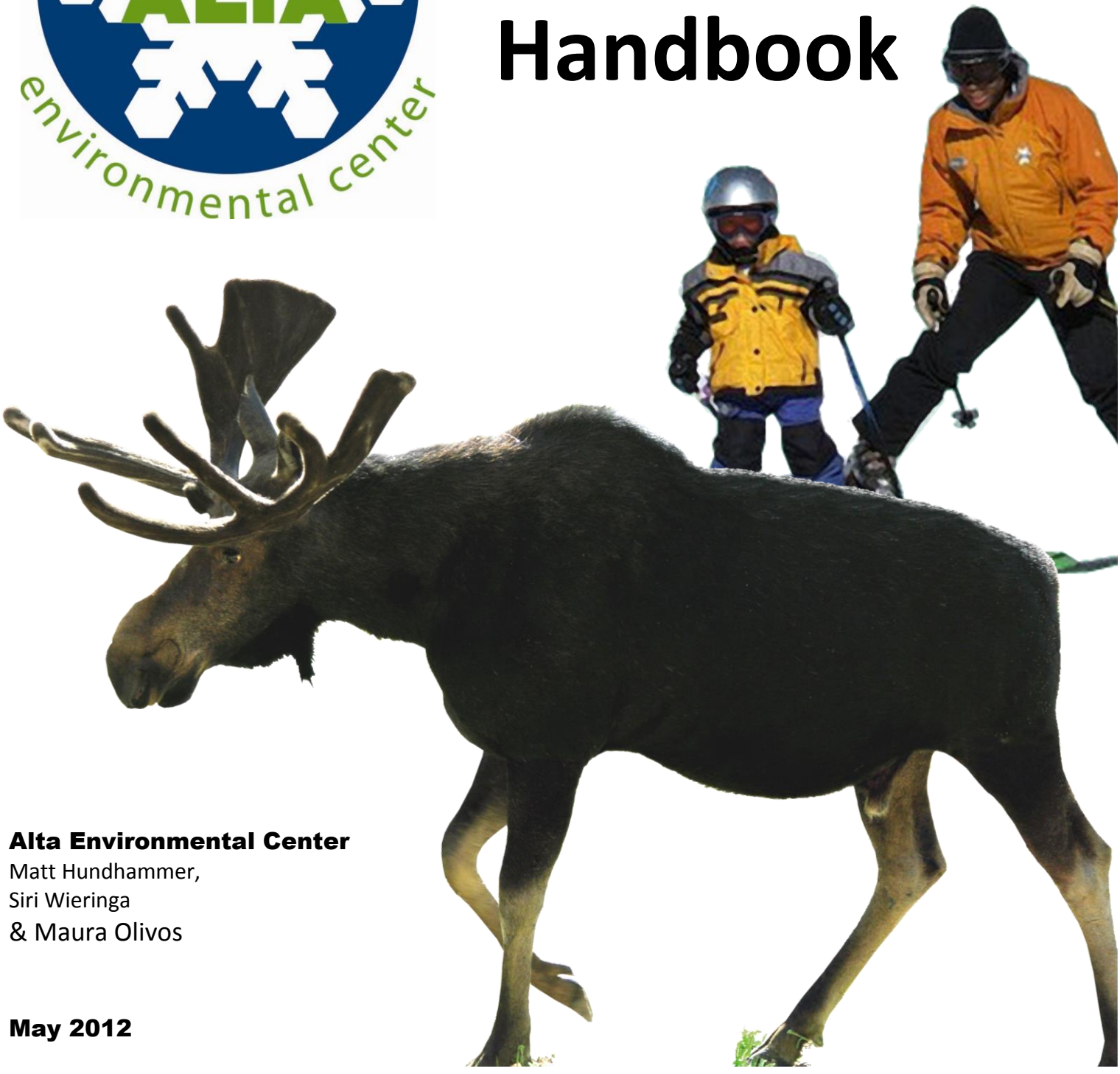
SKE-COLOGY

K-12 Educator's Handbook



Alta Environmental Center
Matt Hundhammer,
Siri Wieringa
& Maura Olivos

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SKE-COLOGY

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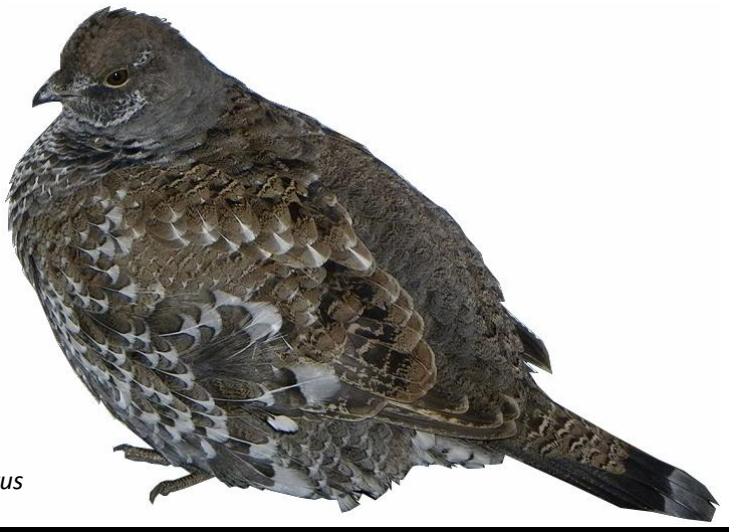

Bird Image: Blue Grouse – *Dendraaapus obscurus*

SKE-COLOGY

ACKNOWLEDGEMENTS

The Alta Environmental Center (AEC) could not have completed this program without the generous guidance and effort by our partners. The following organizations and people helped to edit the material and spread awareness of the SKE-COLOGY program, and are always partners in helping to build a greater appreciation for Alta's environment and history.

- Utah Society for Environmental Education – Andreé Walker-Bravo and Charice Bourdeaux
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- Alf Engen Ski School - Robyn Christiansen, Dave "Hoopa" Robinson, Julian Cordova, Alan Engen, Julia Head and Caroline Olsen
- Andy White, Salt Lake City Science Teacher & AEC Green Team Member
- SKE-COLOGY – National Ski Area Association
- U.S. Forest Service

SKE-COLOGY

INTRODUCTION

Welcome to Alta Ski Area's environmental education offering, SKE-COLOGY. As an expression of our commitment to reduce our company-wide environmental impact we have pursued environmental education as a means to give back to our community by providing an informational offering to Alta's residents and visitors concerning the ubiquitous natural environment surrounding us here at Alta. As a function of our gratitude to Utah's formal and informal educators we have provided a list of the Utah Core Curriculum grade course-specific standards and objectives met by Alta's environmental education program. With the assistance of our educator's handbook, program brochure, and informational sign tour we hope that you have all the tools necessary to meet the needs of your educational pursuit.

WHAT IS ENVIRONMENTAL EDUCATION?

Environmental Education (EE) is creating a fluid connection between individuals and their environment. It's taking education outside the classroom's four square walls and turning the great outdoors into a multi-subject, standard-meeting, educational experience, which is what Alta SKE-COLOGY is all about. The intent of this program is to provide formal and non-formal educators with an activity that forms a synthesis between Utah core standard requirements and outdoor education. This manual is aimed to help facilitate easy lesson planning related to SKE-COLOGY and outdoor education.

