EECapacity. The 2015-16 initiative focuses on empowering and educating fifteen students from Kentucky State University, Eastern Kentucky University, and Murray State University. The first weekend of February, 2016, students attended a two-day leadership retreat where they met cohorts from other Universities and were trained in the basics of EE, designing and marketing educational campaigns, fundraising, leveraging networks for success, teambuilding, and more. Students from all three institutions went back to their respective campuses and planned three very different environmental literacy campaigns that were implemented throughout the fall of 2016. Opportunities like these, for KSU students and others, are what allow the efforts started by the fellowship to grow and flourish into life-changing possibilities for young people who represent the future of our field.

### ***Successes and Best Practices***

Perhaps the most unexpected, pleasant surprise that has come out of the fellowship is the long-lasting engagement of students and the relationships that have resulted. When I started out on this journey, I was thinking that I would work with the student group to implement a project or two. As evident from my project description, the work has yet to stop. Student participants are now integrated into the field of environmental education in many ways, be it by attending our state's annual EE conference, serving on local boards like the Frankfort Solid Waste Task Force, and signing up for Project WET, WILD, and PLT

educator trainings. The campus community is also more involved in ameliorating environmental issues and I am quite certain that this is due to our students caring and demanding that we do better. The ongoing nature of our efforts has created a new culture of environmental awareness and appreciation and I truly believe that this is in great part due to the seed planted by then CCC Fellowship.

### ***Lessons Learned***

It is always a challenge to get any group of folks to be on the same page and stick with it. Sometimes, getting together with a group of busy college students is like herding cats! It is hard to reach all of the students who are interested in contributing at the same time and so we have had to be very strategic in our meeting schedules, and in planning and holding events. Time is really our greatest limiting factor, as the students have so many ideas about what they would like to do for each initiative, however, they then remember homework, jobs, exams, etc. and have to reign in their plans a bit. We've had a lot of talks about developing effective AND reasonable projects that do not take up every free moment they have. This has been a good learning lesson for them on how to develop better work-life balances. It should be noted that enthusiasm within our group is definitely not lacking!

### ***Value to the Community***

First off, at the individual level, I can attest to how rewarding it is to work with young people who will very soon be entering into the workforce and witnessing how they celebrate successes and face defeat. Starting a recycling program (on a campus that had not recycled before 2015!) was filled with challenges, backlash, and frustrations. There were times we all wanted to give up. Watching the students' resilience and drive to educate and empower others by taking meaningful action was by far the most rewarding thing I've done in my professional career. Seeing the change in levels of interest and engagement among other students, faculty, and staff, has made all of this effort

worth it. For the community and our partners, we have been able to work together to support eager students who represent our collective future- not only in EE, but in other sectors as well. Allowing them to make decisions and lead these efforts is beneficial on so many levels. For KAEE, our community partner, we are working to hone the next generation of leaders of EE in our state by providing them with the tools they need to learn and implement projects designed by them, benefitting us all.

### ***Additional Climate Change Action & Education Resources***

- Climate Literacy and Energy Awareness Network (<http://cleanet.org/index.html>)
- North American Association for Environmental Education (<https://naaee.org/>)
- <http://kysu.edu/academics/cafsss/research-extension/cooperative-extension/environmental-education/>
- <http://kysu.edu/2014/08/28/ksu-selected-for-pilot-climate-change-fellowship/>
- Project Learning Tree's Southeastern Forests and Climate Change secondary module (<http://sfrc.ufl.edu/extension/ee/climate/>)
- NOAA's Climate Stewards Education Project (<http://oceanservice.noaa.gov/education/climate-stewards/>)
- Kentucky Association for Environmental Education ([www.kaee.org](http://www.kaee.org))
- EECaacoTu State Consortia (<http://www.eecapacity.net/about-us/state-consortia>)

### ***Project Link***

[www.kysu.edu/ee](http://www.kysu.edu/ee)

### ***Keywords***

Youth Investment/Empowerment – Environmental Justice – Train the Trainer– Public Education Campaigns



*ReForest Frankfurt Volunteers, 2015*



## Youth Climate Resilience Job Training in Baltimore *CCC Fellow – Sam Little*

### **Background**

Sam is an adopted son of Baltimore City where he manages environmental education programs at Parks & People Foundation, a locally-based nonprofit organization. Sam facilitates meaningful outdoor experiences for Baltimore youth through school-day, after-school and summer nonformal environmental education programs, including urban park field trips, installing schoolyard habitats and vacant land reuse projects. Sam is a true believer in self-powered transportation (you'll see him riding around Baltimore on his bike) and enjoys publicly accessible open space in urban areas, looking at maps,

street art, and, of course, bees and trees! Sam is dedicated to community-based grassroots approaches for cultivating environments that bring out the best in people and encourages everyone to visit Baltimore to explore its' unique natural and cultural past, present and future!



### **Origins and the Need**

The project origin is about engaging people (i.e. Baltimore young adults) to understand and actively care about the outdoor places they inhabit (i.e. neighborhoods, schools and public open



spaces) in order to adapt and mitigate climate change-related impacts. The idea is to collaborate with Baltimore City youth, through a long-term process, in learning about and addressing climate change and resiliency-related issues directly impacting Baltimore City (e.g. sewage overflows, blighted vacant land, lack of healthy food, low tree canopy, etc.). Sam sees the need as two-fold:

1. Urban dwellers often do not have formative opportunities to actively engage in meaningful and positive experiences in their environment (in this case the term “environment” is broadly defined to fit the urban experience, i.e. urban surroundings, including both natural and man-made components). In particular, the potential for young people to become passionate stewards and champions of the places they spend time is often missed.
2. We are at a unique place in time when there is a worldwide serious issue in climate change that needs to be addressed. There is a need for a shift in the human

relationship with the environment and natural resources, particularly related to the fact we are fundamentally changing the biophysical environment by burning fossil fuels for energy.

### **About the Project**

Originally, Sam sought to integrate his climate change education project through Parks & People Foundation's (PPF) middle and high school informal environmental education school programs (i.e. school-day - Nature & Cultural Field Trips on the Gwynns Falls Trail Program and after-school - KidsGrow!). Since then, in order to delve deeper than permitted by structural limitations of school-based programming, the project has evolved to be an integral component in the BRANCHES program. BRANCHES is a year-round green jobs training program for youth ages 14 to 21 where there is a unique opportunity for a long-term project; working with a small group of dedicated young people. WBAL TV presented a short news



report on the program in August, 2015 related to the Baltimore riots in April. BRANCHES addresses two vital needs in Baltimore City—the need for meaningful employment for underserved youth and the need for a trained workforce of environmental stewards caring for our parks and open green spaces. Team members learn urban forestry, natural resource conservation and vacant lot reuse skills, including tree and natural resource management, urban agriculture and building schoolyard habitats. Recreation is also an important part of the program, and participants have the opportunity to try new activities including riding a zip-line, rock climbing, canoeing and tent camping.

All the work at PPF, from creating and sustaining green spaces to providing recreational opportunities for youth, is integral to building resilient communities facing a changing climate – particularly the economically and environmentally disadvantaged facing greater health risks. The program goals are to:

1. Engage 14 Baltimore City young people (2 teams of 7) in paid employment for 8-25 hours/week, 9 months/year for 1-4 years, in order to:
  - a. Earn an income
  - b. Learn essential job skills
  - c. Positively contribute to improving environmental conditions
  - d. Build social capital in stressed communities
2. Equip the next generation of environmental stewards with the necessary knowledge, skills, attitudes and values - starting at the local level of West Baltimore communities through hands-on projects such as raised bed gardening, nature play space construction, vacant land reuse and urban natural resource conservation.

Specific to climate change, BRANCHES team members are learning the necessary skills to implement projects that build resilience within their own communities (e.g. schools and neighborhoods), such as:

1. Preparing and responding to natural disasters
2. Utilizing vacant land to be community assets, rather than blights, in ways that contribute to climate change adaptation and mitigation. For example, using vacant land as storm water mitigation facilities, community managed open spaces and food production.
3. Planting and maintaining trees in order to learn urban forestry skills and contribute the TreeBaltimore goal of reaching 40 % urban tree canopy.
4. Designing and constructing nature play spaces for youth of all ages to play and learn in.

### ***Helpful Resources and Community Partners***

Sam's community partner (and employer), PPF, has provided the necessary support and resources to implement his project through the BRANCHES program. The ability to integrate climate change issues into his work has allowed Sam to leverage efforts otherwise impossible. PPF has a 30 year history of revitalizing neighborhoods through hands-on cleaning and greening. This history includes strong partnerships with government agencies and communities, which enable the organization to better sustain green spaces, and programs that help children to learn, grow, and explore their natural environment. Additionally, PPF provided funding opportunities enable Sam to do his community climate change project with BRANCHES. He works closely with the PPF development team to incorporate essential program elements into funding proposals, which are implemented with the BRANCHES teams on a daily basis. Finally, PPF recently moved in to its' new campus on a restored portion of Druid Hill Park, including a LEED Platinum certified headquarters, historical buildings and 9-nine acres of park space. This space has been a crucial

component in Sam's project by providing a place to learn and practice key skills needed to build community resilience. The space will eventually be a key component of the Baltimore's green network in West Baltimore and contribute to improving the surrounding communities.

The biggest thing that went really well thus far was the opportunity to build relationships with the young people participating in BRANCHES while simultaneously meeting several big needs in Baltimore (e.g. environmental issues and lack of jobs). Many of the BRANCHES team members were new to the program at the end of 2015 and in just a short few months they grew an incredible amount in terms of both the job skills as well as in developing as young adults. The program presents a unique opportunity to work intensively with a small community of young people over a relatively long period of time; resulting in deeper impacts at the human scale. The key is to provide a structure that works for the given community and to strive for the best.

Parks & People's mission is undoubtedly connected to taking action on climate change but, as of yet, the organization does not directly address climate change issues in Baltimore City. One of the biggest challenges is intentionally thinking about activities in terms of taking action on addressing climate change and how to use all given projects (e.g. tree plantings, rain gardens, etc.) as a climate change-related educational opportunity while also being able to do this work, based on specific funding streams, in the time at hand. The intentional integration of climate change education into what is currently being done at PPF (e.g. community greening, youth development, providing volunteer opportunities) has also been quite challenging. Finally, coming up with creative ways to address both climate change and pressing community needs in Baltimore is a challenge as well. Making climate change relevant and meaningful while living in a city with so many more seemingly unrelated and more pressing issues, such as crime,

obesity, corruption, budget cuts, inefficient transportation, an aging population, and so on. The connections, while not apparent on the surface, can be made but it will often take a little longer than expected.

### ***Value to the Community***

Hopefully, Sam's community climate change work with BRANCHES will contribute to the body of knowledge available on working with youth from stressed urban communities on environmental education-based projects. Best practices for doing so is becoming increasingly important with the majority of the world population moving to urban areas and the impacts of climate change becoming more and more common place occurrences rather than rare things.

### ***Additional Climate Change Action & Education Resources***

- [http://www.beslter.org/frame5-page\\_4.html](http://www.beslter.org/frame5-page_4.html)
- [http://www.windows2universe.org/earth/Atmosphere/urban\\_heat.html&edu=high](http://www.windows2universe.org/earth/Atmosphere/urban_heat.html&edu=high)
- <http://blaustein.eps.jhu.edu/~zaitchik/bmorecool.html>
- <http://baltimoretreetrust.org/treekeepers>
- <http://www.baltimoresustainability.org/projects/growing-green-initiative/>
- <http://www.baltimoresustainability.org/projects/green-schools-initiative/>

### ***Project Links***

- <http://www.parksandpeople.org/learn/nature-field-trips-on-the-gwyn/>
- <http://www.parksandpeople.org/learn/after-school-programs2/kidsgrow/>
- <http://www.parksandpeople.org/learn/branches-or-summer-jobs/>
- <http://www.wbaltv.com/education/program-teaches-city-youth-green-job-skills/34930264>
- [http://www.wbaltv.com/news/parks-people-to-open-space-across-mondawmin-mall/34426862](http://www.baltimoremagazine.net/2016/4/28/new-parks-people-foundation-campus-helps-anchor-mondawmin-area)

people-foundation-campus-helps-anchor-mondawmin-area

<http://www.wbaltv.com/news/parks-people-to-open-space-across-mondawmin-mall/34426862>

### ***Keywords***

Sector Keywords: Community Organizations – After-School Programs – Nonformal Education  
Approach Keywords: Innovation and Social Innovation – Youth Investment/Empowerment – Environmental Justice – Train the Trainer – Creating a Model – Building Community Networks – Gardening – Watersheds – Resource Management – Urban Environmental Education – Green Jobs – Urban Vacant Land Reuse





## **Empowering Public School Climate Change Curriculum in Santa Cruz** *CCC Fellow – Stew Jenkins*

### ***Background***

Stew Jenkins is the Director of Monterey Bay Center for Environmental Literacy (MBEL) in Santa Cruz, CA. He teaches Pre-K to 12th grade students the skills and knowledge to become environmentally literate. To be environmentally literate



means to be educated and empowered to make decisions and take action in support of the health of all earth's systems.

### ***About the Project***

I teach 4th-12th grade students about climate change using age-appropriate curriculum. I have taught many students the causes of climate change and the concepts and vocabulary

needed to understand it. After learning that humans are the main cause of climate change, the 4th and 5th graders look at different aspects of their life in order to reduce the carbon they are putting in the atmosphere. I use a curriculum called, "Journey for the Planet" put out by the Empowerment Institute. For older grades we might explore solar panels or the building small power-generating systems to power small motors, radios and water pumps.

