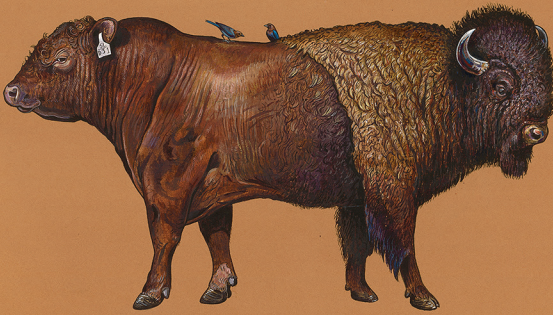


THE  
Science & Storytelling  
SYMPOSIUM



*Bison Cow (Taurus choloratus)  
Hoodoo Ranch, Wyoming*



*Plains prickly pear cactus  
(Opuntia polyacantha)*



*Barbed wire*

*James Prosek 2016*



*Greater sage grouse  
(Centrocercus urophasianus)*

Bison Cow, Hoodoo Ranch, Wyoming, 2016.  
Watercolor, gouache, colored pencil on tea-stained paper, 27 x 30 1/2 in.  
by James Prosek

In today's interconnected world, it is no longer enough for scientists to simply publish their findings in academic journals. Writers, artists, photographers, filmmakers and other storytellers are increasingly seen as essential collaborators in scientific exploration. These storytellers help explain not only how scientific research is conducted but, critically, what it means for society.

## 8:30AM Welcome Address

### Jamie Shreeve

Deputy Editor in Chief, National Geographic

#### A WILD IDEA



James (Jamie) Shreeve is Deputy Editor in Chief at National Geographic. Before joining the Geographic staff in 2006 as Senior Editor for Science, he was a freelance science writer and author specializing in human evolution and biology. His books include *The Genome War*; *The Neandertal Enigma: Solving the Mystery of Modern Human Origins*, named by Doris Lessing as “Book of the Year” in 1996; *Lucy's Child: The Discovery of a Human Ancestor*, and *Nature: The Other Earthlings*, the companion volume to the public television series. Mr. Shreeve received his B.A. in English from Brown University in 1973. A 1979 graduate of the Iowa Writers Workshop, he contributed fiction to various literary magazines before turning to science writing. From 1983 to 1985, he was Public Information Director at the Marine Biological Laboratory in Woods Hole, Massachusetts and founding director of the MBL Science Writing Fellowship Program. He has been awarded fellowships from the Alfred P. Sloan Foundation, the Alicia Patterson Foundation, and the Knight Foundation. Mr. Shreeve lives in Bellport, New York, and Washington, DC.

## 9:00AM Framing Perceptions: Artistic Representations of Nature

Long collaborators in scientific exploration, artists both reflect and influence our cultural perceptions of nature. But how do such collaborations really work? What should be the role of the artist in scientific inquiry? And how can artists help promote richer understandings of the natural world and our place in it?



American Elk, 2016. Oil, acrylic and mixed media on wood panel, 56 x 90 in. by James Prosek



On Carter Mountain above Pitchfork Ranch, 2015.  
Watercolor, graphite and gouache on paper, 5 x 12 1/4 in.  
by James Prosek

#### Panelists:

### James Prosek

Artist

DRAWING LINES: EXAMINING, THROUGH ART, THE NAMES AND BOUNDARIES WE IMPOSE ON NATURE



As an artist, James is well known for his natural history based works. He has produced acclaimed books on the diversity of trout and marine fishes; exhibited widely; and painted murals for institutions including The Smithsonian American Art Museum and the Cornell Lab of Ornithology. As a writer, James has published numerous popular books and contributed to *National Geographic* and the *New York Times*. As a filmmaker, he has retraced Izaak Walton's steps and traveled the world to tell the story of mysterious eel migrations for PBS Nature. For James, trout, eels, elk and other creatures are not as different as they may seem: in today's world, all of them encounter the same kinds of boxes and boundaries we impose on the natural world.