This handbook is designed for educators of all types. Formal Educators will find material that correlates with the core standards of K-12th graders and Home School students. Non-formal educators such as naturalist tours or ski school instructors can also use this handbook as a resource. The SKE-COLOGY signs that correlate with this handbook can be accessed by skis during the winter and on foot in the summer at Alta Ski Area.

Flower Image: Rocky Mountain Penstemon – *Penstemon strictus*

WHAT IS SKE-COLOGY?

SKE-COLOGY is an environmental education program used at ski resorts across the country and is modified at each resort to address local wildlife, habitat, and environmental issues. The SKE-COLOGY curriculum is centered on explanatory signs that give information on local animals and their habitats. The program was originally designed for use by non-formal educators, more specifically ski school instructors, and by visiting skiers.

At Alta Ski Area, the SKE-COLOGY program was enhanced to include ten signs providing information on Alta's ecosystem in the winter and summer, correlated to K-12 Utah core standards for the formal educator as well, and assigned Global Positioning System (GPS) coordinates. Signs are located on two beginner runs in the winter and one primary beginner-hiking trail in the summer, and each sign has a different environmental or social responsibility topic.

SKE-COLOGY

How do I use this Handbook?

This handbook contains four sections that provide formal educators with the vision to see how Alta SKE-COLOGY can meet Utah core curriculum standards for different grade levels or give non-formal educators additional resources to enhance participants' experiences. The sections are designed and organized to allow for easy reference. You may also use the Table of Contents to move swiftly to your desired section of the handbook.

1. Cross Reference Charts
2. Signs and Core Standards Correlation
3. K-12th Relevant Grade Core Standards
4. Resources
    - SKE-COLOGY Brochure Map
    - SKE-COLOGY Signs
    - Glossary
    - Organizations Resource Guide
    - Literature Resource Guide
    - Handbook Works Cited & References

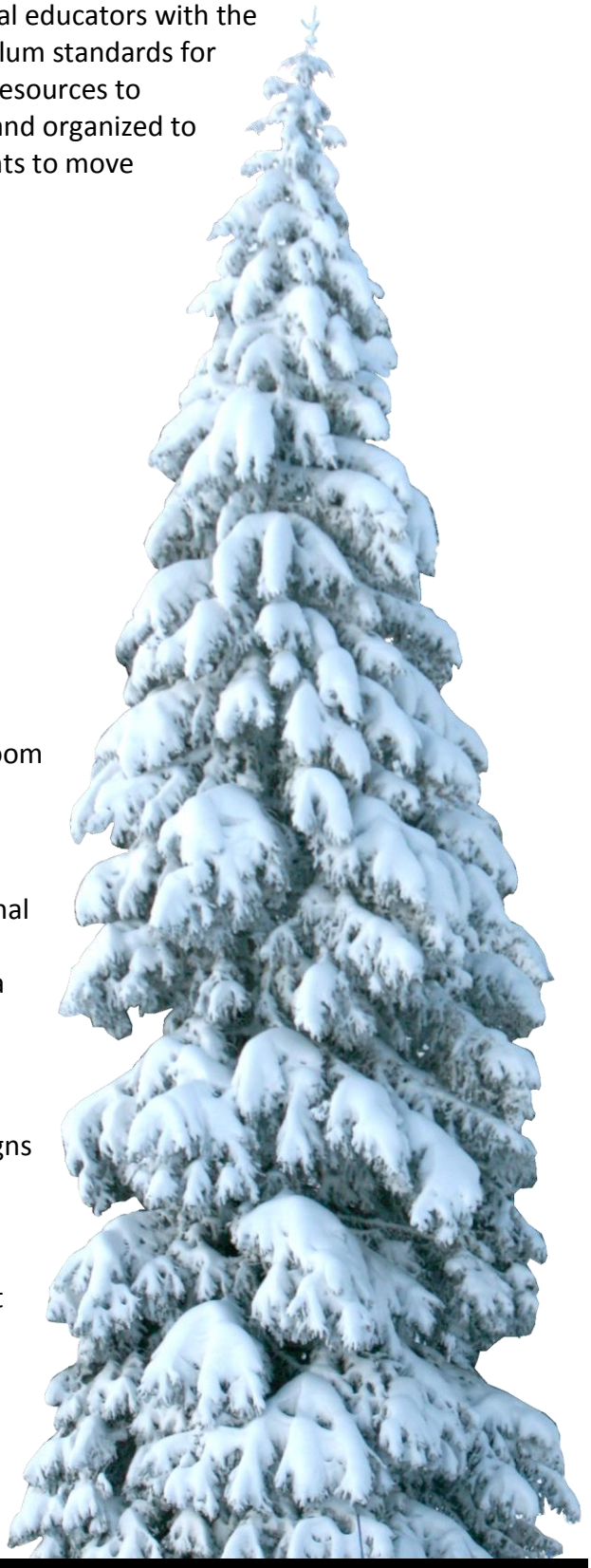
In addition, the program includes conceptual questions, map/brochure, "EE" resource guides, and a glossary. These additions are for teachers supporting extra-curricular or classroom base extensions like field journals and research assignments.

SKE-COLOGY Tour Preparation

Preparing your students for an environmental educational outing can be fun, easy and beneficial. This sub-section gives optional and necessary field trip preparation steps for your Alta outing.

Pre-Field Trip: In the Classroom (Optional)

- Make field journals that would correlate with the signs you plan to see
- Consider Alta SKE-COLOGY conceptual questions for essay prompts.
- Outline charts, graphs and tables that you may want the students to fill in.
- Identify supplemental curriculum for your Alta visit form the Organizations Resource Guide.



Tree Image: Engelmann Spruce – *Picea engelmannii*

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Things to Know for Your Field Trip

This section is here to help the educators, trip leaders or students be prepared for a few hours to a whole day in Alta. You can print this page and the next for chaperones or to give students the activity of preparing for high elevation recreation.

1. **Weather:**
   - ✓ Check the National Weather Service to view the forecasted weather for your trip date. You can also go to www.alta.com > MTN REPORT & WEATHER

2. **Appropriate Dress Attire**: Weather and conditions during the months of May, June and October are always variable; therefore we recommend avoiding field trips during those months.
   - Winter (December – April)
     - ✓ Layering is always preferable to heavy garments
     - ✓ Water resistant pants, jacket, and gloves
     - ✓ Eye protection such as goggles or sunglasses
     - ✓ A warm hat
     - ✓ Skis, boots, and poles may be rented from the Alta Ski Shop, located on the east side of the Wildcat Ticket Office building.
   - Summer (July – September)
     - ✓ Supportive footwear
     - ✓ Light breathable layers
     - ✓ Warmer, wind-blocking outer layers (raincoat and jeans)
     - ✓ Hat

3. **Supplies Needed:**
   - ✓ Water – Bring and drink plenty of water. There are water fountains at the Town Park, Albion Base and Campground Parking Lot in Albion Basin.
   - ✓ Snacks – It is easy to exert oneself above 8,500 feet and higher elevations. Students and adults may get famished sooner and snacks are an easy way to prevent serious health issues.
   - ✓ Sunscreen – SPF 15 works just fine; just remember to reapply as a group every hour.
   - ✓ Backpack – Group leaders may find it easiest if students carry their own supplies.

