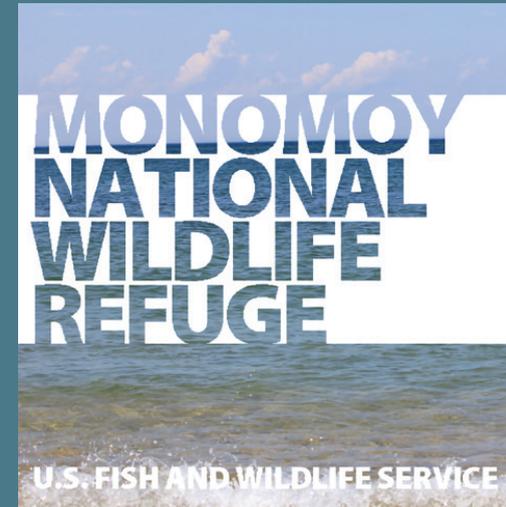
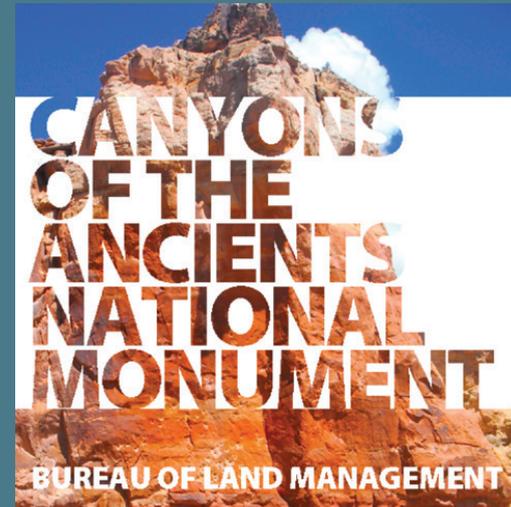
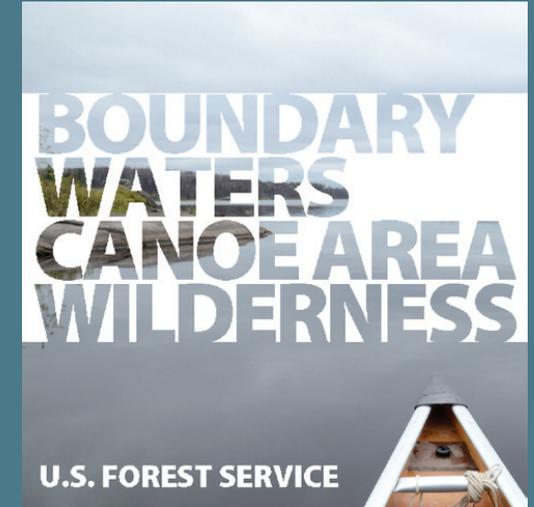
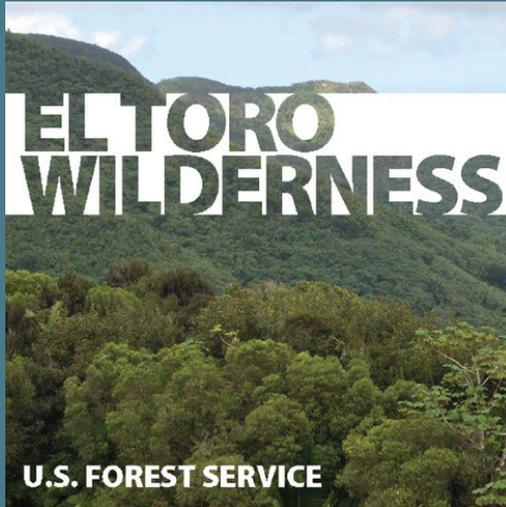




United States Department of Agriculture



Rocky Mountain Research Station

General Technical Report RMRS-GTR-397

October 2019

**Author**

Grant Pound is executive director and a co-founder of the Colorado Art Ranch in Livermore, Colorado.

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# Aldo & Leonardo

A WILDERNESS SCIENCE AND ART COLLABORATION

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## Preface

Aldo & Leonardo, a partnership between Colorado Art Ranch and the Aldo Leopold Wilderness Research Institute, was a project to celebrate the 50th anniversary of the Wilderness Act. The project was inspired by the scientific wisdom of Aldo Leopold and the artistic genius of Leonardo da Vinci. Our endeavor was an interdisciplinary collaboration of artists and scientists designed to celebrate the lands, resources and opportunities protected by the Wilderness Act. In 2013, we hosted one-month residencies in six diverse wilderness areas. Artists worked alongside wildland research scientists and gained firsthand knowledge of the wonders, complexities and challenges of our nation's wildest places. The result is this body of work that creatively illustrates the value of wild areas and honors the scientific efforts to preserve wilderness for the next fifty years.

# Aldo & Leonardo

A WILDERNESS SCIENCE AND ART COLLABORATION

### **The Work of an Artist or Scientist Begins With Questions**

Today's issues facing wilderness biomes and human beings require complex thinking. Complex thinking requires both broad and focused perspectives. The problem-solving approach used by artists gives rise to a range of possibilities previously unimagined and the possibilities can enrich the framework for scientific inquiry.

For example, Leonardo da Vinci, both an artist and a scientist, imagined the helicopter centuries before a working version could be realized. His vision gave scientists and engineers the basis for the ultimate invention.

Artists and scientists are similar in that their work starts with questions about the what, why, and how of the world's phenomena, yet the methods they use to explore and find answers are poles apart. When artists and scientists work together, their different perspectives and ways of thinking can lead to conclusions that combine the best of right-brain and left-brain thinking. The scientists begin to think like artists and the artists begin to think like scientists. The disruption of their typical ways of seeing and the cross-fertilization of ideas facilitate creative problem-solving.

The following pages give perspective and working examples from participants in the Aldo & Leonardo collaboration.

## The Beginning of Aldo & Leonardo: A Wilderness Science and Art Collaboration

By Grant Pound, Colorado Art Ranch

Paris on the Platte is a coffee house in Denver down by the river. It isn't on the river but is close enough to claim the name. I chose the shop as a meeting place because it's more or less on my guest's route to the airport and I could pop into REI afterward. I ordered an Americano and waited for Cindy Swanson to show up.

Cindy was, at that time, the director of the Aldo Leopold Wilderness Research Institute in Missoula, Montana. Cindy has a Ph.D. degree in economics from the University of Wyoming. She had heard about Colorado Art Ranch from nature writer Susan Tweit, who was married to my late friend Richard Cabe. Richard had gone to graduate school with Cindy and had ultimately given up economics for the lure of sculpting with stone and steel. Susan had told Cindy of the artist residencies that we had hosted through Colorado Art Ranch and she wanted to talk about the possibility of a wilderness arts residency to celebrate the 50th anniversary of the Wilderness Act.

Settled with coffee, I asked her what she had in mind. I wanted to hear her vision even though my head was already flooded with ideas about how to go beyond a typical artist residency. After talking with Cindy on the phone the day before, I had a lengthy discussion with Art Ranch co-founder Peggy Lawless.

Cindy reiterated her idea to celebrate wilderness by having a few artists work in a wilderness setting and then publish their work. She did not know how to set up a residency or find artists and hoped we could help.

I had put together eight residencies through Colorado Art Ranch. We had always selected artists who were using their skill, passion, and talent to react to the world we live in. Over the years we had wonderful artists from a wide range of media and experience. The artists generally had a great time, gave back to the local community, and reported changes in their perceptions, but it wasn't enough for me. I wanted to explore how the arts can change society and be partners in planning and decision-making. We began focusing our residencies on selected topics and encouraged

scientists to apply. We put together a project, called Hardrock Revision, during which artists worked with scientists and community members to create a vision for future uses of a shuttered silver mine. I told Cindy we could put together a residency but asked her to first tell me about the Aldo Leopold Wilderness Research Institute.

The Leopold Institute is the only Federal research group that develops and disseminates research-based information needed to protect and manage Wilderness Areas. They work across agencies including the USDA Forest Service, U.S. Fish and Wildlife Service, National Park Service, U.S. Geological Survey, and Bureau of Land Management. The Leopold Institute focuses on wilderness stewardship research to make sure wildlands endure for future generations. They favor multidisciplinary approaches and identify five primary problem areas: Recreation, Relationships, Wildland Fire, Larger Ecological and Social Systems, and Delivery and Application of Scientific Knowledge.

Cindy had me at "multidisciplinary." What if ... what if scientists were involved in the project?

What if we highlighted as many different Wilderness Areas as possible? What if the artists actually collected data and learned the scientific process? As our coffee grew cold, Cindy and I became more animated. The "What ifs" were flying. Finally, I was able to summarize the possible project. We would have six different biomes, represented with artists working with scientists to collect data and then creating works in response to their experiences.

I told Cindy that Colorado Art Ranch could absolutely develop a program, facilitate it, and find artists, but we were lacking three key components. Colorado Art Ranch did not have housing, access to scientists, or access to funding.

Cindy told me that the Leopold Institute could arrange all three and the project was born.

## **WILDERNESS ACT**

**Public Law 88-577 (16 U.S. C. 1131-1136)**

**88th Congress, Second Session**

**September 3, 1964**

An act

to establish a National Wilderness Preservation System for the permanent good of the whole people, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled.

### **SHORT TITLE**

SECTION 1. This Act may be cited as the "Wilderness Act."

### **WILDERNESS SYSTEM ESTABLISHED**

SECTION 2. (a) In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this purpose there is hereby established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as "wilderness areas," and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness; and no Federal lands shall be designated as "wilderness areas" except as provided for in this Act or by a subsequent Act.

(b) The inclusion of an area in the National Wilderness Preservation System notwithstanding, the area shall

continue to be managed by the Department and agency having jurisdiction there over immediately before its inclusion in the National Wilderness Preservation System unless otherwise provided by Act of Congress. No appropriation shall be available for the payment of expenses or salaries for the administration of the National Wilderness Preservation System as a separate unit nor shall any appropriations be available for additional personnel stated as being required solely for the purpose of managing or administering areas solely because they are included within the National Wilderness Preservation System.

### **DEFINITION OF WILDERNESS**

(c) A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

### **NATIONAL WILDERNESS PRESERVATION SYSTEM – EXTENT OF SYSTEM**

Section 3. (a) All areas within the national forests classified at least 30 days before September 3, 1964, by the Secretary of Agriculture or the Chief of the Forest Service as "wilderness," "wild," or "canoe" are hereby designated as wilderness areas. The Secretary of Agriculture shall:

(1) Within one year after September 3, 1964, file a map and legal description of each wilderness area with the Interior and Insular Affairs Committees

of the United States Senate and the House of Representatives, and such descriptions shall have the same force and effect as if included in this Act: Provided, however, that correction of clerical and typographical errors in such legal descriptions and maps may be made.

(2) Maintain, available to the public, records pertaining to said wilderness areas, including maps and legal descriptions, copies of regulations governing them, copies of public notices of, and reports submitted to Congress regarding pending additions, eliminations, or modifications. Maps, legal descriptions, and regulations pertaining to wilderness areas within their respective jurisdictions also shall be available to the public in the offices of regional foresters, national forest supervisors, and forest rangers.

Classification. (b) The Secretary of Agriculture shall, within ten years after September 3, 1964, review, as to its suitability or non-suitability for preservation as wilderness, each area in the national forests classified on September 3, 1964, by the Secretary of Agriculture or the Chief of the Forest Service as "primitive" and report his findings to the President. Presidential recommendation to Congress. The President shall advise the United States Senate and House of Representatives of his recommendations with respect to the designation as "wilderness" or other reclassification of each area on which review has been completed, together with maps and a definition of boundaries. Such advice shall be given with respect to not less than one-third of all the areas now classified as "primitive" within three years after September 3, 1964, not less than two-thirds within seven years after September 3, 1964, and the remaining areas within ten years after September 3, 1964.

Congressional approval. Each recommendation of the President for designation as "wilderness" shall become effective only if so provided by an Act of Congress. Areas classified as "primitive" on September 3, 1964, shall continue to be administered under the rules and regulations affecting such areas on September 3, 1964, until Congress has determined otherwise. Any such area may be increased in size by the President at the time he submits his recommendations to the Congress by not more than five thousand acres with no more

than one thousand two hundred and eighty acres of such increase in any one compact unit; if it is proposed to increase the size of any such area by more than five thousand acres or by more than one thousand two hundred and eighty acres in any one compact unit the increase in size shall not become effective until acted upon by Congress. Nothing herein contained shall limit the President in proposing, as part of his recommendations to Congress, the alteration of existing boundaries of primitive areas or recommending the addition of any contiguous area of national forest lands predominantly of wilderness value. Notwithstanding any other provisions of this Act, the Secretary of Agriculture may complete his review and delete such area as may be necessary, but not to exceed seven thousand acres, from the southern tip of the Gore Range-Eagles Nest Primitive Area, Colorado, if the Secretary determines that such action is in the public interest.

Report to President. (c) Within ten years after September 3, 1964, the Secretary of the Interior shall review every roadless area of five thousand contiguous acres or more in the national parks, monuments and other units of the national park system and every such area of, and every roadless island within the national wildlife refuges and game ranges, under his jurisdiction on September 3, 1964, and shall report to the President his recommendation as to the suitability or non-suitability of each such area or island for preservation as wilderness. Presidential recommendation to Congress. The President shall advise the President of the Senate and the Speaker of the House of Representatives of his recommendation with respect to the designation as wilderness of each such area or island on which review has been completed, together with a map thereof and a definition of its boundaries. Such advice shall be given with respect to not less than one-third of the areas and islands to be reviewed under this subsection within three years after September 3, 1964, not less than two-thirds within seven years of September 3, 1964, and the remainder within ten years of September 3, 1964. Congressional approval. A recommendation of the President for designation as wilderness shall become effective only if so provided by an Act of Congress. Nothing contained herein shall, by implication or otherwise, be construed to lessen the present statutory authority of the Secretary

of the Interior with respect to the maintenance of roadless areas within units of the national park system.

Suitability. (d)(1) The Secretary of Agriculture and the Secretary of the Interior shall, prior to submitting any recommendations to the President with respect to the suitability of any area for preservation as wilderness--

Publication in Federal Register. (A) Give such public notice of the proposed action as they deem appropriate, including publication in the Federal Register and in a newspaper having general circulation in the area or areas in the vicinity of the affected land;

Hearings. (B) Hold a public hearing or hearings at a location or locations convenient to the area affected. The hearings shall be announced through such means as the respective Secretaries involved deem appropriate, including notices in the Federal Register and in newspapers of general circulation in the area: Provided, that if the lands involved are located in more than one State, at least one hearing shall be held in each State in which a portion of the land lies;

(C) at least thirty days before the date of a hearing advise the Governor of each State and the governing board of each county, or in Alaska the borough, in which the lands are located, and Federal departments and agencies concerned, and invite such officials and Federal agencies to submit their views on the proposed action at the hearing or by no later than thirty days following the date of the hearing.

Any views submitted to the appropriate Secretary under the provisions of (1) of this subsection with respect to any area shall be included with any recommendations to the President and to Congress with respect to such area.

Proposed modification. (e) Any modification or adjustment of boundaries of any wilderness area shall be recommended by the appropriate Secretary after public notice of such proposal and public hearing or hearings as provided in subsection (d) of this section. The proposed modification or adjustment shall then be recommended with map and description thereof to the President. The President shall advise the United States Senate and the House of Representatives of his recommendations with

respect to such modification or adjustment and such recommendations shall become effective only in the same manner as provided for in subsections (b) and (c) of this section.

## USE OF WILDERNESS AREAS

Section 4. (a) The purposes of this Act are hereby declared to be within and supplemental to the purposes for which national forests and units of the national park and national wildlife refuge systems are established and administered and--

(1) Nothing in this Act shall be deemed to be in interference with the purpose for which national forests are established as set forth in the Act of June 4, 1897 (30 Stat. 11), and the Multiple-Use Sustained-Yield Act of June 12, 1960 (74 Stat. 215) (16 U.S.C. 528-531).

(2) Nothing in this Act shall modify the restrictions and provisions of the Shipstead-Nolan Act (Public Law 539, Seventy-first Congress, July 10, 1930; 46 Stat. 1020), the Thye-Blatnik Act (Public Law 733, Eightieth Congress, June 22, 1948; 62 Stat. 568), and the Humphrey-Thye-Blatnik-Andresen Act (Public Law 607, Eighty-Fourth Congress, June 22, 1956; 70 Stat. 326), as applying to the Superior National Forest or the regulations of the Secretary of Agriculture.

(3) Nothing in this Act shall modify the statutory authority under which units of the national park system are created. Further, the designation of any area of any park, monument, or other unit of the national park system as a wilderness area pursuant to this Act shall in no manner lower the standards evolved for the use and preservation of such park, monument, or other unit of the national park system in accordance with sections 1, 2, 3, and 4 of this title, the statutory authority under which the area was created, or any other Act of Congress which might pertain to or affect such area, including, but not limited to, the Act of June 8, 1906 (34 Stat. 225; 16 U.S.C. 432 et seq.); section 3(2) of the Federal Power Act (16 U.S.C. 796(2)); and the Act of August 21, 1935 (49 Stat. 666; 16 U.S.C. 461 et seq.).

(b) Except as otherwise provided in this Act, each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so

administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.

## PROHIBITION OF CERTAIN USES

(c) Except as specifically provided for in this Act, and subject to existing private rights, there shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and, except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.

SPECIAL PROVISIONS (d) The following special provisions are hereby made:

(1) Within wilderness areas designated by this Act the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to such restrictions as the Secretary of Agriculture deems desirable. In addition, such measures may be taken as may be necessary in the control of fire, insects, and diseases, subject to such conditions as the Secretary deems desirable.

(2) Nothing in this Act shall prevent within national forest wilderness areas any activity, including prospecting, for the purpose of gathering information about mineral or other resources, if such activity is carried on in a manner compatible with the preservation of the wilderness environment. Furthermore, in accordance with such program as the Secretary of the Interior shall develop and conduct in consultation with the Secretary of Agriculture, such areas shall be surveyed on a planned, recurring basis consistent with the concept of wilderness preservation by the United States Geological Survey and the United States Bureau of Mines to determine the mineral values, if any, that may be present; and the results of such surveys shall be

made available to the public and submitted to the President and Congress. Mineral leases, claims, etc. (3) Notwithstanding any other provisions of this Act, until midnight December 31, 1983, the United States mining laws and all laws pertaining to mineral leasing shall, to the extent as applicable prior to September 3, 1964, extend to those national forest lands designated by this Act as "wilderness areas"; subject, however, to such reasonable regulations governing ingress and egress as may be prescribed by the Secretary of Agriculture consistent with the use of the land for mineral location and development and exploration, drilling, and production, and use of land for transmission lines, waterlines, telephone lines, or facilities necessary in exploring, drilling, producing, mining, and processing operations, including where essential the use of mechanized ground or air equipment and restoration as near as practicable of the surface of the land disturbed in performing prospecting, location, and , in oil and gas leasing, discovery work, exploration, drilling, and production, as soon as they have served their purpose. Mining locations lying within the boundaries of said wilderness areas shall be held and used solely for mining or processing operations and uses reasonably incident thereto; and hereafter, subject to valid existing rights, all patents issued under the mining laws of the United States affecting national forest lands designated by this Act as wilderness areas shall convey title to the mineral deposits within the claim, together with the right to cut and use so much of the mature timber therefrom as may be needed in the extraction, removal, and beneficiation of the mineral deposits, if needed timber is not otherwise reasonably available, and if the timber is cut under sound principles of forest management as defined by the national forest rules and regulations, but each such patent shall reserve to the United States all title in or to the surface of the lands and products thereof, and no use of the surface of the claim or the resources therefrom not reasonably required for carrying on mining or prospecting shall be allowed except as otherwise expressly provided in this Act: Provided, That, unless hereafter specifically authorized, no patent within wilderness areas designated by this Act shall issue after December 31, 1983, except for the valid claims existing on or before December 31, 1983. Mining claims located after September 3, 1964, within the boundaries of wilderness areas designated

by this Act shall create no rights in excess of those rights which may be patented under the provisions of this subsection. Mineral leases, permits, and licenses covering lands within national forest wilderness areas designated by this Act shall contain such reasonable stipulations as may be prescribed by the Secretary of Agriculture for the protection of the wilderness character of the land consistent with the use of the land for the purposes for which they are leased, permitted, or licensed. Subject to valid rights then existing, effective January 1, 1984, the minerals in lands designated by this Act as wilderness areas are withdrawn from all forms of appropriation under the mining laws and from disposition under all laws pertaining to mineral leasing and all amendments thereto.

