

Out-of-School Innovation Project

Nature-based Curriculum for
Out-of-School Programs in Central Oregon

**CHILDREN'S
FOREST**



**CENTRAL
OREGON**

Out-of-School Innovation Project

Dear Educator,

As a leader or staff of an out-of-school program for youth in Central Oregon, the role that you play in children's lives is huge! The time that youth spend in your programs offers so many opportunities for youth development, learning, and health and wellness. The Children's Forest of Central Oregon and the Central Oregon STEM Hub have teamed up to support you and your programs to be able to provide more opportunities for outdoor learning and exploration and STEM for your participants. Often, with busy school days and family lives, outdoor time and STEM can be among the first things to go. Out-of-school programs, with the relaxed atmosphere, extended time frames, and supportive mentors, are the perfect venue to provide more of these experiences to youth.

Recognizing that time, resources, and training opportunities can be limited for out-of-school providers, The Children's Forest and the STEM Hub have worked on creating six kits and curriculum that have everything a program needs to implement the activities. The kits are free to check-out and include curriculum, materials, and coaching (if needed).

Children's Forest of Central Oregon:

Learn more and reserve these kits at www.childrensforestco.org/out-of-school

- Nature Arts - developed in partnership with the High Desert Museum
- Survival Skills - developed in partnership with Wildheart Nature School
- Habitat Investigations (coming in fall 2019) - developed in partnership with The Environmental Center

Central Oregon STEM Hub:

Learn more and reserve these kits at www.centraloregonstemhub.org

- Space Science
- STEM and Sports
- Under Pressure (coming in fall 2019) - developed in partnership with the Bend Science Station

The mission of the **Children's Forest of Central Oregon** is to unite our community to inspire lifelong connections to nature for all kids. We are a network of 20+ public, and non-profit organizations working to connect children and families to nature through learning, exploration, and play.

The Central Oregon STEM Hub is a partnership connecting regional pre K-12 education, higher education, industry, and community partners to catalyze opportunities and exploration in science, technology, engineering, and math (STEM).

Thank you to our project partners and funders!



Nature Art

Created in partnership with
the High Desert Museum

Overview

Nature and its beauty is all around us. In this kit you will find activities that help youth explore nature, and to find a deeper appreciation of its beauty and wonder. Activities connect art, science, engineering, and play, providing many opportunities to learn about and be inspired by the natural world. The activities are designed so that they can be done in any outdoor space, during any time of year. If your program has the opportunity to utilize a natural area near your site, this will enhance participants' experience with the activities.

Activities

Camouflage	pages 4-6
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A Note About Collecting Natural Objects:

Many of these activities have students looking for and collecting natural objects. In order to minimize our impact on natural spaces, follow these guidelines:

- Start by looking for objects on the ground. A good phrase to use is “dead, down, and detached”.
- If participants would like to collect flowers or leaves from a living plant, try to collect from different places on the plant or from different plants of the same type, so that you aren't stripping one plant of most of its flowers or leaves.
- When appropriate, ask permission from land owners or managers.
- If possible, return natural objects to where you found them after using them.
- Familiarize yourself with anything that is poisonous or that might cause itching or stinging so you know to avoid touching them.

Camouflage

Background

In nature, every advantage increases an animal's chances of survival, and therefore its chances of reproducing. This simple fact has caused animal species to evolve a number of special adaptations that help them find food and keep them from becoming food. One of the most widespread and varied adaptations is natural camouflage, an animal's ability to hide itself from predator and prey.

Have you ever walked right past a rabbit or bird only to see it bolt away once you have gone by? Ever noticed how difficult those nasty tent caterpillars are to see on a tree? These are just some examples of how camouflage adaptations help animals live in their environment. This topic is an excellent activity to teach youth how color, shape and size help living organisms blend with their surroundings. Color of the organism helps mix with natural colors, providing a "hidden" appearance such as a grouse in the brush or a walking stick in a tree. Shape allows an organism to mimic surroundings of the area they are in. Ever notice how a squirrel stretches out on a tree limb and remains motionless? These are all good items to have youth watch for when out on a hike or spending time outdoors.

Getting Ready

Part A: Hide plastic frogs outside in playing area. Make sure to count how many you've hidden so you know how many to find.

Part B: Optional - Pre-cut animal shapes out of white paper.