4. **Duration & Ability:**
   - Winter – The tour may be completed on two beginner runs, Crooked Mile and Home Run, off the Sunnyside Lift, Alta's primary beginner lift and area. Depending on the group size and skill level this may take 1 to 2 hours. Signs are positioned in locations accessible by skiers of most levels. It is recommended that all skiers know how to turn and stop before accessing the Sunnyside Lift.
   - Summer – The sign tour is located on the Albion Meadows trail, a beginner 2-mile round-trip trail. Depending on the pace and group size the completion of the program may take between 1 to 3 hours.

5. Risks: Outdoor activities at high elevation require a higher level of physical exertion than participating adults and children may be used to. If a member of your group becomes ill or hurt while on the tour, your first priority is to the wellbeing of that person. These are actions to take to prevent issues or in case of emergency.

- Prevention
  - ✓ Stay hydrated – drink plenty of replenishing fluids like water or activity drinks.
  - ✓ Know where you are – keep an eye out for landmarks, signs, and know your directions North, South, East and West.
  - ✓ Take a rest – often groups are comprised with many individuals with varying levels of fitness, so it is important to schedule in 5-10 min breaks.
  - ✓ Be prepared – it is recommended that all educators carry with them a basic first aid kit and be certified in First Aid and CPR.
- Emergencies
  - ✓ Winter – Call Ski Patrol at any business or send a group member to call 801.359.1078 x0 with the location, age and condition of injured party.
  - ✓ Winter – During ski season operations, the Alta Clinic is open from 8 am to 5 pm at 801.742.2273.
  - ✓ Summer – Call the Town of Alta at 801.742.3522.

6. Tips on Tour Mechanics

- Explain the course, goal and objectives of the tour before you see the signs.
- Stay in the lead, have a chaperone or other adult walk in the rear of the group.
- Repeat questions and directions for those who may not have heard.
- Capitalize on teachable moments:
  - Unexpected wildlife sightings
  - Questions from students
  - Natural occurrences
  - Comparing where they live to this environment

7. Post Field Trip: In the Classroom (Optional)

- Reflection journaling about the experience.
- Consider Alta SKE-COLOGY conceptual questions for essay prompts.
- Outline charts, graphs and tables that you may want the students to fill out based off the tour.
- Identify supplemental curriculum from the Organizations Resource Guide.

Bird Image: Clark's Nutcracker – *Nucifraga columbiana*

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CROSS REFERENCE CHARTS

This section displays the Alta SKE-COLOGY information in easy-to-read cross-correlation charts. The attached four charts are the program's attempt to give educators an idea of which signs best fit or cross-reference with Utah Core Standards, grade level, and subject matter. The following are descriptions of each of the graphs and how they can be read, but the program relies on educator's professional judgment to get the most out of these resources:

- **Sign Verbiage Chart**
  This chart contains the language written on all ten of the signs, so that educators can assess all the information in one location before visiting the signs in person.
- **Cross Reference Subject Matter**
  This chart reveals what signs have the same cross-reference subject matter associated with a particular grade level. In this way, if an educator wants to teach a particular subject, they can see what signs would best fit that subject for the lesson.
- **Best Fit Grade Level**
  This chart reveals what signs and information are most appropriate for a given grade level. In this way, an educator can easily see what signs fit with their student's grade, and tailor the Alta SKE-COLOGY tour to their specific curriculum needs.
- **Standards Correlation Chart**
  This chart reveals all of the Utah Core Curriculum standards that are met by each of the ten signs. The standards displayed are within the subjects of Science, Biology, Social Studies, Utah Studies, Geography For Life, and Earth Systems.

Butterfly &Plant Image: Western Tiger Swallowtail – *Pterourus rutulus* and Horstail – *Equisetum arvense*