#### Water resources and grazing.

(4) Within wilderness areas in the national forests designated by this Act, (1) the President may, within a specific area and in accordance with such regulations as he may deem desirable, authorize prospecting for water resources, the establishment and maintenance of reservoirs, water-conservation works, power projects, transmission lines, and other facilities needed in the public interest, including the road construction and maintenance essential to development and use thereof, upon his determination that such use or uses in the specific area will better serve the interests of the United States and the people thereof than will its denial; and (2) the grazing of livestock, where established prior to September 3, 1964, shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture.

(5) Other provisions of this Act to the contrary notwithstanding, the management of the Boundary Waters Canoe Area, formerly designated as the Superior, Little Indian Sioux, and Caribou Roadless Areas, in the Superior National Forest, Minnesota, shall be in accordance with regulations established by the Secretary of Agriculture in accordance with the general purpose of maintaining, without unnecessary restrictions on other uses, including that of timber, the primitive character of the area, particularly in the vicinity of lakes, streams, and portages: Provided, That nothing in this Act shall preclude

the continuance within the area of any already established use of motorboats.

(6) Commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas.

(7) Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to exemption from State water laws. Nothing in this Act shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish in the national forests.

#### STATE AND PRIVATE LANDS WITHIN WILDERNESS AREAS

Section 5. (a) In any case where State-owned or privately owned land is completely surrounded by national forest lands within areas designated by this Act as wilderness, such State or private owner shall be given such rights as may be necessary to assure adequate access to such State-owned or privately owned land by such State or private owner and their successors in interest, or the State-owned land or privately owned land shall be exchanged for federally owned land in the same State of approximately equal value under authorities available to the Secretary of Agriculture: Transfers, restriction. Provided, however, That the United States shall not transfer to a State or private owner any mineral interests unless the State or private owner relinquishes or causes to be relinquished to the United States the mineral interest in the surrounded land. (b) In any case where valid mining claims or other valid occupancies are wholly within a designated national forest wilderness area, the Secretary of Agriculture shall, by reasonable regulations consistent with the preservation of the area as wilderness, permit ingress and egress to such surrounded areas by means which have been or are being customarily enjoyed with respect to other such areas similarly situated.

Acquisition. (c) Subject to the appropriation of funds by Congress, the Secretary of Agriculture is authorized to acquire privately owned land within the perimeter of any area designated by this Act as

wilderness if (1) the owner concurs in such acquisition or (2) the acquisition is specifically authorized by Congress.

#### GIFTS, BEQUESTS, AND CONTRIBUTIONS

Section 6. (a) The Secretary of Agriculture may accept gifts or bequests of land within wilderness areas designated by this Act for preservation as wilderness. The Secretary of Agriculture may also accept gifts or bequests of land adjacent to wilderness areas designated by this Act for preservation as wilderness if he has given sixty days advance notice thereof to the President of the Senate and the Speaker of the House of Representatives. Land accepted by the Secretary of Agriculture under this section shall become part of the wilderness area involved. Regulations with regard to any such land may be in accordance with such agreements, consistent with the policy of this Act, as are made at the time of such gift, or such conditions, consistent with such policy, as may be included in, and accepted with, such bequest. (b) Authorization to accept private contributions and gifts The Secretary of Agriculture or the Secretary of the Interior is authorized to accept private contributions and gifts to be used to further the purposes of this Act.

#### ANNUAL REPORTS

Section 7. At the opening of each session of Congress, the Secretaries of Agriculture and Interior shall jointly report to the President for transmission to Congress on the status of the wilderness system, including a list and descriptions of the areas in the system, regulations in effect, and other pertinent information, together with any recommendations they may care to make.

#### APPROVED SEPTEMBER 3, 1964. Legislative History:

House Reports: No 1538 accompanying H.R. 9070 (Committee on Interior & Insular Affairs) and No. 1829 (Committee of Conference).

Senate report: No. 109 (Committee on Interior & Insular Affairs). Congressional Record: Vol. 109

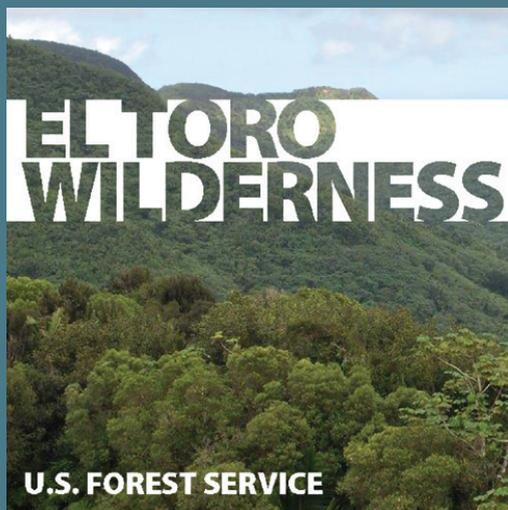
(1963):

April 4, 8, considered in Senate.

April 9, considered and passed Senate.

Vol. 110 (1964): July 28, considered in House.

July 30, considered and passed House, amended, in lieu of H.R. 9070 • August 20, House and Senate agreed to conference report.



## El Toro Wilderness

Puerto Rico  
USDA Forest Service  
March 1-30, 2013



## A Tropical Start

By Grant Pound, Colorado Art Ranch

The El Toro Wilderness in Puerto Rico was a great location to start our project. Dr. Grizelle González, a soil scientist and project leader of the International Institute of Tropical Forestry, was our coordinator. She provided us with housing, research, staff, and goals. She also took it upon herself to make a connection with the Museo de Arte Contemporáneo de Puerto Rico. She was able to get housing for the artists in a brand-new facility at the Sabana Field Research Station at the edge of the El Yunque National Forest.

I arrived in San Juan at night and was immediately struck by the cacophony provided by the coquí. These small tree frogs make the night come alive and became the chorus of our nights. I had picked a hotel in Fajardo online. It looked pretty close to the airport on the map, but the miles were Puerto Rican miles and it seemed like it took hours to cross the northern part of the island.

The next morning, I found my way to the Sabana Field Station and sought out the Operations Assistant, Miriam Salgado. I had a chance to practice my rudimentary Spanish, which sounds a lot better in my head than it does coming out of my mouth. We had fun trying to figure things out as she showed me around the field station. The compound consisted of five buildings with all but a technician office within a fenced area. I met several of the research techs and station workers.

The artists arrived on different days, giving me a chance to get used to driving on the Puerto Rican roads. I also learned my way around and was able to pick the right exit from the airport over 50 percent of the time.

The artists had some issues from the get-go. Since the housing had not had occupants, we were lacking some of the basics. The building had been readied just days before our arrival and some things were not yet in evidence, but Miriam went out of her way to make sure we had what we needed.

We were also without cell or internet service. I had not promised these things—remember the wilderness part—but apparently they were expected. Two of the artists had ongoing projects. It turns out the Forest Service had to issue us each separate passwords to get through their firewall. We had these after a couple days.

Early on we were warmly welcomed at the International Institute of Tropical Forestry (IITF) in the Jardín Botánica south in Río Piedras by Dr. Ariel Lugo, director of the



Panoramic view of El Yunque National Forest.

IITF. Ariel introduced us at the monthly “Family Meeting” and talked about the project and how excited they were to have us working with them. Each artist had a chance to talk about their work.

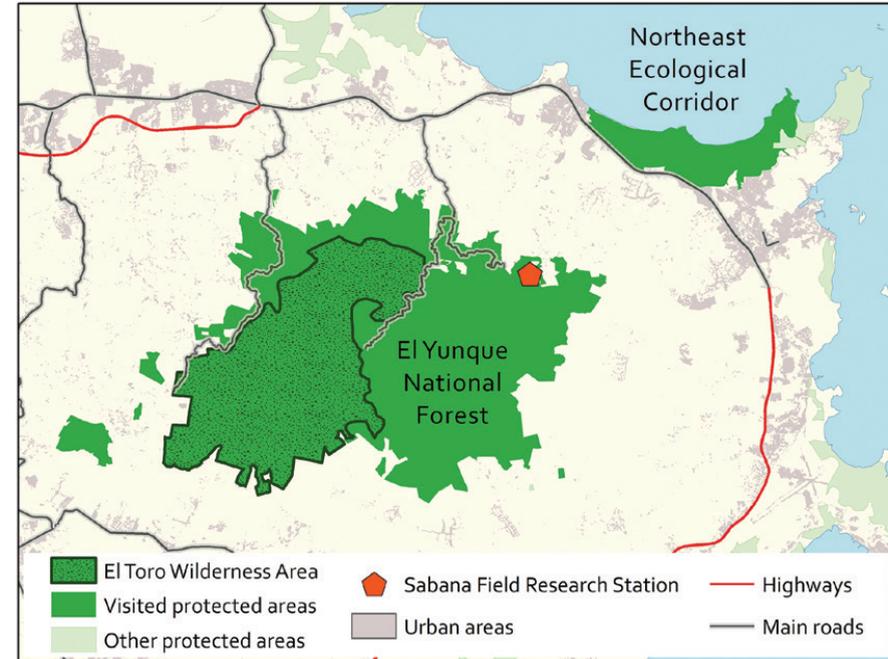
We all gathered the first full day of the project at the Sabana Field Station. We were joined by seven artists selected by the Museo de Arte Contemporáneo. We had discussions about how we each dealt with process, how we related to wilderness, and the comparisons of art and science. In the following days we had tours of the welcome center at El Yunque National Forest with the Forest Supervisor, Pablo Cruz. We climbed a tower used for collecting climatic data with the technicians Carlos Estrada, Samuel Moya, María Rivera-Costa, and scientists Tamara Heartsill and Grizelle González. The tower gave a commanding view of the several rain forest zones that make up El Yunque.

Toward the end of my stay, the Museo hosted a conversation with the artists and scientists involved in the project. It was a large panel discussion moderated by Museo Director Marianne Ramírez.

I left the next day and the work continued with the artists collecting data in the field and going on tours with the scientists and Ariel Lugo. At the end of the month the Museo again held an event to give the artists a chance to talk about their experiences.

### Participants

Grizelle González, Soil Scientist	Iván Acosta, Artist
Tamara Heartsill, Research Ecologist	Félix Rodríguez, Artist
Samuel Moya, Research Technician	Piso Proyecto Artist
María Rivera, Research	Elizabeth Robles, Artist
Ariel E. Lugo, International Institute of Tropical Forestry, Director	Mariela Parilla, Artist
William Gould, Research Ecologist	Jonathon Cohrs, Video Artist
Carlos Estrada, Javier and Jaime Suarez, Installation Artists	Grisha Coleman, Choreographer
Dhara Rivera, Multimedia Artist	Aline Veillat, Artist
Noemí Segarra, Artist	
Natalia Muñoz, Artist	



Location map for El Yunque National Forest and El Toro Wilderness. Cartography by Maya Quiñones Zavala.

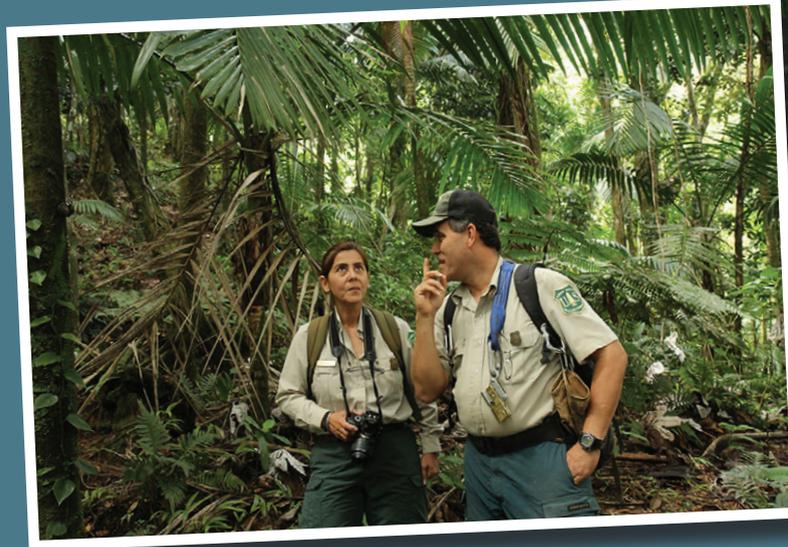
Approximately 10,000 acres of El Yunque National Forest have been designated as the El Toro Wilderness Area. El Toro, named after the highest peak (3,524 feet) in the Forest, is the only tropical Wilderness in the U.S. National Forest System. It contributes to the national goal of a more diverse Wilderness Preservation System and is also a Biosphere Reserve, an internationally designated protected area managed to demonstrate the values of conservation.

El Yunque National Forest is well recognized as a unique location. The Forest features the largest number of species of native trees (240) in the National Forest System and contains 50 varieties of orchids and more than 150 species of ferns. The Forest also provides a valuable water source for thousands of Puerto Rican residents. The area is also rich in wildlife with more than 100 species of vertebrates, including the endangered Puerto Rican parrot.

The area’s spectacular scenery and the grandeur of the tropical vegetation can be appreciated from peaks both within and outside the area. El Toro can be seen from many vistas around the island and by sailors traveling the North Atlantic Ocean and the Caribbean Sea as well as inhabitants of neighboring islands. The area features dense vegetation with a mixed evergreen forest ranging from 3 meters in height on the peaks to 30 meters at lower elevations. There are potential cultural or historical features within the area possibly containing artifacts and Taino petroglyphs.

Artists worked with scientists in the El Yunque National Forest and the Northeast Ecological Corridor, two important protected areas in northeastern Puerto Rico. Nearly half of the National Forest is designated as the El Toro Wilderness Area.

IITF technicians, María M. Rivera and Carlos Estrada; Research Ecologist Tamara Heartsill Scalley (2nd from left) leads a walk on the road to El Yunque Peak with artists John Cohrs, Grisha Coleman, and Dhara Rivera; Artists and IITF employees (technicians and scientists) at the East Peak tower, Luquillo Experimental Forest; Artists walking down a forest path; Artist Grisha Coleman climbing the canopy tower at the Bisley Experimental Watersheds, El Yunque National Forest. Photo by Jon Cohrs.



## The Brain and the Body

By Grizelle González, Soil Scientist

As part of the celebration of the 50th anniversary of the Wilderness Act, the Aldo Leopold Wilderness Institute wanted to establish arts and science residencies in six biomes across the United States that would represent a variety of ecosystems and partner agencies.

El Toro Wilderness in El Yunque National Forest (Luquillo Experimental Forest) is a unique location—representing the first designated Wilderness in Puerto Rico and the first designated tropical wilderness in the National Forest System, so it seemed like a good option. Originally, I wrote the proposal to include El Toro as part of the arts and science collaboration with two main goals in mind: 1) to showcase the significance of the research work being performed at the Forest Service’s International Institute of Tropical Forestry in Río Piedras, Puerto Rico and 2) providing the opportunity to local Puerto Rico artists to collaborate with visiting artists (from mainland United States and Europe) and scientists while living and working in a relatively remote environment. To my surprise, Marianne Ramírez, Executive Director of the Museum of Contemporary Art (MAC) in Santurce, Puerto Rico, wholeheartedly supported the project by recommending the local artists, integrating the participants into the exhibit of “Puerto Rico: Puerta al Paisaje” and together we developed the “Poetic Science” exhibit that presents the artwork that was conceptualized after the experiences and knowledge learned through the Aldo & Leonardo Arts and Science residence in El Toro Wilderness had taken place.

The hands of artist Aline Veillat holding a soil sample from the rainforest.



When the artists and scientists started meeting to share our vision on expectations and goals about the Aldo & Leonardo project, I did not realize how important or how big of an impact this collaboration was going to have on the IITF work environment. But pretty soon after we started going out into the forest and doing research with the artists, we learned the value of getting a fresh look at the things we were doing on a daily basis through different lenses. It is so easy to fall into a routine of visiting permanent study sites and mechanically start taking measurements—particularly if you are doing so over the long term—collecting the same data (whether it is rainfall, air temperature, stream sedimentation, or amount of litter falling from the forest canopy) every week or every month over the span of 10-20 years. Thanks to the artists we were able to recalibrate our senses, which is something that had a great positive impact on all of us (scientists and technicians) at a personal level as well as professionals working in a team environment. It helped improve employee morale not only because the activity per se was out of the ordinary but because external partners (outside of research) showed great appreciation for the constant and meticulous work being done over the long term.

One of the highlights for me in the discussion with the artists was on the use of “tools” for the development of projects in both arts and sciences. Some of the artists explained how they see their body as the main tool to carry on the work ahead of them. As with an artist, to a scientist the brain, other body parts, and senses can also become an essential part of our toolkit. But sometimes scientists get too absorbed in the use of technology, the details of a methodology and the specifics of a particular task—so it was fascinating to learn from the artists how to approach the use of tools differently and more holistically.

Another lesson learned for me from this project is the discovery that an arts and science collaboration is a creative way to teach and show others the work we do as scientists in a non-intimidating way, where the conversation can start with the description of the subtleties of an art expression but can also serve as a template to communicate ecological principles. The enjoyment of an art piece or installation is an ageless activity. Certainly, arts can help scientists communicate scientific terms, ideas, or theories to the general public by reaching and bridging people of all kinds of backgrounds and educational levels.

Project Leader Grizelle González shares ideas and expectations with scientists and artists participating in the Aldo & Leonardo Wilderness Science and Art Collaboration during a dialogue session in the Museum of Contemporary Arts in Santurce, Puerto Rico. Subjects: from left- Jaime and Javier Suarez, Tamara Heartsill Scalley, Aline Veillat, Ariel Lugo, Grizelle Gonzalez, Grant Pound, John Cohrs, Elizabeth Parrilla, Dhara Rivera, Mariane Ramirez.



**Grizelle González** was born in Santurce, Puerto Rico. She obtained a B.S. degree in biology (1993) an M.S. in soil ecology (1996) from the University of Puerto Rico, Río Piedras Campus for research on earthworm ecology. At the University of Colorado in Boulder, she obtained a Ph.D. (1999) in soil ecology and biology.

Grizelle started working at the Forest Service's International Institute of Tropical Forestry (IITF) in 2000. She became director of the Sabana Field Research Station in Luquillo in 2006. Currently, she is the project leader of the Research and Development Unit at IITF. She is an adjunct faculty of the Department of Biology and the Department of Environmental Sciences at the University of Puerto Rico, Río Piedras campus. She is the principal investigator of the Luquillo Long-Term Ecological Research Program and the Luquillo Critical Zone Observatory. She is a member of editorial boards of the Caribbean Journal of Science, International Journal of Biodiversity and Conservation, and International Scholarly Research Network-Soil Science, and a Caribbean Naturalist. Grizelle has published many scientific reports, 55 peer reviewed journal articles, 17 book chapters, and nearly 10 scientific opinion columns published by local Puerto Rico newspapers. Her newest book, *Ecological Gradient Analyses in a Tropical Landscape*, was released in 2013.



A scientific installation designed by IITF Project Leader Grizelle González combines scientific tools, field equipment, data sheets, and a climatic station as part of the Poetic Science exhibit at the Museum of Contemporary Arts in Santurce, Puerto Rico. This installation has served as a “laboratory” inside the museum, where the general public and students of all educational backgrounds and levels (from pre-K to college undergraduates) can learn about El Toro Wilderness and the scientific method. Installation photos by Antonio Ramírez Aponte.