I have been teaching environmental education for 20 years. I have worked for a wide variety of non-profit organizations including the Monterey Bay Aquarium, an outdoor science camp called Koinonia in Corralitos, California, LifeLab Science Program, and the Coastal Watershed Council. I have a teaching credential and a master's degree in multicultural education. Empowering students of all ages to make earth-friendly decisions is what gets me really excited.

### ***Helpful Resources and Community Partners***

The Public Works Department of Santa Cruz County expressed an interest in teaching students about climate change. I put together a curriculum that included PowerPoint presentations, a carbon footprint tool, and the Journey for the Planet Activity Book (put out by the Empowerment Institute). Later, I developed a set of climate change information cards to allow students to become experts in different parts of climate change and teach one another. Eventually, I expanded to middle schools and high schools. In middle school, students looked at how their families would need to adapt to the changes in the intensity of weather.

### ***Successes and Best Practices***

I was able to teach more than 700 students about climate change. I developed a wide variety of teaching tools and curricula that helped younger students digest smaller "bites" about climate change and then put these parts together to

understand the whole better. I exposed a diverse group of students to useful information and powerful tools.

### ***Lessons Learned***

I wish I had encouraged the students and their teachers to put on an event to pass their knowledge on to the parents and families. I did not include enough follow-up lessons that would allow students to take their new-found knowledge and spread it around to their communities.



### ***Value to the Community***

Reaching the children is like planting redwood seeds and watering them; if you do it right, these students can grow into very tall, very long-lived advocates for the earth and in support of human actions that benefit rather than harm life on earth. The youngest students will be living through the most dramatic changes of climate change. Students are open to hearing the truth and they WANT to take action, once they know how they can help.

### ***Additional Climate Change Action & Education Resources***

- <http://www.greeninja.org/carboncommand/> is a game about greenhouse gases for 3rd-5th graders
- <http://www.climateparents.org/> is a group of parents advocating for climate action
- <https://acespace.org/> The Alliance for Climate Education (ACE) is a wonderful program that works with middle and (especially) high school students
- The EPA has a valuable site focused on CC: <https://www3.epa.gov/climatechange/> including a site for kids.
- <http://www.cde.ca.gov/pd/ca/sc/envronliteracyblueprint.asp> - This is California's new Blueprint for Environmental Literacy

### ***Keywords***

Sector Keywords: K-12 Schools – Nonformal Education  
Approach Keywords: Youth Investment/ Empowerment – Public Education Campaigns – Carbon Mitigation – Adaptation – Education Followed by Action



## Mass Audubon Community Climate Change Initiatives

*CCC Fellow – Kris Scopinich*

### **Background**

As the Director of Education at Mass Audubon, Kris Scopinich works with educators, directors, and scientists at Mass Audubon nature centers and wildlife sanctuaries across the state to develop, coordinate, and evaluate programs and curricula for a variety of audiences—preschool-aged children, families, K-12 schools, adults, and community-based organizations. She is responsible for curriculum guidelines and evaluation as well as the on-going professional development of Mass Audubon



educators. Kris represents Mass Audubon's goals and objectives by actively participating in statewide initiatives and advisory committees with respect to increasing environmental and climate literacy in Massachusetts

s. In her role, she oversees Mass Audubon's work in Climate Literacy and Outreach, in partnership with the Advocacy Department.

Prior to stepping into her statewide role, Kris spent 14 years as the Education Manager for Mass Audubon's Drumlin Farm Wildlife Sanctuary where she oversaw on and off-site educational programs at the sanctuary and in local communities. In her work with colleagues and partners, Kris was part of developing programs such as Lowell Leaders in Stewardship, Digital Environmental Education Project, RiverSchools Network, and Leaders in Environmental Access for All. In partnership with colleagues in science education, she has developed original curricula for both formal and informal learning environments that address science education through inquiry-based learning and community-based field investigations of local habitats.

Her interest is in developing engaging learning environments that encourage people of all ages to explore their connection to the natural world as well as the role they can play in its conservation.

### **Project Description**

Mass Audubon developed a four-part climate change program that is results oriented and suits our organizational focus on advocacy, education and conservation. It includes:

1. Leading by Example to reduce our carbon footprint and showing others how they can, too.
2. Advocating for mitigation of and adaptation to climate change on a policy level.
3. Creating a culture of climate literacy and community-based action through our education and outreach programs.
4. Revising both the ecological management of our sanctuaries and our land protection plans through the prism of climate change.

My involvement in Mass Audubon's climate change program is focused on creating a culture of climate literacy and community-based action through three core efforts: Building staff and program capacity for integrating climate change messages across Mass Audubon; Promoting climate science and green energy literacy in K-12 schools in Massachusetts; and Supporting Mass Audubon Wildlife Sanctuaries/Nature Centers as Climate Change Action Centers. For my Community Climate Change Action Project, I decided to concentrate on the community-based effort to support Mass Audubon Wildlife Sanctuaries/Nature Centers to develop plans to engage visitors, members, and program participants in building climate literacy and moving to action. Our wildlife sanctuaries and nature centers are living laboratories for how our changing climate is affecting the nature of Massachusetts. They also provide engaging demonstrations of individual and community-scale ways for reducing carbon emissions through energy efficiency and green energy.

A core component of our work in increasing climate literacy and action among our members and program participants is to develop a suite of programs that effectively integrate climate change messages and action steps for general visitors and program participants. We also needed to build staff capacity through ongoing professional development in climate change science and communications.

As part of our efforts, we developed and launched the "Make the Switch" campaign. This campaign provides Mass Audubon members and supporters an easy and effective way to reduce carbon emissions and support the development of green energy. Based on our own carbon reduction experience, we partnered with Mass Energy Consumers Alliance, a non-profit dedicated to growing green energy in New England. We utilized 21 Mass Audubon Wildlife Sanctuaries/Nature Centers, media, and a series of "green" special events to build support and momentum for this important effort to reduce greenhouse gas

emissions in Massachusetts. To date, we have directly inspired over 700 members to switch to green energy through this program.

This effort, combined with our programs that integrate climate messages, inspired us to create a concept of Mass Audubon Climate Action Centers, which will leverage our core strengths as an organization. Mass Audubon Climate Action Centers will afford our staff at our nature centers and wildlife sanctuaries the training and resources to connect climate change to local communities and compel program participants and members to positive action. To ensure our attention to these critical steps to increasing climate literacy in Massachusetts, we have created and raised funds to support a Climate Change Program Coordinator at Mass Audubon. This key staff supports our work at our nature centers and wildlife sanctuaries, working with environmental educators to design curriculum informed by research and best practices as well as develop resources for programs, online, and across Mass Audubon communications.

My fellowship project was just the beginning of what has now become a core component of the work in the Education Department at Mass Audubon-- to increase environmental and climate literacy in Massachusetts.

As part of my project, I have consulted with a variety of community partners. We worked with Union of Concerned Scientists to support staff professional development as well as to identify effective actions to share with members and program participants. We also worked with Mass Energy Consumers Alliance to develop our "Make the Switch" campaign. We even met with researchers at Yale Project of Climate Communication to learn more in depth how we might change our own organization communication and outreach practices to become more effective. As part of this project and the work that has followed, I have found colleagues in this effort to be extremely generous with ideas and resources. We are all in this together

and we will make progress as we collaborate and work together to make an impact.

Staff at Mass Audubon were thankful and continue to appreciate resources we are providing with regards to integrating climate change messages into programs as well as supports for inspiring and even compelling our members, visitors, and program participants to take action. It seems almost a relief that they are not alone in thinking about how to include climate change as part of our work. For many it is difficult to teach climate change, its effects on local ecosystems, and appropriate/effective actions into programs. As such, it was often avoided, but discussion and sharing circles with colleagues have provided support and collaborative opportunities for program development and sharing best practices with colleagues across our statewide network of sanctuaries. Our staff also realize that integrating climate change affords unique opportunities to build networks with new partners in the communities they serve.

For the component of my project that was to design and implement the "Make the Switch" campaign as an accessible way to make a real difference in taking climate action, I learned that there is a learning curve working with environmental educators to include community-based advocacy as part of their work/programs. Not all of our staff were comfortable communicating about the campaign so we needed to offer more professional development and training than we originally expected. We also have/had a number of environmental educators that did not feel compelled to integrate climate change into their programs. I was not prepared, initially, to have educators that were not interested in teaching climate change to our program participants.

As an organization, we are moving in a positive direction with regards to embracing climate change as a core component of

our work as a conservation organization. Being able to message this to our constituents -- both internal and external has been key to our success. Thinking through what "addressing climate change" means to your own organization is a critical component to ensuring the development of an effective plan. I would say to any organization that is interested in addressing climate change, that it is critical to first look internally at one's own organization, staff, way of "doing business". Addressing any challenges within your own shop will help you become more successful and empathetic as you reach out to your constituents.



***Project Link***

<http://www.massaudubon.org/our-conservation-work/climate-change>

***Keywords***

Sector Keywords: Museum – University – Science or Nature Center – Community Organizations – K-12 Schools  
Approach Keywords: Science Dimension – Culture Creation – Communication Models – Creating a Model – Building Community Networks – Public Education Campaigns



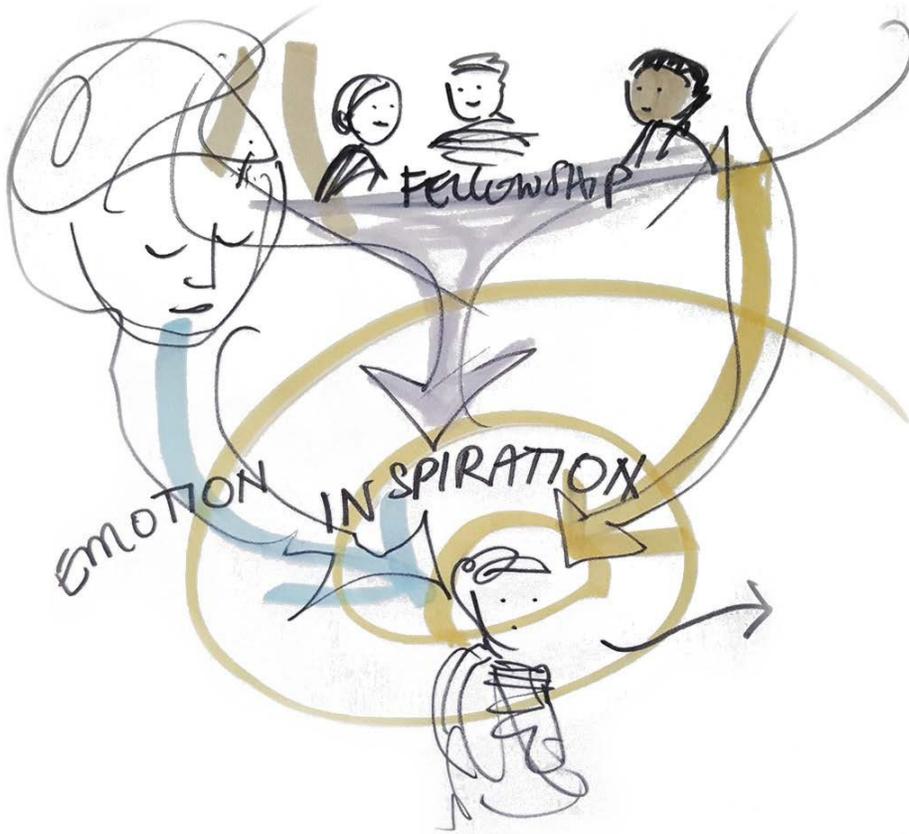
**Community Climate Change Education**

***Vignettes***

**A MOSAIC**

*of approaches*

## Introduction to the Vignettes: Inviting Creativity, Engaging the Heart, and Nurturing Supportive Relationships for Collective Impact



Over thirty themes emerged from the reports, story-sharing, and evaluative synthesis of the three-year long experience of the Community Climate Change Fellowship. Something important and unique grew and flourished during this time of mutual support, learning, and collegial collaboration. These vignettes share snapshots of emergent experience and highlight the process dimension of the fellowship. They indicate ways in which future programs and your own climate change initiatives and communities of practice can be catalyzed to support growth and sustain important community climate resilience organizing and education. Creating opportunities for **mutual learning** and **support** via **vibrant networking** can **prevent burnout, inspire, and create cultures**. The vignettes highlight the importance of **building professional capacities**, including **fundraising**, along with generating spaces for **storytelling** can empower community and **youth action**. These sixty vignettes reveal how the process of organizing effective community climate change for collective impact requires and invites creativity, engaging the heart, and nurturing supportive relationships.

# Preventing Burnout





## An Invaluable Network

***Michelle Eckman***

First and foremost, the network and Facebook site provides me with wider access to climate change resources than I would have otherwise. This is invaluable to me, as I imagine it is for everyone of us who face the challenge of very limited time and multiple demands on that time.

Keywords: networking - professional development



*Photo by Karen Temple-Beamish*



## Rejuvenation Through Shared Learning

***New Knowledge CCC Fellows Workshop  
Evaluation Report, p. 3***

Those who shared feeling disheartened during the interviews reported feeling reinvigorated at the Workshop. This was further underscored by the closing farewells, where expressions of gratitude were emotional for all present, stories of amusing transgressions were shared, and the levity and light-heartedness were fully joined. The Fellows mentioned the security and safety they felt in terms of the Workshop's design, implementation, content, and process.

Keywords: emotional support - reinvigoration - security - process



## **The Will To Keep Going: Recognizing That Change Does Not Happen Overnight**

***Stew Jenkins***

I have learned to find balance between work and rejuvenation. I have become overwhelmed several times in the past 15 years at the enormity of this and many other environmental problems and the lack of response from teachers, parents and students. I feel as if we are now experiencing the “tragedy of the commons” on a global scale. I’ve realized that change in people’s behavior is slow. And I’ve discovered that when I become an emotionally dry sponge that I crack and yell at principals (yep I did this in about 2007) and alienate others with whom I’m trying to work. Unluckily, my work on climate change is only about 30% of my job. So there are other tasks I have to spend my time on if I want to keep my job. It is very difficult to be aware of this slow motion disaster and to feel that I cannot stop it from happening.