Doing the Activity:

Part A - Frog Hunt

1. Go to open natural space nearby. Ask participants "What is camouflage?". Field responses. Ask follow up questions, such as "Why do animals have camouflage? (hide from predators/prey), "What kind of animal could camouflage well in this area?", etc. Lead a discussion.
3. Tell participants they will be hunting for frogs camouflaged within an area. Allow participants to search until all of the frogs are found.
4. Reflect with participants: What was the easiest frog to find? Most challenging? Why?
5. Next, have students pair up. They can take turns hiding five frogs for each other. (This could also be done within a classroom space!)

Recommended Ages: K-5th grade

Duration: 1 hour

Objectives:

- Participants will learn about camouflage as an animal adaptation.
- Participants will understand how color, shape and size help living organisms blend with their surroundings.
- Participants will immerse in challenges animals face in hiding themselves
- Participants will practice careful observation skills

Notes about location/time of year: Part C (Camouflage Game) works best in natural areas with trees or shrubs to hide behind. Part B can be done inside or outside, but a table would be helpful if done outside.

Materials Needed:

Part A:

- Plastic frog set
- Jar or container
- Open natural space

Part B:

- National Geographic, or other photo magazine pages
- Animal cut-out sheets
- Colored pencils or markers (not in kit)
- Glue sticks (not in kit)
- Scissors (not in kit)

Nature Art

Activity 1

(continued)

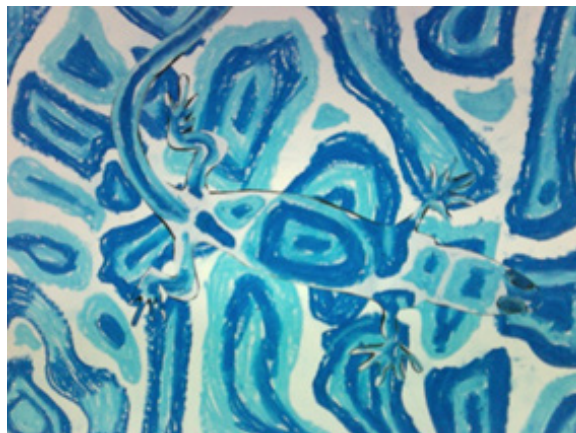
Part A - Frog Hunt (continued)

EXTENSION 1: Go on a nature walk and look closely at the trees and plants and grasses—can you find a real-life prey animal that is camouflaged? (Hint: many insects rely on camouflage to stay safe from predators).

EXTENSION 2: Were the frogs that were easiest to see brightly colored? If yes, they are probably models of real-life brightly colored frogs called poison dart frogs. They don't rely on camouflage as much, but instead they rely on their bright colors to warn predators that they are poisonous. Poisonous prey animals tend to be brightly colored. Predators have learned over time that bright colors means they should stay away. Go on a hike and see if you can find examples of brightly colored creatures. Do a little research to see if their bright colors are meant to advertise that they are poisonous.

Part B – Camouflage Art

1. Pass out pre-cut animal shapes. Or, have older students draw (and cut out) their own.
2. Have participants pick out a photograph that they like from a photo magazine. Alternatively, students can draw their own colorful, patterned background on a blank sheet of paper.
3. Prompt participants to think about what shape of animal, color of animal, pattern, etc. would be able to hide best in that scene.
4. Participants glue the cut-out animal onto the background they chose, and then color it to blend in.