## Sound Circles/Inmersión

By Tamara Heartsill Scalley, Research Ecologist  
Gerónimo Mercado, Artist

With the field recordings of ARBIMON (Automated Remote Biodiversity Monitoring Network), Tamara Heartsill Scalley and Gerónimo Mercado developed a piece that highlights the noninvasive perception, experience, monitoring, and measurement of wild soundscapes. The piece invites the audience to reflect upon sounds in the metaphoric set/group environment of delineated and layered sound-circle spaces. The audience is invited to engage in exploration of marine, aquatic, terrestrial, and Aeolic wilderness sounds that occur upon active movement among and between sound circles in the installation space.

*What do sounds in a small space communicate? What do sounds in a larger space communicate? What sounds are immersive?*

Hearing and exploring Sound Circles/Inmersión with an awareness of recently experienced silence is a key element to this piece. The audience must prepare before entering the installation space by using earplugs, which will prompt the recalibration of silence perception and awareness of sound. This simple act of wearing earplugs before entering the installation space heightens the contrasts between the displayed sound circles. This state of refreshed/renewed listening awareness begins to be explored by contrasting the evoked feelings of silence with the earplugs, followed by the immersion into the sound-circle spaces. The initial silence period invites retrospection and sets the stage to heightened sound awareness. In this instance the audience is invited to further explore these feelings evoked by sounds from the juxtaposition of layered sound circles in the tropical wilderness soundscape installation. The installation provides an immersive and stereophonic experience where variations in distance, elevation, and frequencies of sound can be explored by the audience moving about in sound-circle spaces delimited by spectrograms.

Sounds are an integral and essential part of understanding wilderness. Aldo Leopold's contributions to the concept of wilderness, and consequently to the needs for conservation, came from seasonal observations of birds in the context of a river valley. These observations led to seasonal recordings of bird songs and nature sounds along a river in the wilderness. These sounds presented a more subtle and complex perspective of the wilderness. Now the wilderness became not just the landscape and

protected land, but also the sounds and particular daily and seasonal soundscapes in which one must be immersed in, and perhaps converse with, in order to have the full experience of the wild.

A collection of sound recordings (arbimon.net) from wilderness daily and seasonal cycles serves as the main context of the piece. The sounds were recorded via noninvasive, automated remote monitoring networks. The benefit of these automated remote monitoring networks is that they are able to capture sounds without the disturbance effect of behavioral changes that come with human intervention and presence during the recording session. The recordings resulting from this remote technology allow for more realistic and genuine wilderness sound experience.

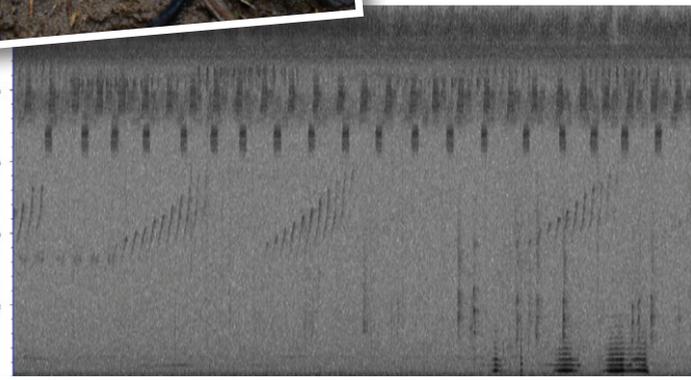
During the Aldo & Leonardo project interdisciplinary collaboration, preliminary discussions of the streams and forest where recorded and heard on site. A discussion of sound as a communication tool and exploration medium was then initiated. The piece explores how the shared listening experience offered by the museum space (in contrast to the contemporary sight of the headphone individual listening) evokes both shared and individual reflection and reaction. The piece begins outside the exhibition hall by invoking initial silence/stillness before entering the piece, the movement through the installation space results in heightened listening delineated in the sound-circle space. Contrasted with inward/personal space, the displayed spectrograms provoke the audience to find in its interior a place for soundscapes and a conversation in/of the wilderness.



Recording forest sounds.



*Leptodactylus albilabris*  
(white-lipped frog).



Spectrogram.



Audience explores  
sound circles.

#### **Tamara Heartsill Scalley**

Native of Río Piedras, Tamara is a research ecologist at the International Institute of Tropical Forestry. She has a B.A. in geography and M.S. in biology from the University of Puerto Rico, Río Piedras. With a Quinney Natural Resources fellowship, she earned a Ph.D. in ecology at Utah State University and was research faculty at University of Pennsylvania. Seeking broader ways to communicate the experience of immersion into wild landscapes, she collaborates with ARBIMON and meets with sound artist Gerónimo Mercado. Tamara's research has always included her interest in streams and forests. Her current research projects encompass wetlands, urban ecology, and long-term measurements of forests in the Caribbean.

#### **Gerónimo Mercado**

After studying with illustrious musicians such as Canals, Figueroa, and Campos Parsi, Gerónimo graduated from Berklee College of Music in Boston where he achieved specialization in composition for film and audio production and engineering. He worked as a music producer, engineer, and sound designer for films such as *Miente* (and representing Puerto Rico at the Oscars), *Broche de Oro* with Jacobo Morales, and *200 Cartas* with Lin-Manuel Miranda. He was commissioned to compose a sound design piece for the Detroit Institute of Arts, inspired Diego Rivera's work, "Detroit Industry Murals." Recent sonic/visual installations have been exhibited in the Poly/Graphic Triennial of 2012 among others. Gerónimo is part of a select group in the world that develops and uses the Reactable, an interactive musical/visual art instrument. He has published in collaboration with the University of Puerto Rico-Fillius Institute the use of interactive audio technology for treatment of autism.

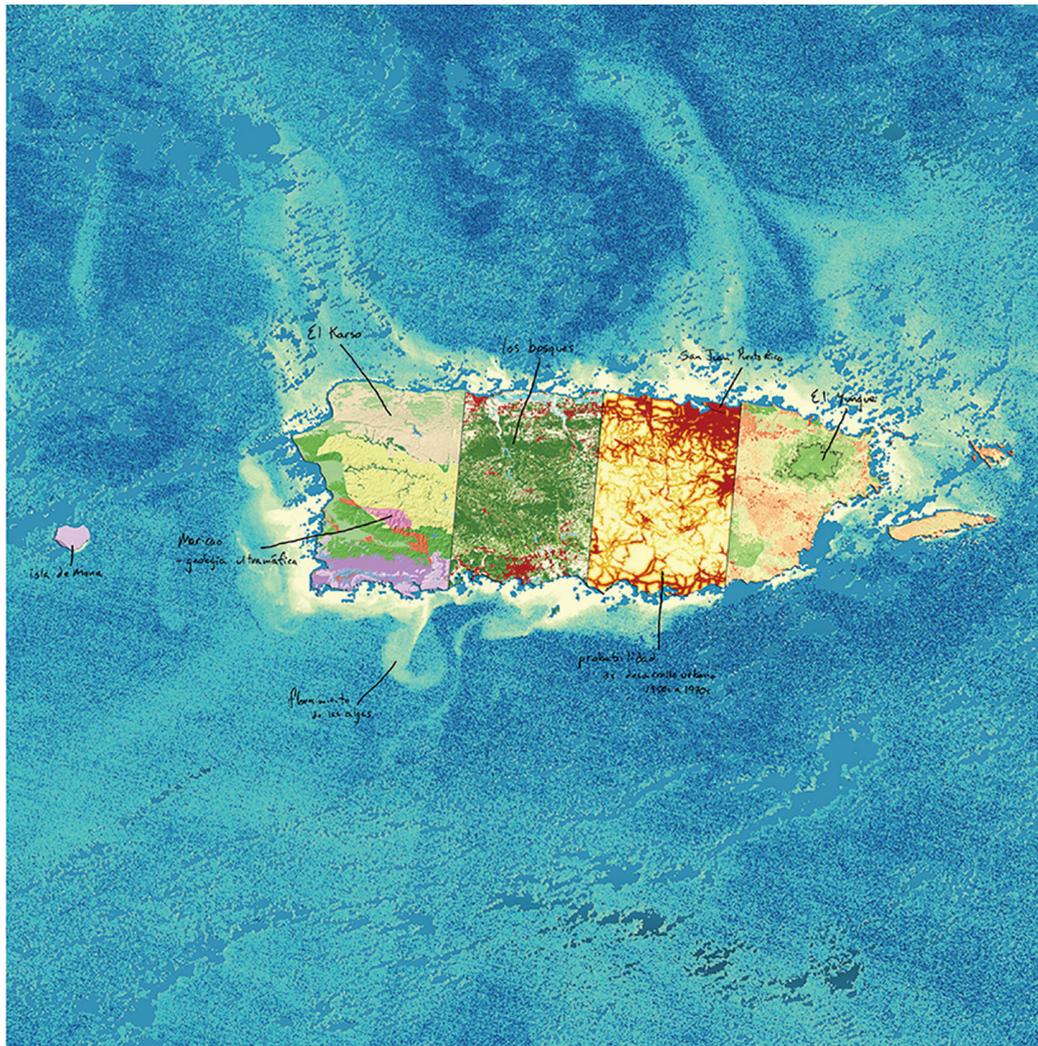
#### **ARBIMON**

The Automated Remote Biodiversity Monitoring Network ([arbimon.net](http://arbimon.net)) is a collaboration among ecologists, environmental scientists, and computer scientists from the University of Puerto Rico, Río Piedras. The major components of the ARBIMON are two web-based solutions for monitoring biodiversity (ARBIMON-acoustic) and land change (ARBIMON-land mapper). The ARBIMON-acoustic component includes a novel combination of hardware and software for automating data acquisition, data management, and identification of multiple species of amphibians, birds, insects, and mammals. The ARBIMON-acoustic web site has more than 1 million recordings from many sites around the world, and anyone with an internet connection is invited to explore these recordings.

## An All Lands Approach

By William Gould, Research Ecologist  
Maya Quiñones Zavala, Geographer

This map represents some of the ways researchers perceive the landscape. Scientists use a variety of tools to understand the state of the landscape and the relationships between forces that shape the landscape, like climate, ocean currents, and human activity. We feel it is important to understand these things because our lives are connected to the landscape and we depend on the food, air, water, and spirituality the land imparts.



A colorful image of Puerto Rico and the surrounding seas created by a composite of remote sensing and mapping techniques that show patterns in algal blooms, bedrock geology, land cover, urban growth, and biodiversity.



**William A. Gould** was born and raised in Minneapolis, Minnesota. He worked and studied for many years in the Arctic and moved to Puerto Rico in the year 2000. He is a research ecologist with the USDA Forest Service's International Institute of Tropical Forestry, the coordinator of the Caribbean Landscape Conservation Cooperative, and the director of the USDA Southeast Regional Caribbean Climate Sub Hub. He works as a landscape ecologist studying the relationships of land and seascapes, biodiversity, ecosystem services, and conservation.



**Maya Quiñones Zavala** is a Puerto Rican geographer for the Forest Service with a special interest in the art of cartography. She started learning and practicing geospatial and analysis techniques, cartography, and remote sensing as a student volunteer at the International Institute of Tropical Forestry in the year 2000. She has coauthored various scientific articles, reports, and research maps. Her cartographic work can also be found in many publications and presentations by Institute scientists and collaborators.



## Monomoy National Wildlife Refuge

Massachusetts

U.S. Fish and Wildlife Service

June 17-July 13, 2013



Dave Brownlie instructs us on how to tell age and sex of horseshoe crabs.



Dave Brownlie instructs us on how wilderness is interpreted in a marine setting.

## A Sand, Salt, and Seafood Wilderness

By Grant Pound, Colorado Art Ranch

Monomoy was an intriguing site from the beginning. I had not even thought of a marine wilderness. My image of wilderness was mountains and trees far from civilization. Monomoy National Wildlife Refuge sits off the coast of Cape Cod and is accessible by small watercraft most of the time. This is wilderness?

Peggy Lawless, co-founder of Colorado Art Ranch, joined me for this part of the project and we flew into Boston where we rented a car. I had not been to the East Coast for a long time and the drive was beautiful. We found the rental easily and tried to figure out how to divvy up the artists. We knew from past experience that first-come first-served leads to months-long resentment among artists in residence, so we make decisions based on perceived needs and personalities and then let them blame us for the choices. We found the rental clean if a bit musty, but there were no sheets or towels. Yikes. After El Toro I could just imagine the artist's reactions. I tried to reach the owner without luck and tried his local cleaning person as well. Then I looked back through our correspondence and saw that these things were not provided. Huh? We ventured out to a big box store and bought sheets and towels. Another nonbudget item.

The artists arrived the next day and we had a nice time eating seafood and getting to know each other. Jeremy Underwood is a photographer, Elisabeth Nickles is a sculptor, and Megan Singleton is a papermaker. All three were excited, friendly, accommodating, and ready to work.

The second day we explored the area together and apart. In the evening refuge manager Dave Brownlie and Biologist Kate Iaquinto joined us at the cottage for food, wine, and a slide show. They had warned us that they would be coming straight from the island and might smell a bit of the sea and bird poop. We didn't mind. Our group was small and we kept the discussion informal. We talked quite a bit about process and wilderness and how Monomoy differs from other Wilderness Areas. We ended the night on a high note with everyone as best friends.

The next day we arrived at the launch early and waded out to the boat. It was a sunny day with just a bit of chop. We were warned that the weather could turn without warning and if it got bad the boat would not be able to return for us. We packed extra food and water just in case.

Dave gave us an introduction to the history and ecology of the island, which was not always an island. Sometimes the causeway filled in and the island became a peninsula. After Superstorm Sandy, the isthmus got washed out and Monomoy became an island again. Dave told us about the horseshoe crab population study that was underway. Crabs had been tagged the previous season and now volunteers were helping to count how many tagged crabs returned. We were at the tail end of the mating season but were able to find a large number of the creatures coupling just off shore.

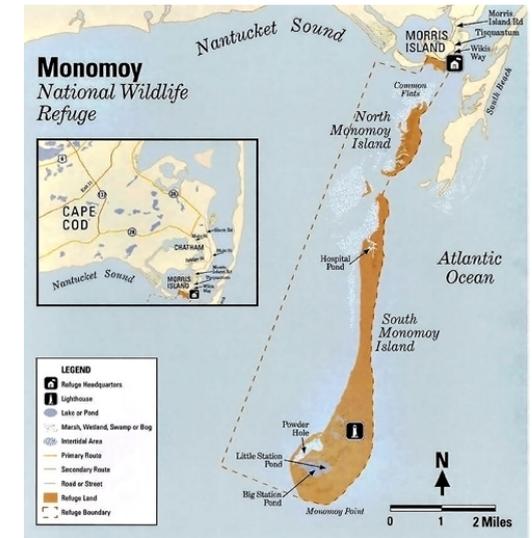
We then donned jackets and hardhats and hiked over the low dunes to the tern colony. The hardhats were quickly put to the test as a few, then dozens, then hundreds of terns swooped and screamed at us. It was an impressive and amazing site. I found myself ducking and dodging to avoid getting hit by these half-pound birds.

We passed through the colony without much possibility of discussion and came out on the other side of the island where a seal lay rotting on the sand. Dave talked about the protection of the seal population and what that had done to other populations such as the great white shark.

The artists would be on the island to collect data one or two at a time. They would sometimes camp there and would have other chances to explore the rest of the island. The third day Elisabeth went out with the research crew and Peggy and I headed north to do some kayaking. We gathered back with the artists in the evening.

As recently as 1958, this area was an extension of the mainland, the eroding shoreline at the elbow of Cape Cod. Severe winter storms isolated Monomoy Point from the mainland and, 20 years later, separated North Monomoy Island from South Monomoy Island. Ten miles of surf-beaten dunes on the eastern shore of the islands, still-shifting sands that sometimes reach 100 feet in height, give way to salt marsh and then to mudflats on the western shore. The ecosystem is a perfect habitat for migratory birds.

Dubbed a sanctuary for wildlife in 1944, most of 2,710-acre Monomoy National Wildlife Refuge has been designated Wilderness: all of the north island and all but two tracts on the south island. The mainland portion of the Refuge remains non-Wilderness. People are known to have lived here from 1711 on, and a lighthouse complex on the south island attests to their presence. Among the migratory birds you may see are grebes, shearwaters, petrels, gannets, bitterns, egrets, herons, swans, geese, ducks, and the endangered piping plover and roseate tern. Hundreds of gray and harbor seals winter along the coastline. Boaters swarm the shores in summer. Camping, fires, and pets are not permitted.



### Participants

Dave Brownlie, Refuge Manager

Kate laquinto, Biologist

Elisabeth Nickles, Sculptor

Jeremy Underwood, Artist

Photographer Megan Singleton, Paper Artist

Bird banding. Photo by Megan Singleton.



Banding tern chick. Photo by Megan Singleton.



Megan Singleton collecting invasive plants for paper making. Photo by Elisabeth Nickles.



Tern chick. Photo by Megan Singleton.



Grant Pound, Dave Brownlie, Jeremy Underwood, Elisabeth Nickles, and Megan Singleton. Photo by Peggy Lawless.



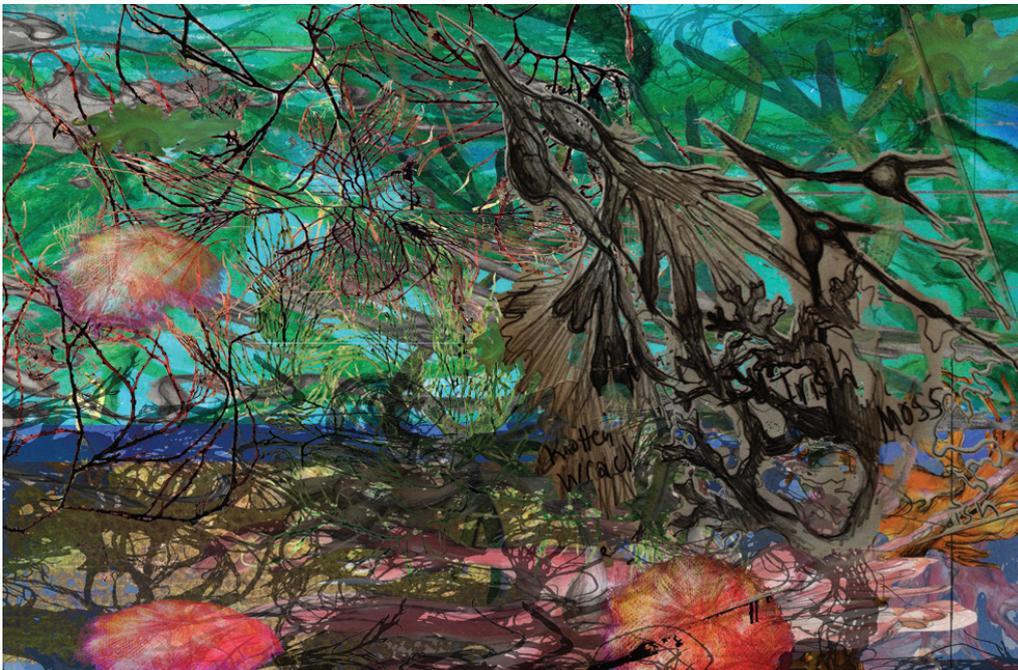


**Elisabeth Nickles** is a mixed media sculptor living in Philadelphia. She has produced bodies of work in bronze, glass, and paper. She attended the Boston Museum School and The Pennsylvania Academy of Fine Art and in 2007 received an MFA from Alfred University. Her work has recently been shown at the Philadelphia Airport, Schmidt Dean Gallery, and Exit Art. She is currently a Muralab artist in residence at NextFab through the Breadboard Science Center and Mural Arts, where she is using new technologies to make small scale models that will be exhibited at the Esther Klein Science Center as possible projects for public spaces. During the past year, she completed a large-scale commission for the SEPTA Arts in Transit program as well as a large wall sculpture for the offices of The Reinvestment Fund in Philadelphia.