### Jennifer Raab

Assistant Professor, Yale Department of the History of Art

MAKING A WORLD: FREDERIC CHURCH AND THE SCIENTISTS



Jennifer Raab is Assistant Professor in the Department of the History of Art at Yale University where she teaches courses in American art and the history of photography. Her first book, *FredERIC Church: The Art and Science of Detail*, was published by Yale University Press in November. Her work has appeared widely in journals and exhibition catalogues. Recent articles and essays have considered history painting and the aesthetics of mapping; ornament and masculinity in portraits of Native Americans; the relationship between panoramic vision and telegraphic language in early railroad guidebooks to the American west; and the minimalist artist Dan Flavin's collection of Hudson River School drawings. Her current book, *The Relics of War*, considers the connections between Civil War and western expedition photography. She has held fellowships at the Institute of Fine Arts, New York University, the Smithsonian American Art Museum, the Freie Universität, Berlin, and the Terra Foundation for American Art.



## Marty Schnure

Founder and Art Director, Maps for Good

CONNECTING PEOPLE WITH PLACES: CARTOGRAPHY FOR CONSERVATION



Marty Schnure is the founder and art director at Maps for Good, where she makes maps to promote conservation initiatives and connect people with wild places. After graduating from Middlebury College with a degree in Geography, Marty got her start as a cartographer at *National Geographic Magazine* and went on to found Maps for Good in 2012. Their first project, mapping the future Patagonia National Park, was made possible by a National Geographic Young Explorers Grant.

**Moderator for Framing Perceptions:**

## Jock Reynolds

Director, Yale University Art Gallery



Jock Reynolds is the Henry J. Heinz II Director of the Yale University Art Gallery. From 1973 to 1983, he was an Associate Professor and Director of the Graduate Program at the Center for Experimental and Interdisciplinary Art at California State University, and also a co-founder of New Langton Arts. From 1983 to 1989, he served as the Executive Director of the Washington Project for the Arts. He then became Director of the Addison Gallery of American Art at Phillips Academy, Andover, MA, in 1989, a position he held until 1998. Reynolds has garnered numerous grants and awards, including two NEA Visual Artists Fellowships and multiple NEA Art in Public Places project awards. Frequently created in collaboration with his wife, Suzanne Hellmuth, his and their artworks have been exhibited broadly in the realms of visual art and theater and are represented in numerous public and private collections. Over the last fifteen years, Reynolds has led the YUAG through the major renovation, expansion, and reinstallation of its exhibition, teaching, and collection facilities, and launched an active program of collection-sharing among college and university art museums.

## 11:00AM Morality and Meaning in a Contested Landscape

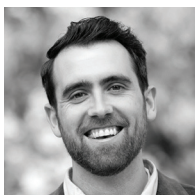
In the Greater Yellowstone Ecosystem, clashes over wildlife, energy, and land use create stories that are often difficult to unpack and understand. What are some of the underlying causes of these conflicts, and how do storytellers dissect and explain not only what is happening, but also why and what it means for society?

**Panelists:**

### Justin Farrell

Assistant Professor, Yale School of Forestry & Environmental Studies

THE IMPORTANCE OF HUMAN CULTURE FOR ENVIRONMENTAL CONFLICT



Justin Farrell is a Yale sociologist whose research examines culture, environment, and social movements. He is an expert on the cultural and political factors that create community and environmental conflict, and is the author of the 2015 book *The Battle for Yellowstone*, acclaimed by *The Economist* as the “most original political book of early 2015.” As a native Wyomingite, much of his research takes place in the American West. His research methods have been praised for their cutting-edge blend of in-depth interviewing and observation, with large-scale data analytics and state-of-the-art machine learning.

## Stephanie Paige Ogburn

Freelance Journalist

THREE KIDS AND A GED: THE MORAL AUTHORITY OF COAL COUNTRY



Stephanie Paige Ogburn is a journalist and editor who has worked for newspapers, magazines and public radio since 2007. Her work has been broadcast on *All Things Considered* and published in *Scientific American* and *High Country News*. Her reporting on food, science and the environment has taken her to Nevada's high desert, alpine lakes in the Colorado mountains, and farm fields across rural America.