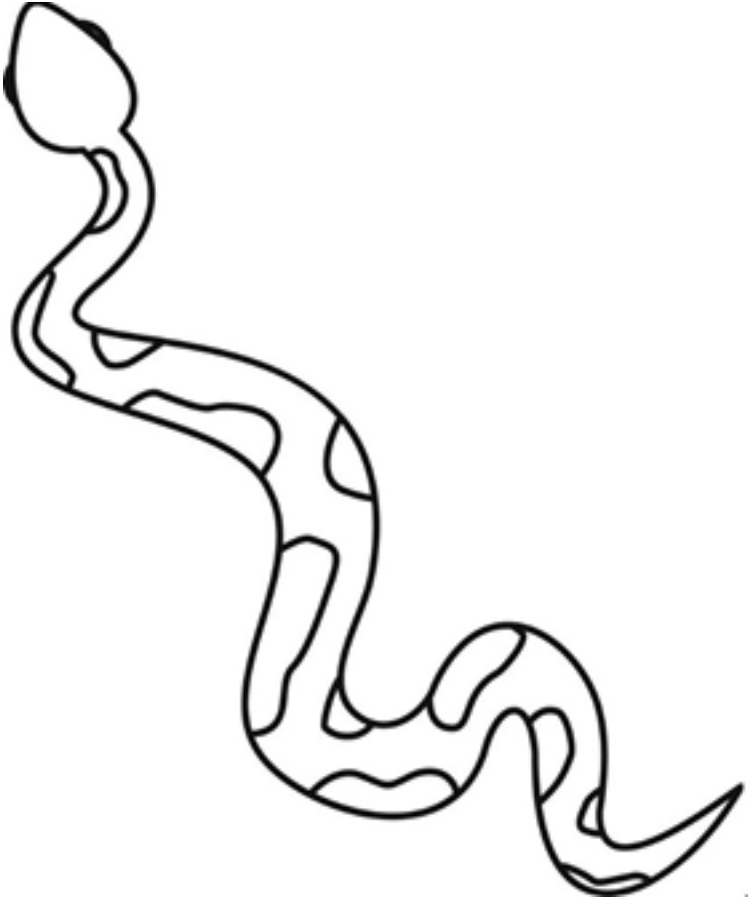
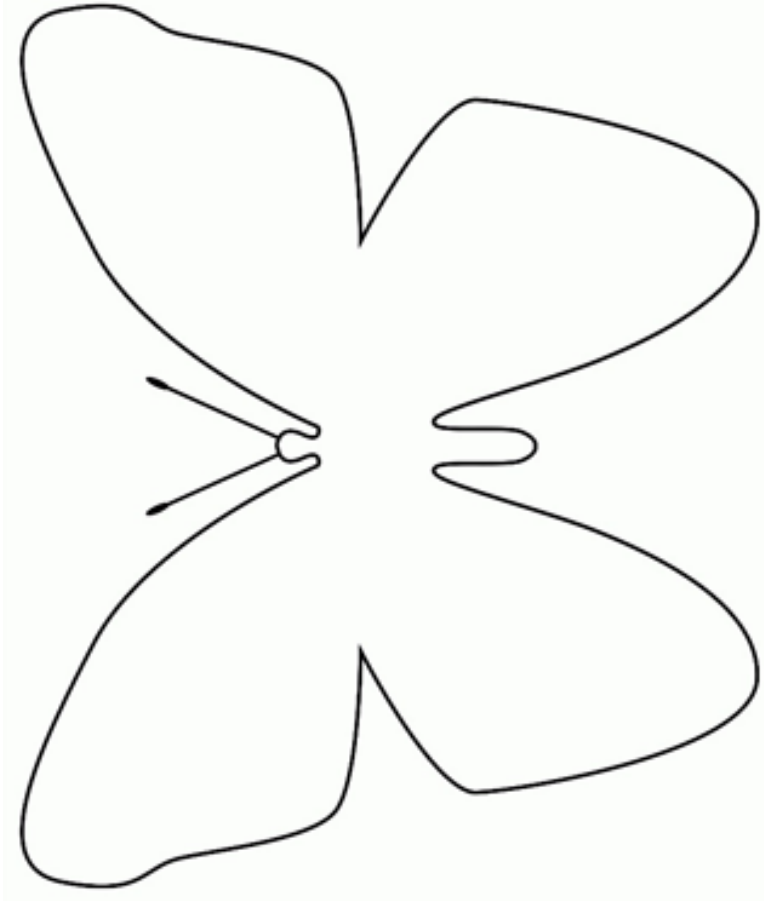
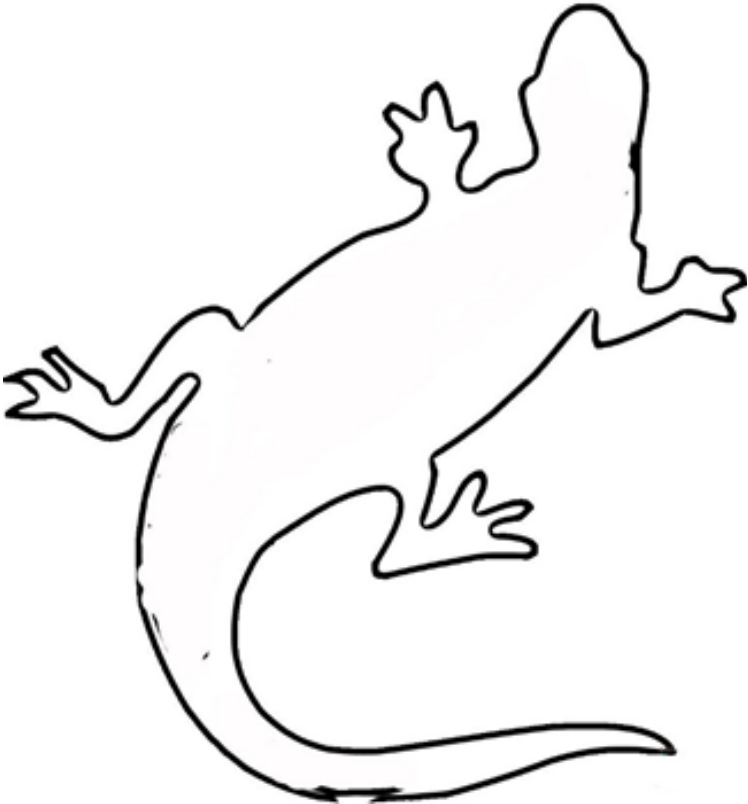