Keywords: self-care - resilience - rejuvenation



## **Coping with Burnout**

***Elizabeth Pickett***

When I mentioned that I have two full time jobs and I’m feeling my energy begin to wane/deplete, there was an overwhelming response by the fellows that I need to restructure so that I don’t burn out. While this was not related to my project, it did wake me up and inspire me to restructure my working situation a bit. The first was to redesign my project so that it wasn’t just for my students and our community, but also something I would enjoy along the way (hence the addition of climate change related art and dance into our community event). It was valuable to have so many people who are passionate and experienced enough to have insight on how we can best achieve our work and keep ourselves healthy along the way.

Keywords: self-care - burnout - network - knowledge exchange



## Educators Nurturing Emotional Needs of Learners Foster Hope for the Future

***Marna Hawk***

I have specifically structured educational and collaborative learning contexts to proactively attend to the emotional and learning needs of the groups I facilitate. When I teach climate change as the topic of an academic course, or as a community-based activist program, I have had great experiences. Students dive into Joanna Macy and Chris Johnstone's book on *Active Hope: How to Face the Mess We're in Without Going Crazy* (2012), which has a four-part model for helping metabolize teachers' and students' experiences engaging with this topic. Their model includes experiential writing and activities for learners and learning groups using the Spiral of the Work that Reconnects. This includes narratives of our time and a reframing around what Macy calls *The Great Turning*. These practices include Coming from Gratitude and Honoring Our Pain for the World to build a framing around The Great Turning, then Seeing with New Eyes, and Going Forth, in the second and third sections of the book. I also use Joanna Macy's online video about the Shambhala Warrior Myth and the need for both insight and compassion in this critical work of our time.



*Photo by Elizabeth Pickett*

Keywords: emotional learning - experiential education - reframing

# Youth Action





## Accelerating CCE Planning Through Dynamic Intergenerational Research Networks

*Trevor Hance*

Through the fellowship, I have been able to gain momentum for my work in the GK-12 program, and open doors with various research groups who are willing to visit with my students. My approach is largely based on expanding student understanding of the systems of the world and how those might change, so any additional positive exposure that involves professionals from the natural or geologic sciences provides both deeper and broader learning experiences for these students. The greatest benefit of the fellowship was helping me focus on this school year and integrating the GK-12 program into our classroom ahead of my normal planning schedule.

Keywords: researcher - student connections - professional development - broadening student's perspectives - networking - accelerating planning



## Never Too Young: Mutual Learning

*Nadine Lefort*

At the recent People's Climate March hosted in Sydney, NS, I facilitated a children's workshop while adults met to discuss climate change actions in our region. I love working with kids, but I was disappointed to miss the creative and dynamic conversations that I knew would be happening. I wasn't expecting the same depth with the 4-11 year olds.

After my initial introduction to the workshop, in which I explained that we were going to be talking about all the things we do that are good for the earth, a 5 year old piped up, "Probably the best thing we can do for the earth is climb trees, because I think it makes trees happy, and trees need love too."

Such a simple statement, but it reminded me that this movement is about networking and collaborative brain-storming and planning, but it is also about loving our earth and taking time to enjoy it. Such wise words! I need to remember to weave that into my project and into all of my work.

Keywords: preK - youth engagement - nature appreciation - multigenerational



## Students Lead the Way

*Jatanna Ramirez*

The institute and their participation in the People's Climate March was the first phase of the march. The second phase of the Fellowship will be their work on the Climate Education Campaign. The fellows will continue to develop their organizing and leadership skills, as well as their commitment to the climate justice movement by working on the Climate Education Campaign that Global Kids leaders developed this year. This campaign calls for the Department of Education to mandate all New York public schools, grades K-12, to incorporate climate change science and solutions in their curriculum. This student-led campaign will help the students leading it to further develop their leadership skills and it will break through one of the greatest barriers of the climate justice movement, an uninformed citizenry. The students have already gained the support of two City Councilmembers who introduced their campaign demand as a resolution.

Keywords: youth engagement - youth leadership - advocacy - climate justice



## Igniting Activism and Connectivity Among Youth Climate Change Leaders

*Michelle Eckman*

I will never forget the day I spent with 20 Common Ground High School students, some of their families, and members of the teaching staff at the People's Climate March in NYC. The students expressed an understanding of why the speed of change in our climate is such a threat to us locally and globally, and truly understood the meaning of their actions and participation. Being around these young people was so inspiring, so reassuring. I got to see their faces, their expressions and responses to their surroundings. To have that experience with my CCC Fellowship partner at this point in time in our work, in my fellowship, in our place in history....well, it's hard to put into words. But it was perfect, just, and fitting.

Keywords: inspiration - global consciousness-activism

# Professional Capacities





## Cultivating Climate Change Program Development and Management Skills Among Citizens

*Karen Temple-Beamish*

The Desert Oasis Teaching (DOT) Garden's mission is to teach ecological restoration and food production gardening; implement and evaluate desert-adapted agriculture; unify the power of innovative technologies with the strength of New Mexico's diverse cultural heritage; and demonstrate respect and reverence for nature and humanity. As drought, soil erosion and food insecurity continue to grip the desert southwest, the DOT garden will help our community meet the Keywords: networking - professional development challenges we face feeding our families, now and in the future.



*Photo by Karen Temple-Beamish*



The fellowship has provided me with the professional development that has launched me from a hopeful, classroom teacher with a good idea into a capable and confident director of an ambitious, multi-purposed project. We have worked on our mission statement, created a development team strategy, refined our messaging, and learned how to better communicate to our community about our project. Especially helpful were the sessions provided in west Virginia, the follow up webinars and the networking with other professionals in my field. The encouragement and can-do attitude of everyone involved has been a wonderful salve to lagging energy and spirit.

Keywords: food security - professional development - inspiration



## **Best Practices Create Refined Program Design and Development**

***Laura Mack***

The professional development training I've received through the CCC fellowship has been invaluable in shaping the design and development of this project (and I have no doubt, will play a significant role in its successful implementation). For example, best practices in EE that I was formally exposed to for the first time at the June 2014 NCTC workshop -- from strategic communications and program evaluation, to community engagement and use of technology, to fundraising -- greatly helped me to refine my approach to the project, and craft (I hope) compelling grant proposals to support this work. In addition, it has been extremely helpful to learn from the work of the EECapacity / NAAEE project team and other fellows; to receive feedback from the team and peers; and to be connected with many terrific resources that I was previously unfamiliar with.

Keywords: best practices - professional development - networking



## **Strategic Communications: The Power of Engaging Speaking Skills**

***Kris Scopinich***

As I have shared above, I have found the tools from Spitfire to be incredibly useful. I am very interested in receiving more professional development in the area of strategic communications. The importance of effective communication with regards to any environmental issue and specifically climate change cannot be overstated. I also have to point out how incredibly inspiring and impactful Keya Chatterjee's talk was. It has not left me. It has inspired my work and intense focus on integrating more green energy-focused programming and interpretation at our nature centers. It has also inspired me to personally support green energy with more effort in my own household.

Keywords: Keya Chatterjee – inspiration



## The Power of Distributed Momentum

*Marna Hauk*

Many people avoid the topic of climate change. And they can really want to avoid the topic of climate justice. And many people don't know what to make of interdisciplinary projects that don't fit in the boxes of traditional activism, environmental education, or community action, organizing, or engagement. An educational program that doesn't charge tuition? A program intentionally inclusive of queer community power? For women? What is a social incubator? All of these things were conspiring to make and sustain momentum toward innovating a social incubator for women for climate resilience action projects a tough process.

If I think about a dimension of the CCC project that helped me tremendously it was about the power of distributed momentum. We are all engaged with lots of projects in addition to the ones that the culture counts as "work." As an emerging academic and a nonprofit director, it can be easier to focus attention on the fires others are also watching (or making). The CCC Fellowship nurtured my ongoing engagement with my emergent project, in spite of all the barriers I described. In the fellowship, in addition to tool-sharing, we have been generating our own cultural momentum: enthusiasm as much as accountability for the fellows with each other.

Composing a web page in the first months for my project catalyzed creation of a website and moved my own project thinking forward. I leveraged the project status reports and applications to dig into project details and dream the project forward into being. Meeting others with a rich diversity of project approaches and sharing our enthusiasms, interweaving approaches and successes has been very life-giving and deeply rewarding. We had small shared initiatives, ways we nurtured each other. I knew the fellows were there, and that helped sustain my interest and taking the next steps. The depth of mutual caring has helped me keep my momentum.

Just as I might dive under another wave of other demands on my time, it would have been easy to "bag it" and call it a day. Instead, by attending conference calls, interacting one-on-one in support calls, and through attendance at conferences, hearing updates on social media and email, I was sustained in attending to my project. Now, for my project, instead of an idea on paper, we are about to have another meeting of the six projects in the ecosocial incubator here in Oregon while the winter rains fall. These projects spinning up are a true testimony to cultural creativity when given some space to grow and evolve.

Keywords: mutual learning – caring – community – momentum



## Community Input Toward Effective Reframing

*New Knowledge CCC Fellows Post-Project Evaluation Report, p.3*

They had gone beyond establishing a potential value - that is, they had built considerable shared knowledge capital and had made changes in their respective practices to an extent that would have been unimaginable without the input and support of the community of Fellows. All final interviewees pointed to performance improvements, even those whose projects remained less fully fleshed out or in earlier stages of development than others. A number of those interviewed highlighted both in their own work and in the work of others, how much reframing had occurred, how actively engaged they had found themselves in rethinking and revamping markers for success, broadening and simplifying these definitions for their own work, the work of their projects, and the active engagement of partners and their mutual constituents.

Keywords: shared knowledge - reframing - strategy - collective input

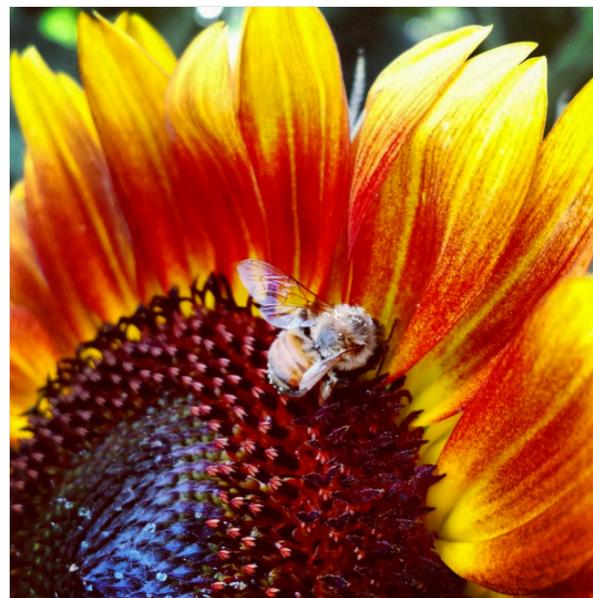


## Change Starts at the Inclusive Community Level

*New Knowledge CCC Fellows Workshop Evaluation Report, p.2*

This constellation of Fellows are highly motivated, achievement oriented, see themselves as leaders, mentors, and shepherds. They conceptualize community in varied ways – operationally, structurally, functionally – but all see it as a primary source and locus of change, and themselves as agents of change.

Keywords: community - changemakers



*Photo by Karen Temple-Beamish*

# Fundraising





## Collaborative Fundraising Efforts to Support Climate Change Programs

*Karen Temple-Beamish*

Andy Robinson's thesis that fundraising should be considered a team effort – and to have a strategy is of paramount importance. We are now incorporating this into our development strategy and are poised to make a big difference – the school's development officer has offered us carte blanche to write our DOT garden into his campaign document that will soon be published to the school's potential donors. This could not have been accomplished without a team approach and strategy.

Keywords: fundraising – teamwork



## Personal Epiphanies in Fund Development Strategies

*Marna Hauk*

I think one of the moments that stays with me was in the funding training, during the activity of having someone ask five times, “Why should I fund your organization?”, I realized that I myself in an earlier part of my own life arc had received an informal version of the program I am designing (mentoring, empowerment, skills building, and resource sharing; for women's empowerment generally not climate change), and this has deepened my self-understanding and how I pitch the work. It is more authentic feeling and genuine to want to give back rather than just “I want to help this disenfranchised group.” This epiphany that I myself had benefitted from the types of experiences I am inspired to create definitely stays with me.

Keywords: fundraising - self-realization - donor cultivation



## How to Make a Pitch to a Funder

***Maria L. Talero***

Susan Chung and I were working together in a breakout session of Andy Robinson's fundraising presentation at the NCTC. We were sitting on the back steps of the building in the fresh air and sunshine. Susan launched in to her fundraising pitch while I listened, and then responded as "myself," telling her as honestly as I could how I perceived her message and her organization. Then we both had a moment of shock as we realized that her pitch had left me with an entirely incorrect impression of her organization, and that the work they actually do is very different and interests me a great deal. In the conversation that followed, as we tried to figure out how the signals had gotten crossed in her message, I learned in a flash how much it matters that you understand out where your listener is coming from and the kinds of trigger words that shape their impressions.

This instantly brought me back to the role-play that Andy Robinson had performed for us an hour or so earlier, in which he acted out a conversation with a potential funder. What I remember is the way he paused and centered himself before he began to speak. And that he had explained this as being almost more important than the words you choose to make your pitch. Back on the back steps in the sunshine with Susan, I saw myself in her shoes, talking to someone about my organization and trying to make a pitch, and I realized that - especially since my organization is unusual - I need to put the emotional connection with my listener first, and make a real effort to center myself and understand where they're coming from and how they might be listening to me as I make my pitch. My pitches have improved dramatically since this session and since the NCTC training as a whole, and I think I have graduated to a whole new level of ability in bringing people "inside" the work I am doing and helping them understand my real goals in a short space of time.