## Jenny Nichols

Filmmaker and Principal at Pongo Media

REACHING BEYOND THE CHOIR:  
A NEW AGE OF CONSERVATION FILMMAKING

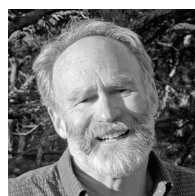


Jenny Nichols is a filmmaker who works to harness the power of visual media to tell important stories. Her projects often focus on the conservation of wildlife, wild lands, and the people who care about them. Nichols was drawn to the field project from which *Invisible Boundaries* grew because of the inspiration she found not only in the wildlife, but in the unusual blend of people from all walks of life – from a scientist, a journalist, and an artist to the ranch owners, outfitters, agency biologists, and residents of Cody, WY. She feels that the most inspiring stories are those which draw on a community's shared values while also encouraging new thinking. Nichols has worked with National Geographic, World Wildlife Fund, *New York Magazine* and others to create films that have screened at Telluride Mountainfilm, Banff Mountainfilm Festival, DC Environmental Film Festival, Yale Environmental Film Festival, Wild & Scenic Film Festival, 5 Point Film Festival, The World Wilderness Congress, and many more.

**Moderator:**

## Fred Strebeigh

Senior Lecturer, Yale School of Forestry & Environmental Studies



Fred Strebeigh teaches environmental writing at the Yale School of Forestry & Environmental Studies and has written for *Atlantic Monthly*, *Audubon*, *Sierra*, *Smithsonian*, the *New York Times Magazine*, and the books division of *National Geographic*. His current work focuses on Russian conservationists defending the world's largest system of strict nature reserves, in Russia, begun 100 years ago and more tightly protected than America's national parks or wilderness system.

*“The scientists of the world have to go beyond the articles.  
They have to work with storytellers.”*

Joe Riis

## 1:30PM Making Science Accessible Through Storytelling

There is an increasing realization that stories — not just data — are essential to communicate scientific research. But in a world inundated with stories, how can scientists make their work both heard and relevant to diverse audiences?

### Panelists:

#### Carl Zimmer

Columnist, *New York Times*

#### THE TREE OF LIFE: TELLING STORIES ABOUT EVOLUTION



Carl Zimmer is a columnist for the *New York Times* and the author of a dozen books. After earning his B.A. at Yale, Zimmer worked for a decade at *Discover*, where he served as a senior editor. He has written for magazines such as *National Geographic*, *The Atlantic*, *Time*, and *Scientific American*. His books include *Parasite Rex* and *Evolution: Making Sense of Life*. Zimmer is a lecturer at Yale, where he teaches science writing, and he is a frequent guest on *Radiolab*. Among his numerous awards, Zimmer won the Stephen Jay Gould Prize and the National Academies Communication Award.



Photo by Joe Riis

## Gary Machlis

Science Advisor to the Director, US National Park Service

#### REVISITING LEOPOLD: REFRAMING THE STORIES OF RESOURCE STEWARDSHIP IN THE NATIONAL PARK SYSTEM



Dr. Gary Machlis '79 Ph.D. is University Professor of Environmental Sustainability at Clemson University. He also serves as Science Advisor to the Director of the US National Park Service, the first scientist appointed to that position. Machlis co-leads the Department of the Interior's Strategic Sciences Group, which provides the DOI Secretary with science-based assessments during major environmental crises. He has written numerous scientific articles on conservation, science during crisis, national parks, and science policy. His most recent co-edited book, *Science, Conservation, and National Parks*, will be published by the University of Chicago Press in November 2016. Machlis is an elected fellow of the American Association for the Advancement of Science, and a deputy editor for *Science Advances*, the open access scientific journal published by *Science*. He received his Ph.D. from Yale University.

## Greg Mcgruder

Vice President for Public Programs, National Geographic

#### CURTAIN UP! SCIENCE AND THE ART OF STORYTELLING



As National Geographic's vice president for public programs, Greg Mcgruder plans and produces lectures, film screenings, panel discussions and other events that give audiences in Washington, D.C. the opportunity to have in-person experiences with National Geographic's explorers, photographers, writers, and adventurers. He also serves on National Geographic's Expeditions Council, its Young Explorers Grant Committee, and the committee that selects and mentors Fulbright-National Geographic Digital Storytelling Fellows. During his career at National Geographic he has been a senior researcher for National Geographic Books, and led the staffs in charge of the National Geographic Museum, Geography Competitions, and the All Roads Film Festival. Outside of National Geographic he serves as a board member for the D.C. Arts and Humanities Education Collaborative, and chairman of the Advisory Council of the Environmental Film Festival in the Nation's Capital. Additionally, he performs with the Washington Revels in two groups specializing in 19th-century American music, stories, and songs.