Part C – Camouflage Game

1. Tell participants that they are going to get to try out camouflage first hand by playing the game CAMOUFLAGE.
2. One person is the deer —they are in the center of the open space and cannot move their feet. The deer calls out “CAMOUFLAGE!!!!” so everyone can hear it, closes their eyes, and count to ten (or 20 or 30)
3. Everyone scatters and has 10 seconds to find a hiding place, where they can see the deer, but the deer cannot see them. (You can explain to participants that predators don't want to be seen by their prey, but that they need to see them to be able to hunt them.)
4. Once deer has finished counting, they have to hold up a number with their fingers for 15-30 seconds. During this time they may turn around, but not move their feet, and call out people who they see and their hiding spots.
5. Once the 30 seconds are up, the deer calls out “Show yourselves” and those who are left undiscovered come out. Ask these players if they can tell you how many fingers the deer was holding up.
6. Reflect: Where was your best hiding place, and why? Did anyone find it was important not only to camouflage, but also to move quietly? What did you do that allowed you to move quietly? Did you consider the color of your clothing when picking a place to hide? Who in the group was able to hide closest to the person who was “it”, and how did they do it? Why is camouflaging important?

EXTENSION: After Step 4, the deer closes their eyes for 10 more seconds. During this time, the players still in the game have to find a new hiding spot closer to the deer. Try this three or four times. The goal of predators is to get as close to the deer as possible, without being detected.

Part B – Camouflage Art
Animal Shapes



Nature Art Activity 2

Nature as Decor

Background

Nature's beauty can extend beyond beautiful natural areas when nature inspires art or craft projects. Nature is often the source or inspiration for decorations or crafts that can be found in homes or businesses.

Getting Ready

Before attempting this art project, find a local patch of nature where participants can find items such as leaves, flowers, twigs, grasses, pine needles, etc. If this isn't available, do some collecting on your own and bring some items in for the activity.

Doing the Activity:

Introduction:

1. Discuss with students the importance of good stewardship when exploring nature and collecting in nature. Instruct students to try and find dead, down, and detached items, when possible.
2. Go over the boundaries of where the collecting will take place and any other guidelines you see fit for your group.

Part A – Plaster Nature

1. Ask students to find plastic containers from recycling bins and clean them out
2. Collect bits of nature from outside for the project.

Recommended Ages: K-8th grade

Duration: 1 hour

Objectives:

- Participants will explore nature and appreciate its beauty
- Participants will learn how to collect nature without causing destruction
- Participants will take bits of nature they collected and create art to decorate their homes or rooms

Notes about location/time of year:

Locations with a selection of natural items to collect are best, but if this isn't available, additional materials can be brought in.