Seal



Seaweed Journal



Seal and Seaweed Journal

## Reflections on an Island Wilderness

By Megan Singleton, Papermaker, Artist

Monomoy Island is a majestic landscape, shape-shifting gradually, every second, by the lunar energy of tidal currents and the battering of sun and wind. My first trip out to the island of Monomoy was June 19, 2013. Anticipation, excitement, and curiosity overcame me as I waded through Nantucket Sound at Morris Island to board the boat. It was a brief, misty, slightly bumpy ride out to the south tip. Dave Brownlie, refuge manager, led us through blue waters, dotted with the occasional seal, to our destination. We were met by a cool breeze on our wet legs and feet as we embarked on the island. I was immediately drawn to the diversity of flora and algae found along the shore and how the seaweeds dried, shrunk, and bleached out into paper-like forms strewn out in 20-foot stretches on the sand. I knew Monomoy was a migratory bird habitat but I was not prepared for the hundreds of angry birds that met us as we passed through the edge of the tern colony. Helmets on, flags up, was the protocol for traversing in the tern colony. Patterns were observed in flight, patterns of time recorded in the sand, and patterns dotted the backs of desiccated crabs. I was overwhelmed, intrigued, and inspired by the sheer number of patterns and textures I observed and began to contemplate the effects of wind, water, sand, and sun, the makers of change.

The next month was spent exploring the diversity of wilderness that Monomoy encompassed and, as an artist, having the rare opportunity to participate in the role of assistant to the remarkable team of biologists working on the island. One of the most rewarding and inspiring experiences of this trip was working with this group of individuals who were so passionate about the preservation and protection of the ecology of this landscape and its inhabitants. We had many engaging conversations as we rustled through shrubs looking for tern chicks, observed nesting plovers lying on vast open dunes from afar, and collected horseshoe crabs from the sea at low tide to be tagged and returned to the sea.

The body of work I created in response to this experience is aptly titled Monomoy and reflects my experiences and observations of being immersed in the unique landscape. While working with the U.S. Fish and Wildlife Service, I researched the invasive plants such as *Phragmites australis*, Common Reed, to be used as a material for papermaking. I was inspired by the force, pattern, and energy of the ocean, as its dominance in the landscape here exemplified that which is wild in nature; and my observation of this shifting landscape reiterated the concept that the only constant is change.

As an interdisciplinary artist, I create installations that resonate with the materiality and rhythms of the natural world. My work is directly inspired by personal experiences had in nature and the research that evolves from wanting to understand the history and systems of the locations I explore and plants I gather. I am an observer, collector, fabricator, and instigator of thought and haptic experience. Throughout my creative process I employ techniques that crisscross the boundaries of contemporary craft, sculpture, and installation.

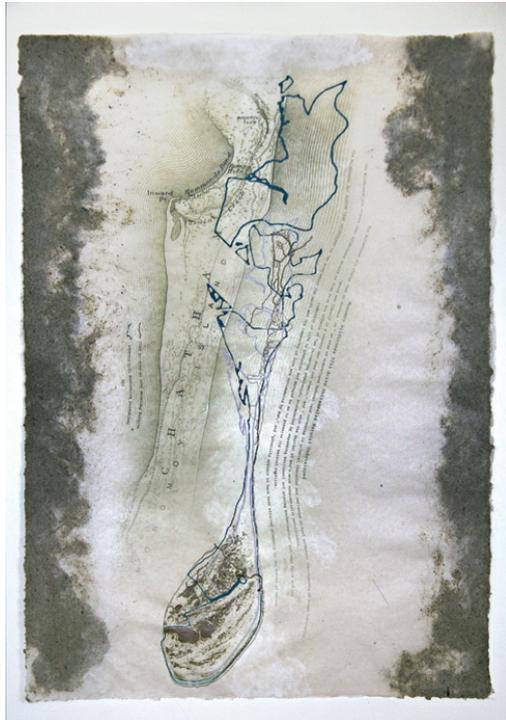
The edition of sculptures, From the Edge of Big Pond (Phrag Patch), explores the materiality and form of the Common Reed. The gesture of removing the plants from the island and transforming the material into paper embeds a physical piece of the site into these sculptures, while simultaneously bringing attention to a use for this invasive plant that is found not only on Monomoy but all over the United States. The sculpture Rip Tide was created in response to my observations and documentation of the wild and rhythmic nature of the Atlantic Ocean and Nantucket Sound. While contemplating what constitutes “wilderness” on the island, my thoughts were constantly returning to the fierce energy and wildness of the ocean that was surrounding me. With this uncontrollability also comes a distinct order and rhythm instilled by the tidal changes. These sculptures are abstractions of the unyielding wildness and cadenced order found in the sea.

Public Law 91-504 10.23.70 are analytical drawings on pulp paintings that depict data collection of the U.S. Fish and Wildlife Service and my traversing footsteps during the duration of my time on Monomoy, 3,244 acres of designated Wilderness. During the 4 weeks I spent on the island, I discussed with FWS staff the importance of the Wilderness Act and discovered the characteristics of “wilderness” that are defined in the Act. On October 23, 1970, 97 percent of Monomoy was designated Wilderness by the U.S. Government. Though given this designation, heavy management of the area does occur because of its dual designation as an endangered migratory bird habitat, including vegetation burns of the invasive Common Reed. Because of its invasive nature and my research interests in using invasive plants for papermaking, I was also allowed to collect and remove these plants from the island. The designation and regulation of Wilderness Areas continue to be a political battle, wherein Wilderness Areas are confronted by threats of exploitative uses of the land through the power of amendments to the Wilderness Act.



Making paper from seaweed.

*Rip Tide*: Handmade paper of abaca, wire.  
Installation by Megan Singleton.



Monomoy map on handmade paper. By Megan Singleton.



Handmade paper of phragmites and eel grass. By Megan Singleton.



**Megan Singleton** is a practicing artist and educator based in St. Louis, Missouri. Her work crisscrosses the boundaries of contemporary craft, combining sculpture, hand papermaking, and digital applications. Her work explores the intersection of dendritic systems and patterns found in waterway, plants, and paths of travel documented terrestrially and aerially. She actively exhibits nationally and internationally in solo and group exhibitions. She is adjunct faculty at Webster University where she teaches papermaking and studio art courses and has worked as a digital artist for Bruton Stroube Studios since 2005. Her MFA in Sculpture was earned from Louisiana State University in 2012 and her BFA in Photography from Webster University in 2005. Megan serves on the advisory board of the hand papermaking organization Friends of Dard Hunter and is a member of the International Art Collective Expanded Draught, based in Galway, Ireland.

## Twists and Terns

By Jeremy Underwood, Photographer

As a child, I remember being afforded the opportunity for a career day, walking in the shoes of another professional, perhaps an exercise in forethought. As adults, we are rarely offered such opportunity to engage with someone's working habits with such intimacy. However, it was the Aldo & Leonardo Wilderness Science and Art Collaboration that allowed just that, opening up dialogue not possible in any other circumstance. Leading up to my time at Monomoy, I remember an incongruity in ideology running through my thoughts: scientific utility versus aesthetic sensibility. We were a group of artists being placed in the camps of scientists. In one sense, the labor of art could be considered to be at odds with science, relying more on intuition than scientific theory. On the other hand, both artist and scientist try to negotiate meaning and posit change, ultimately working for the same outcome. I wondered, what was to come of such a residency experiment?

I arrived at the island with idealized expectations about wilderness, thinking the scientists would have some kind of insight for me about the way things should be. Under their guidance, I focused my attention on productivity research and wilderness stewardship of Monomoy's 16,000 strong tern colony. In ideology, the act seemed straightforward, even a bit romantic, to protect and document Monomoy's colony of birds. In reality, philosophy and practice can be a considerable divide.

From the fringe of Monomoy's tern colony, you see the birds majestically soaring and dipping, so beautiful and graceful in flight. You notice the bright yellow hardhats of the workers with red flags on them meandering through the landscape. The workers looked like some sort of alien caregivers with colorful antennas wandering through and watching over the colony of birds. But as you approach the colony, the feeling of tranquility quickly fades, and the first thing you notice is the intense noise.

The reverberation of 16,000 birds in one locality is an intensity that words can't quite illustrate. The sense of awe I felt for the birds at a distance was quickly replaced by apprehension. Rather than strange yellow dots moving along the horizon, the reality is that the hardhats of the workers served as protection from the barrage of birds. Since the birds typically attack the highest point on your body, the flags act as deterrence to a direct assault of the head, ear, or neck. Despite our good intentions to protect them, the birds only saw us as predators to their young. Every moment in the colony we were

barraged by birds, attacked, and defecated on. I've been told that in some cultures people believe that it is good luck to be hit by bird excrement. I guess it can be said that every day we came back to camp covered in good fortune.

As in other Wilderness Areas, the work surrounding the area and the story of Monomoy is a complicated one. Located in Cape Cod, Monomoy Island is close to high populations of people and heavily trafficked waters. I never thought about wilderness being so close; it always seemed off in a distance. As an island, there is a certain level of natural protection. However, this area labeled as protected Wilderness brings with it restrictions that limit and prevent harvesting of natural resources and access to beaches—ultimately impacting the livelihoods of the local fishing community.

Another complicated question is what species get designated as protected. The reality is that the management of Monomoy's 16,000 tern colony is for the protection of only a handful of roseate terns. The summer I worked there, it was around half a dozen nesting pairs. The roseate tern is a federally protected bird that needs a healthy population of common terns to nest. So, the common terns benefit from the roseate terns. While on the other side of the coin, predators of these birds such as coyotes and sea gulls are euthanized when they become a threat to the colony. It begs the question: What species do we save and what do we allow to perish? Do we intervene to protect one species by killing another? You have to wonder, is it worth the cost? Or do we do nothing, possibly letting another species disappear completely? Do we restrict people from enjoying nature to protect it? How do you decide who can take from the land and how much? The questions and decisions surrounding wilderness protection are precarious and full of paradox.

Monomoy echoed for me the complexity of our relationship with the natural world. It implored the question: How do we define wilderness and how do we value nature? The residency gave me a pause for a moment in time. It allowed me to engage in a field I would normally never have access to. It allowed me to undo some of the assumptions I had about wildlife management and to access a new way of looking at the environment from which we came. And rather than getting all the solutions I had hoped, I left Monomoy with far more questions than answers. I guess it is to be expected that at any confluence, there is sure to be turbulence. And at the edge of nature and culture, this is especially true.



**Jeremy Underwood's** work embodies our complicated relationship with the environment and the contemporary landscape, focusing on the tension between nature and culture shaping these physical spaces. Jeremy has been published in Photo District News and named an emerging talent by Lens Culture magazine. He has received a number of grants and fellowships from such institutions as the Society for Photographic Education, the University of Houston, and the Cynthia Woods Mitchell Center for the Arts. Recent exhibitions include the Houston Center for Photography, Fotofest, and the Fort Wayne Museum of Art. Jeremy has been awarded residency at Yaddo, one of the oldest and most competitive artist residencies in the United States. His recent research project entails collaboration with the Colorado Art Ranch and the U.S. Fish and Wildlife Service, exploring wilderness stewardship along Massachusetts' marine and coastal region. Jeremy received his B.S. from the University of Central Missouri and his MFA from the University of Houston in addition to study at the University of Central Lancashire in England.



## John Muir Wilderness

California  
USDA Forest Service  
July 10-August 30, 2013



## A Classic Mountain Wilderness

By Grant Pound, Colorado Art Ranch

We wanted to include a classic mountain wilderness from the very beginning. We had a great venue set up in the Bob Marshall Wilderness where the artists would go on horseback to study fire sites. This fell through for unknown reasons. I searched around for a replacement but did not have much luck. I tried Region 2, which includes Colorado, and even spoke about the project at a wilderness volunteers meeting. Finally, I started looking up wilderness areas and sending out emails about the project. I got a message back from Adam Barnett, the Wilderness Manager for the Sierra National Forest. Adam had recently transferred from the Stanislaus National Forest and was eager to be part of the Aldo & Leonardo Project. Not only that, but the Forest had housing available at the Jackass Station. The only catch was that they did not have scientific research going on. They were collecting data on human intervention in the Wilderness and I decided that would be good enough.

I flew into Fresno and was greeted by a very high heat. I did not know Fresno at all and had a vague notion of how to drive out of it and into the hills. I stopped first at a grocery store as there was nothing to be had within 2 hours of where we were staying. The first grocery I saw was a Super Mercado and it was wonderful. There were all kinds of unfamiliar foods and unknown ingredients.

I bought enough stuff to make a couple of meals for everyone and cover the basics in case others forgot. I bought beans and cactus and tortillas.

The drive up was through dry brown hills—mile after mile of dormant grasses and dormant trees. Everything was a golden brown without so much as an edge of green weeds. I was amazed that people had horses and even cattle. What did they feed them? The air finally cooled as I hit the high country. The last part of the drive over Kaiser Pass was wonderful and scary at the same time. The views were spectacular, but I had few opportunities to enjoy them as the road was one lane and paved, but barely. Most of the time I was traveling at about 10 miles per hour.

I found the cabin and Adam was busy cleaning it out. It had not been used that season and had the usual scattering of mouse droppings, dust, and cobwebs. In the bathroom there were bear prints high up on the walls, which explained why we had to lock the windows whenever we left. I helped Adam clean up and then we waited for others to arrive. Tory Tepp showed up first. He had driven from Florida and had then done some hiking with friends.

Tory is an installation artist. Libby Barbee arrived with her husband and a friend. Libby had been on the uncertain list, as a grandparent had recently died and she was very close to the surviving spouse. Duane McDiarmid was last. I had met him several days earlier when he and his son Fisher stopped by our ranch in Colorado. He had dropped Fisher at the airport that day before following me up. We all cooked dinner together and had a great time.

The next morning, we took coffee out to the rocks for our orientation discussion. A heartfelt wilderness talk lasted for several hours. We followed that up with a hike. This was really a shakedown hike so Adam could determine if the artists were fit enough to go out on the trail with the rangers. The artists would be out for 8 days at a time and have to carry all their food, clothes, gear, and tools like shovels and pick axes. They had all indicated they did this kind of thing all the time. They lied, of course, but we hiked about 11 miles and no one died.

The next day Libby decided that she really couldn't stay and, with regret, headed home. It was too bad because she missed a great adventure, and we missed the pleasure of seeing what her creative mind would do with the John Muir Wilderness.

I stayed another day and watched the progress of packing. Duane and Tory had to fit all their food into bear canisters and the process of measuring, figuring, sorting, and packing went on all day. Adam was amused by the process. After years and years in the backcountry, he could easily pack in 20 minutes. I watched enviously. The hiking would be hard, but what a great trip.

I left the next morning and made my way back down into the heat. Duane and Tory ended up with a great adventure and even greater artwork. They both had intriguing insights into the nature of wilderness, if you'll forgive the pun, and what wilderness means to man.



The John Muir Wilderness stretches for 100 miles along the crest of the Sierra. It is a land of lofty snow-capped mountains, deep canyons, and vast expanses of glacially carved terrain. The John Muir Wilderness was designated by Congress in 1964. It covers 650,000 acres. About 299,000 acres are managed by the Inyo National Forest, while the remainder is managed by the Sierra National Forest. The Wilderness was named in honor of John Muir, who once described himself as a "self-styled poetico-tramp-geologist-bot. and ornate-natural, etc.!!!" Muir spent his life advocating for the protection of the wild parts of the Sierra Nevada.

#### Participants

Adam Barnett, Wilderness Manager

Duane McDiarmid, Artist at Large

Tory Tepp, Installation Artist

Greg Dusic, Wilderness Ranger

Benjamin Katz, Wilderness Ranger

Allison Ayers, Wilderness Ranger

Oz Jardine, Wilderness Ranger

Sarah Holt, Wilderness Ranger

Pete Muehmel, Wilderness Ranger

Scott Marcinkowski, Wilderness Ranger

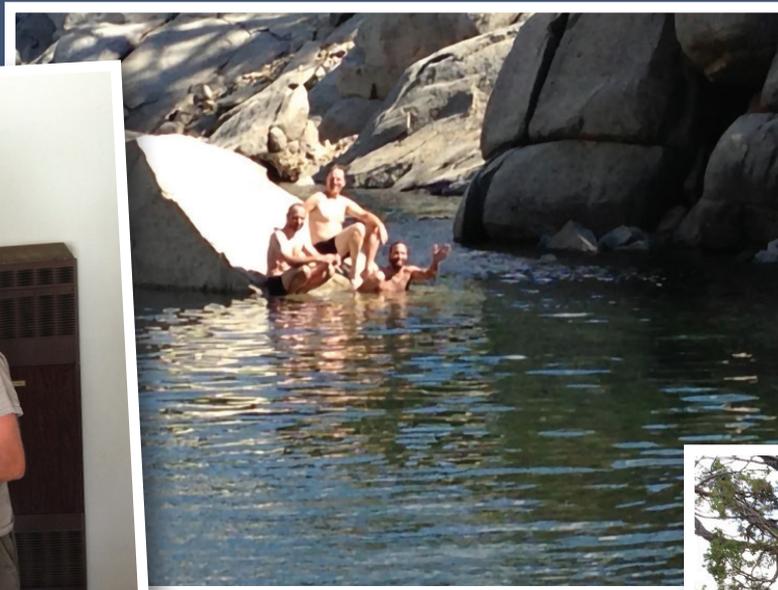
Jessica Speyer, Wilderness Ranger

Bill Miller, Wilderness Ranger

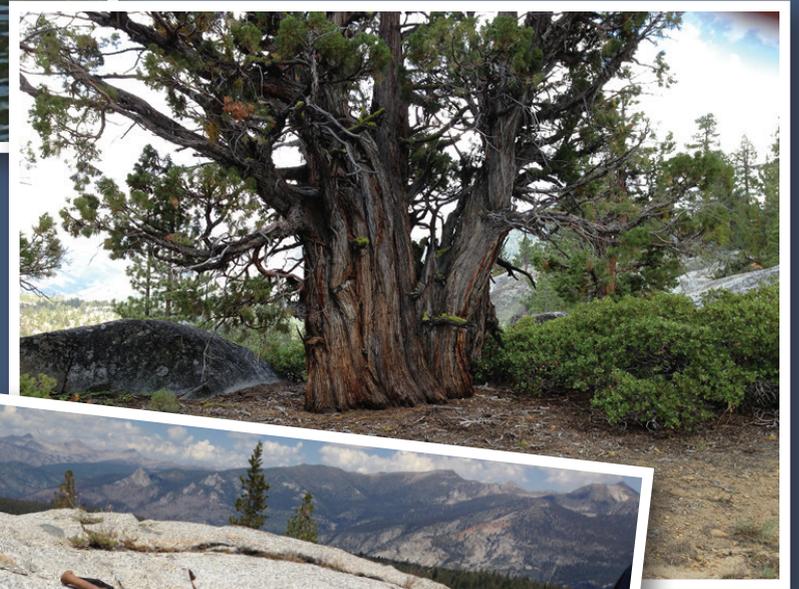
Brett Flaharty, Wilderness Ranger



Trip preparations.



Adam, Duane, and Tory cool off.  
Photo by Grant Pound.



Adam Barnett, Tory Tepp, Duane McDiarmid, and Libby Barbee.  
Photo by Grant Pound.



Duane at the angle of repose.  
Photo by Grant Pound.

# Our Wilderness Heart

By Tory Tepp, Artist

Well, finally a moment to come down the mountain, taste civilization again, and attempt to put words to the past 3 weeks. It may be as difficult as the adventure itself to describe.

## *Prelude*

I ventured in to this endeavor with a sick and heavy heart, and the work that would result from this residency would be influenced not only by the direct experience of the residency itself but by all the concentric spheres of ecological relationships, both environmental and esoteric, that I passed through en route and harbored within.