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SKE-COLOGY Signs Verbiage Chart						
Sign	**Subjects**	**Side 1:** Animal & Tracks	**Side 1 Questions:** 1. Who Am I? 2. Question on subject	**Side 2:** Quick Facts - K-3rd grade	**Side 2:** Detailed Explanation 4-12th grade	**Side 2:** Further Thought
1	**Recreational Stewardship**	Red Squirrel	What are some things you can do to help protect my home?	I live here in Alta. I build my nests high in the trees. From there I can see everything! You can help protect my mountain home by respecting these rules: 1. No Dogs 2. No Swimming 3. Camp at least 200 feet from water 4. Leave-No-Trace 5. Pack it in, Pack it out	As a visitor in this alpine ecosystem, you are a guest in the habitat of hundreds of living things. While you are visiting you can help preserve natural habitat by following a Leave-No-Trace policy. This means leaving any place you go just the way you found it or cleaner.	Why is it important to protect places like Alta?
2	**Habitat**	Snowshoe Hare	What do I need to survive in Alta?	Like all other living things I need: 1. Food – I eat young tree bark. 2. Water - I 'drink' snow. 3. Shelter - I live in burrows under bushes and logs.	An animal's habitat must provide the essentials for survival: food, water and shelter. Many habitats exist within Alta's alpine ecosystem. In addition to forests, lakes and meadows, animals at Alta inhabit the area's wetlands, rocky outcroppings and high ridges. Due to Alta's varied landscape, there are many habitat types and a diversity of wildlife that calls Alta home.	Where do you live?
3	**Adaptation**	Porcupine	How do I manage to survive in the wild?	I have 20,000 long, pointy quills on my back.· I do not throw quills, but slap my enemies with them when attacked.· I have scaly feet to climb trees.· When I'm around trees or bushes my fur helps me camouflage.· I make my cave home in rock or under roots.	Every living thing in an ecosystem must adapt its body and behavior to survive and contribute to the function of its environment. Ecosystems are full of niches, or jobs that animals and plants adapt to fill. Porcupines use their scaly feet to climb trees and eat bark. Sometimes they kill the trees. This is good because it makes habitat for other species. Porcupines are slow-moving herbivores, their bodies have adapted by growing quills for protection against predators.	Can you think of adaptations that would be helpful in Alta?
4	**Migration / Hibernation**	Yellow Bellied Marmot	What do I do during the winter?	In the winter: I hibernate in a deep burrow underground. I sleep all winter. I live off my body fat for food. My heartbeat slows down. My body temperature drops to just above freezing.	To prepare for winter, animals do different things to get the food they need to survive. Animals will hibernate, migrate, or store food. Those that migrate must expend lots of energy to travel far distances. Animals that hibernate must be sure to eat a LOT of food during the summer. Those animals that collect food must store enough to last them the entire winter.	What do you do to prepare for winter?
5	**Interdependence**	Clark's Nutcracker	Why is my favorite tree the Limber Pine?	My favorite tree is the Limber Pine because: I love to eat its seeds, I'm the only bird in Alta that can open its pinecones, We are friends, It gives me food to eat and I plant its seeds. We both live in the mountains.	Plants and animals cannot exist without certain other plants and animals. When two living things are reliant on each other for survival they are interdependent. The relationship the Nutcracker has with the Limber Pine benefits both species. This is called a mutualistic relationship. A parasitic relationship benefits one organism and harms the other. A commensalistic relationship benefits one organism without doing harm to the other. Within Alta's high alpine ecosystem there are hundreds of interdependent relationships.	Can you think of other relationships where living things are dependent on each other?
6	**Geologic History**	Mountain Goat	How was my home formed?	I live high up in the rocky cliffs. My hooves have soft, rubber like pads that act like hiking boots. Sometimes you can see me from the road as you leave Little Cottonwood Canyon.	The rocky mountain-tops that I call home were formed by: Earthquakes pushing up the earth's crust, A glacier, two skyscrapers tall, that carved out this canyon 16,000 years ago· Snow, ice, water and wind scraping away rock. 2nd: Alta's Geologic History - Geology is the study of rocks. Alta's geology tells the story of millions of years of earthquakes, glacial ice and weather. The Mountain Goat's high rocky ridges rose in elevation 25 million years ago when two plates from the earth's crust collided, causing an earthquake that pushed one plate up to create mountains. 16,000 years ago a huge glacier, twelve miles long, two miles wide and 2,000 ft high carved the mountains. The downhill movement of this ice, snow and water created Little Cottonwood Canyon's "U" shape. Alta's mountains continue to be pushed higher and weather continues to erode and redeposit rock.	Do you think that Alta's mountains are still changing?
7	**Climate**	Cougar	How do I handle Alta's climate?	My big paws help me stay on top of deep snow. I can track my prey's scent in the snow. My thick fur keeps me warm in the rain & snow. I'm big and strong to climb trees & mountains.	Climate is the average weather over time and is influenced by elevation, geography and bodies of water like the Great Salt Lake. Alta's unique location, elevation and topography allows for an average of over 500 inches of "the greatest snow on earth" every winter.	Can you describe how climate affects your life?
8	**Watershed**	Ermine	Why is snow important to you and me?	Snow is important to me because: In the winter, snow helps me hide from predators & prey. I make my home in the snow. The white snow helps me see my prey. I need snow for water.	Snow is important to the Ermine and people for water and food. Alta's peaks and the surrounding mountains are a natural watershed allowing mass amounts of snow to be stored for later use. Little Cottonwood Canyon is the second largest water source for homes and farms of Salt Lake Valley. From mountains to taps, help protect your watershed to keep water clean for you and the plants and animals of Alta.	Why is the snow at Alta important to you?
9	**Cultural History**	Coyote	How are you and I the same?	Just like people: I live in a community - mine is called a pack. I am very social – my pack and I work together to find food. I listen to leaders – a male and female are in charge of my pack. I talk - I howl to find other members of my pack. I am a mammal.	Over the past 140 years the town of Alta has gone through a dramatic transformation from a mining town to a skiing community. In 1872, Alta's population reached a seasonal high of 8,000 people. After the mining boom, much of Alta's land was turned into National Forest and became a ski area in 1938. Now the town has a population of 370, a sustainable economy and is surrounded by a healthy forest that will be enjoyed for generations to come.	How can culture change the environment?
10	**Conservation**	Moose	What is my history in Alta?	I am the largest animal in Alta. My long legs help me walk through wetlands. I used to live in Alta over 100 years ago. When mining came to Alta I had to move out. Trees were cut down to build mine tunnels and houses. After the mining stopped people began planting trees. I moved back to Alta when the forest came back.	The extensive loss of vegetation on Alta's slopes during the mining boom caused many animals to leave Alta in search of better habitat. Since 1937, Alta Ski Lifts has planted thousands of native trees and plants to prevent soil erosion, reduce avalanche danger, increase water quality and restore native habitat for animals like the Moose. Alta Ski Lifts Company continues to act as a conservation steward to ensure that Alta's ecosystem remains healthy and thriving for generations to come.	Why is conservation important?

This easy-to-read layout of each signs' verbiage shows all the nomenclature, conceptual questions, and subject matter of the Alta SKE-COLOGY tour. The tour signs are set up to have K-3rd grade appropriate answers to each question from Side 1 represented in short and/or bulleted responses. Also on the signs are more detailed answers for 4th -12th grade, which also introduce the main vocabulary words of the signs' topic.

Cross Reference Signs by Subject Matter												
Sign	Subject	Animal	1	2	3	4	5	6	7	8	9	10
1	Recreational Stewardship	Red Squirrel					🐾			🐾	🐾	🐾
2	Habitat	Snowshoe Hare			🐾		🐾				🐾	
3	Adaptation	Porcupine		🐾		🐾	🐾		🐾			🐾
4	Winter Survival	Yellow Bellied Marmot		🐾	🐾				🐾	🐾		
5	Interdependence	Clark's Nutcracker	🐾	🐾	🐾					🐾		
6	Geologic History	Mountain Goat		🐾					🐾	🐾		
7	Climate	Cougar			🐾	🐾		🐾		🐾		
8	Watershed	Ermine	🐾			🐾	🐾	🐾	🐾			🐾
9	Cultural History	Coyote	🐾	🐾								🐾
10	Conservation	Moose	🐾		🐾					🐾	🐾	

This graph is designed to show which signs have the strongest correlation with each other. The subject matters in this case have strong overlapping concepts and would compliment each other if educators were looking to tailor the Alta Ske-Cology tour to their specific curriculum needs or student's grade.

Best Fit Grade Level												
Sign	Subject	Animal	K	1	2	3	4	5	6	7	8	9 - 12
1	Recreational Stewardship	Red Squirrel								🐾		🐾
2	Habitat	Snowshoe Hare								🐾	🐾	🐾
3	Adaptation	Porcupine	🐾	🐾	🐾					🐾		🐾
4	Winter Survival	Yellow Bellied Marmot	🐾									🐾
5	Interdependence	Clark's Nutcracker								🐾	🐾	🐾
6	Geologic History	Mountain Goat					🐾			🐾	🐾	🐾
7	Climate	Cougar		🐾	🐾		🐾			🐾		🐾
8	Watershed	Ermine	🐾	🐾			🐾				🐾	🐾
9	Cultural History	Coyote								🐾	🐾	🐾
10	Conservation	Moose								🐾	🐾	🐾

This graph is meant to offer the educator the best-fit grade level corresponding with each sign marked with a paw. Blue indicates next best-fit grad level. In this way, an educator can easily see what signs fit with their student's grade, and tailor the Alta SKE-COLOGY tour to their specific curriculum needs.