Materials Needed:

All:

- Collected bits of nature

Part A:

- Plaster of Paris mix
- Water
- Stirring spoon
- Plastic containers (not in kit)

Part B:

- Clear contact paper
- Construction paper
- String
- Hole puncher
- Scissors (not in kit)
- Glue (not in kit)

Part C:

- Paper plates
- String
- Hole puncher
- Crayons or markers (not in kit)
- Glue (not in kit)



Nature Art

Activity 2

(continued)

Part A - Plaster Nature (continued)

3. Mix plaster powder with water according to amounts needed and box directions, and pour into each container.
4. Press bits of nature into plaster.
5. Let dry according to box direction (sets in 5-10 minutes, but make take up to 24 hours for a full dry)

Part B – Nature Ornaments

1. Trace two circles of the same size onto the non-sticky side of the contact paper
2. Cut the circles out
3. Peel back the backing off one circle and stick bits of nature on the sticky side
4. Peel the backing off the other sticker and cover the nature bit circle sticky side to sticky side
5. Cut two rings out of construction paper that are the same size to make a frame or border for the contact paper circles
6. Glue the rings together around the contact paper
7. Hole punch the top once and tie a string through it for an ornament



Part C – Nature Wreath for All Seasons

1. Cut the center of a paper plate out
2. Color the paper according to personal preferences (one solid color, patterns, designs, etc.)
3. Glue down bits of nature cover as much of the paper plate as you want
4. Punch two holes at the top of the plate about 2-3 inches apart.
5. String the two holes and tie a knot making a triangle of sting to hang the wreath from on any door!



Giving Back to Nature

Nature Art Activity 3

Background

In this activity, participants will create bird feeders and seed balls, both of which provide benefit for local birds and insects. Feeding birds can help to replace food sources that have been destroyed by development. When homes are built and landscaped, birds lose nesting spots, shelter, and natural food sources, but proper feeding and bird-friendly landscaping can help replace those resources so birds and birders can live together in harmony. Seed bombs are an easy way to reintroduce native plants into a landscape, which in turn helps local wildlife, birds, and insects. A seed bomb is made up of compost, clay, and seeds. The compost provides nutrients for the seed to germinate and grow, and the clay acts as a carrier. Seed bombs have been used to revegetate empty lots or other abandoned areas, as the ball can be thrown over walls or fences and has everything the plants needs to grow.

Getting Ready

This activity works best with large pinecones (Ponderosa pine are ideal). If you don't have a natural area to gather cones in at your site, gather cones beforehand and bring them in. A clear table space is recommended for these activities. If possible, cover table with butcher paper for easier clean up.

Doing the Activity:

Part A – Pinecone Bird Feeders

1. Tie string around the top of the pinecone.
2. Use popsicle sticks to spread shortening around the pinecones.

Make sure to fully coat pinecones and its crevices with the shortening.

3. Roll the covered pinecones in the bird seed making sure it's fully covered.
4. Hang the bird feeders around your area, or pack in a Ziploc bag for the students to take home and hang outside.



Recommended Ages: K-8th grade

Duration: 1 hour

Objectives:

- Participants will learn about the value of giving back to nature
- Participants will make bird feeders for their local birds
- Participants will engage in the spreading of seeds to grow flowers that help local pollinators

Notes about location/time of year:

These activities can be done outside or inside. The best time of year to spread seed bombs is fall to early spring.

Materials Needed:

Part A:

- Pinecones (1 per student)
- Shortening
- String
- Bird seeds
- Popsicle sticks
- Bowl

Part B:

- Crayola air dry clay
- Flower seeds - preferably native species
- Soil
- Water
- Ziploc bags

Nature Art

Activity 3

(continued)

Part B – Seed Bombs

1. Give students a handful of clay. Have them roll it out flat.
2. Spread a scoop of soil evenly over the clay.
3. Sprinkle native flower seeds over the soil and clay.
4. Fold and mash the clay until everything is well mixed.
5. Pull off small chunks the clay mixture and roll into balls roughly 1 inch in size
6. Pack the seed bombs into Ziploc bags for the participants to take home. Highlight good places to throw their seed bombs (yards of friends or family, open nature, etc.). Make sure they are throwing them somewhere flowers could grow (not concrete).



Building With Nature

Nature Art Activity 4

Background

Art can be created using nearly any medium. Artists use paint, clay, charcoal, and ink to create their works. Artists like Andy Goldsworthy, though, use materials that are a little more unexpected. Andy Goldsworthy is a renowned British artist who works with found natural elements. His work is temporary, sometimes even destroyed by wind before he is finished! Because of this, photography plays a key role in his artwork – capturing the art, before it decays, falls apart or floats away. Goldsworthy is inspired by all aspects of the natural world, including snowflakes, twigs, icicles, reeds, tree roots, and rocks. He has said that his goal is to understand nature by becoming a part of it, and he considers his creations to be transient or ephemeral because they, like any other part of nature, are destined to change over time. In addition, he has said that “movement, change, light, growth, and decay” are the lifeblood of nature, and his work is designed to reflect that as well as participate in it.