## *Into the wilderness*

From this point on, words not only lack the proper ability to convey the experience but the copious visions of majesty and glory and beauty are just too redundant to constantly and poorly express. A short book could possibly encompass all the travails and laughter and pain and transformations that occurred on the 8 days we went into the wild with a pair of Forest Service rangers.

The idea of throwing a couple of artists into this environment, this situation, with seasoned rangers was pretty insane. I can say this because I am an artist, and from my experience, artists are generally whiny. I always say, "It's artists who give art a bad name." Looking back at the adventure it's tempting to ask, "What were you guys thinking"? Easily one of the most grueling and difficult few days I've ever had, we managed to hang in there and accomplish all we set out to do, both personally and with the rangers.

We hiked up the Bear Creek trail, camping at roughly 8,500 feet for 2 days. This gave me the opportunity to gobble up some of my fresh foods, not understanding the criticality of weight to such undertakings. We spent the next 3 nights at roughly 9,500 ft. This location was dear to me, for we bathed in a waterfall and that area of the creek was home to a faerie island that I marveled at for days.

My partner throughout this whole adventure was Duane. Duane's supreme wit nourished us all with endless and almost bruising bouts of laughter. His gifts as a teacher and his wide well of knowledge thoroughly buttressed the entire experience.

Our final hike was to Lake Marie at approximately 10,500 ft. By the time we reached and pitched camp, I had pushed my body about as far as I ever had. It was this afternoon that my project, which had been percolating with every drop of sweat up the mountain, coalesced and began to fill my empty being.

It so happened on that night, the final of our ascent, that I woke up in the middle of the night to relieve myself. The nearly full moon had set and the entire Milky Way was reflected in the surface of Lake Marie. Skies so clear and alive with stars must be seen to be believed and to do that you have to be on top of the world.

## *Rangers and the Wilderness Act*

It was an interesting experience working with the rangers. It was regrettable the residency wasn't able to actually have a scientific component to it. The work was relegated to the role of maintenance, which can be broken down to landscaping, janitorial, and security. From my vantage point, aside from field education and regulation enforcement, the rangers were there to maintain a wilderness theme park. The work we engaged in was hard and brutal and frustrating because much of it seemed contrary to what one would think of as obeying wilderness and nature. Duane and I quickly realized that there was little to be gained from this work and that's when we went in search of our own wilderness experience.

The rangers were some of the healthiest, calmest, and durable folk I've ever met. Theirs is a devotion to a lifestyle, a life spent in nature, yet not necessarily about nature. They seemed completely in love with the environment in which they work and lived and their skills were about surviving within it.

## *The nuclear winter*

We came down from the mountain just in time. Thunderstorms on the night we emerged spawned 14 fires due to lightning strikes. The Aspen Fire burned over 14,000 acres. Smoke from the fire, a mere 15 miles away, drifted over and covered the land completely. Ash drifted like snow and all sounds muted under the ominous mantle of smoke and threat. The effect on one's lungs was immediately apparent on day hikes.

*The project*

At the onset of my explorations, I became enamored with the great profusion of wildflowers. At first my infatuation was leading me toward some sort of cataloging and presentation of these splendid creatures. Then it occurred to me that this Wilderness Act, the rangers and their life, and America's love of such places was about romance—a deep, mystical romance where all things are one, and all love is one. This became the impetus behind my ongoing project. I had been cleansed by the rushing waters, the stone, the branches of trees, and the winds from the heavens. The project unfolded as a love poem to the wilderness, a poem to my lover. It is called “Our Wilderness Heart.”

Thank the gods, to be an artist!





Our Wilderness Heart



**Tory Tepp** received his BFA in painting from Parson's, the New School for Design in New York City, with a minor in non-traditional art histories. The following 15 years saw his work expand into printmaking, metalworking, and furniture making. In 2009, Tory earned his MFA in public practice at Otis College of Art and Design in Los Angeles. After a temporary relocation to New Orleans, Tory assumed the role of the driver of a vintage armored car for Mel Chin's Fundred Dollar Bill Project and proceeded on a 19,000-mile journey around the country as the public face for the nationwide public art project devoted to remediating lead-contaminated soil in New Orleans. This, in turn, led to the development of an itinerant art practice that has kept him on the road for the past 3 years, working from project to project in New Orleans, Milwaukee, Los Angeles, and Death Valley, until the wheels finally came off in Florida.

## Kotwa\* and the Circus of Destruction

By Duane McDiarmid, Fiber and Performance Artist

*Bear, look how clownish I am, I am an accordion playing bear,*

*Boxing in a rigged match, see how I am a fool. Trading to forage for instant porridge*

*Bear remain wild, wary is your lucky charm, never buy the ad mans jingle.*

*Claw rotted brown logs for fatty grubs I have forgotten*

From Kotwa and the Circus of Destruction

Nature's placement of stone or pinecone is to be left undisturbed—anything brought beyond the naked body and a desire for survival might be thought exotic-alien and therefore intrusive to wilderness—and it's not just what's in your pack but also what's in your head that seems non-indigenous—my thoughts are grounded in another world, that holds human interests away from unfettered connectivity and its twin, expansive solitude.

*—Excerpt from my trail journal*

My character as Kotwa—creator of ritual—walked and climbed over 100 miles, much off trail. My art-laden pack, props lashed to its exterior a spectacle and curiosity—often inviting scoff from lighter-equipped trekkers...but for a jester, disdain can be a tool. My headdress with its many velvet eyes obscured my physical vision—but also served as a temporal cairn or surrogate fire to gather round...



Kotwa the sound is not the medicine only its marker.

Up on the Piute, the rangers had their work and I was free to wander toward glacial lakes and icy fragments. Drawn higher and farther off trail by the lure of a lake more filled by sky, and the trance swing of a wind chime within my bear can—it swung between my steps and the terrain, breath and motions, body and geology. High above the tree line in a world of only stone, water, ice, sun, and the stirring of grasshoppers—I marked my way with gesture—leaving a blur of color and temporal muted sound as monument.

As Kotwa, I concocted and performed absurd practices; these contributed to the theatrics I observed being played out by hikers, rangers, and myself—for within the wilderness area I experienced a seemingly unavoidable role-playing—in everyone, a pretending of character. It seems that for a contemporary human visitor, the wilderness is no longer a place of indigeneity, but instead a sort of stage—an island within the pervasive and surrounding non-wilderness norm. Is wilderness, then, a “gated community”? Existing within boundaries by way of legislation, management, bylaws and standardized taste—in short—intentional artifice. “Intentional artifice” is alien to flora, fauna, and geology; these possess no consciousness of boundaries, entry, or intent for a “wilderness experience.” ... I like others performed. My props and I were both “in” and “intrusions” on wilderness.

Kotwa performances enacted for a happenstance audience of trail-mates: Kotwa and the circus of destruction; an accordion and other musical objects are nightly placed in bear cans—bears are warned in song not to perform like foolish circus bears. Kotwa and the corridor of sacrifice; a cushion overlays the trail—embroidered into its surface are fragments of trail-food wrappers. Each is touched when walking the length of the cushion, Kotwa and the defeat of fire; a game is played: rock-foil-fire—foil always wins. Kotwa and the swarm of the white flowers wearing a loin cloth decorated in a motif of “brown skulls,” soft absorbent leaves are collected and wrapped in wax paper as weapons to defeat the white flower litter of inadequately buried waste and toilet paper found in many camp sites.

Actions that transformed me:

Kotwa: the sound is not the medicine, only its marker; I walk and climb swinging a bear can containing only a wind chime, its muted tinkling a direct response to my movements negotiating pathless turf. Kotwa: the cairn's eye, I contemplate my headdress—watch the wind animate the queer object as it would any flora or fur.

\*Kotwa: Keeper of the Wilderness Act, an invented tribe



Kotwa and the cairn's eye.



Kotwa and the circus of destruction.



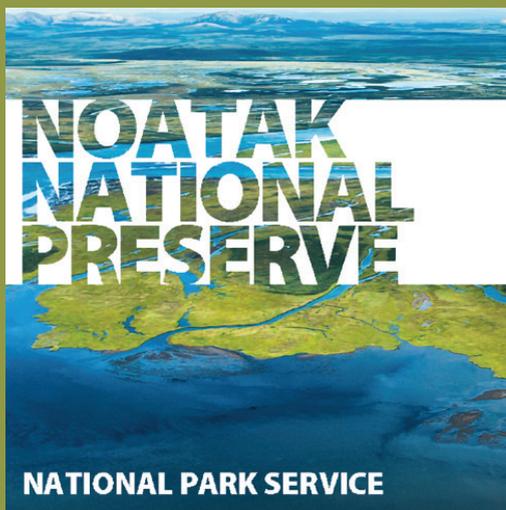
Kotwa and the corridor of sacrifice.

**Duane McDiarmid** grew up in Mankato, Minnesota, location of a historic mass-hanging of local indigenous people. He attended an experimental “experiential-learning”-focused K-12 school where he raised pigeons, audio recorded the elderly, excavated a cave floor, and witnessed civil disobedience demonstrations. His education by action coupled with the complex social politics of his family and community shaped McDiarmid’s perspective and formed the foundation for his reimagining of art as a social and sited practice.

McDiarmid earned his BFA from Kansas City Art Institute and his MFA from Florida State University. He has fed the public ice cream from a solar artwork in remote deserts, bathed in used motor oil for an audience of animals, worn a French-court inspired wig while traversing mountain passes with a Mr. Coffee pot, dressed an Arabian horse in “I dream of Jeanie”-inspired garb. His work has been supported by the National Endowment for the Arts, the Rockefeller Foundation, and the BLM and Forest Service. He has exhibited and presented his work internationally at The Delaware Center for Contemporary Art, the Santa Fe Art Institute, and ACC Galerie in association with Bauhaus University Weimer Germany. McDiarmid is currently a celebrated educator and chair of Sculpture + Expanded Practice at Ohio University.

McDiarmid’s participatory events explore class and privilege via absurdist acts, constructions, and costumes. He sees his work as celebrative provocations that serve as forums or social medicines.





## Noatak National Preserve

Alaska

National Park Service

March 1-30, 2013



## North to Alaska

By Peggy Lawless, Colorado Art Ranch

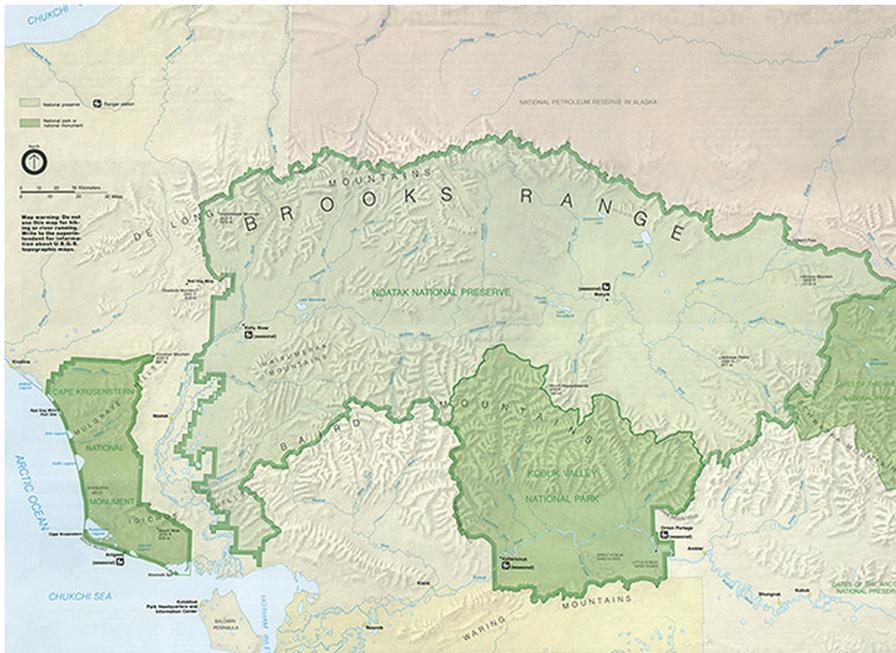
I am usually happy to influence Colorado Art Ranch from behind the curtain. I enjoy meeting artists and working on the planning for our projects. This time I was forced out into daylight by scheduling conflicts. Two of the wilderness sites were due to begin at almost the same time. Grant headed off to John Muir Wilderness and I got to go to Alaska.

The selection process for the artists was interesting. The jury came up with a short list and the three top recommendations were all women. The Noatak site promised to be the most wild of the wilderness areas that we chose. The artists would be flying into a remote archaeological worksite far above the Arctic Circle. This was not the sort of place you could walk out of. There were also the bears to be considered.

The expensive plane travel for this project had already resulted in one Park bailing out. We were lucky that Frank Hayes had just moved from Hawaii to be the new Park Superintendent. He was very enthusiastic about the project and suggested working with Mike Holt, an archaeologist. We were thrilled to include this area of science in the Aldo & Leonardo Project. I arrived in Kotzebue, Alaska, on July 15. Kotzebue is a remote town bordered by ocean and wilderness. There are no roads in and all people and goods arrive by air or ship. Naturally nothing leaves the town either.

Part of the bargain for traveling to Alaska was that I would get to see some of the fabulous shore birds that I had only read about. I had my binoculars and camera at the ready. Unfortunately, it is not easy to get out of town and the birds in town consisted of a lonely raven and a few sparrows. The artists, however, were in heaven. They took to the small village with their practiced eyes and absorbed everything. Frank and Mike made us feel welcome and the project got off to a good start. The artists had many adventures, such as a visit to an Inupiaq village, bear training (to avoid them, not to get them to do tricks), and two trips to the remote parts of the Park.





Together with neighboring Gates of the Arctic Wilderness, Noatak National Preserve (more than 6.5 million acres) protects almost the entirety of the largest untouched river basin in America, that of the Noatak River. All the preserve, except for about 700,000 acres around the village of Noatak, has been designated Wilderness. From glacial melt on Mount Igikpak in the Brooks Range (in Gates of the Arctic National Park), the mostly gentle Noatak River flows westward 425 miles through the heart of the preserve to Kotzebue Sound, patiently carving the scenic Grand Canyon of the Noatak along its course. From its source to its confluence with the Kelly River, 330 miles have been designated “Wild and Scenic,” making it the longest river in the Wild and Scenic System. More and more visitors each year come to canoe and kayak on the Noatak, and almost the entire river may be paddled easily. Those who fish can try to catch Arctic char, grayling, whitefish, or

salmon. Here in the land of the summer midnight sun, above the Arctic Circle, the huge Western Arctic caribou herd roams, 200,000-plus strong. Backpacking in the foothills, among the bears, wolves, lynx, and Dall sheep, has been increasing in popularity, and backcountry travelers must move with care, as this land is fragile. Bird life abounds in the migratory seasons.

**Participants**

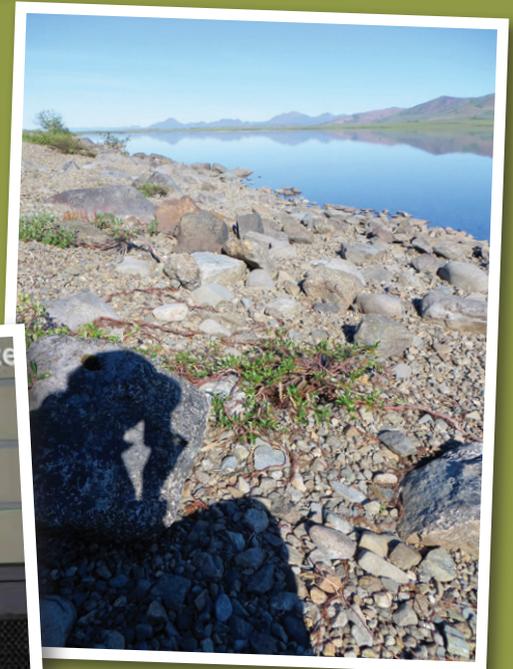
- Frank Hayes, Park Superintendent
- Mike Holt, Archaeologist
- Tama Baldwin, Writer and Photographer
- Andrea Spofford, Poet
- Jessica Segall, Artist

Andrea returning from the wilderness.  
Photo by Andrea Spofford.



Mid-July moonrise. 2 a.m.  
Photo by Tama Baldwin.

Coffee in the wilderness.  
Photo by Andrea Spofford.



The Noatak crew. Photo by Peggy Lawless.



## There Is No Inupiaq Word for Wilderness

By Jessica Segall, Artist

July 22, 2013—Deposited by floatplane somewhere within the 6.5 million acres of the Noatak National Preserve. There is no Inupiaq word for wilderness. Before our trip, we met with local elder and Native Liaison for the National Park Service, Willie Goodwin. Willie tells us with a laugh that we are about to enter his “backyard.” I think about this sentiment on our trip, considering the difference of perspective from those who have thrived by subsistence hunting and gathering on this land for centuries, and the majority of modern Americans, who, if they have familiarity with wilderness, know it on a recreational level.

Archaeological artifacts are strewn throughout the Brooks Range, dating back centuries. Each object told a story tantamount to written language. Mike Holt, lead archaeologist for the Western Arctic National Parklands, explained to us how to identify lithic (stone) tools among the exposed gravel of the tundra by looking for marks of intention. A trained eye can tell the difference between the marks of an apprentice and the marks of a trained craftsman making a projectile point. In parallel, a trained painter can look at a painting and tell from the marks what the interior life and ideology was of the maker. Setting aside dated material such as subject matter, the maker can be perceived by the size of the canvas, the speed of production, and the dexterity of marks and by which marks are withheld. A straight line is an ideology. A curved line is a different worldview. The terms of history and pre-history, culture vs. civilization, man vs. nature is married to an idea of progress, and a straight line as a worldview.

The protection of this land is larger than a question of American identity. Alaska was ratified into statehood in 1959, while the indigenous inhabitants have continued to maintain culture there for centuries. Borders may shift again. The protection of this land is a legacy.

My arctic residency culminated in a photographic series of altered tundra, captured with a macro-lens. These “landscapes” also show evidence of inhabitation—recreational and celebratory. Our time in Noatak, especially conversations with locals about climate change, adaptation, and traditional knowledge, informed another work in progress. “Breaking Ice” is a multimedia collaboration between myself, composer Iddo Aharony, Cellist Sophie Webber, and The Physics Department of Chicago University. The resulting video and score investigate climate change informed by both personal and scientific perspectives.



### Jessica Segall

Jessica’s practice is multidisciplinary, falling under the categories of sculpture, performance, and video. With a mix of humor and elbow grease, her work investigates the link between creativity and survival, engaging current cultural attitudes toward adaptation. She builds shelters, boats, and develops off-grid technologies, from wood-powered film projectors to high arctic survival fashion. Risk, vulnerability, and a conscious ecology underline all of her work, and within her practice, she maintains a position of radical optimism.

Segall’s work has been exhibited at the 10th Havana Biennial, The National Gallery of Indonesia, The Queens Museum of Art, the Aldrich Museum, The National Modern Art Gallery of Mongolia, and The Inside Out Museum in Beijing. She is the recipient of grants including Art Matters, the Leighton International Artist Exchange Program, an Arts and Science grant from Chicago University, and The Gatsby Charitable Foundation. Jessica attended artist residencies at Skowhegan, The MacDowell Colony, Sculpture Space, Kuenstlerdorf Schoppingen, Art OMI, Bemis, Triangle Arts, and Socrates Sculpture Park. She is a graduate of Bard College and received her MFA from Columbia University.



## Excerpted From “Walk it Down,” First Published by Vela Magazine

By Andrea Spofford, Poet

My first night fishing along the seawall, a man a few spots down from where I stood caught one fish after the next all night long. He moved to the boat ramp and stood there, throwing fish into a giant plastic action-packer, layering them atop each other, carelessly stacking their slick bodies. He mirrored the commercial fisherman—those that brought in hundreds of pounds at once, fish bruised and pink as they were lifted from the bottoms of boats with a net and crane. These fish were sent to Washington, maybe Oregon, somewhere in the Pacific Northwest, flown that night by freight. The man who snagged so many kept the fish for himself, or he gave them to his neighbors, the gift of bounty a gift to be shared.