Keywords: fundraising - problem solving - knowing your audience



## Elements Which Support Longer Term Project Sustainability

### *New Knowledge CCC Fellows Workshop Evaluation Report, p. 5*

Longer-term trajectory in Fellows' thinking around CCC work was also seen in the sessions they most appreciated (fundraising, communication, and evaluation) and the additional support they needed (channels for communication, financial resources, and evaluation strategies). These are critical to ensure the long-term success of their projects and the sustainability of the emerging CoP.

Keywords: sustainability - fundraising -  
communication - evaluation - strategy

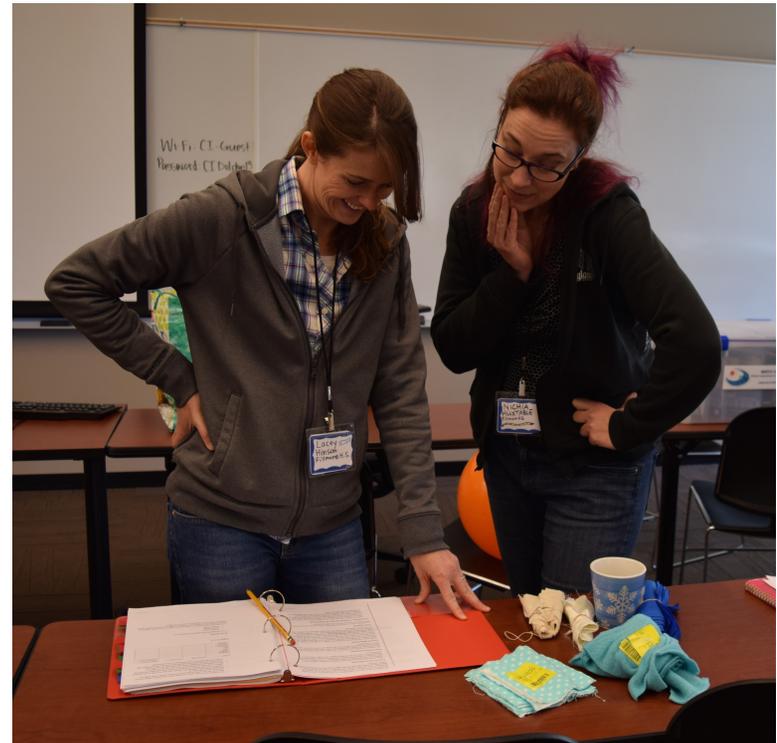


Photo by Rocio Lozano-Knowlton



## **Fundraising Becomes Easier After Validation From Your First Victory**

***Maria Talero***

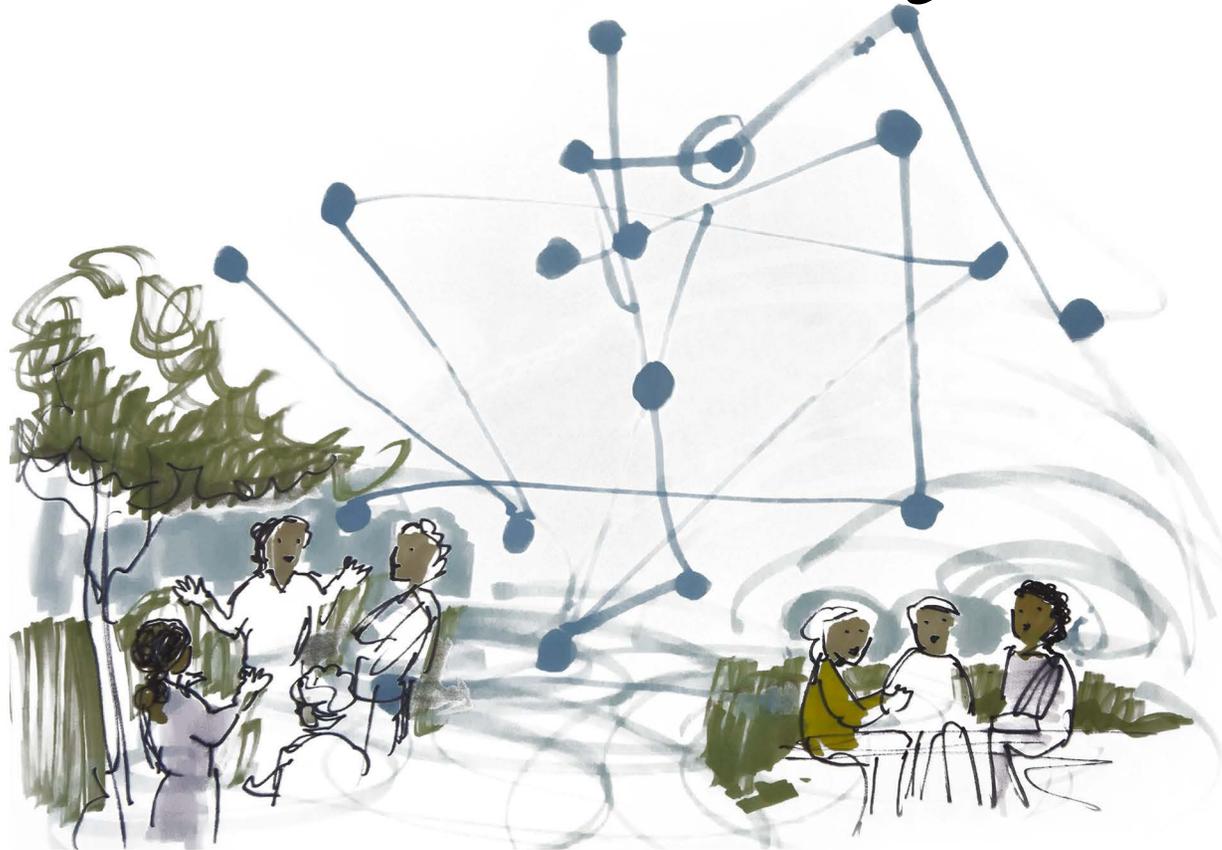
So I can bear witness to the truly magical effect that took place when I returned from the Kettering Foundation research exchange conference in Dayton, Ohio (to which I was invited through the CCC Fellowship, and where I received the news that I had been awarded the mini-grant) to report back to my Climate Courage Resilience Circle members that we got the grant. It was touching and inspiring to see the excitement in their faces and to hear that they were thrilled and ready to jump on board with the project. The news that a funding agency had recognized our group's existence and was ready to support our efforts was a source of real pride for them (to the point where it has been difficult to frame this report in terms of "my project" since from then until today, I have truly experienced this as "our project," a true collective achievement based on our group's mutual friendship, trust and goodwill).

From that point onwards, I noted the same effect: every time I pitched the project to someone, and used these magic words, "we received a grant," it was like a door would open up in their mind and they instantly viewed us as legitimate. It is a little bit sad to see that our society doesn't have much regard for the efforts of true grassroots community groups, but mostly, it was so helpful to be able to use these words that unlocked the minds of our listeners and made them feel that we should be taken seriously.

People need hope, and in this case, hope came from hearing the news that a big funder like the EPA (don't worry, I repeatedly clarified that it wasn't direct EPA funding, but people got excited anyway) cares enough to support a community-based climate change initiative. Hope came from the sense that something new was afoot, and that there was a new kind of cultural and social "hub" forming, and that it was all due to a grant that was awarded to a 'mere' community group. I have been moved to tears watching my volunteer team stand proud and tall at our events and seeing how much the recognition from this granting project has made them feel validated in their efforts.

Keywords: fundraising - legitimacy - grants - recognition - hope

# Networking





## The Importance of Networking

*Kris Scopinich*

Generally, it has been very helpful and supportive to have a network of other environmental educators on the same path in many different locations, working on meaningful projects in each of their communities. Specifically, Jennifer Hubbard-Sánchez, likely unbeknownst to her, has been very helpful through the number of resources she has shared over our Facebook community.

Keywords: social media - network - community



## Prioritizing People: A Connected Community is the Most Important Resource

*Jatnna Ramirez*

The most meaningful lesson I have gained from the fellowship is the importance of having a community that can inspire and support our work. The community of environmental educators that the Community Climate Change Action Fellowship has created has enabled me to develop and implement the project and to improve in other aspects of my work. Moreover, this fellowship reinforced in me the idea that people is the most vital resource of all. I also see this reflect in my project as I see my students connecting and building long lasting friendships. Without this fellowship, I wouldn't have had the idea to purposefully create a platform for the students to build their own leadership community, which I think is essential for their leadership development and for creating effective change.

Keywords: community- knowledge exchange - support



## **Collective Capacity and Collective Impact**

***Margie Simon de Ortiz***

It was very inspiring for me to interact with this group of wonderful people (in a beautiful place) who all share the same concern for the future of our planet and the desire to actively contribute to its conservation and sustainability. All of our collective challenges are difficult; ranging from, the most common - finding economic resources, to the most complex; interacting with contradictory social and political interests to have our 'alternative' ideas accepted and embraced. Getting to know this group increases my resolve to achieve the goals of this specific project as well as the general mission of CICEANA. In general, my interaction with NAAEE encourages me to not lose sight of these and my personal goals when I interact with so many individuals doing so many good things.

Keywords: inspiration - collective - resolve – courage



## **Climate Fellows Appreciated In-Person Time Together**

***New Knowledge CCC Fellows Post-Project Evaluation Report, p. 4***

There was an appreciation of the large amount of content the Leadership Team had made available to the Fellowship, and the recognition that striking a balance could be difficult. There appeared to have been a general consensus, however, that this group could have benefited from more time spent in working task groups, topic and focus groups, informal gatherings, and assignments for dyads and small groups. A heavier emphasis on time for dialogue and social intercourse would have served to further solidify the desired sense of community and inter-reliance.

Keywords: dialogue - social intercourse - community



## A Beautiful Web

### *Michelle Eckman*

Whenever I think of networking, I think of a spider web with each spindle being a line of communication connecting individuals at each corner. In this particular case, the strength of the web is contributed not by just one spider, but all of the individuals in each corner. The web of Community Climate Change Fellows is the strongest web in which I have ever helped build. This building of this web has spun into many incredible relationships that have beneficial to me as an individual and professional.

As a professional, I have worked with three Fellows on the following projects:

- Kris Scopinich and I have partnered on not one, but two federal grants. We were awarded an EPA Environmental Literacy grant in 2015; we began our work on our Building Climate Action Communities project this January! We are awaiting word from NOAA on another high school climate education project we proposed this winter.

- Jatnna Ramirez and I partnered on a CT-based Sustainaware project where we trained ten high school students in environmental and climate justice leadership.
- Jason Davis worked with Common Ground in spring 2015 on his Climate Stories project. He spent a day in the classroom teaching students interviewing skills, and then connected them in another session with students in Shishmaref, Alaska - a community suffering tremendously from climate change impacts.

On a personal level, I have developed deeply meaningful friendships with many of the fellows. I am so grateful this fellowship brought these people into my life; they bring me such joy.

I have had the change to visit with many of them across the country and plan to visit some more.

I consider the whole group to be a family to me. While we all have varying levels of closeness and compatibility, I believe we are all ultimately very supportive of one another.

Keywords: partnering – emotional support – possible future collaborations



## Seeing the Bigger Picture: Fellows Provided Diverse Perspectives

### *Marna Hauk*

Another pivotal moment during the training week was during the pitch sessions at the end. I received a lot of support and novel ideas for how to frame my project to others. That kind of synthesizing, multi-perspective feedback was phenomenally helpful. Because I am inside of the subculture with whom I am wanting to develop services/projects, I really gained valuable perspective on how I might also frame my project as economic development, job training, and queer empowerment in addition to its relevance as a women's and climate action project. I also received phenomenal help making novel connections about how to pitch it particularly in an Oregon- and Portland context due to one rotating visitor who knows the Portland context.

Keywords: support - network - fellowship - multi-perspective feedback



*Photo by Elizabeth Pickett*

# Mutual Learning





## Uncovering Solutions Through Fellowship Collaboration

### *Luis Morales*

The CCC fellows and NAAEE-EECapacity team sparked the courage and inspiration and provided invaluable advice on how to promote and negotiate access to the land by envisioning multiple win-win scenarios and solutions that would be possible if developing this project.

Some CCC fellows have expressed their interest in partnering and to participate from their own backgrounds and fields of expertise.

Having the opportunity of collaborating and having the insight of such an amazing and inspiring advisors (the fellows and the NAAEE-EECapacity team) has encouraged me to go on and take a bigger challenge (Selva Escuela Project).

It has also allowed and inspired me to reinforce existing partnerships and create new ones (in particular with fellow Rocio Lozano's Merito Foundation and an NGO we work with based in San Diego called Ocean Connectors).

Keywords: courage - inspiration - knowledge exchange- partnerships – collaboration



## The Fellowship Accelerated Design and Implementation

### *Marna Hawk*

There are several ways the fellowship training opportunities and network have improved and tuned my fellowship project. First, it supported me developing a project plan on six axes of action for next steps. The press release push put me in motion and accelerated my early project articulation: I prototyped an initial website and set up PayPal donation infrastructure. I have also accelerated mentor recruitment and prospective learning circle recruitment. I have sought help to hold an initial survey and focus group to develop personas for program recruitment and programming development.

The training in Virginia was amazing. The interactive exercises grounded the emergent learning. I appreciated the trainings on community-based organizing, climate change information, funding, and the culminating pitch sessions with feedback. I enjoyed beginning to get to know other participants.