In addition to art materials, building materials also can be unexpected—think outside of the LEGO box! Wood, stones, clay, and plants are the most ancient building materials.

Getting Ready

Part A: If your site doesn't have a natural area with a good selection of natural materials, do some collecting off-site to bring a variety of materials for participants to use. Good materials include pine cones, sticks, pine needs, leaves, rocks, etc.

Doing the Activity:

Part A – Andy Goldsworthy-Inspired Art

1. Introduce participants to Andy Goldsworthy. Pass around examples of his art and discuss his methods.
2. Have students read aloud quotes from Goldsworthy and discuss his art philosophy.
3. Give students 15-20 minutes (or more) to create their own Andy Goldsworthy-inspired art projects, working alone or in small groups. Instruct students that they should use found materials, being careful not to interrupt nature's processes by picking plants and flowers, but to using what you can find on the ground, like branches, thorns, leaves, etc.

Recommended Ages: K-8th grade

Duration: 1 hour

Objectives:

- Participants will appreciate temporary, natural art, like that of Andy Goldsworthy.
- Participants will view their outdoor surroundings as natural play spaces and temporary art canvases.
- Participants will practice engineering design and teamwork by working together on natural block building challenges.

Notes about location/time of year: Any

Materials Needed:

Part A

- Andy Goldsworthy quotes
- Sample art from Andy Goldsworthy
- Collection of natural objects, if there isn't a great selection at your site

Part B

- Set of tree blocks
- Plastic animal figurines

Nature Art

Activity 4

(continued)

Part A - Andy Goldsworthy-Inspired Art (continued)

4. When participants are finished working, go on a “gallery walk” and take the whole group to view each person’s (or group’s) art. Ask if there is a title for the work, and if participants were inspired by anything in particular as they were making it. Ask if there is any symbolism, or if the piece represents any larger ideas to them.
5. Depending on the site, you may choose to have participants disassemble their art, or leave it as is. For programs using public parks or natural areas, students should return materials to where they found them.

EXTENSION: If cameras or phones are available, students can try photographing their work like Goldsworthy.

ADAPTATION: If participants need time to warm up their creativity, have them recreate an example of an Andy Goldsworthy example that they like.



Part B - Nature Blocks and Engineering

1. Ask participants: What is an engineer? What sorts of things do engineers work on? Can you think of any animals that could be considered engineers (AKA, any animals that design and/or build)?
2. Lead a discussion about examples of animal engineers in nature. One example are beavers, who are called “ecosystem engineers” because they physically alter habitats by cutting down trees, building dams, digging canals and building lodges. Beavers not only engineer their own homes, but also have an impact on other animals and plants as well. When beavers dam a stream they slow the movement of water, creating a pond of still water, which changes what plants and animals live there. Beavers also change forests by cutting down certain types of trees and leaving gaps in the forest, where new shrubs and saplings can grow.
3. Give participants free play time with wood blocks. This can be done inside or outside—preferably outside!
4. Next, introduce an engineering challenge. Come up with one on your own, or try these:
 - Build a bridge. Build a bridge using at least 10 blocks.
 - Build a structure that is at least 12 inches high that can support a plastic animal figurine for 10 seconds
 - Build a structure that has at least three windows.
5. Take a tour of participants’ designs and have them share their thought process in creating their structure.



"We often forget that WE ARE NATURE. Nature is not something separate from us. So when we say that we have lost our connection to nature, we've lost our connection to ourselves."

-Andy Goldsworthy

"My sculpture can last for days or a few seconds - what is important to me is the experience of making. I leave all my work outside and often return to watch it decay."

-Andy Goldsworthy

"There is life in a stone. Any stone that sits in a field or lies on a beach takes on the memory of that place. You can feel that stones have witnessed so many things."

-Andy Goldsworthy

"When I make a work, I often take it to the very edge of its collapse, and that's a very beautiful balance."

-Andy Goldsworthy