SKE-COLOGY Utah Core Standards Correlation Chart																							
Sign	Subject	K		1		2		3		4		5	6	7			8			9 to 12			
		S	SS	S	SS	S	SS	S	SS	S	SS	S	SS	S	US	GL	S	US	GL	ES	BIO	US	GL
1	Recreational Stewardship		2		2 *3		*3	2	1				4		1	*1 5		1	*1		1	1	*1
2	Habitat	4	3 4	2 4	*3	4	*3	2	1	5	1	5		4 5	1	*1	2	1	*1 2		1	1	*1 2 5
3	Adaptation	1 4	4	1 4	*3	1 4	*3	2	1	5	1	5		4 5		*1					1 5		*1
4	Winter Survival	1 4	3 4	1 4	*3	1 4	*3	2	1	5		5		4	1	*1	2	1	*1	2	1 5	1	*1
5	Interdependence	1 4	4	1 4	*3	1 4	*3	2	1	5		5	4	4	1	*1 5	2	1	*1 5		1 5	1	*1 5
6	Geologic History	1 2 4	3	1 2 4	*3	1 2 4	*3	2	1	1 2 3 5	1	2 5		4	1	*1 2 3 6	3	1	*1 2 3 4 6	2 3 4	1 5	1	*1 2 3 4 6
7	Climate	1 4		1 2 4	*3	1 2 4	*3	2	1	1 2 5	1	2 5		4	1	*1 2 3		1	*1	2 4	1	1	*1 2
8	Watershed	1 4	2 3	1 2	2 *3	1 2	*3	2	1	1 2 5	1	5	4	4	1	*1	2	1	*1 2	2 4	1	1	*1 2
9	Cultural History	4	2 3 4		2 *3		1 *3	2	1 2		1 2		4	5	1 2 4 5	*1 2 4 6		1 2 4 5	*1 4 5 6		1	1 2 4 5	*1 2 4 5 6
10	Conservation	4	2 4		2 *3	1 4	1 3	2	1 2	5	1 2		4	4	1 2 4 5	*1 2 3 4 5 6		1 2 4 5	*1 2 3 4 5 6		1	1 2 3 4 5	*1 2 3 4 5 6

Notes: This chart is designed to act as an easy reference to determine each sign's Utah Core Standard numbers by grade and subject matter.

1. SS = Social Studies, US = Utah Studies, GL = Geography for Life, S = Science, BIO = Biology, ES = Earth Systems
2. * = Standard is met if Educator's utilize the maps provided within the program.
3. All grades meet 8 or more common core standards in Language Arts
4. Mathematics may be applied too any number of signs in the form of measurement and locations.

SKE-COLOGY

SIGNS AND UTAH EDUCATIONAL CORE STANDARDS CORRELATION

Alta's SKE (and HIKE)-COLOGY program is designed in part to assist educators in addressing some of the State Educational Core Standards primarily in the areas of Language Arts, Science and Social Studies. The tens signs that make up the Alta SKE-COLOGY program are placed throughout the beginner ski area in the winter and along the beginner-intermediate Albion Meadows Hiking Trail in the summer. Each sign within the program introduces visitors, skiers, students and educators alike to the story of Alta's wildlife, ecology and history. Trail sign themes may be addressed at many different levels and it is hoped visitors may include as many signs as possible in their tour, integrating them into a complete ecosystem picture.

The signs are designed to engage kids by focusing on similarities between humans and animals, human activities and ecosystems, and fun educational facts on Alta. Thought provoking questions are also included to support observations and facilitate deeper thought.

Each sign has been correlated with Utah Core Curriculum Standards to assist educators in deciphering which signs might be most relevant by grade. The colored tables below each sign present the level of correlation using a three-tiered color code: **light blue** = 1-2 grade level standards met, **dark blue** = 3-4 grade level standards met, and **green** = 5 or more grade level standards met. To view the standards in detail you may refer to the K-12th Grade Core Standards or to view other correlating charts to better prioritize your classroom's time with the Alta SKE-COLOGY tour you may reference any of our easy to use Charts.

Core Correlating Legend			
0 standards	**1-2 standards**	**3-4 standards**	**5-8 standards**
Language Arts		LA	
Social Studies		SS	
7-12th Grade		Utah Studies – US	Geography for Life – GL
Science		S	
9-12th Grade		Earth Systems -ES	Biology - Bio

SKE-COLOGY

I am a Red Squirrel!	
I live here in Alta. I build my nests high in the trees. From there I can see everything! You can help protect my mountain home by respecting these rules… 1. Dogs by permit only 2. No Swimming 3. Camp at least 200 feet from water 4. Leave-No-Trace 5. Pack it in, Pack it out	As a visitor in this alpine ecosystem, you are a guest in the habitat of hundreds of living things. While you are visiting you can help preserve natural habitat by following a Leave-No-Trace policy. This means leaving any place you go just the way you found it or cleaner.
Why is it important to protect places like Alta?	

Recreational Stewardship										
Sign 1	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										

I am a Snowshoe Hare!	
Like all other living things I need: 1. Food – I eat young tree bark. 2. Water - I 'drink' snow. 3. Shelter - I live in burrows under bushes and logs.	An animal's habitat must provide the essentials for survival: food, water and shelter. Many habitats exist within Alta's alpine ecosystem. In addition to forests, lakes and meadows, animals at Alta inhabit the area's wetlands, rocky outcroppings and high ridges. Due to Alta's varied landscape, there are many habitat types and a diversity of wildlife that calls Alta home.
Where do you live?	

Habitat										
Sign 2	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										

SKE-COLOGY

I am a Porcupine!

- I have 20,000 long, pointy quills on my back.
- I do not throw quills, but slap my enemies with them when attacked.
- I have scaly feet to climb trees.
- When I'm around trees or bushes my fur helps me camouflage.
- I make my cave home in rock or under roots.

Every living thing in an ecosystem must adapt its body and behavior to survive and contribute to the function of its environment. Ecosystems are full of niches, or jobs that animals and plants adapt to fill.

Porcupines use their scaly feet to climb trees and eat bark. Sometimes they kill the trees. This is good because it makes habitat for other species. Porcupines are slow-moving herbivores, their bodies have adapted by growing quills for protection against predators.

Can you think of adaptations that would be helpful in Alta?

Adaptation										
Sign 3	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										

I am a Yellow Bellied Marmot!

In the winter…

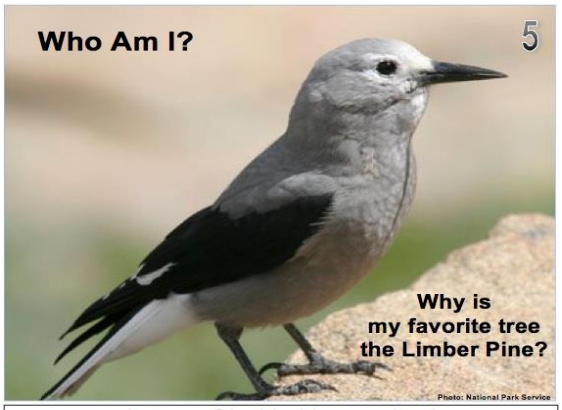
- I hibernate in a deep burrow underground.
- I sleep all winter.
- I live off my body fat for food.
- My heartbeat slows down.
- My body temperature drops to just above freezing.

To prepare for winter, animals do different things to get the food they need to survive. Animals will hibernate, migrate, or store food. Those that migrate must expend lots of energy to travel far distances. Animals that hibernate must be sure to eat a LOT of food during the summer. Those animals that collect food must store enough to last them the entire winter.

What do you do to prepare for winter?

Winter Survival										
Sign 4	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										

SKE-COLOGY



I am a Clark's Nutcracker!