Keywords: networking - inspiring



## **Collaborative Co-Design Through Reflection and Connection**

*Susan Chung*

The fellowship experience was meaningful on a personal level because I had the opportunity to meet with other environmental educators who inspired me. When I arrived at the NCTC, I was surrounded by nature and given a space and time to reflect on my co-design practice. This personal reflection interspersed with communal activity assisted me in gaining the insight and courage to create changes in the way I implement the co-design outreach in Vancouver. The reflection was very valuable: The conversations I had in the evenings with those unexpected fireflies lighting up the night; the speakers who inspired me to keep fighting the fight; the strategies for networking and fundraising that opened my eyes to the possibilities. Many of my colleagues reported to me that I had new strength upon returning from West Virginia.

Keywords: self-care - reflection



## **Sam's Story: Diversity and Community Environmental Engagement**

*Sam Little*

The Community EE guidelines are particularly useful to my work, as Parks & People's primary audiences are the underserved, low-income and minority communities in Baltimore. I also find great value in hearing the approaches my fellow fellows are using to address climate change in similar situations to myself (i.e. urban environmental education). Though, the diversity of fellowship action projects taking place across the continent are astounding; there are just so many unique and amazing ways to address such a wicked problem – it's inspiring!

Keywords: knowledge exchange - communicating climate change



## Finding One's People and the Significance of Social Learning

### *New Knowledge CCC Fellows Workshop Evaluation Report, p. 2*

An interest in a close-knit community of CC Fellows was expressed. Either implicitly or explicitly, they conveyed the following needs: • Being part of a community; • Feeling one with others sharing similar values; • Identifying with one another's passions, goals, and visions; and • A kind of union, with promise of reunion. One Fellow described these sentiments as follows: "Really interested in the fact that there was going to be a supportive context inside of a really collaborative model, which I really like – I am a social learner as well, and I like working in collaborative contexts where people can spark ideas off one another and have mutual nurturing for supports."

Keywords: community - longevity - value alignment - supportive



## Broadened Perspectives Supporting Future Work of Fellows

### *New Knowledge CCC Fellows Workshop Evaluation Report, p. 5*

The End-of-Workshop Evaluation Survey validated that the group had not only expanded their knowledge base but had also been exposed to a rich array of ideas and perspectives they anticipated would enrich their work.

Keywords: perspective - enriching - continued impact



*Photo by Karen Temple-Beamish*



## A Sense of Community

***Adam Ratner***

At first when contemplating whether to apply for the Community Climate Change Fellowship I was torn. I had already recently gotten involved in another national collaborative related to climate change (the National Network for Ocean and Climate Change Interpretation) and needed to identify the best uses of my limited time that I could commit to climate change. At The Marine Mammal Center, a nonprofit marine mammal hospital and education facility in Sausalito, climate change is unfortunately something that we see directly affecting our marine mammal patients, but until recently we hadn't tackled head-on with a concerted effort due to limited time and resources (the typical story for many non-profits). In the end, I decided that the Community Climate Change Fellowship could provide a new layer to our climate change work and I dove in headfirst.

From the first minutes together as a group in West Virginia, I knew I had made the right decision. I found myself surrounded by 25 amazing fellows, all bringing incredible backgrounds and skill sets to the table. My network over the past seven years had focused primarily on the animal and marine world

with zoos, aquariums and science centers, but I found myself around a table with an elementary school teacher, a musician and storyteller, and an educator with a National Park (among many others). Hearing the real-world experiences of how climate change intersected all these different sectors of society was amazing and the unique approaches being used provided a wonderful resource that I could bring back to my own audiences within the marine and animal-centric fields.

After just one week together, it was clear that this group would be an invaluable resource not only for not only educational resources and support as I move forward on my climate change initiatives, but also for the sense of community and inspiration I took from the group. As the week came to a close, we all wrote postcards to ourselves with words of wisdom and even two years later, those same words ring true:

*Don't forget to take advantage of the tools and network now available! Keep asking questions and evaluating! Remember the experience, the knowledge, the setting, the ideas, the people and the inspiration.*

Keywords: inspiration – resources – community – new perspectives

# Story Telling





## Identifying Platforms for Common Ground to Connect with Climate Change Non-Believers

*Carlos M. Velazquez*

Recently I met with a local falconer who has noticed that when he hunts with his hawks they are coming back with smaller and skinnier mice and ground squirrels. Many of the smaller prey they feed on are gone from the fields because of the hottest summer in NC. This gave me the opportunity to speak to a North Carolinian nonbeliever about climate change without an argument.

Keywords: conversation - citizen science - connection



*Photo by Karen Temple-Beamish*



## Expanding an Inclusive Storytelling Network for a Climate Change Leader

*Jason Davis*

I have been fortunate to interview about half of the CCC fellows for Climate Stories Project. Some fellows have been very helpful in connecting me with others to interview, especially native and First Nation community members who have first-hand observations of climate-driven changes to their local environments and communities. I have also been exposed to a great deal of valuable resources and organizations through my participation in the CCC Facebook page and in conversations with other fellows.

I have been very impressed by the willingness of the other fellows to participate in the project and give me feedback and suggestions. I'm very grateful for the opportunity to be a CCC Fellow and the chance to develop my project much more than would have been possible on my own.

Keywords: networking - knowledge exchange - inclusivity



## **Building Leadership Capacity for Climate Justice**

*Jatnna Ramirez*

The Community Climate Change Fellowship has had a great impact in my professional life. When I was first selected to participate in this fellowship, I had great passion for environmental and climate education but I did not have a lot of experience in the field. Being part of this fellowship has increased my capacity as an environmental educator tremendously. I now have access and know of tools and resources that prior to this fellowship I did not know about. These tools have strengthened my capacity to deliver high quality environmental and climate justice programs. One of the most meaningful experiences to date that I have had thanks to my participation in this fellowship is the opportunity to connect with a fellow to carry out a component of a global environmental sustainability initiative that I have led at Global Kids for two years. Together we provided a five-day environmental sustainability training with a focus on the global climate movement for 10 high school students from Connecticut in New York City.

Keywords: capacity - tools - collaboration - leadership - climate justice



## **Synthesizing the Significance of Language and Emotional Messaging**

*New Knowledge CCC Fellows Workshop  
Evaluation Report, pp. 2-3*

There is recognition that the nuance of language, voice, and message are inextricably bound. For this reason, sensitivity and thoughtfulness in its construction and use in what is considered an environmental justice movement is deemed critical, warranting deep thought and consideration. There is a clearly emerging appreciation that movement will occur through the winning of hearts and minds, the reaching out and inclusion of others. Science learning is deemed invaluable, but there is a viable sense that emotional learning is central in the consideration of many, and articulated by most.

Keywords: language - messaging - emotional learning



## Building the Individual Leader to Connect Necessary Sectors

### *Rocio Lozano-Knowlton*

This fellowship was exactly what I needed in this time of my professional life. The application arrived in my inbox one day out of the blue, as if the universe had sent it, and I am so thankful. For 10 years I worked as a consultant for a Federal government agency dear to my heart. I tried to institutionalize ocean and Earth conservation education in the region's public school system, and was very discouraged for lack of sustainability and long-term investment from across public agencies. The fellowship came to me at a time when I needed to grow from an individual's effort to deliver environmental education content and experiences to underserved communities, to an environmental NGO with multiple programs and partners. EECapacity gave me tools, training, knowledge and courage to grow and have a larger impact, and to envision, design and launch a new program titled EECCOA that is having tangible impacts.

For NAAEE and EE Capacity, it's not about favoring the closest friends, pleasing a specific political agenda or politician, scientific endeavor or complying with a grant. It is about empowering the people behind grass-root movements with a local or regional impact and about global vision. My little regional battles mean so much more now knowing there are other CCC Fellows who feel, think and fight the same or similar ways for what we believe in. It is good for our blue planet, and NAAEE and EE Capacity is there for us.

Keywords: professional support - tools - knowledge – courage



*Photo of CCC Fellow Elvia Rodriguez Ochoa*

# Culture Creation





## Creating an Effective, Replicable Module for Communicating Climate Change

*Adam Ratner*

My project builds upon the system of the National Network of Ocean and Climate Change Interpretation which provides staff and volunteers at respected, highly trafficked environmental organizations with climate change science and scientifically-tested communication strategies from social psychologists, to guide visitors toward strategies to reduce their fossil fuel use. This “train the trainers” program will reach hundreds of thousands of people each year and is easily replicable by other organizations, using the tools created from this program. The program will empower individuals and communities with the science of climate change and solutions to reduce their fossil fuel use. Bringing together experts from different fields of science, communication, and social psychology allows us to build messages that are powerful and relatable, leading to stewardship in our communities, while being consistent across numerous organizations around the country.

Keywords: climate change communication - messaging - educator training



## Citizen Action Can Mean More Than a Reduced Carbon Footprint

*Maria Talero*

My goal is to help counter the perception that the "average person" is more or less powerless to do much about climate change beyond reducing their individual carbon footprint, by providing a context in which people can discover and invent ways of taking action by teaming up with other "average people" in their own communities, discovering as they do so that no one is truly "average" or "powerless" and that everyone has a unique set of resources and abilities to contribute to the fight against climate change.

Keywords: empowering - community – innovation



*Photo by Karen Temple-Beamish*



## Grasping the Human Dimensions of Climate Change

*Jennifer Hubbard-Sánchez*

In a meeting this week with the Climate Change Committee of the MANRRS group, we were brainstorming our projects ideas and the many paths down which our educational campaign can go. Students were bouncing ideas off of each other and two of them illustrated to me the impact the project is having on their thinking and on how they are really grasping the human dimension of climate change, something I view as extremely important. One student suggested having a “cowpea soup” dinner/fundraiser for MANRRS where we could feed folks and give them an overview of climate change and link the idea that green beans are starting to underperform in KY soils, mainly due to climate change, making the point that cowpeas are the next up-and-coming crop suitable for our changing conditions here.

Another student wanted to do a pizza fundraiser where people paid a certain amount to receive a ticket. Tickets would be coded for how much pizza one would get and people could get two slices each, one slice each, half a slice, a slice to share with two people, etc. He wanted to illustrate the changes in access to food that are predicted due to a changing climate and how they would vary around the world. The fact that the MANRRS students are thinking about climate change at this level and about the creative ways they want to showcase their project to the community are so meaningful to me, both personally and professionally.

Keywords: human dimension - food security - agriculture - civic action - college student



*Photo by Maria Talero*



## Schools Reduce Their Carbon Footprints

*Rocio Lozano-Knowlton*

Students will be immersed in climate science and the engineering practices of energy management to deeply understand and consciously address climate change. Students will assess their school's carbon footprint in teams of 4 to 5 students per class and present their findings of energy audits in Kilowatt units. Their findings will show energy consumptions per activity and/or processes over time. They will research energy saving methods and practices. School's energy diet solutions may include among other: methods for further reducing, reusing, recycling, and composting waste products; changing the school's landscape to native and drought tolerant vegetation; changing cafeteria materials to reusable or compostable plates and utensils, and cost-effective solar energy options. Students will present their findings to their peers during an end-of year science fair, then the best projects of each school will be presented to school district administrators, Science Fairs, Sanctuary Advisory Meetings, and/or City Council meetings



*Photo by Azucena Yzquierdo*

By working primarily with Title 1 schools, we will target mainly economically disadvantaged and Hispanic students who are severely underrepresented in STEM careers. Students will have pride and ownership over their project outcomes while learning and using the most up to date climate and environmental science. Partnering organizations include EPA, NOAA weather service, NOAA Office of National Marine Sanctuaries, Jean-Michael Cousteau Ocean Futures Society, CREEC, Ventura County Office of Education and CSU Channel Islands.

Keywords: energy - partnerships - personal impact - carbon footprint



## Inspired to Add Art and Music to the Science!

### *Elizabeth Pickett*

Upon becoming a CCC Fellow, I was thrilled to be invited to participate and yet wondered if it was wise of me to add one more commitment and project to my otherwise two-fulltime-job list of projects and tasks needing my attention. Originally, I proposed something that I knew I could pull off within the context of my existing programming- a climate change- focused student-led event within our community. My initial thinking was that students would be introduced to some extra material related to climate change and then supported to share about climate change with adult audiences within our town and county.

Indeed, my project did remain fairly true to this original concept, except it expanded in ways that not only benefitted the students and the community event they led, but also allowed me to incorporate additional life-giving aspects for me personally. This was something inspired as a result of the fellowship, and something I didn't expect to be a result of working within this group.

While in West Virginia, many of the CCC Fellows were kind enough to provide valuable feedback on both my project plan and my personal/professional quandary about 'how do I maintain both full-time jobs and still make room for art and music in my own life with no time for anything extra?'