When I showed up at the seawall the second night, I did not anticipate I would catch anything, partially because I had fished for 4 hours the night before. I didn't go to catch anything, not really, but rather for the repetition of casting, the meditation. I arrived at the seawall after midnight again, and again children lined the railing, as older teenagers and adults cast out. Pointing to the water one of the boys said, “Look for the ‘V,’ like something's moving beneath.” It was with that direction that I realized I could see salmon. They came in waves along the wall in groups of 10 or more, each fish silver beneath the dark water, as long as my forearm at least and some even bigger still. These fish were three to four times the girth of my arm. They were close to the edge of the wall and swam in formation like migrating birds, moving only slightly out of line with the strong current.

That night, I cast into this formation and jerked my line tight.

The key of snagging is not just the movement or jerk of the line, but rather paying attention to the children who cluster the seawall watching the adults. These children watch for fish beneath the clear water, the shape of disruption and slight ripple that means another fish is coming. If the children aren't gathered along the seawall sides, the fish aren't traveling close to the shore. It's as if the children know the pattern and migration, can see it beyond the water.

My salmon was in the ocean stage of its spawning trek. It had not turned the deep greens and pink of river spawning, not yet, and it remained a silvery shiver in the

dark water. The slight pink of its underbelly hinted at red tiger stripes that were to come, those deep oxblood rings that would circle its body.

My fish was male; when it was cut open, there was no roe inside. I do not know how much my fish weighed before it was gutted, nor do I have a picture of me with my fish before it lost its head. I do know it bent my pole in half when I snagged it. And while I knew that survival is strong in all of us, I did not expect the strength of this fish.

When the hook hit its side, I walked it down the boat ramp. “She's got one!” the girls yelled. They told me over and over to take two steps backward and one step forward as I reeled in the fish. It was still alive. One of the boys kicked its head—these fish are too large to curb as one would stun trout upon brook stones. Salmon are clubbed in Kotzebue, but I had no club. I wished I had a knife.

The same boy cut the head from the fish with a small serrated blade. It was not a graceless motion, though it was bloody. He pulled the head from the body and spilled the rest into water. The seagulls—those fat birds sometimes killed for sport, their bodies stuffed into rusting junkyard ships, those sparse yet full birds—dove for the parts, returning the fish to the sea eventually.

When the boy cut its head the children gathered around, the fish's mouth was still moving. I wanted to tell them that snakes are like this too, that when I was a child my father killed a rattlesnake on our front porch because he was afraid it would continue to return there. They may not have understood this comparison because most of them had never seen snakes in the wild. The snake's head moved like this fish's head, jaws snapping for minutes after its death while my sister and I watched.

“Can you put it back on?” one of the children asked.

“No,” the boy answered. “It just does that; it's a nerve. It's okay.”

They did not want the fish to live again—these are children raised to eat from the sea, to catch fish from their father's boats, their uncle's boats, or along the seawall itself. They were instead entranced by the movement, how the fish gasped for air though it had been separated from its gills, though it could no longer breathe, though it was scattered to ocean and thrown to sea and diving birds.

This is not a fish story because I did not take this fish from Kotzebue; I did not take the fire-weed, *Chamerion angustifolium*, willow-herb spicy and rich, or the buried things archaeologists want to find either. I left them there in the vastness of water, the inseparability of people and landscape, the moment when the fish reels its head, an arch, and all the children gather to watch.

## CARIBOU

A herd sends vanguard, you asleep in your tent, the chuffing outside a sudden breath by the kunnichuck, foot-stamping, ground-pawing, running mid-August.

Things that change: sky, layers of dawn and twilight, seaglass collected in pockets, teenagers killing seagulls, fat birds stuffed into broken ships, beachfronts in August.

Permissive killing is using whole animals, percentages allowed by government, subsistence, a beheaded walrus floating tuskless in the Chukchi, heavy sunk in August.

Build from this sewing trout skin, sinew, caribou parts, something we use and Seal oil—the coldness of hands in winter, dilating blood vessels, warmth collected in August.

I want to share a bounty, muktuk cut and cured from whales, salty hardness of Fins and fat quick melting in mouths, a tongue around summer, around August.

Let's walk the loop road, the place we saw blueberry pickers, One in a white suit, heard a rustle in the willows, cranberries still hard in August.

Frost happens later, first snow in September, unlayering of fleece, my name Andrea and how you say it, every month a countdown after August.

—*Qikiqtaruk: Almost an Island*, published by Red Bird Chapbooks

## DESPERATION I: FISH

The fish black ripple along the outflow, rush  
body into water and out, leap and flutter  
as a run for river from the deep, streaming bright  
from lake darkness. People tell  
stories here, there are lake monsters here, fish  
get so big one should not camp by the outflow here, or pull  
from its tumbled waters, or eat from its bounty, or wade knee deep.  
One could walk the tops of these fish as street,  
backs as stepping stones, or one could fashion a weir  
from willow and netting, or one could cast a fly to surface  
And throw it back overhead, fish hungry to bite, hungry  
to feed, desperate mouths giving chase toward this feather tied  
to string, a splashing smallness atop water, the hum  
of brook stones.

## DESPERATION II: FLY

When water is calm floatplanes hit ground, stay  
In the middle of lakes, floats unable to break  
suction, downward  
Pull too strong for upward momentum. Some pilots  
jump logs  
thrown to water, some wait  
for the breeze, sitting hours on shore, a rope  
in one hand, a grip on the tail and eye on rudders.  
there is no shiver of wind  
just stillness and silence,  
hard pulling upon your ears,  
the calmest nothing you have ever heard,  
a loss of the rustle inside you  
like anechoic chambers, the disorientation  
of free field conditions, ears attuned to balance  
based on reflection, the way sound hits  
as energy released forward and never returning  
back.

## DESPERATION III: BEARS

In 1954 pilots dropped barrels,  
canisters of oil and gas along this shore, a last  
vestige of the desperate, a refueling station in the  
Arctic north.  
The oil seeped into soil and the cans emptied,  
rusted, labeled, plotted  
by GPS coordinates, slated for removal,  
manuport remnants of early Arctic flight.  
Bears wallow here by the shore and once a blond  
grizzly  
broke a can, bear's paws all smeared and black,  
slick oiled and grimed. The bear waded,  
his tracks from shore to water a seep  
of manufacture, a mar disappearing into mud.

—*Qikiqtaruk: Almost an Island*, published by Red  
Bird Chapbooks

## TUNDRA

I.  
The first time I walk on tundra my feet sink.  
I wish I was lighter, my feet larger,  
like snowshoes strapped down, the broadness of  
mammoths  
spread across landscape, hills that  
turn into softness and drown  
lichen deep into permafrost.  
Layer me here beneath bearberry and crowberry,  
beneath pink salmon berries like flowers,  
cloudberries of orange, beneath cold.

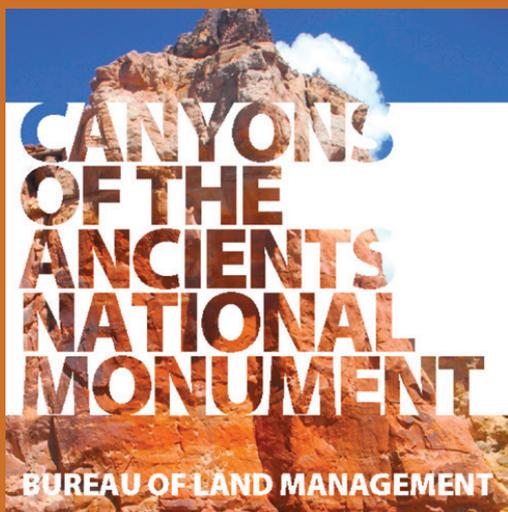
II.  
The first time I walk on tundra I am aware  
of bear grass like cotton, questions of gathering,  
weaving, how yak wool is combed from the chest  
not shorn, how to tear ground  
and roll beneath it, to sleep and brave winter,  
struggle this storm as one knit into sod and sewn  
into skins of caribou, returning everything as it was.

III.  
The first time I walk on tundra I think of felled trees  
dropping and total decay,  
the sponginess of warmth beneath elements,  
pine needles and leaves and cones and eventual soil,  
how suddenly my feet dip but do not burst,  
all trees intact just bending,  
the becoming of one thing into another, how quickly  
we can change.

Published in *Redactions*



**Andrea Spofford's** poems and essays appear or are forthcoming in *Birmingham Poetry Review*, *The Portland Review*, *Sugar House Review*, *Vela Magazine*, *Revolver*, *Puerto del Sol*, *Cimmaron Review*, and others. Her book *The Pine Effect* is available from Red Paint Hill Publishing and her chapbooks *Everything Combustible*, *ferox femina*, *Qikiqtaruk: Almost an Island*, and *Frost & Thaw* are available from Dancing Girl Press and Red Bird Chapbooks. The Tennessee-based Spofford earned her Ph.D. from The University of Southern Mississippi's Center for Writers. In addition to teaching, she also serves as poetry editor for Zone 3 Press, the literary press of Austin Peay State University's Center for Excellence for the Creative Arts.



## Canyons of the Ancients

Colorado

Bureau of Land Management

September 1-30, 2013



Canyons of the Ancients National Monument. Photo by Leslie Sobel.

## The Wilderness Line

By Esther Rogers, Cellist/Composer

With quilt, book, camera, and cell phone, I pulled open the squeaky front door and stepped outside into the cool gray-blue of early morning to watch the sunset and call my boyfriend. Am I in the wilderness?

This first week in the “desert wilderness of Colorado” has been different from what I originally expected, complete with hot showers, ice cream, box springs and mattress, and internet. Our discovery of the wilderness so far has not been through the window of a tent but I have been learning so much.

At the Dolores Brewery we were again asked (by Marietta the field manager this time) what we hoped to gain from this experience. In an attempt to answer this question, we talk about our work, our hopeful productivity, but more and more about what we learn from the dialogue and conversation with the scientists we are getting to know. These conversations range around every possible topic, and many of them are funny, over my head, fascinating, deep ... I want to record them and have tried to use my Nascam or camera video to hold them in concrete for future review, but like often special performances and improv left unrecorded by not hitting the magic button or the batteries running out, these conversations seem destined for the now, for the vapor of our present interaction, and their impact will be left in the impressions made in our souls, to our artwork, to some unquantifiable inquiry about the value of our work.

In our wilderness collaboration here, we dialogue with scientists entrusted with the care of the wilderness ... we talk about ideas and lots of questions.

Bat observances with sound wave recorders; what level frequency are they? Can two waves be picked up simultaneously? Are feeling and hearing separate things? Can we hear without a brain?

Can an archaeological landscape that is estimated to have had (60?) thousand people at one time and now is designated as a wilderness preserve with no residents, actually be wilderness?

What are people coming from cities most afraid of when they enter a wilderness?

What shapes social responsibility and morals in a time when traditional moral voices are being less effective?

The people living here long ago: What did they think about their existence? Was it amazing to live in a cliff house, were they afraid of each other, were they all artists?

The Navajo believe that all people are artists, that life is an art, there are no separate vacationed artists.

How do we preserve the smell of the wilderness?

Who should be granted access to the wilderness?

Yesterday I rode the intern house mountain bike to the closest point at which Canyon of the Ancients National Monument can be accessed. I couldn't tell from the map whether I could enter the park at the end of County Road W or not, so I thought I'd wander that direction and find out. I still couldn't tell when I got there—no signs to mark public or private, though I could see the canyon landscape in about a quarter of a mile. I made a phone call to see if I could get access there or not. (If I was on my own representation, I would have just hiked in anyway, but seeing as my picture was in the paper representing a government agency, an art organization, a research institute, and a museum, I figured I better not do anything stupid.) In the end, I was told I couldn't get into the Monument there or anywhere nearby because it was surrounded by private lands and some landowners are violent about trespassers.

I thought about The Wilderness Line—that point at which the land is labeled “Wilderness” instead of rural or whatever bureaucrat label “the other” is given. How do we gain access to “the Wilderness” and who gives it to us? Canyons of the Ancients National Monument seems like a secret Wilderness that is intentionally being isolated from the public to preserve it, and yet it is legislatively national property. I have to admit I was pretty ticked off that after my pedaling I couldn't go for a hike, and I blamed everybody, while full knowing that there are incredibly complicated issues consciously being worked through by intelligent people regarding access.

From my vantage point I write a piece, and others sign papers, map routes, document land use, and raise funds. The conversation continues...

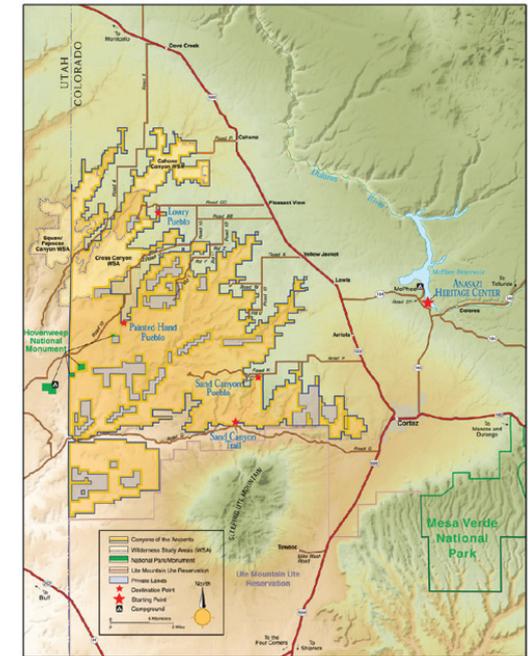
## Participants

Michael Williams, Interpretive Specialist

Leslie Sobel, Artist

Ben McCarthy, Ceramic Artist

Esther Rogers, Cellist/Composer



Canyons of the Ancients National Monument in southwestern Colorado Saddlehorn Pueblo along the Sand Canyon trail contains a huge number of archaeological sites—more than 6,000 recorded so far, and up to 100 per square mile in some places—representing Ancestral Puebloan and other Native American cultures.

Canyons of the Ancients is managed as an integral cultural landscape containing a wealth of historic and environmental resources.



Ben McCarthy at Window Rock, Canyons of the Ancients National Monument.



Esther Rogers performing original cello composition near an archaeological site at the Anasazi Heritage Center. Photo by Leslie Sobel.



Ancestral Puebloan dwelling. Photo by Leslie Sobel.



Leslie Sobel at Sleeping Ute Mountain. Photo by Ben McCarthy.

# The Brain and the Body

## Amtrak Train from Chicago to Denver

### September 1, 2013

By Esther Rogers, Cellist and Composer

*Wherever you are is the entry point*  
— Kabir

Day 2

The sun coming up in the café car window is so bright, and warm, and happy. Huge sky, and so much land. I love the idea of being on a train spreading west. Yellow wildflowers. Windmill. Black cows. Fences along the tracks, but otherwise open, rolling land. I think fundamentally, underneath, I'm afraid (and motivated/intrigued/excited) by the starting point of here, and me as the entry point. The starting. This is the assignment of this residency; to go where I have to go, to be there, and then to allow the creative, productive work to begin just at that place. I've known this, I've already written this, I've directed my own collaborative work this way, but I still get this fear and anxiety that I need to put down some other starting point— études perhaps, or themes I lay down ...

*I have to listen now, I have to take responsibility for being available to what is trying to bubble up today.*

—Paraphrase of Julia Cameron from *The Right to Write*

My goal for the residency was to work with my cello each day and to follow through with any ideas I had. I wanted to let the residency influence me, but not wait for a sudden inspiration. I began with working on some technical exercises in the morning before we left the house. I composed a line of something. I got my hands moving to stay in shape. Nothing profound. Then gradually ideas came and I started moving. ... I decided that if I was available to any idea trying to bubble up, and I took the time and effort to create whatever that was, then I might have something.

It occurred to me almost immediately as I saw Leslie and Ben sketching and gathering rough ideas that I too could sketch. I could sketch by recording myself improvising, I could sketch by writing down ideas for performance art pieces or drawing symbols that were alive to me in the art of the Ancestral Puebloans. While I had improvised live in bands or to create additional lines in someone else's music, I had never sat down to improvise as though I was writing, to put down my impressions of the day in sounds as a journal entry.

Whispers of Past was a sound journal entry I recorded after we had spent time in the Monument in the dry heat. I was thinking about the open dry land and the feeling of touching on the past lives of our ancestors, seeing the remains of their buildings, and the contrast of us in our modern sneakers and living selves.

**Esther Rogers** is a cellist, collaborator, composer, and teacher. She graduated with honors from the Hartt School at the University of Hartford. Her honors thesis was a collaborative performance about creative process and her research with dancers, actors, writers, and artists set her on a journey of exploration in integrated arts. After graduating, Esther studied classical chamber music in San Francisco and collaborative leadership practices in London. She directs her own original performances including a multidisciplinary play for the Rochester Fringe Festival; teaches cello and improvisation; and freelances as a cellist. As a classically trained cellist, she is passionate about experimental and contemporary music, the music of Bach, and traditional chamber music. Esther performs with Cordancia chamber orchestra and enjoys improvising with musicians and artists from different backgrounds and genres.



## Cliff Dwellers

By Leslie Sobel, Artist

I spent September 2013 as one of three artists in residence at Canyons of the Ancients National Monument (CANM) in southwestern Colorado. CANM is high desert with canyons and mesas surrounded by mountains on all sides. It's a very unusual national monument, set up primarily for the enormous number of Ancestral Puebloan (formerly referred to as Anasazi) archaeological sites. The density of artifacts from earlier habitation is truly staggering; in places the ground is literally covered with potsherds despite years of people stealing priceless clues to times past. The area was densely settled by the Ancestral Puebloans until about 1276 CE when settlements were abandoned due to a prolonged drought perhaps caused by human overuse.

CANM was not wilderness in the same sense as some of the other Aldo & Leonardo sites. It is a place where development for mineral rights predates the national monument and where private land and Federal land are deeply intertwined so the complexities of managing wilderness to protect archaeology, habitat, and development were the subject of frequent, nuanced discussion. The issues involved in protecting habitat, archaeology, mixed use, and allowing previously licensed mineral extraction—primarily carbon dioxide—are complex. We learned about the balancing act from archaeologists, geologists, biologists, and park managers along with much discussion of the question of how one defines Wilderness. That said, it is remote, challenging terrain and we explored it in the company of scientists and on our own.

One of the most memorable aspects of this trip was the dramatic weather and the impact it had on all of our activities. September 2013 was a month of huge weather in Colorado, and while I wasn't in the Front Range, which experienced catastrophic flooding, even the southwestern part of the State had near constant major storms. In a Wilderness setting where one is outdoors in an immense landscape, big weather is an overwhelming and powerful experience. This experience made me all the more aware of how deeply nature moves me and of how deeply vulnerable and small individual people are in the face of nature.

Each week was a mix of structured time working with scientists and unscheduled time.

One week we worked with biologists conducting a snake and lizard inventory where we got lessons on what animals were common and which ones were rare and how to identify them. CANM was created partially because of certain rare lizards' presence, so it was notable to help monitor them. Another week we went backpacking with an archaeologist and helped him document a set of rock art using photogrammetry—a very precise technique involving many photographs that are later rendered with software to make remarkably accurate 3D images. That trip was notable since we were in an area that had not been excavated or formally surveyed for artifacts and saw many. Yet another outing was in the company of two geologists who gave us a whirlwind tour of extremely complex morphology while dodging flooding and catastrophic rain—and bears. Other days we were left to our own devices and would hike, draw, photograph, and experience the quite diverse landscape or spend time in the Monument's museum when it was raining too hard to hike.

We learned a great deal about the Ancestral Puebloans. They built highly sophisticated settlements—cliff dwellings at Mesa Verde and CANM, towers, and pueblos on the flats at CANM and surrounding areas. They left behind rock art, jewelry, clothing, basketry, and remarkable pottery. The region's desert climate preserved the artifacts to an extraordinary degree and the population in the 1200s was far denser than it is today. When they moved on it appears to have been caused by famine and conflict over dwindling resources due to a changing climate. This is obviously a sobering thought as we start to see major impacts of our current changing climate.