### Moderator:

#### David Skelly

Director of the Yale Peabody Museum of Natural History



David K. Skelly is Director of the Peabody Museum of Natural History and the Frank R. Oastler Professor of Ecology at the School of Forestry & Environmental Studies at Yale University. Prior to assuming the Museum Directorship he served for five years as Associate Dean for Research in Forestry. He also holds an adjunct appointment in the Department of Ecology and Evolutionary Biology. Dave is a field biologist whose research focuses primarily on the ecology and development of amphibians. He has authored more than 80 papers, and his work on the effects of water pollution on the development of frogs in suburban environments has received wide attention in the national media. Dave has held a Guggenheim Fellowship and is a Fellow of the American Association for the Advancement of Science. He has been awarded the Forestry School's annual prize for teaching excellence on four occasions. Dave received his B.A. from Middlebury College and Ph.D. in biology from the University of Michigan, and held postdoctoral fellowships at the University of Wollongong, Australia and the University of Washington before joining Yale's faculty in 1996.



**3:30PM Plenary**

Greater Yellowstone Migrations

**Arthur Middleton***Associate Research Scientist, Yale School of Forestry & Environmental Studies*

Arthur Middleton '07 M.E.M. is an associate research scientist at the Yale School of Forestry and Environmental Studies. He was recently appointed Assistant Professor of Wildlife Management and Policy at the University of California, Berkeley. From 2007-2012, while pursuing his Ph.D. at the University of Wyoming, he studied wolf-elk interactions in the Absaroka Mountains. Middleton's current research focuses on the ecology of large mammals in the mountains of North and South America, particularly the attributes of these creatures that predispose them to acute conflicts with humans: predation and migration. He is also dedicated to improving science communication and ecosystem-based management in the landscapes where he works. In 2014, Prince Albert II of Monaco awarded Middleton and photojournalist Joe Riis the inaugural "Camp Monaco Prize." The prize recognized the duo's effort to link scientific exploration and public outreach on the subject of trans-boundary wildlife migrations of the Greater Yellowstone Ecosystem.

*"Science can help restore our sense of wonder at nature, but to do that it has to be more than words on a page."*

Arthur Middleton

**Joe Riis***Contributing photographer, National Geographic*

Joe Riis is a National Geographic Magazine contributing photographer and Photography Fellow at the Wyoming Migration Initiative. Trained as a field biologist, his work explores the migrations of animals in the Greater Yellowstone region of North America, highlights science and research expeditions, and connects people to some of the most remote and rare species on the planet through his photography and films. Since 2009, he has worked on photography assignments for *National Geographic Magazine* on four continents. He is the recipient of several awards including the Camp Monaco Prize with Arthur Middleton, three National Geographic Expeditions Council grants, the Stanford Knight-Riser Award for western environmental journalism with Emilene Ostlind, and an Emmy Award for his work on pronghorn migration in the National Geographic *Great Migrations* series. His short films have toured in the Banff Mountain Film Festival and Telluride Mountainfilm Festival, among others. He lives in rural South Dakota.

**Introduction:****Os Schmitz***Director Yale Institute for Biospheric Studies*

Os Schmitz is the Oastler Professor of Population and Community Ecology in the Yale University School of Forestry and Environmental Studies and the Director of the Yale Institute for Biospheric Studies. His research aims to make sense of nature's complexity emerging from the interdependencies among the variety of carnivore, herbivore, decomposer and plant species within ecosystems. Schmitz is a Fellow of the American Association for the Advancement of Science and the Ecological Society of America. He has served on the scientific advisory board of the American Forest Foundation's Center for Conservation Solutions and US Environmental Protection Agency's Scientific Advisory Board ad hoc panel reviewing the *EPA Report on the Environment*. He has also served as science advisor to the Open Space Institute's efforts to develop strategy for building a climate resilient landscape in the northeastern USA. He currently serves on the science advisory council of the Ocean Conservancy.