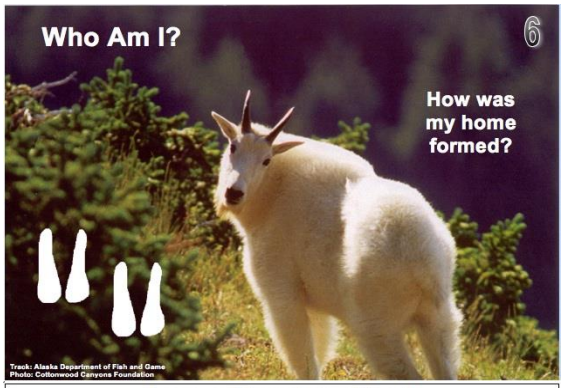
My favorite tree is the Limber Pine because…

- I love to eat its seeds.
- I'm the only bird in Alta that can open its pinecones.
- We are friends. It gives me food to eat and I plant its seeds.
- We both live in the mountains.

Plants and animals cannot exist without certain other plants and animals. When two living things are reliant on each other for survival they are interdependent. The relationship the Nutcracker has with the Limber Pine benefits both species. This is called a mutualistic relationship. A parasitic relationship benefits one organism and harms the other. A commensalistic relationship benefits one organism without doing harm to the other. Within Alta's high alpine ecosystem there are hundreds of interdependent relationships.

Can you think of other relationships where living things are dependent on each other?

Interdependence										
Sign 5	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										



I am a Mountain Goat!

- I live high up in the rocky cliffs.
- My hooves have soft, rubber like pads that act like hiking boots.
- Sometimes you can see me from the road as you leave Little Cottonwood Canyon.

The rocky mountain-tops that I call home were formed by…

- Earthquakes pushing up the earth's crust
- A glacier, two skyscrapers tall, that carved out this canyon 16,000 years ago
- Snow, ice, water and wind scraping away rock

Do you think that Alta's mountains are still changing?

Alta's Geologic History

Devil's Castle

Photo: Matt Hundhammer

Geology is the study of rocks. Alta's geology tells the story of millions of years of earthquakes, glacial ice and weather. The Mountain Goat's high rocky ridges rose in elevation 25 million years ago when two plates from the earth's crust collided, causing an earthquake that pushed one plate up to create mountains. 16,000 years ago a huge glacier, twelve miles long, two miles wide and 2,000 ft high carved the mountains. The downhill movement of this ice, snow and water created Little Cottonwood Canyon's "U" shape. Alta's mountains continue to be pushed higher and weather continues to erode and redeposit rock.

Geologic History										
Sign 6	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										

SKE-COLOGY

I am a Cougar!	
• My big paws help me stay on top of deep snow. • I can track my prey's scent in the snow. • My thick fur keeps me warm in the rain & snow. • I'm big and strong to climb trees & mountains.	Climate is the average weather over time and is influenced by elevation, geography and bodies of water like the Great Salt Lake. Alta's unique location, elevation and topography allows for an average of over 500 inches of "the greatest snow on earth" every winter.
Can you describe how climate affects your life?	

Climate										
Sign 7	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										

I am an Ermine!	
Snow is important to me because… • In the winter, snow helps me hide from predators & prey. • I make my home in the snow. • The white snow helps me see my prey. • I need snow for water.	Snow is important to the Ermine and people for water and food. Alta's peaks and the surrounding mountains are a natural watershed allowing mass amounts of snow to be stored for later use. Little Cottonwood Canyon is the second largest water source for homes and farms of Salt Lake Valley. From mountains to taps, help protect your watershed to keep water clean for you and the plants and animals of Alta.
Why is the snow at Alta important to you?	

Watershed										
Sign 8	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										

SKE-COLOGY

I am a Coyote!

Just like people…

- I live in a community - mine is called a pack.
- I am very social – my pack and I work together to find food.
- I listen to leaders – a male and female are in charge of my pack.
- I talk - I howl to find other members of my pack.
- I am a mammal.

Over the past 140 years the town of Alta has gone through a dramatic transformation from a mining town to a skiing community. In 1872, Alta's population reached a seasonal high of 8,000 people. After the mining boom, much of Alta's land was turned into National Forest and became a ski area in 1938. Now the town has a population of 383, a sustainable economy and is surrounded by a healthy forest that will be enjoyed for generations to come.

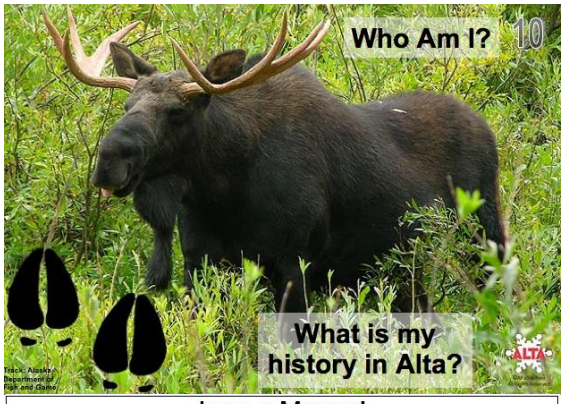
How can culture change the environment?

Alta's Cultural History

Town of Alta Circa 1870

Photo: Alf Engen Archive

Cultural History										
Sign 9	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										



I am a Moose!

- I am the largest animal in Alta.
- My long legs help me walk through wetlands.
- I used to live in Alta over 100 years ago.
- When mining came to Alta I had to move out.
- Trees were cut down to build mine tunnels and houses.
- After the mining stopped people began planting trees.
- I moved back to Alta when the forest came back.

The extensive loss of vegetation on Alta's slopes during the mining boom caused many animals to leave Alta in search of better habitat. Since 1937, Alta Ski Lifts has planted thousands of native trees and plants to prevent soil erosion, reduce avalanche danger, increase water quality and restore native habitat for animals like the Moose. Alta Ski Lifts Company continues to act as a conservation steward to ensure that Alta's ecosystem remains healthy and thriving for generations to come.

Why is conservation important?

Conservation										
Sign 10	K	1	2	3	4	5	6	7	8	9 - 12
LA										
SS										
US										
GL										
S										
ES										
BIO										

SKE-COLOGY

K – 12TH GRADE CORE STANDARDS

This section of the handbook describes the Utah Core Curriculum standards as well as Language Arts Utah Common Core State Standards (CCSS) that are satisfied for each grade while visiting the Alta SKE-COLOGY tour. In order to meet all standards and objectives, completion of the entire activity (all ten signs) would need to be made. For each grade level there is a chart that explains the educational purpose of each SKE-COLOGY sign. The left column of the chart gives a brief summary of the subject matter and the right column discusses how the sign satisfies corresponding standards by explaining what students can expect to learn. In addition, the right column gives discussion lead points for each signs' "further thought" question. Immediately after each chart are the entire grade's standards and objectives written out that the SKE-COLOGY program satisfies. For the purposes of relevancy, this handbook conservatively identifies relevant Utah core standards, objectives and common core standards. Depending on each educator's focus, outside curriculum and interpretation there is room to build upon the program's state standard educational relevance.