There were huge storms more days than not and catastrophic flooding in the Front Range at the same time that we were in the southwestern part of the State. I have never experienced so much big weather for so many days. Because we spent so much time hiking and camping, we felt far more exposed and vulnerable to the elements and that became a truly profound experience. At the time I tried to capture it as much as I could with photography, sketching, and journaling. Back in the studio it has become a series of prints and paintings exploring the storm/ground experience in encaustic—a medium not well suited to field work.

I would be remiss if I did not take the opportunity to thank the people we worked with at CANM who were extraordinarily generous with their time, expertise and kindness to us, answering questions, and hosting us in their homes and in the field.



Lively juniper.



Storm Cloud over the mountain, encaustic monotype. Photo by Leslie Sobel.



**Leslie Sobel**

My work is driven by my relationship with nature. I am particularly interested in the impact of climate change on habitat. I love to hike and camp—both in my home State of Michigan and out West. Despite growing up in urban areas, I did a lot of camping as a child and teen and do even more as an adult. I have a particular love of high desert. Sharing that love with others through my work has been a formative part of my motivation as an artist.

I was born in New York City and grew up in Chicago. I grew up in a family of scientists as the only artist and that mix of outlooks has profoundly shaped who I am and given me a deep interest in different ways of understanding and connecting to the world.

I received my BFA from the University of Michigan School of Art in 1983. After working in computer graphics for many years and doing Master's degree work in Interdisciplinary Technology at Eastern Michigan University, I went back to being a full-time artist in 1999.

My process is studio-intensive but starts outdoors with experience, photography, and drawing providing the visual and emotive references that come back into the studio to be realized in mixed-media artwork.

I am married and have three young adult children. Sharing the outdoors with them has been one of the best things about being a mom. I have lived in southeast Michigan for more than 30 years.



Storm over pink desert. Photo by Leslie Sobel.



Sand Canyon ruin in niche. Photo by Ben McCarthy.

## Sacred Landscape

By Benjamin McCarthy, Clay Artist

Time spent in the Canyons of the Ancients offers glimpses into a sacred landscape once inhabited by our ancient ancestors. The stoic mountains and massive geological formations of sandstone are charged with a mighty presence of the Ancient Ones, the Anasazi, or Ancestral Puebloans—a fascinating native culture that thrived within the pure wilderness of southwestern North America thousands of years ago. Wandering through fields of boulders, I see a hidden map emerges upon a closer look at the rock faces within alcoves of stone. Complex patterns of grids, figures, and animals have been meticulously carved into sprawling walls written through symbols and visual stories. A rippling geometric spiral signifies a nearby water source, and sprawling petroglyphs depicting spirits, footprints, and abstract forms may be a trail marker, a record of a historic event, or a ceremonial space.

Trekking through the green valleys within the mountains, I observe that another feat of the Anasazi culture still stands today. Their architectural achievements of building homes into the sides of the cliffs with shaped structural stones is remarkable and puzzling. Labyrinths of prismatic towers and circular kivas assembled only with square blocks of sandstone and mud mortar give the visitor a sense of the Anasazi's imagination, innovation, and deep connectedness with the landscape. There are many large structures built with precise design and integrity, yet the function or purpose of these ruins still remains a majestic mystery. The cliff dwellings are phenomenal in how they camouflage with nature while home to memories of the world's earliest sparks of human civilization.

Another riddle left behind is within the Ancestral Puebloan's ceramic objects. Hundreds of sites amidst the Canyons of the Ancients contain pieces of clay pottery that embody the creative skill of their culture, sculpted into a language of vessels, dippers, and mugs painted with visually striking geometric line patterns. Their ability to harness the ceramic kiln technology in a complete wilderness setting combined with a distinct style of tessellated shapes and mathematical measurements is what truly makes the art of the Anasazi unique. There is an idea of peace, sustainability, and a utopian culture within the discovery of the Anasazi's prolific creative community. The black on white painted textures almost appear as blueprint think-pads for the foundation of a sandstone city, communicating time and creation with a drawn surface on fluid gestures into the clay, made up of coils embedded with their fingerprints.

As a contemporary artist, I find this idea of connection we have to understanding ancient societies through referencing their artwork and architecture very intriguing. Their moments and spirits are encapsulated into expressive structural forms that are an accurate method for relating to how our ancestors lived. By deciphering a sculpture or rock art from a distant era, there is a universal, human language that can portray strong ideas across long periods of time. The archaeological process leads us to learn more about ourselves and how we can learn to progress our culture by learning from the past. Utilizing the ceramic process with these thoughts in mind, I created several sculptures that appear futuristic, while remaining simple, primitive, and calculated forms, similar to symbols found in ancient rock art. I am interested in how this concept implies a technique of time travel through art history in order to propose an existential or philosophical experience through a piece of sculpture. This series portrays an evolution of thought, through smiling heads and wandering spirits, formed with a reverence to universal connection. Their archaic expressions are friendly and terrestrial, yet with also an otherworldly and galactic knowledge.

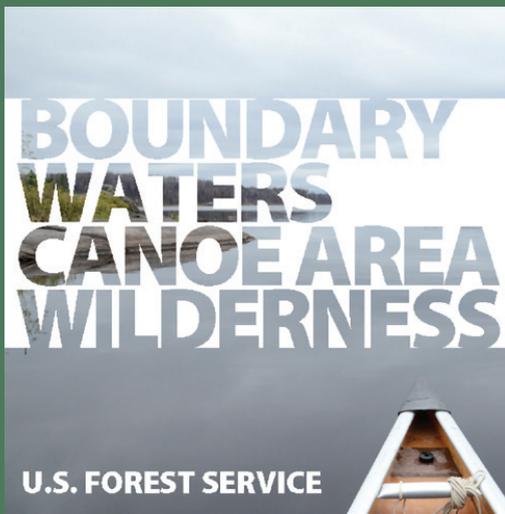
With the rapid advancement of our technology today, new methods of archaeological conservation are being developed to further preservation of these artifacts. Photogrammetry is a way of documenting structures and objects in a three-dimensional, digital format so the pieces can be studied by generations beyond our own and after the fragile history has been weathered away with time. This technology allows for high definition views of the piece in new perspectives in a digital interface, which may bring a breakthrough in understanding the purpose and function of ancient artifacts.

During my artist residency at the Canyons of the Ancients, I was granted the opportunity to work with an archaeologist of the Bureau of Land Management Anasazi Heritage Center. The goal of the project was to document one of my sculptures, Volcano Vessel, using photogrammetry, transforming it into a floating computer model that can be spun in all directions—a new way of experiencing a sculptural work of art dimensionally. Hundreds of excavated ceramic shards, pots, and buildings made by the Anasazi culture are being categorized with this technique today to prolong their existence. I believe this gives importance and value to handmade artworks, while incorporating the ingenuity of modern science and technology.





**Benjamin McCarthy** is an artist from Chicago, primarily interested in sculpture, nature, music, and architecture. He graduated from the School of the Art Institute of Chicago with a BFA degree in sculpture, ceramics, and sound. Wilderness has always provided an infinite source for creative inspiration, whether it be geological formations, wildlife, plant structures, or weather patterns. There is always a new idea to be found through experiencing how nature works. All ancient cultures from around the world influence McCarthy's sculptures, which are often reminiscent of monolithic artifacts that have seemingly just emerged from a portal to the future. Clay has become a vital material for communicating these prehistoric ideas because of its aesthetic strength, lasting durability, and similarity to stone. The artist is currently exploring methods of sculpting large-scale organic structures from terra cotta clay into contemplative beings composed of natural shapes and architectural elements. McCarthy also plays the piano and incorporates the poetic discourse of sculpture-making into composing music. With a passion for understanding natural rhythm and cycles of life, there is a constant search for harmony in nature, and exploring ideas of landscape architecture, land preservation, and sculptural gardening. The Canyons of the Ancients artist residency had a great impact on McCarthy's artwork and his plans for future projects.



## Boundary Waters Canoe Area Wilderness

Minnesota

Superior National Forest

USDA Forest Service

September 15-October 15, 2013



Photo by Troy Nickle.

## A Rainy Start

By Grant Pound

The morning I was to leave for the Denver Airport was smack in the middle of a 100-year flood event. I got up at 4 a.m. to monitor the roads for the 90-minute drive to the airport. The roads to the south were closed. The roads to the east were closed, the roads to the west were, yup, closed. I could, however, go north. I weighed that option for a bit and then headed north.

It rained off and on until I got to the Minnesota/Iowa border and then it poured. Water came down so thick and fast that visibility was almost nonexistent. I didn't dare stop because I might get hit and I couldn't get off because I could not see an exit. It took almost 4 hours to drive the last 100 miles to Minneapolis where I stayed with friends for the night.

The next day I picked up installation artist Katherine Ball at her friend's house and we drove to the airport to pick up costume designer Anaya Cullen. We bought groceries and had a nice lunch before heading up to Ely, an entry point for the Boundary Waters Canoe Area Wilderness (BWCAW). About halfway there the weather turned sunny and bright. It was a beautiful drive through the boreal forests.

We made it to the Forest Service headquarters with plenty of light to spare and met up with our third artist, sculptor Troy Nickle at the staff housing, which was large and open with a big kitchen and six bedrooms.

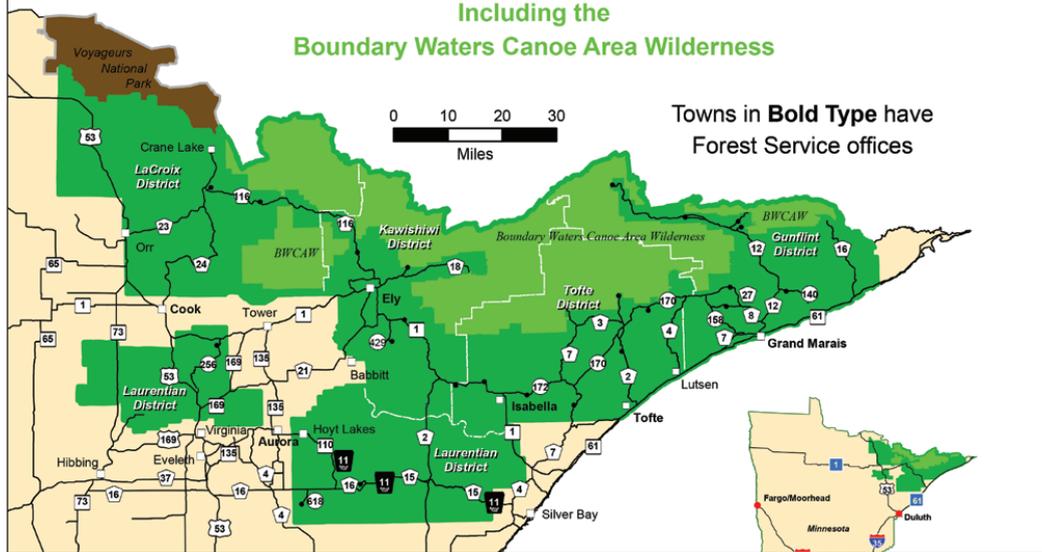
Ann Schwaller was our coordinator for the BWCAW location. She had been in frequent contact since the beginning of the year. At first, she had been interested in the project, but was not so sure about getting scientists involved. The first ones she talked too seemed reluctant to have artists mucking about in their studies and did not understand the value of the association. Ann prevailed and by the time we arrived there was a group of scientists, graduate students, forestry technicians, and wilderness rangers willing to join in the project.

We kicked it off at the Forest Service Kawishiwi Ranger Station in Ely. We were given a tour of the facility and made to feel at home. Then we were given a tour of the International Wolf Center across the road from the visitor center. In the evening we met for dinner at one of the few restaurants that was still open in town. The fall chill had already begun to push people inside, but we braved the patio seating.

The next day we met back at the Ranger Station. We shared our vision, the work of the artists, and the scientific data collection that was happening in and around the Wilderness Area. As we wrapped up, I had to jump back in the car for the 15-hour drive home, leaving the artists in very capable hands.

# Superior National Forest

Including the  
Boundary Waters Canoe Area Wilderness



The glaciers left behind rugged cliffs and crags, canyons, gentle hills, towering rock formations, rocky shores, sandy beaches, and several thousand lakes and streams, interspersed with islands and surrounded by forest. The Boundary Waters Canoe Area Wilderness is a unique area located in the northern third of the Superior National Forest in northeastern Minnesota. Over 1 million acres in size, it extends nearly 150 miles along the International Boundary adjacent to Canada's Quetico and LaVerandrye Provincial Parks and is bordered on the west by Voyageurs National Park, and on the east by Grand Portage National Monument. The BWCAW contains over 1,200 miles of canoe routes, 12 hiking trails and over 2,000 designated campsites. Wilderness offers freedom to those who wish to pursue an experience of expansive solitude, challenge, and personal integration with nature. Because this area was set aside in 1926 to preserve its primitive character and made a part of the National Wilderness Preservation System in 1964, it allows visitors to canoe, portage, and camp in the spirit of the French Voyageurs of 200 years ago.

## Participants

- Ann Schwaller, Forest Wilderness Program Manager
- Katherine Ball, Artist
- Anaya Cullen, Costume Designer
- Troy Nickle, Artist
- Jack Greelee, Forest Ecologist
- Mark Jirsa, USGS Geologist
- Jeffrey Lee, State Plant Ecologist
- Lawson Girdes, State Ecologist
- Dan Wovcha, State Ecologist
- Jenna Pollard, Naturalist

Color Rock: Assembled leaves, moss and pine needles on boulder.  
Site-specific Installation by Troy Nickle.



Pressing plants. Photo by Katherine Ball.



Jack Greenlee and Anaya Cullen heading to work.

Trip preparations. Photo by Katherine Ball.



At Moose Lake Boundary Waters Canoe Area Wilderness: (BWCAW) entry point #25, Sept. 30, 2013.



## Wilderness Art Expectations and Results

By Ann Schwaller, Forest Wilderness Program Manager

Expectations—When the Aldo Leopold Wilderness Research Institute contacted me concerning the Boundary Waters Canoe Area Wilderness representing the fresh water and deciduous forest biome in a wilderness science and art collaboration, I was skeptical. I didn't fully understand the importance of the connection. Illustrating the value of wild areas through art while honoring the scientific efforts to preserve them was not something I ever would have considered, but I slowly explored the idea. I spoke with the Colorado Art Ranch, read the artist blog discussions from previous projects, solicited scientists/researchers that might be interested in such an event, and remembered how nature essays and artwork helped pique my interest when I was younger. I finally started to recognize how this project could be designed to celebrate the lands, resources, and opportunities protected by the Wilderness Act and celebrate its 50th anniversary. I was hooked from then on and determined to make this project successful by being the best liaison possible between all of the players.

Results—Watching relationships flourish between artists and scientists/researchers was fascinating because each had different perspectives and experiences either operationally or philosophically. I believe the scientists were able to see their work in a new light; their work could be artistically beautiful while explaining what they see, hear and feel when working. One of the scientists said the project helped him remember why he got into the business in the first place, which was to help save these beautiful landscapes. When we are children and drawn to nature, it's both science and beauty in all forms that draw us in, right? Sure, understanding how a caterpillar emerges from chrysalis is scientifically amazing, but the monarch butterfly is a work of art. It seems obvious, but as scientists and wilderness managers, we may forget that much of the reason the public is drawn to our national wilderness areas is the beauty of it. All the little gateway communities (like Ely, Grand Marais, Cook, and Tofte) have shops lining the streets with beautiful wilderness-related photographs, essays, paintings, natural sound recordings, journals, books, t-shirts, carved paddles, pottery, etc. Artwork can attract wilderness support. Scientists can help examine/discover research gaps and answer conservation questions. Managers must combine all of these strategies of art, science, and natural resource management to both protect the resource while inspiring visitors at the same time. My only regret was the government shutdown at the time, preventing my goodbyes to the wonderful artists working in the Wilderness. I can only hope they loved their experiences.



### Ann Schwaller

I serve as Wilderness staff for the Superior National Forest. This involves researching, planning, partnering and advising the Forest on anything related to the implementation of the 1964 Wilderness Act, the 1978 BWCAW Act, the BWCAW Management Plan, and related wilderness Forest Service policy. I work in an interdisciplinary fashion with all Forest Service departments, other government agencies, universities, the State of Minnesota, Canada, non-government organizations, and our other partners on wilderness issues. Having worked in several other designated Wilderness Areas, National Forests, and National Parks, I have a passion for wilderness management. My collegiate training was in recreation management in the School of Forestry at the University of Montana's graduate program. My undergraduate degree was from the University of Florida in both journalism and forest resources and conservation.

## Scientists Among Artists

By Jeffrey Lee, Plant Ecologist and Botanist

Being asked to participate in the Aldo & Leonardo Wilderness Science and Art Collaboration was simultaneously thrilling and frightening. It was thrilling because I was given the opportunity to head into the Boundary Waters Canoe Area Wilderness during the best time of year in September with one of my favorite coworkers, Daniel Wovcha; an artist from my home State of Michigan, Katie Ball; and a super amiable and exuberant volunteer, Jenna Pollard. The excitement gave way to fear upon realizing that this would be my first time leading a wilderness trip with the added self-imposed pressure of ensuring a worthwhile residency experience for Katie. Questions began streaming inside my mind: Can I safely guide the group to our camp and work sites? Do I remember how to tie that knot to keep our tarp from falling down? Are we going to see any rare plants this late in the season? Do they realize that I received a barely passable C- in elementary school art class?

Thankfully, most of those fears dissipated as the trip got underway. Our foursome immediately bonded over paddling as the chaos of modern life drifted from memory. The serene lake sounds and wave undulations invite contemplations of life, state of being, and purpose. As is typical of a scientist's pragmatism, my thoughts were directed first and foremost toward collecting plant data and evaluating vegetation communities in the most efficient manner—at least initially. The progression of the 8-day trip and gaining greater familiarity with my traveling companions compelled me to relax the rigid daily schedules and work quotas I had set forth prior to the trip. Two-hour morning discussions at camp concerning potential art products derived from the residency were not uncommon. It was during these moments of discourse when it became apparent how there is a shared mutualism between art and science. Both disciplines aim to explain phenomena, perhaps stir up emotion, question established principles, or enact action. In our case, an art installation erected at an environmental learning center (see photo) became the canvas on which to showcase wilderness camping and ecological surveys to vibrant young minds.

Katie's perspective during the trip was invaluable and refreshing. Because she verbalized many of her thoughts and ideas, it was a constructive exercise to compare how she interpreted the same visual or circumstance to my own. For example, during a long stretch of lake paddling when my mind was blank but still receptive, Katie poignantly likened canoeing to slow-frame television viewing: the scenes changing

continuously but at a deliberate pace. In a second instance, while I was standing in the middle of a shrub shore fen, a vegetation community common to the BWCAW, taking notes methodically but without excitement, I was caught off guard when Katie asked how I felt about my surroundings. Not ever having considered the emotive side of my work, I had to think. My response was, "Well, this vegetation community is common and many would say ho-hum, but these are some of my favorite places to gaze out at 360 degrees." I was reminded just then to not take for granted the common places of our landscapes. Though I expend tremendous effort searching for rare plants and their associated communities, I must not discount the value of places that occur abundantly. Imparting subjectivity based on human values is a risky proposition. Katie's simple question—question borne from an artist—steered me back to understanding that the grandeur of the Wilderness lies not in the rarity of select species but in the composite of the rare and common alike in a largely intact freshwater-palustrine-forest matrix.



Installation constructed by the trip participants at Wolf Ridge Environmental Learning Center, Finland, MN. Photo credits: MN DNR.