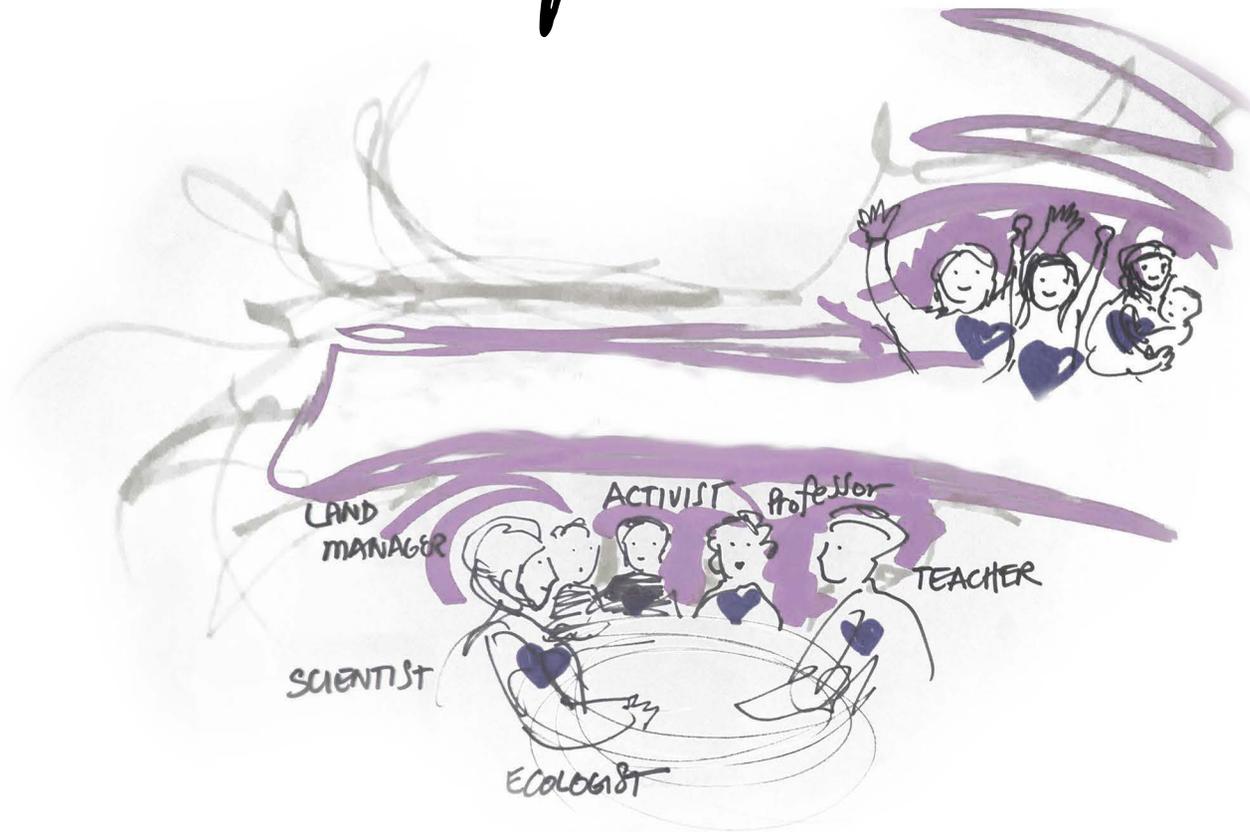
Thanks to the ideas and brainstorming of many within our cohort, I worked to incorporate music and art into our community climate change event. Students not only learned the science behind climate change, but created art and poetry to supplement their slide presentations on causes, impacts, and solutions to climate change. We invited professional artists and poets to perform at the event, practiced and performed original songs related to the landscape and waters of our island and state (we live in Hawai'i and I was able to compose some music for the children to sing to), and provided local organizations the opportunity to invite the audience to join their environmental

conservation, restoration, or garden efforts. What started as a simple presentation idea led to an event that brought together diverse individuals and entities within our community and allowed for lots of creativity from our staff, partners, and the students themselves (and me)! In the end, our event was a success, and the result of finding a way to keep my own climate change related environmental education work energy-providing instead of tiring is a testament to the knowledge, experience, insight, and encouraging nature of the CCC Fellows.

Keywords: youth empowerment – inspirations



# Inspiration





## Leadership in Event Facilitation Inspiring Budding Role Models

### *Tara Hostnik*

As a young professional, I have had many mentors and role models to look up to in the field of environmental education. For the first time in my career, I feel like I am becoming the person I have always wanted to be in this field! I have a similar feeling with my participation in this Fellowship. I feel empowered and privileged to be a part of something so incredible. Many people approached me during and after the Festival with positive feedback about this event. The executive director told me this was the single biggest event during his over 30-year career with the Parks. Dr. Story Musgrave, one of the astronaut speakers and lead mechanic for the Hubble Space Telescope, gave me not only an autographed copy of his book, but a hug and encouragement that I was doing good things. I felt incredibly accomplished and I will carry this positive experience with me throughout my future. I learned, through this Festival, how important it is to take initiative, form positive relationships with partners, volunteers, members, staff and our audience and to sometimes step back and delegate jobs rather than try to accomplish everything on my own.

Keywords: inspiration - partnerships



*Photo by Karen Temple-Beamish*



## Long Lasting Climate Change Advocacy Emerges from Genuine Community Oneness

*Marna Hauk*

Start wherever you are, with whomever you are working with, be it a neighborhood group, your family, or your school. Adopt a collaborative, bottoms-up approach so that everyone can engage together in emergent, solutionary explorations and community-building experiments that are right for your context and place. If the actions and ideas are sourced emergently from the group, the level of commitment and meaning-making will be very deep. We are all in this together. Catalyzing climate change visionary-activists who are emboldened to collaborate with others and nurture community thriving is much more effective than transmitting science facts. Kindle the creativity of others others' creativity to engage with this opportunity for re-culturing and solidarity.



*Photo by Karen Temple-Beamish*

"Our dreams and visions for the future are essential for navigating through life because they give us a direction to move in....Moreover, moving toward a destination that's excited and inspires us energizes our journey, puts wind in our sails, and strengthens our determination to overcome obstacles. The ability to 'catch' an inspiring vision is therefore key to staying motivated. When we're moved by a vision that we share with others, we become part of a community with a common purpose." (Macy & Johnstone, 2012, p. 163). We are never alone.

Keywords: solutions based - visionary - solidarity - collaborative – grassroots



## **When the Framing of Facts Can Make a Difference**

***Rocio Lozano-Knowlton***

Ms. Chatterjee shared strong tangible justifications during her presentation, and her decisiveness and perseverance was contagious. After conversations with some of NOAA ONMS education staff during which I shared some of the learned facts, and most importantly 'The framing of the facts', my colleagues at ONMS are now supportive of the 'My School's Energy Diet' project, and ONMS will be providing letters of support and access to NOAA content, curriculum, media and databases to the project participants.

Keywords: climate conversations - communicating climate change



## **You Are Not Alone: Finding Strength in Shared Vision Toward Change**

***Ray Jantzen***

The time spent with the cohort in Shepardstown was inspiring. Living in the north and in a primarily resource based government town, I find there is little interest in environmental issues. Yet I am very concerned. I find I often have few others to discuss these issues with. The other Fellows provided the reminder that there are many people doing great work that hold the same concerns and passions as I do.

Keywords: inspiration - networking - professional development



## **Any Means Necessary**

***Trevor Hance***

As a classroom teacher in an extraction-economy state that started the whole “standards movement”, I have to be particularly careful in structuring these learning opportunities. Very candidly, most teachers I know would never reach as far outside of the required curriculum as I do to engage students and excite them towards their future. I believe I have an obligation to help them realize their potential by any means necessary, and work hard to find opportunities like the one provided through this fellowship that help me stay on this path by giving me a community of supportive “ears.”

Keywords: K-12 - student engagement - youth engagement - overcoming obstacles



## **Life Altering Program Creating Lifelong Partnerships**

***New Knowledge CCC Fellows Post-Project Evaluation Report, p. 5***

Numerous Fellows reported this program as having been one of premier opportunities for them in their career, both for professional and personal reasons. They reported life-altering impacts and deeply affecting changes in hopes, aspirations, and direction. Some indicate having forged deeply valued relationships they anticipate maintaining far into the future.

Keywords: professional development - personal development - emotional learning - long term relationship building



## The Musician

### *Tara Hostnik*

Spirits were high and bellies full as the dancers migrated toward the dance floor. The musicians transitioned from one song to the next with ease, filling the warm San Diego air with Latin beats. Tiki torches were aflame creating a nice ambiance as nature lovers from around North America walked around in their fun, flashy evening wear to celebrate a week of networking, learning, sharing and connecting at the NAAEE conference. One group in particular had their eyes glued to the stage with smiles so large their cheeks hurt.

The Community Climate Change Fellows have now spent three weeks together, once during a private workshop and twice at this conference. During their

time together they have supported each other in new more ways than one as they developed their community climate change projects, hoping to learn resources, fundraising, marketing and other lessons. One of the most valuable aspects of the fellowship however, was meeting 25 other inspiring and motivated individuals and gaining their general trust and support. Through formal and informal conversations, group discussions, phone updates and webinars, meals, traveling and playing together, this group learned each other's projects but also became friends. On this particular night, one of their own was on stage performing a solo alongside the band. In this perfect moment in San Diego, just as they had always done since they first met, this group was now cheering on and supporting their colleague, but most importantly, their friend, as he shared his passion and talent with the world.

Keywords: partnering, emotional support, mutual learning, self-care, inspirations, friendship





**Community Climate Change Education**

***Articles***

**A MOSAIC**

*of approaches*



## Article: “Cast your minds into the future...” – About the Co-Design Approach of Emergent Illustration

*Susan Chung*

### Framing

Co-design is an award-winning method of design participation invented by Canadian architect Stanley King where citizens gather with an artist to collaboratively draw their future. The goal is to capture a citizen's round of life and desired environment in the form of drawings.

We ask: “**Cast your minds forward into the future and imagine that all the design is done, and done entirely to your satisfaction...What would you be doing?**” As people talk, we draw, and a picture emerges of their complex web of social interaction that must be supported by future design. The drawings become design criteria for planning. Co-design has helped over 300 communities collaboratively design their future space.

Susan Chung is an experienced co-design artist facilitator who has practiced co-design for 24 years. She adapted co-design for Environmental Education and was recognized with an Advocate for Architecture Award by the Royal Architectural Institute of Canada. Recently, she conducted co-design training in University of Boulder, Colorado, Los Angeles Congress of Neighborhoods, and San Diego.



### Resources

More information on Susan here:

<http://youthmanual.blogspot.ca/p/susan-chung.html>

Co-design Group Website: <http://co-designgroup.ca/>

And for latest news, our blog: <http://youthmanual.blogspot.ca/>



## Article: How Open Space Technology Ignited Environmental Learning and Action in L.A.

*Laura Mack*

### Framing

How many times have you ever been to a meeting where the agenda was a completely blank wall? If you have, and the resulting meeting was declared by your group as both your most fun and most productive meeting ever, it just might have been an “Open Space Technology” meeting!

Thanks to the CCC fellowship, I got to sample this meeting approach at our 2014 fellows’ retreat. It stuck in my mind as much for the lively, rich conversations it generated among our group (none of us wanted the session to end!), as for the infectious advocacy for the technique by our facilitator.

Fast forward two years. My nonprofit, the Neighborhood Council Sustainability Alliance (NCSA), and I needed to create a space for community leaders from across Los Angeles to: come together, learn about, and act on timely neighborhood and citywide environmental sustainability issues; produce clear proceedings and prioritized plans with action commitments; and achieve all of this on a shoestring budget and within the span of a three hour workshop.

We also wanted to use a meeting structure that would foster collaboration, creativity, and self-agency. Based on my single, rewarding CCC experience with Open Space, the NCSA and I took a leap of faith and designed a workshop using this method.

Open Space is not a new approach. According to creator Harrison Owen, it has been used with great results for 30 years, all over the world and with all size groups. Part of its beauty lies

in how simple it is -- and strangely, says Owen, “how it always seems to work to address issues and enhance group capacity.”

Open Space uses two very simple mechanisms -- a Community Bulletin Board (aka the blank wall you start with), and a Village Marketplace.

Let’s start with the Bulletin Board. At my community workshop, some 50 diverse participants, all new to Open Space (and curious!), were invited to write on a sheet of paper any issue for which they had personal passion and were willing to convene a discussion on, related to our theme of fostering environmental sustainable communities in LA. (Additionally, as recommended by Owen, conveners were “invited, begged, and urged - though never commanded - to ensure that a reasonable record of their group’s discussion was prepared.”)

Eighteen attendees walked into the center of the circle of attendees to read aloud their topic, then fixed their session sheets to the wall.

Once all issues of interest were displayed -- ranging from how to achieve 100% clean energy in LA, to dealing with urban coyotes, to assuring tree survival during chronic drought, to





## Article: Community Climate Change Fellows Evolution as a Community of Practice

*Anne Umali Ferguson*

In 2014, twenty-six fellows from a diverse set of communities across the U.S., Canada and Mexico were selected based on key criteria including leadership potential, experience in environmental education and community development, and ideas for innovative climate change solutions. The fellowship program was originally designed to be a leadership and professional development program, where participants came together to share ideas on how to best address climate change at the community level. Each fellow began their fellowship with their own project. Projects ranged from a Climate Change 101 course for college-aged students in Frankfort, KY to a K-12 climate education outreach program *Hot Science – Cool Talks*, in Austin, TX to a community dialogue series, “Climate Courage Workshops” where scientific evidence can be heard from a place of social connectedness, strength, and courage, in Denver, CO.

The fellows had a 5-day leadership training in the summer of 2014, and they took the next several months to exchange ideas with each other and enhance their climate change projects. By the time they came back together at the NAAEE Conference in Ottawa later that year, they decided that they wanted to continue their work beyond the original scope of their 8-month fellowship. In that timespan, the goals of the fellowship expanded from the original goals of professional development and individual climate change projects to also include the creation of a collaborative legacy product and a shared common identify around their work and their experience in this fellowship, all elements of a fledgling Community of Practice.

The fellows quickly formed a strong bond with each other, supporting each other’s projects through feedback and advice, and oftentimes by visiting fellows across the country and getting to know their work directly. Fellows sought technical as well as emotional support from their cohort, sharing the difficulties and challenges of doing this kind of work. At the end of 2015 they decided they would pursue a collaborative writing project, “A Mosaic of Approaches” that would illustrate the spectrum of approaches to addressing climate change in their work and also highlight their personal experiences in the fellowship and how they came to grow as a CoP.