Image: Devil's Castle

SKE-COLOGY

KINDERGARTEN

Sign 1: Recreational Stewardship This sign introduces the Red Squirrel and how visitors can help protect their natural environment and watershed through appropriate behavior and recreational etiquette.	This sign satisfies 1 standard within the subject of Social Studies and numerous common core standards in Language Arts. Students learn to recognize their roles and responsibilities of being a good citizen and protecting the environment around them.
	Why is it important to protect places like Alta? It is very important protect Alta from pollution and trash because Alta provides drinking water, diversity of beautiful plants and a scenic home for both people and wildlife.
Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies numerous standards within Language Arts, and 3 standards between Social Studies and Science. Students learn to investigate living things, and recognize the difference between people's basic needs (food, shelter and water) and wants (toys, games, treats).
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
Sign 3: Adaptation This sign introduces the Porcupine and how its unique characteristics help it to survive in the wild allowing students learn how animals adapt to an environment.	This sign satisfies numerous standards in Language Arts and 3 standards between Science and Social Studies. Students begin to get an understanding of Life Science's adaptation through the study of the porcupine's abilities.
	Can you think of adaptations that would be helpful in Alta? Alta can be very cold in the winter, so it would be helpful to have a warm coat. It would also be helpful to have the ability to camouflage to be a good hunter and find food.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students learn about another mechanism (hibernation or migrations) animals may do to survive winter.	This sign satisfies numerous standards in Language Arts and 4 standards between Science and Social Studies. Students start to investigate the alternatives for winter survival applying scientific process.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive.	This sign satisfies numerous standards in Language Arts and 3 standards between Science and Social Studies. This sign helps students to learn about the different relationships between plants and animals and gain an understanding of Life Science.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients.
Sign 6: Geologic History This sign introduces the Mountain Goat and its home of the rocky cliffs. Students learn to think about how the mountains were formed and how the goats survive in them.	This sign satisfies numerous standards in Language Arts and 4 standards between Social Studies and Science. Students begin to investigate non-living things to understand the changes to them over time and how it affects living organisms.
	Do you think that Alta's mountains are still changing? Our earth is constantly moving and shifting, along with new plants and animals living on the surface.
Sign 7: Climate This sign introduces the Mountain Cougar and how it hunts and survives in Alta's climate.	This sign satisfies numerous standards in Language Arts and 2 standards in Science. Students learn to compare changes in weather over time and investigate living things.
	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.

Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow is for the animals and us.	This sign satisfies numerous standards in Language Arts and 4 between Science and Social Studies. Students begin to recognize their roles and responsibilities of being stewards over their vital basic needs of food, water and shelter.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.
Sign 9: Cultural History This sign introduces the Coyote and how they like to live in communities. Students learn similarities between wildlife and humans and how living in a community is beneficial.	This sign satisfies numerous standards in Language Arts 4 standards between Science and Social Studies. Students will be introduced to roles and responsibilities in a community through the introduction of appropriate social skills for a group.
	How are you and the Coyote the same? We live in communities with leaders, work together communicate with others in our group.
Sign 10: Conservation This sign introduces the Moose and its history of having to adapt with the changes in Alta. Students learn about the history of Alta as a mining town.	This sign satisfies numerous standards in the subjects of Language Arts and 3 standards between Science and Social Studies. Students will learn about the role humans have in their environment and the responsibility we have to take care of our natural resources.
	Why is conservation important? If we don't conserve the places that animals like the moose live, they will no longer have a habitat to eat and find shelter.

CCSS Language Arts

Reading - Informational Text Standard 1: With prompting and support, ask and answer questions about key details in a text.

Reading - Informational Text Standard 4: With prompting and support, ask and answer questions about unknown words in a text

Reading - Informational Text Standard 7: With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).

Reading - Informational Text Standard 10: Actively engage in group reading activities with purpose and understanding.

Speaking and Listening Standard 1 - Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.

- Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
- Continue a conversation through multiple exchanges.

Speaking and Listening Standard 2 - Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.

Speaking and Listening Standard 4 - Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.

Language Standard 4 - Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.

Language Standard 6 - Use words and phrases acquired through conversations, reading and being read to, and responding to texts.

SKE-COLOGY

Science

Standard 1: Students will be able to apply scientific processes, communicate scientific ideas effectively, and understand the nature of science.

- Objective 2: Communicating Science: Communicating effectively using science language and reasoning

Standard 2: Students will gain an understanding of Earth and Space Science through the study of earth materials, celestial movement, and weather.

- Objective 1: Investigate non-living things
- Objective 3: Compare changes in weather over time

Standard 4: Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

- Objective 1: Investigate living things.

Social Studies

Standard 2: Students will recognized their roles and responsibilities of being a good citizen.

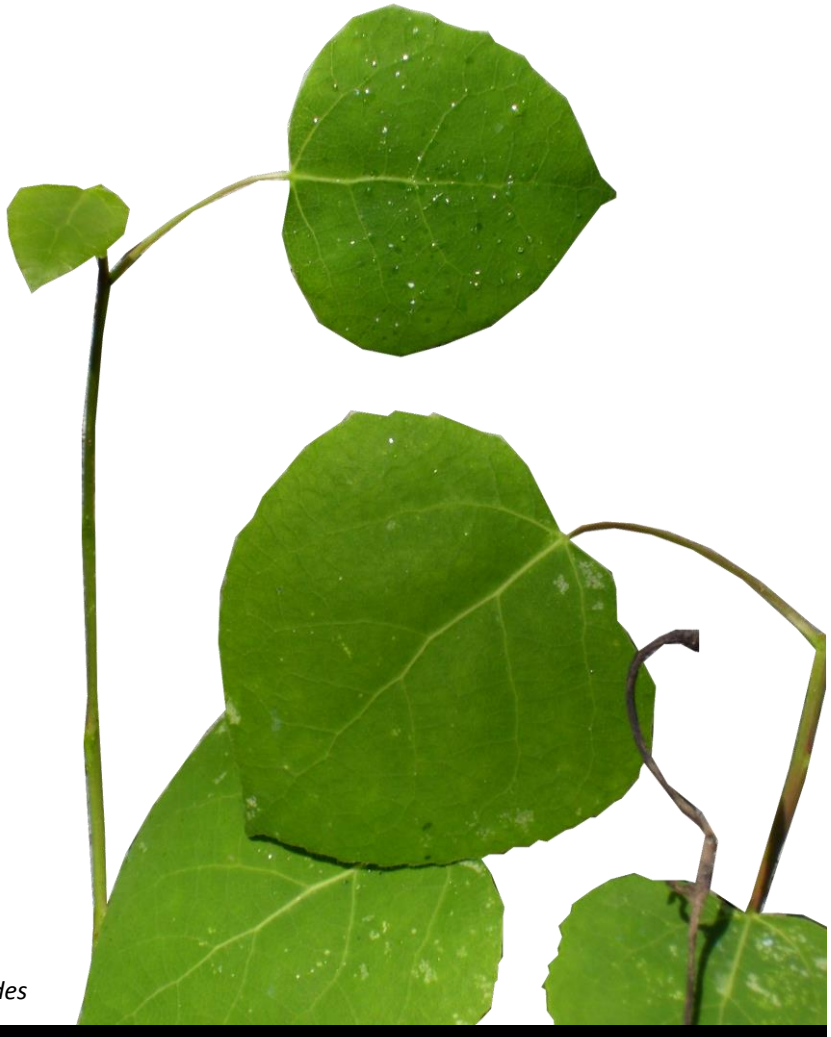
- Objective 1: Demonstrate appropriate ways to behave in different settings.