**Jeffrey Lee**

I work as a plant ecologist and botanist for the Minnesota Biological Survey (MBS), a unit within the MN Department of Natural Resources. We collect, interpret, and deliver baseline data on the distribution and ecology of rare plants, rare animals, native plant communities, and functional landscapes needed to guide decision-making. My work takes me to northeastern Minnesota, which is an area of bountiful freshwater lakes, exposed bedrock knobs and cliffs, and expansive sub-boreal forests. Prior to working for MBS and moving to Duluth, Minnesota, I lived in southern Michigan conducting similar vegetation surveys for Michigan Natural Features Inventory, which is an analogous organization to MBS. My collegiate training was in forest ecology at the University of Michigan’s School of Natural Resources and Environment. Studying under the great Dr. Burton V. Barnes, I learned to appreciate the nuances of walking in the forest, intently observing details one may normally pass over, and piecing together the wondrous puzzle of landscapes and their component ecosystems. I feel fortunate to now live on the north shore of Lake Superior where sunrises over the water become my morning ritual with coffee in hand.

**Lawson Gerdes**

I work as an ecologist with the MBS. When I first heard about the opportunity for artists and scientists to share their experience of wilderness, I was captivated. As a field ecologist conducting biological surveys in this landscape and as the northern coordinator for MBS, I realized that perhaps I could play a role in helping to make this happen. I prepared a description of the project for the Colorado Art Ranch. I got busy planning the route to one of my most remote wilderness survey areas. I selected locations for rare plant searches and for vegetation sampling plots. I prepared a presentation on the MBS program for the participating artists and scientists. I found other MBS scientists who were interested in participating along with me. Then...during my first MBS Wilderness survey trip of the field season, I broke my arm (that’s another story). Okay... onto “Plan B.” There’s always a “Plan B,” right? Step forward Jeff Lee, Dan Wovcha, and Jenna Pollard. Together with Katie Ball, they formed the consummate team. It was as if it was meant to be. So, I passed the baton. While the group was out together, I kept a phenology of natural events: the winds, the rain, the moon, the fall migration, the mushroom flush. It kept me in touch with some of what they might also be experiencing. Then, when the group returned, I was reintegrated... graciously...seamlessly.

And together, we envisioned the installation at Wolf Ridge Environmental Learning Center—a gratifyingly, interactive event that transformed our individual experiences into a collective response that was designed to be shared. Many thanks!



**Dan Wovcha**

I have been an ecologist with the Minnesota Biological Service (MBS) since 1991. My first project was a book on the natural history of the St. Croix River Valley and Anoka Sandplain region of east-central Minnesota, volume one in a series of regional MBS books describing Minnesota’s native plant communities and rare plants and animals. Now I am collaborating with several other MBS staff members on the second volume, on the Red River Valley and Aspen Parkland region of northwestern Minnesota. Between these projects I assisted with field surveys in the Big Woods region of Minnesota and with the development of the Minnesota Department of Natural Resources’ statewide native plant community classification. The classification was a huge project, using analysis of data collected in thousands of vegetation plots (called relevés) across Minnesota by vegetation scientists over the past several decades. The project culminated with the publication of three regional field guides describing Minnesota’s plant communities, which are being used widely within and outside the Minnesota Department of Natural Resources for forest management, conservation, and plant community restoration in Minnesota. Before coming to MBS, I studied plant community ecology under the direction of Ed Cushing at the University of Minnesota, who was instrumental in promoting the use of relevés in Minnesota and also did pioneering research in glacial geology, paleoecology, and other fields that underlie the work we do with plant communities at MBS.

**Jenna Pollard** is a naturalist and artist from South Dakota. She earned a B.A. in Biology from the College of Saint Benedict/Saint John’s University in 2010, with a focus in ecology and botany. She moved to Finland, Minnesota, in 2012 and fell in love with the magic of the Northwoods while teaching kids at Wolf Ridge Environmental Learning Center. Jenna was invited to participate in the Aldo & Leonardo trip after assisting Lawson Gerdes on an MBS trip to the BWCAW in June 2013. Jenna and her partner are moving to DreamAcres Farm in rural Wykoff, Minnesota, where they are excited to build a home and live in community. Jenna is working to set up a folk pottery studio at the farm and enjoys working in the garden, helping to make homemade sodas for pizza nights on the farm, and swimming in nearby Deer Creek. Jenna also looks forward to future botanical endeavors in the Boundary Waters Canoe Area Wilderness.



## Windows Into an Ancient World

By Mark Jirsa, Geologist

I initially viewed this outing with an artist as an “excuse” to continue geologic field work in the Boundary Waters Canoe Area Wilderness (BWCANW), which has been ongoing intermittently since 2002. It became so much more. The BWCANW offers a unique opportunity to study the early history of the North American Continent. The bedrock evidence for most of Minnesota’s ancient geologic history—as old as 3.5 billion years—is buried beneath sediments deposited by glaciers during the last 2 million years. By contrast, the bedrock in the BWCANW has only a thin cover of glacial debris in some areas. The nearly complete bedrock exposure allows geologists to see not only the various rock types, but also the contacts between rock types that illustrate relationships of time, space, and origin. From this, one can develop an evolutionary story, which for the BWCANW is both protracted and compelling.

The Boundary Waters Canoe Area Wilderness is a broad region of interconnected lakes. The mapping area lies on the South Arm of Knife Lake, a distance of about 18 miles from the edge of the Wilderness. The canoe access route passes from the entry point on Moose Lake, northeastward through eight lakes, and required about a day and a half of paddling and portaging each way. Once in the area, geologic mapping was conducted by canoe and on foot. Sixteen sites within the area were selected as subjects for artwork (red dots on map). Some of the map area was burned in the late summer of 2013; some has partially regrown from an older fire, perhaps 5-6 years old.

The field work involved detailed mapping in an area of well-exposed, complex, and unique bedrock geology—primarily within areas of recent forest fires. Fire burns the vegetation, duff layer, and lichens from the outcrops, revealing details about their composition, origin, and history that are otherwise obscured. Obviously, this provides a time-sensitive opportunity for mapping. The bedrock outcrops in this region collectively represent a 2.7-billion-year-old fault basin, analogous in many ways to the much younger San Andreas Fault zone in California. The relict basin contains volcanic rocks and sediments shed from volcanic flanks and fault scarps into depressions that alternated from being a shallow inland ocean to an elongated and steep-walled contrast to the San Andreas. The bedrock in the BWCANW has undergone extensive deformation due to multiple episodes of tectonic plate collision. The once flat-lying strata were folded, metamorphosed (thermally altered), faulted, and now stand nearly on-end. Deciphering their original content, attitude, and depositional

environment in one small area of the Wilderness was the scientific objective of this outing. My research and mapping over the last decade or so has been directed toward understanding the details of this basin-forming event as it relates to early evolution of the continent. In addition, the work will contribute to eventual production of a regional bedrock geologic map and associated “geologic user’s guide” to the BWCANW. These products will help address ongoing planning, address hydrologic and environmental issues, and enhance Wilderness experiences for future visitors.

The collaboration between artist Troy Nickle and me developed when Troy noticed I was using a Geographic Positioning System (GPS) device to precisely place individual outcrops in geographic space—an essential component of accurate geologic work. At these locations, I collected data about the rock type and structural characteristics and typically acquired documentary photographs. The GPS uses the Universal Transverse Mercator projection, having resolution that permits location to an area of 1 square meter. Troy recognized that these 1-meter squares were basically the scientist’s “windows into an ancient world.” His art involved replicating my photographs with his own, after modifying the outcrops to create 1-meter squares bordered with local materials—reeds, burned sticks, and indigenous rocks. He uses these photographs in various combinations with my field notes and scenic photos to highlight the geologic and geologist’s stories in the context of place. I should note that this is the geologist’s perspective on the themes of his work; the artist’s perspective may differ somewhat. The apparent symbiosis between artist and geologist gave me new insight about the portrayal of geologic processes and concepts, particularly to non-geologists. Photos of Troy at work and some interesting rock outcrops are shown.



Map of Knife Lake area showing location of sites selected for art work as red numbered dots.



Photos of both representative (upper) and unusual (lower) rock types. Above left: pebbly sandstone and mudstone deposited by ancient streams. Above right: broken volcanic lava (breccia) with spherules, indicating submarine volcanism. Photo by Mark Jirsa.

Glacially transported boulder of iron-formation (iron-rich mudstone).

Chaotically broken slate.



**Mark Jirsa**

Research interests: geologic mapping, utilizing the combination of geophysical, drill core, and outcrop information to improve and convey the understanding of Minnesota's Precambrian terranes.

Recent projects include creation of a statewide bedrock geologic map, structural study of the Mesabi Iron Range, maps of wilderness areas affected by forest fires, and research related to 1850 Ma Sudbury meteorite impact layer and Archean unconformities and paleoclimate. Mark has authored and coauthored more than 125 maps, publications, and abstracts, and is the technical review coordinator and content editor for MGS map products. He is also Executive Board member of the Institute on Lake Superior Geology, and an instructor for Precambrian Research Center, University of Minnesota, and Duluth.

Much of the work he conducted in the BWCWA was funded by the U.S. Geological Survey's StateMap element of the National Geologic Mapping Program. Additional funding and assistance was provided by the Precambrian Research Center's annual field camp program, and discretionary funds of the MGS. All of these programs in the wilderness were made possible with permits and support from Superior National Forest staff.

At top left: photo of area burned by forest fire extinguished a month or two prior to this photograph.

Top right: artist Troy Nickle at work on 1-meter-square perimeter of local rocks; note GPS device in center of square that gives precise (1 meter) geographic location.

Lower right: Troy at Knife Lake camp. Lower left: Troy photographing artwork.





**Katherine Ball** is a visual and relationally based artist that focuses on social and environmental issues. With increasing frequency, living materials are her media and scientific research is her inspiration. Venues for her public projects have included the Indianapolis Museum of Art, Smack Mellon, Portland Art Museum, Steirischer Herbst, Bétonsalon, Kampnagel (Hamburg), and Kunsthall Charlottenborg. She has an MFA in art and social practice from Portland State University. Katherine's projects have included living in an off-grid floating island while constructing mushroom filters to clean a polluted lake, bicycling across the United States filming a documentary about local communities solutions to the climate crisis, building a living laboratory in a tower of discarded windows for studying the behaviors of decompositional species, organizing a free weekly produce market for people experiencing financial hardship, and collaborating with the Lab of Insurrectionary Imagination to create a 5-hour performance that oscillated between utopian feast and rebel training camp. Currently, Katherine is the community artist-in-residence at the Atlantic Center for the Arts (FL). Her upcoming collaborations include being an "Agent of Change" in Wochen-Klauser's initiative to make life easier on the barrier island of Kivalina, Alaska, and illustrating Banen plant rituals documentary.



The artist and scientists go over plant collections.



Tools of the trade for an art/science collaboration.

## South of the Border

By Troy Nickle, Artist

I applied to the Aldo & Leonardo Wilderness Science and Art Collaboration out of an interest to collaborate with scientists in a wilderness setting and to gain a greater understanding about our environment. My practice often involves creating work in situ in the landscape with materials I find on site. The Boundary Waters Canoe Area Wilderness (BWCAW) of Minnesota was the perfect opportunity to create work in a new landscape while responding to new understandings about the ecosystem and our relationship to it.

I took two trips during my residency; the first trip would involve a 4-day canoe trip with fellow artist Anaya Cullen, Forest Service ecologist Jack Greenlee, and biological technician and Wilderness ranger Becca Orf. Jack and Becca are working in the BWCAW to monitor and mitigate invasive plants. The work that they undertake involves paddling out to the many campsites along the network of lakes within the BWCAW to check the progress of invasive plants, map their locations, and pull the plants. The plants that they target are not native to the area and were usually introduced during European settlement. I learned that many of these plants reproduce rapidly and cause major changes to areas where they become established. Some of the invasive plants in BWCAW include buck thorn, St. John's wort, Canada thistle, common tansy, hawkweed, spotted knapweed, ox eye daisy, leafy spurge, and purple loosestrife to name a few.

This made me consider: What is the relation of my art to the work that Jack and Becca do with invasive plants?

How can I make work that builds on awareness of these plants? I thought perhaps I could do my part in helping to mitigate these invasive intruders by using them in my art. After we pulled a bunch of Canada thistle in our campsite on Lake Four, I tied bunches of them around the pines at our site. Due to the damage these nonnative plants can have on an ecosystem, I saw wrapping the pines in thistle as a symbolic act of adorning them with a crown of thorns. Later during the residency, I pulled and collected bunches of common tansy on the outskirts of the town of Ely, Minnesota, in order to make paper. Common tansy is a terrible plant for making paper, so the paper

I made is rough and textured. After several runs I was able to make a rough sheet of paper from the tansy that I later painted with an illustration of common tansy with its Latin name, *Tanacetum vulgare*, in watercolor.

The second trip I took involved accompanying geologist Mark Jirsa on a 6-day canoe trip to map an area of well-exposed, complex, and unique bedrock geology—primarily within the Knife Lake area of the BWCAW, where there have been recent forest fires that burned away the vegetation, duff layer, and lichens, revealing details about the rock's composition, origin, and history that were otherwise obscured.

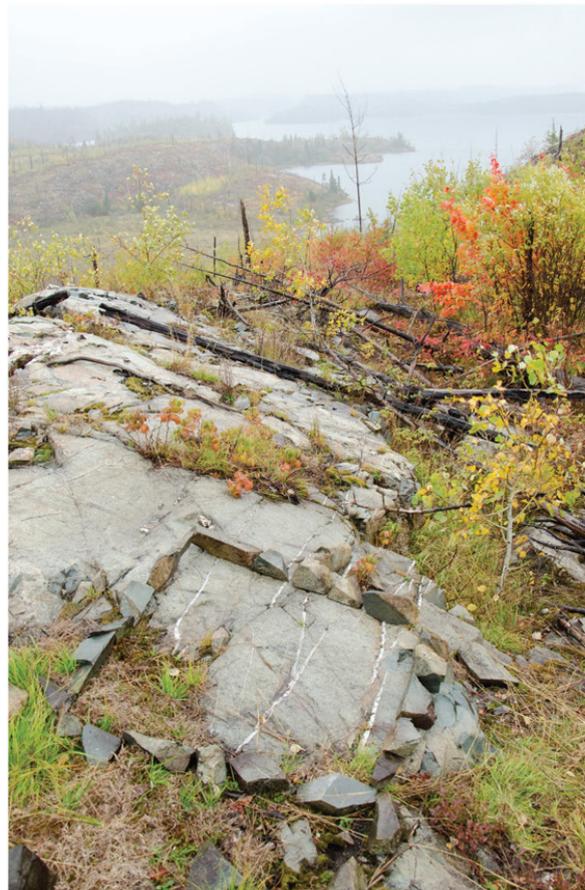
While I was watching Mark conducting research and mapping the geology, I noticed him using a GPS, which has a resolution that permits location to a 1-meter square. After a discussion with Mark, I decided to create a 1-meter square border at these locations with local materials—reeds, burnt wood, and indigenous stones.

These materials were used to frame key areas of bedrock, acting like scientific transects of research, investigation, and points in geographic space. These frames were essentially like windows looking into an ancient past—as old as 3.5 billion years. Each rock formation is like a unique drawing that forms intersecting lines and textures that reveal the rock type and structural characteristics. Once the 1-meter square frame was created around the bedrock, I took an image of the frame in context to the land and one of the rock within the border. I would later collage these two images together in various combinations with Mark's field notes to highlight the geologic and geologist's stories in the context to place.

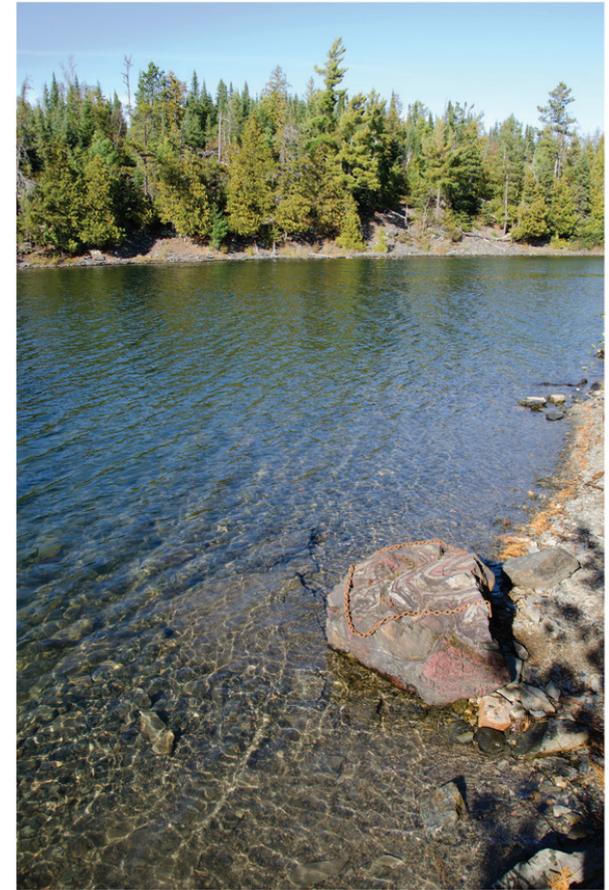
After my two trips into the BWCAW, I created an intervention titled "Around the Center," which was made in the Superior National Forest on a large stone along a path between the Ranger Station and the Vermillion College in Ely, Minnesota. I started to contemplate the symbolic nature of this work and could relate it to when a stone is thrown in the water and ripples expand outward around the stone's impact in the water. The stone's impact creates energy and this energy radiates outward. To me this represented the energy created when the artists and scientists were able to collaborate and bridge creativity with knowledge and people with wilderness.



**Site 5 UTM – 636081E/5328209N (NAD 27)**  
*Interlayered white weathered sandstone and mudstone  
 B = N 10 degrees E / 80 degrees W. T = W*



**Site 10 UTM – 635990/5327936**  
*N 60 degrees E / 90 degrees  
 Quartz veins cutting into massive medium to fine grained  
 graywacke sandstone*



**Site 15 UTM – 627770E/5325720 (NAD 27)**  
*Iron – formation boulder near Isle of Pines and Robbins Island, Knife Lake.  
 Iron – formation consists of chaotically folded layers of black magnetite, red jasper,  
 and white chert. Complex folding suggests deformation occurred prior to lithification –  
 but while sediment was semi – brittle. This boulder was moved here by nephews of  
 Dorothy Molter (“the Rootbeer Lady”)*





*Tanacetum vulgare*: Watercolor on handmade common tansy paper. By Troy Nickle.

Around the Centre: Assembled moss and pine needles on boulder. Site-specific Installation by Troy Nickle.



Making paper with common tansy,



**Troy Nickle** is an environmental artist currently living in Lethbridge, Alberta, Canada. His practice encompasses a variety of ideas and processes that stem from working in relation to the landscape to create site-specific interventions, sculpture, drawing, painting, book works, or collaborations with scientists. His site-specific artworks incorporate natural materials like wood, moss, mud, stone, and vegetation to form assemblages that enhance one's experience of place. These works are then documented in photographs. Many of the materials used in his installations are gleaned from the landscape to create ephemeral assemblages, murals with mud, or sculptures from wood. Nickle grew up in the small town of Lundbreck in southern Alberta, and spends a lot of his time exploring the river valleys, mountains, and foothills in his area, an activity that allows him to intimately connect with his surroundings and influence the work he makes.

Previously enrolled in the BFA Program at the University of Lethbridge, Troy has also studied at the Alberta College of Art and Design in Calgary, and is a member of the Field Notes Collective in Lethbridge, Alberta. He has exhibited his work in galleries across Canada including the Southern Alberta Art Gallery in Lethbridge, Alberta, Arnica Artist Run Centre in Kamloops, British Columbia, and The Alternator Centre for Contemporary Art in Kelowna, British Columbia, and Gallery 1313 in Toronto, Ontario. He has created a temporary outdoor installation at the Nathan Manilow Sculpture Park at Governors State University in Illinois and exhibited work for their campus library's Skylight Gallery.