*Wenger (1998) defined a Community of Practice (CoP) as is a **place of learning** where practice is developed and pursued, meaning and enterprise are negotiated among members, and membership roles are developed through various forms of engagement and participation.*

### ***Where are Communities of Practice found within EE?***

Communities of practice can be used as a framework of learning in environmental education characterized by the development of **joint enterprise** (through a common negotiated meaning/goal), **mutual engagement** (sustained interaction of people within a community of practice and the roles and relationships that arise from this interaction), and **shared repertoire/language** (signs, symbols, tools, and language that are used as resources and have meaning specific to the community. CoP is both a process and product (Aguilar, 2010).



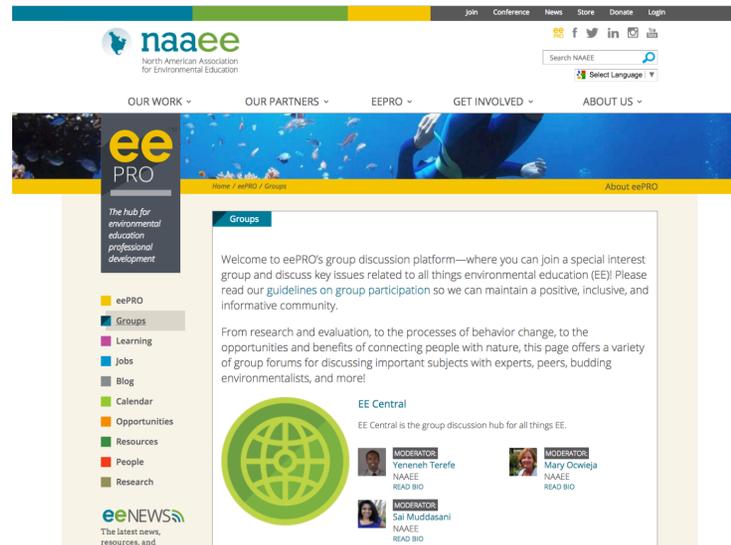
# Article: An Ongoing Digital Community of Practice: EEPro's Climate Change Education Nexus

Adam Ratner

## Framing

When environmentalist Paul Hawken is asked if he feels pessimistic or optimistic about the future, his reply is always the same: "If you look at the science about what is happening on earth and aren't pessimistic, you don't understand data. But if you meet the people who are working to restore the earth and you aren't optimistic, you haven't got a pulse."

Teaching about climate change can and should be an inspiring and positive experience. However, even the most seasoned experts can feel overwhelmed and without hope at times. There are strategies though to teach, inspire and maintain positivity in the face of great challenge. One of the most important elements is to utilize the resources and support of the larger community of environmental educators. EEPro, a hub for environmental education professional development through the North American Association of Environmental Education, provides a space to communicate with other educators through blog posts and forums. Whether you are looking for new climate resources, such as lesson plans from the World Wildlife Fund, or have a question for the community around tips for addressing climate change within the humanities and English Language Arts, EEPro can be one of your most powerful tools. With a growing community of over 135 individuals involved in the Climate Change Education group alone, a discussion forum, and with



new posts almost every day, there is a wealth of opportunities for professional development and support for educators of all backgrounds and experience. For me, beyond the resources that sites like EEPro provide, I find the most powerful component is bridging the national community of environmental educators and providing a safe space to communicate and share both successes and struggles around climate change communication. Similar to the feeling I get when I leave a professional development conference, knowing the vast and diverse work taking place brings such a sense of optimism and

hope to my work and reenergizes me to take on the next challenge around climate change that presents itself around climate change. As the famous African proverb goes, "If you want to go fast, go alone. If you want to go far, go together." For me, the climate change forum on EEPro helps us go far.

Keywords: EEPro - community of practice - forum - discussion - resources



# Article: Surfacing Unheard Voices: Catalyzing Collaborative Writing for Climate Change

Marna Hauk with Elizabeth Pickett

## Framing

Two Community Climate Change Fellows share facilitation approaches and creative methods for surfacing unheard voices. These tools open up creative, “brave” spaces, unleashing creativity by writing from visual and poetic prompts, and facilitating collaborative writing. We describe the use of multimedia and social media for sharing what is generated.

## Introduction

This article provides a briefing on models and practices for organizing multiple people in a united writing effort about climate change. The two authors catalyzed collaborative writing with the Community Climate Change fellows to generate this *Mosaic of Approaches* book, a web-based climate change education resource being launched at the conference. We also presented these ideas at the North American Association of Environmental Education 2016 Conference in Madison, Wisconsin for practitioners of environmental education. Resonant with leadership and capacity building, we will share resources as well as model, practice, and offer hands-on strategies for diversifying and strengthening the field of EE by surfacing often-unheard voices. These strategies of grassroots creativity can gain reach through support social media publishing, to bring community climate change engagement to life.

## Concept with Application/Practice

- Self-Compassion - Co-Generating an Affirmation Wall
- Upwelling from the Larger Quiet - Multi-Voiced and Self-Facilitated Space Setting within Silence
- Deep Listening - Poem-Making

- Lead by Stepping Back - Image Prompts and Collaborative Poems
- Generating Brave Spaces - Collaborative Scripting
- Reframe Pain as Connection - Letters from the Future Beings

## Practice One: Self-Process-Noticing and Self-Compassion + Affirmation Wall

Often it is helpful to start encounters about sensitive topics by creating a space for self-compassion and affirmation. Macy and Johnstone (2012) refer to this as starting from strength and gratitude. For facilitators and those wanting to create generative discussion spaces across difference, affirmations can help set a space of positive generativity. By providing a larger context for emotionally supportive exploration, the space helps invite more robust self-holding, more acute self-awareness, and more skillful self-containment. In other words, these practices of self-process-noticing can be used to avoid either self-suppression or the sharing of self-experience that overtakes the listening to another’s experience. We become freed up to listen because we can hold our own experiences without them taking the foreground. This can be tremendously useful in charged conversations about oppression. These practices allow us to

flexibly notice our own and others' processes without moving into reactivity. This ability to reflect on our reflections is called reflexivity.

**Practice idea:** Create an affirmation wall. Step 1: Pass out 4-5 sticky notes per person and invite each person to generate a few affirmations in the form of first person singular or first person plural, and present tense. For example, "I move from a place of strength and am amply resourced to listen deeply," or "We create space welcoming all voices." Step 2: Participants place their sticky notes on a wall, at first sticking them up and then allowing all to move them towards clusters of similar affirmations. The group interacts and collaborates to move the affirmations towards these dynamic and emergent clusters. Step 3: Participants read out loud different clusters of affirmations. This "Affirmation Wall" then becomes a resource for the rest of the shared writing time. Additionally, facilitators initiate an invitation and model examples of self-process-noticing.

### **Resources**

Margo Adair; Joanna Macy; Marilyn Taylor; Margaret Wheatley

### **Practice Two: Upwelling from the Larger Quiet + Space Setting with Bell**

The idea of this practice is to generate a larger container of deep inner stillness and quiet from which sharing can arise. The context image is that the conversation is happening inside of a larger, encompassing silence. This practice helps avoid social cultures of interruption, opening up reflective space between sharing.

Silence has matter - we don not have to fill the silence; it is not an empty spot to be filled. This practice is resonant with Bohmian dialogue and Quaker cultural practices. We cultivate waiting for those who might share, whether from cognitive or cultural diversity. We adopt an attitude of not expecting others to

interact the same way as we might. This practice supports multiple ways of communicating and multiple ways of knowing. It also assists in listening beyond the human realm into the naturecultural and biocultural dimensions: how to not interrupt the thoughtfulness of things. We facilitate from a respectful quiet and spaciousness.

### **Practice idea**

Practitioners of Poetic Medicine (Fox, 1997) have generated a series of prompts that they print on a piece of paper and cut into small paper slips (Hauk, Edera, & Dwyer, 2013). These slips are arranged on a central table with a bell. Participants sit in a circle and each one selects one of the slips of paper to read out loud, and after speaking the slip of paper (surrounded by silence), they ring a bell. When the bell sound completely ends in silence,



*Photo by Elizabeth Pickett*

the next person in the circle selects one of the phrases to read. This whole process precedes poem-making activities in order to invite a non-judgmental creative space.

### **Activity**

Self-Facilitated Poem-Making Cards (Hauk, Edera, & Dwyer, 2013)

We gather together in a container of silence and the poems arise.

We pause and let the sharer take in and hear what was spoken.

This is a time for deep listening.

We gather together connecting from the generative depths.

When a person shares their writing, we often ask them, after a pause, to share it again. The listeners have the sacred task of listening deeply and, as the time arises, echoing lines back. This is not a time for commentary or analysis or styling. It is not about evaluation or response. We enter a different mode of reflective listening.

The poem is alive. As if the poem were a living person, we listen for its wisdom. (Just as we wouldn't tell a person who they are, we don't tell a poem who it is.)

Speak from the "I"

A bell is available. Anyone can ring the bell at any time. When we hear the bell we pause and awaken to the spacious silent presence available right here and right now. Our senses dilate and we touch in on the heart of our time together, our breath, our aliveness.

Each person only speaks once before everyone has shared. This helps us honor and generate our spacious, sacred time together.

### **Resources**

John Fox, 1997; Institute for Poetic Medicine Website ([poeticmedicine.org](http://poeticmedicine.org)); Marna Hauk, Peg Edera, and Birch Dwyer, 2013

### **Practice Three: Deep Listening + Poem-Making and Collective Line Sharing**

Deep listening describes a process of vibrant presence, listening for what the world and nature are offering to the attention. Drafting notes or sketches in a process of open awareness allows the subtle and nuanced perception to open up and widen. Poem-making is one creativity that can support this activity of deep listening.

### **Activity: Poem-Making**

Show the poem video "Dear Matafele Peinem" (Link: <https://www.youtube.com/watch?v=DJuRjy9k7GA>). Then have people read a line in a go-round circle from such a climate change poem. Let the participants who wish echo out loud a favorite line from that poem. Turn one of the lines into a poem-making prompt. Allow five or ten minutes for each person to write a part of a poem. If time allows, invite participants to share their poems or poem-fragments. Participants can echo back lines that resonated or moved them. And/or, create a group poem by starting with the prompt and then inviting each participant to share one line from their poem, in the sequence that feels spontaneously flowing, spoken into the circle. An alternative is to have each person write their selected line down and then place it while speaking into the center of the circle, face down. At the end, this pile represents a group-authored poem which can be tweeted or blogged.

## Biomimicry - Flowering Insight and Open Awareness

“To remove the blocks of habits of thought, we can take a lesson from the way a wildflower grows. For example, we can create times when we draw back (contraction in the plant) from a train of thought, since by keeping a continuous focus we often get cramped and confined by the pathway we have taken. If we pull back and shift into a mode of open awareness of what may come, we heighten our receptivity. This is akin to the practice of... ‘sauntering with the eyes.’ In this context the emphasis is on the letting go and waiting to see what may come - we create the inner space for new perceptions that can appear to the mind’s eye” (p. 86).

### **Resources**

John Fox (2006), on Deep Listening; Felstiner (2009) - Can Poetry Save the Earth?; Goldberg - Wild Mind; Holdrege (2013) Thinking Like a Plant: A Living Science for Life. Example of the value of brief haiku and sketches is the entire IPCC findings translated into haiku: Climate Change Science, 2013, Gregory Johnson: <https://www.youtube.com/watch?v=I0McGUF9hc0> or <http://www.sightline.org/2013/12/16/the-entire-ipcc-report-in-19-illustrated-haiku/>

### **Practice Four: Lead with Step Up/ Step Back and Collaborative Writing Circle Sparked by Catalytic Images**

“Step up/Step back” was a practice that was introduced on the first day of the Community Climate Change Fellowship in 2014 in West Virginia. This practice was designed to encourage those who are from positions of privilege (who might be more fluent and comfortable in high-sharing and “stepping up”) to step back and make space for others, especially marginalized individuals.. It is an invitation for those whose voices have not been welcomed or who have been actively suppressed to feel welcomed and have their voices heard. The practice of leading by stepping back involves more than conversational patterns. It

requires enacting step up/step back practices across dimensions of organizational structure and culture.

One activity that invites stepping up and stepping back is the fishbowl style process sharing. With the goal of eliciting climate change stories, we invited participants to select a vibrant image from a stack of mid-motion, dynamic, and multi-raced and gender-spectrum photos. These photos also included humans in relationship with the more than human world. For the climate change related topic, we selected images that were in one way or another related to climate change and climate resilience while avoiding cultural memes on the topic.

The group arranged the images in a circle, with a piece of paper as a writing station next to each image. The facilitators rang the bell every minute, timed. The participants would shift from picture station to picture station, adding a poetic line, stanza, or a couple of sentences to the unfolding poem or prose response to that image. After completing the circuit, participants read through the piece. They encountered the polyvocal responses to the image, reflecting the diversities of perception, framing, and insight, as well as the building of collaborative emergent themes. Variations, with more time, include passing the images and having each author compose inspired by the passing images. With more time, participants can also work further to refine, edit, and re-sequence collaborative pieces.

### **Resources**

Collaborative Writing, Fishbowl Techniques - Including Homogenous Fishbowls; Read about One Step Up / One Step Back in Brave Spaces article; Starhawk - Facilitating Diversity, and a Chapter from her book on the topic, The Empowerment Manual, with the Five-Fold Path of Productive Meetings as well as the Poetic Medicine resources mentioned in Practice 3.