Photo by Joe Riis

## 5:00PM Keynote Address

### David Quammen

Author and Contributing Writer for *National Geographic*

#### MAKING YELLOWSTONE...NEW

David Quammen is an author and journalist whose fourteen books include *The Song of the Dodo* (1996), *The Reluctant Mr. Darwin* (2007), and *Spillover* (2012), a work on the science, history, and human impacts of emerging diseases (especially viral diseases), which was short-listed for eight national and international awards and won three (including the Merck Prize, given in Rome). More recently he has published *Ebola: The Natural and Human History of a Deadly Virus* and *The Chimp and the River: How AIDS Emerged from an African Forest*, both drawn largely from *Spillover*. Quammen is a Contributing Writer for *National Geographic*, in whose service he travels often, usually to wild places. He has also written for many other magazines, ranging from *Harper's*, *The Atlantic* and *The New York Times Book Review* to *Rolling Stone*, *Outside* and *Powder*. Much of his work is focused on ecology and evolutionary biology, frequently garnished with history and travel. In 2012 he received the Stephen Jay Gould Prize from the Society for the Study of Evolution. Quammen has lived in Montana for 43 years, and in the Greater Yellowstone Ecosystem for most of that time. His home is in Bozeman, where he shares a house and a small lot with his wife, Betsy Gaines Quammen, a conservationist at work on a doctorate in environmental history, and their family of other mammals.



Cactus with Ant, Pitchfork Ranch, 2015.  
Watercolor, gouache, powdered mica and graphite on paper, 10 x 12 1/4 in.  
by James Prosek



James Prosek. American Bison (Wyoming), 2014.  
Oil, acrylic and mixed media on wood panel, 45 x 56 in.  
by James Prosek

#### Introduction:

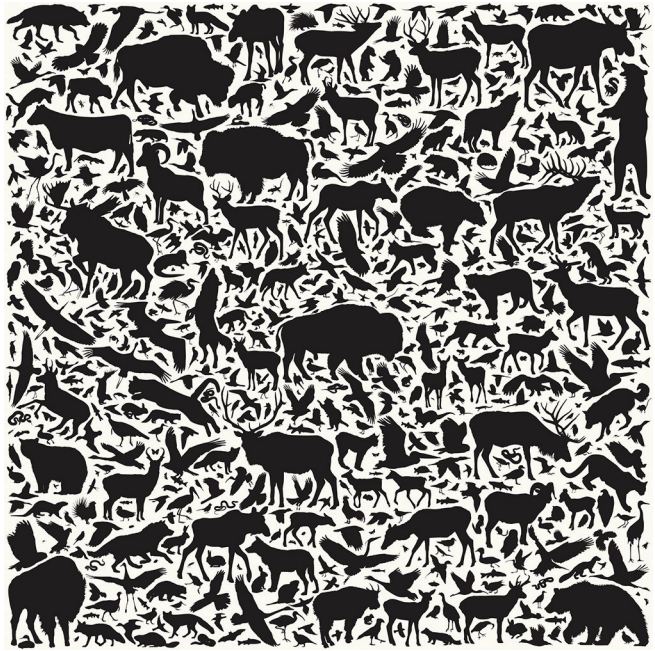
### Timothy Brown

Assistant Editor, *Yale School of Forestry & Environmental Studies*



Timothy Brown '15 M.E.Sc. is Assistant Editor with the F&ES Communications Team and Coordinator of the Yale Environmental Humanities Initiative. The 2015 recipient of the Stratchan Donnelley Award, Brown examined cultural identity and the climate debate in the U.S., and studied documentary filmmaking and creative writing at Yale. He also served as Editor in Chief of *Sage*, a student-run environmental magazine, and worked as an editorial assistant intern at *Yale e360*. Prior to enrolling at Yale, Brown was an award-winning high school environmental science teacher and selected as a 2010 fellow with the Toyota International Teacher's Program to Costa Rica. A lover of all things wild, he previously studied Canada lynx as a wildlife biologist for the U.S. Fish and Wildlife Service and has tracked grizzly bears in Alaska and the Yukon Territory.






Yellowstone Composition No. 2, 2016. Mixed media on wood panel, 45 inches x 45 in.  
by James Prosek

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