## **Practice Five: Generating Brave Spaces + Collaborative Scripting on Climate Ethics and Distributive Justice**

Brave space practices nurture spaces of deep social justice conversations by not caving in to demands from those in positions of power and privilege to avoid uncomfortable feelings. Those in positions of privilege can tend to conflate safety with avoiding feelings of discomfort. Brave space practices mitigate against the phenomena of white fragility and white resistance which can otherwise attempt to control or suppress difficult conversations through deflection, discounting, defensiveness, or defeatedness. Brave space practices aiming for honest, sensitive, and respectful conversation also increase resilience for all discussion participants as a fuller range of topics and experiences is liberated and discussed. The authors of this resource also describe the “One Step Forward/One Step Backward” activity that is related to Practice 4. Discussing ground rules becomes an opening for engaging in brave conversations, troubling common ground rules and exploring how ideas such as controversy with civility, owning your intentions and your impact, increasing awareness about how agent group membership affects decisions to contribute, as well as expanded expressions of respect and understandings of kinds of attack. “We believe facilitators of social justice education have a responsibility to foster a learning environment that supports participants in the challenging work of authentic engagement with regard to issues of identity, oppression, power, and privilege.” (Arao & Clemens, 2013, pp. 138-139).

For our work, we support brave space work through the facilitation strategies themselves, and also by inviting collaborative scripting and role-playing of troubled climate scenarios. One possibility is to have actors or actor teams represent continental or other alliances in regard to climate justice or carbon limits, or local environmental justice conflicts, in relation to distributive justice. Through writing and/or improvisational acting, teams use creativity to surface topics of

tension and conflict, allowing deeper conversations and dynamics to erupt or come to life.

### **Resources**

Arao & Clemens article on Brave Spaces- [https://styluspub.presswarehouse.com/resrcs/chapters/1579229743\\_otherchap.pdf](https://styluspub.presswarehouse.com/resrcs/chapters/1579229743_otherchap.pdf). Also see Mohanty (2003) on solidarity approaches to surfacing unheard voices, Article on Intergenerational Climate Ethics and “The Perfect Moral Storm” (Gardner, 2006) - [http://www.hettingern.people.cofc.edu/Environmental\\_Philosophy\\_Sp\\_09/Gardner\\_Perfect\\_Moral\\_Storm.pdf](http://www.hettingern.people.cofc.edu/Environmental_Philosophy_Sp_09/Gardner_Perfect_Moral_Storm.pdf)

## **Practice Six: Reframe Pain as Connection + Letters from the Future Beings**

The final practice we explored in our Surfacing Unheard Voices Workshop related to Joanna Macy’s *The Work That Reconnects*, and focused on reframing pain as connection. The pain, fear, and grief we sometimes experience when thinking about climate change are really just evidence of our capacity for healthy empathy and our vibrant existence embedded within and as part of the planetary system (Joanna Macy with Chris Johnstone, 2012 in *Active Hope: How to Face the Mess We’re In Without Going Crazy*). Another dimension of connection Macy explores in her work is that of intergenerational connection. She sees *deep time* as a powerful source of sustaining hope for climate change activists. She invites imaginal conversations and dialogues between the ancestors, the current generation, and those two hundred years in the future. The past and the future, as well as the intergenerational nature of climate ethics (see Gardner, 2006, “Perfect Moral Storm”), are also unheard voices related to climate change.

We applied the concept of reframing pain as connection by inviting participants to write letters from the future. First, we shared Macy’s piece entitled “Prayer to Future Beings.”

### ***Prayer to Future Beings - Joanna Macy***

You live inside us, beings of the future.

In the spiral ribbons of our cells, you are here. In our rage for the burning forests, the poisoned fields, the oil-drowned seals, you are here. You beat in our hearts through late-night meetings. You accompany us to clear-cuts and toxic dumps and the halls of the lawmakers. It is you who drive our dogged labors to save what is left.

O you who will walk this Earth when we are gone, stir us awake. Behold through our eyes the beauty of this world. Let us feel your breath in our lungs, your cry in our throat. Let us see you in the poor, the homeless, the sick. Haunt us with your hunger, hound us with your claims, that we may honour the life that links us.

You have as yet no faces we can see, no names we can say. But we need only hold you in our mind, and you teach us patience. You attune us to measures of time where healing can happen, where soil and souls can mend. You reveal courage within us we had not suspected, love we had not owned.

O you who come after, help us remember: we are your ancestors. Fill us with gladness for the work that must be done.

Then we invite participants to imagine they are those future beings. Macy has noted how those future beings already know what must be done in this time to generate a world of flourishing that they inhabit; it is historical fact for them. So we reach across, with our writing, words, and intention, to receive guidance and affirmation. We invite participants to write as if from those future beings, writing a letter of support and encouragement to us in this time. This activity brings a

satisfying conclusion to the writing experiences, re-aiming our gaze across the stretches of deep time.

### ***Resources***

Joanna Macy - with Molly Brown - Coming Back to Life; The Work That Reconnects (<http://workthatreconnects.org/>); and with Chris Johnstone - Active hope: How to live in this messed up world without going crazy- <http://www.activehope.info/> - Also check out the Shambhala Warrior Myth Video - <https://www.youtube.com/watch?v=1fVqrFNIRAc>

At the close of the workshop, we invited folks to consider how they could collaboratively publish what they generate, via community networks, including on Prezi visual flows, youtube videos, Storify visual narrative platform, as well as via FB, tweets, or on index cards shared at community boards. We value the importance of surfacing these unheard voices, in generative groundswells of continuing inspiration, insight, and action.



*Photo by Elizabeth Pickett*



### ***What inspired the research/the question/the intention***

As members of the EECapacity Community Climate Change Fellowship, we have learned that there are many obstacles to successfully implementing climate change education and that, while some strategies work in some geographic areas of the country, they may not work in others. Through myriad conversations among our group, it became apparent that a survey of the greater climate education community was warranted to glean from others what issues they have when teaching about climate change and their strategies for overcoming them. Likewise, it was important to ask more seasoned climate change communicators about the things they look back on and wish they had known when they started down this path in order to better prepare newcomers to the field.

### ***How did we recruit participants***

Each of us has an extensive network of colleagues, friends, and co-workers in this field. The one common overlap for the entire group was the Climate Literacy and Energy Awareness Network (CLEAN), an engaging online community of 555 participants

who share resources, ideas, stories, and strategies, within an electronic platform. The survey was sent to the CLEAN network, as well as to our own personal networks of individuals who may not participate on the CLEAN forum.

### ***Who responded?***

Respondents to the survey included: Formal Classroom Teachers (38.1%); University Faculty and Staff (21.4%); Nonformal Educators (14.3%); Non-Profit Agencies (9.5%); Community Climate Change Fellows (9.5%); and Government Agencies (7.1%).

### ***Resources***

The word cloud in this section was generated from all participant responses. Practitioner Handouts with summaries of findings coded along six themes, and a sheet of resources for teaching climate science and communicating climate change follow.



# Communicating About Climate

## Change:

Strategies to Teach, Inspire, and Maintain Positivity in the Face of Great Challenge



Teaching about climate change can and should be an inspiring and positive experience. However, even the most seasoned experts can feel overwhelmed and without hope. Whether it is a politically charged audience, varying levels of experience and information among participants, or just feeling like you are teaching a topic that can sometimes be too daunting to solve, all climate communicators experience hard times within their work. This fact sheet has been created using feedback from the climate communication and education community across the United States. The ideas and tips included come from survey responses given in a summer, 2016 survey. The focus is on the positive strategies used to overcome the challenges of teaching and talking about climate change, as experienced by the larger climate communication community.

### CHALLENGE

Communication about Climate Science is Complex and Intimidating

### SOLUTIONS

- Know as much as you can about who is in your audience: their age, educational background, experiences, economics, etc..
- Know your science: teach what you know and don't bite off more than you can chew.
- Know your place: provide as many relevant, local examples of impact as possible.
- Let them build it, and they will come: hands-on learning is best and people love to play with stuff.
- It's so easy, a fifth grade caveman can do it: speleothems and sandcastles.

### CHALLENGE

Conflicting Attitudes and a Charged Political Environment Make It Difficult to Teach about Climate Science

### SOLUTIONS

- Start with natural climate change before anthropogenic and use pertinent local and concrete facts.
- Understand that most people are very open and willing to listen.
- Set boundaries before your conversation and create a "safe" space for dialogue, using sensitive language.
- Remain politically neutral and maintain that what you are presenting is based on science, not politics.
- Spend some time familiarizing yourselves with climate denial and counterarguments so you feel more comfort teaching the subject in the face of skepticism or tougher audiences.





# Climate Change Educational Resources

There are many resources available for educators to utilize that can help communicate climate change to your audiences.

These are some of our favorites!

**NAAEE Community Climate Change Fellows:**

**Michelle Eckman**  
Connecticut Audubon Society

**Trevor Hance**  
Laurel Mountain Elementary

**Marna Hawk**  
Institute for Earth Regenerative Studies/  
Prescott College

**Tara Hostrik**  
Sequoia Parks Conservancy

**Jenny Hubbard-Sanchez**  
Kentucky State University

**Adam Ratner**  
The Marine Mammal Center

**Kristin Scopinich**  
Mass Audubon

## Climate Change Science

**NASA: Global Climate Change and Climate Kids**

<http://climate.nasa.gov/> and <http://climatekids.nasa.gov/>

**EPA: Climate Change Basics and a Student's Guide to Global Climate Change**

<https://www3.epa.gov/climatechange/basics> and <https://www3.epa.gov/climatechange/kids>

**National Climate Assessment**

<http://nca2014.globalchange.gov/>

**National Geographic: Climate Change**

<http://nationalgeographic.org/topics/climate-change/>

## Climate Change Communication

**Climate Change Professional Online Learning Community Alliance**

<http://www.naaee.net/climatechange-POLCA>

**Climate Communication**

<https://www.climatecommunication.org/>

**Frameworks Institute: Climate Change Interpretation**

<http://frameworksinstitute.org/climate-change-and-the-ocean.html>

**CLEAN Network**

<http://cleanet.org/clean/community/index.html>

**NOAA Climate Stewards**

<http://oceanservice.noaa.gov/education/climate-stewards/>

**Yale Program on Climate Change Communication**

<http://climatecommunication.yale.edu/>

**Center for Research on Environmental Decisions: Psychology of Climate Change**

<http://guide.cred.columbia.edu/>





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*See Also: After School, Youth Investment*



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Faith in Place Chicago  
Global Kids Organizing  
LA Neighborhoods  
Mass Audubon  
Initiatives  
Open Lands CC Garden  
Women's Ecosocial  
Incubator  
Youth Co-Design



### **Vignettes**

Culture Creation  
Fundraising  
Networking  
Storytelling



### **Articles**

About Co-Design  
Open Space  
Technology  
Surfacing Unheard  
Voices

## Public Schools

See Also: *After School and K-12*

## Science Dimensions



### **Theme Pages**

Climate & Science  
Conservation & Natural  
Resources  
Marine Environment



### **Project Stories**

Biking to Climate Repair  
Bird Observatory  
Project  
Bring it Home  
Kentucky  
Climate Courage  
COOL Earth Schools  
Experiential Marine  
Science  
Malama Kai Youth  
Action  
Marine Mammal  
Volunteers  
Mass Audubon  
Initiatives  
Science on the Sphere

## Social Innovation



### Theme Page

Social Innovation



### Project Stories

Biking to Climate Repair  
Climate Courage  
Climate Resilient Food  
Systems  
Climate Stories Project  
Community Food  
Networks  
COOL Earth Schools  
Women's Ecosocial  
Incubator  
Youth Co-Design



### Vignettes

Culture Creation  
Fundraising  
Inspiration  
Mutual Learning  
Networking  
Professional Capacities  
Storytelling



### Articles

Communities of  
Practice  
EEPro as Digital  
Community  
Open Space  
Technology  
Surfacing Unheard  
Voices

## Storytelling and Digital Media



### Theme Pages

Social Innovation  
Storytelling & Digital  
Media



### Project Stories

Climate Courage  
Climate Stories Project  
Digital Travel in Canada  
Marine Mammal  
Volunteers  
Science on the Sphere  
Youth Co-Design



### Vignettes

Culture Creation  
Inspiration  
Professional Capacities  
Storytelling



### Articles

Communities of  
Practice  
EEPro as Digital  
Community  
Surfacing Unheard  
Voices

## Teachers as Leaders



### Theme Page

Teachers and Trainers



### Project Stories

Biking to Climate Repair  
COOL Earth Schools  
Desert Oasis Garden  
Public School CC  
Curriculum



### Vignettes

Networking  
Preventing Burnout  
Professional Capacities  
Storytelling



### Articles

Communities of  
Practice  
EEPro as Digital  
Community  
Research on CC  
Educators  
Surfacing Unheard  
Voices

## Train the Trainers



### **Theme Page**

Teachers and Trainers

### **Project Stories**

Climate Courage  
Climate Resilient Food  
Systems  
Climate Stories Project  
COOL Earth Schools  
Experiential Marine  
Science  
Marine Mammal  
Volunteers  
Women's Ecosocial  
Incubator  
Youth Co-Design



### **Vignettes**

Inspiration  
Preventing Burnout  
Professional Capacities  
Storytelling  
Youth Action



### **Articles**

Research on CC  
Educators  
Surfacing Unheard  
Voices

## Youth Investment and Empowerment

*See Also: Leadership, K-12, After School*



### **Theme Pages**

Social Innovation  
Youth Investment



### **Project Stories**

Biking to Climate Repair  
Bird Observatory  
Project  
Bringing it Home  
Kentucky  
COOL Earth Schools  
Experiential Marine  
Science  
Global Kids Organizing  
Malama Kai Youth  
Action  
Open Lands CC  
Gardens  
Public School CC  
Curriculum  
Youth Climate Job  
Training  
Youth Co-Design



### **Vignettes**

Fundraising  
Inspiration  
Networking  
Storytelling  
Youth Action



### **Article**

Surfacing Unheard  
Voices

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