Standard 3: Students will use geographic terms and tools.

- Objective 1: Identify geographic terms that describe their surroundings.
- Objective 2: Describe the purpose of a map or globe.

Standard 4: Students can explain how humans meet their needs in many ways.

- Objective 1: Recognize that people have basic needs (food, shelter, and clothing) and wants (toys, games, treats).



Plant Image: Aspen – *Populus tremuloides*

SKE-COLOGY

FIRST GRADE

Sign 1: Recreational Stewardship This sign introduces the Red Squirrel and how visitors can help protect their natural environment and watershed through appropriate behavior and recreational etiquette.	This sign satisfies 2 standards within the subject of Social Studies and numerous common core standards in Language Arts. Students learn to recognize their roles and responsibilities of being a good citizen and protecting the environment around them.
	Why is it important to protect places like Alta? It is very important protect Alta from pollution and trash because Alta provides drinking water, diversity of beautiful plants and a scenic home for both people and wildlife.
Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies numerous standards within Language Arts, and 3 standards between Social Studies and Science. Students learn to investigate living things, and recognize the difference between people's basic needs (food, shelter and water) and wants (toys, games, treats).
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
Sign 3: Adaptation This sign introduces the Porcupine and how its unique characteristics help it to survive in the wild allowing students learn how animals adapt to an environment.	This sign satisfies numerous standards in Language Arts and 3 standards between Science and Social Studies. Students begin to get an understanding of Life Science's adaptation through the study of the porcupine's abilities.
	Can you think of adaptations that would be helpful in Alta? Alta can be very cold in the winter, so it would be helpful to have a warm coat. It would also be helpful to have the ability to camouflage to be a good hunter and find food.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students learn about another mechanism (hibernation or migrations) animals may do to survive winter.	This sign satisfies numerous standards in Language Arts and 3 standards between Science and Social Studies. Students start to investigate the alternatives for winter survival applying scientific process.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive.	This sign satisfies numerous standards in Language Arts and 3 standards between Science and Social Studies. This sign helps students to learn about the different relationships between plants and animals and gain an understanding of Life Science.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients.
Sign 6: Geologic History This sign introduces the Mountain Goat and its home of the rocky cliffs. Students learn to think about how the mountains were formed and how the goats survive in them.	This sign satisfies numerous standards in Language Arts and 4 standards between Social Studies and Science. Students begin to investigate non-living things to understand the changes to them over time and how it affects living organisms.
	Do you think that Alta's mountains are still changing? Our earth is constantly moving and shifting, along with new plants and animals living on the surface.
Sign 7: Climate This sign introduces the Mountain Cougar and how it hunts and survives in Alta's climate.	This sign satisfies numerous standards in Language Arts and 4 standards between Science and Social Studies. Students learn to compare changes in weather over time and investigate living things.
	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.

Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow is for the animals and us.	This sign satisfies numerous standards in Language Arts and 4 between Science and Social Studies. Students begin to recognize their roles and responsibilities of being stewards over their vital basic needs of food, water and shelter.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.
Sign 9: Cultural History This sign introduces the Coyote and how they like to live in communities. Students learn similarities between wildlife and humans and how living in a community is beneficial.	This sign satisfies numerous standards in Language Arts 2 standards in Social Studies. Students will be introduced to roles and responsibilities in a community through the introduction of appropriate social skills for a group.
	How are you and the Coyote the same? We live in communities with leaders, work together communicate with others in our group.
Sign 10: Conservation This sign introduces the Moose and its history of having to adapt with the changes in Alta. Students learn about the history of Alta as a mining town.	This sign satisfies numerous standards in the subjects of Language Arts and 2 standards in Social Studies. Students will learn about the role humans have in the natural environment and the responsibility we have to take care of our natural resources.
	Why is conservation important? If we don't conserve the places that animals like the moose live, they will no longer have a habitat to eat and find shelter.

CCSS Language Arts

Reading - Informational Text Standard 1: Ask and answer questions about key details in a text.
Reading - Informational Text Standard 3: Describe the connection between two individuals, events, ideas, or pieces of information in a text.
Reading - Informational Text Standard 4: Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.
Reading - Informational Text Standard 6: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
Reading: Informational Text Standard 7: Use the illustrations and details in a text to describe its key ideas.
Speaking and Listening Standard 1: Participate in collaborative conversations with diverse partners about *grade 1 topics and texts* with peers and adults in small and larger groups.

- Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
- Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
- Ask questions to clear up any confusion about the topics and texts under discussion.

Speaking and Listening Standard 3: Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
Speaking and Listening Standard 4: Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

Science

Standard 1: Students will be able to apply scientific processes, communicate scientific ideas effectively, and understand the nature of science.

- Objective 2: Communicating Science: Communicating effectively using science language and reasoning

Standard 2: Students will gain an understanding of Earth and Space Science through the study of earth materials, celestial movement, and weather.

- Objective 1: Investigate the natural world including rock, soil and water.
- Objective 3: Compare and contrast seasonal weather changes.

Standard 4: Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

- Objective 2: Living things change and depend upon their environment to satisfy their basic needs.

Social Studies

Standard 2: Students will recognize their roles and responsibilities in the school and in the neighborhood.

- Objective 1: Describe and demonstrate appropriate social skills necessary for working in a group.

Standard 3: Students will use geographic tools to demonstrate how symbols and models are used to represent features of the school, neighborhood and the real world.

- Objective 2: Recognize and use a map or globe.

SKE-COLOGY

SECOND GRADE

Sign 1: Recreational Stewardship This sign introduces the Red Squirrel and how visitors can help protect their natural environment and watershed through appropriate behavior and recreational etiquette.	This sign satisfies 1 standard within Social Studies and numerous common core standards in Language Arts. Students learn to recognize their roles and responsibilities of being a good citizen and protecting the environment around them.
	Why is it important to protect places like Alta? It is very important protect Alta from pollution and trash because Alta provides drinking water, diversity of beautiful plants and a scenic home for both people and wildlife.
Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies numerous standards within Language Arts, and 2 standards between Social Studies and Science. Students learn to investigate living things, and recognize the difference between people's basic needs (food, shelter and water) and wants (toys, games, treats).
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
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	Can you think of adaptations that would be helpful in Alta? Alta can be very cold in the winter, so it would be helpful to have a warm coat. It would also be helpful to have the ability to camouflage to be a good hunter and find food.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students learn about another mechanism (hibernation or migrations) animals may do to survive winter.	This sign satisfies numerous standards in Language Arts and 3 standards between Science and Social Studies. Students start to investigate the alternatives for winter survival applying scientific process.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
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	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.

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	Why is conservation important? If we don't conserve the places that animals like the moose live, they will no longer have a habitat to eat and find shelter.

CCSS Literature

Reading - Informational Text Standard 1: Ask and answer such questions as *who, what, where, when, why*, and *how* to demonstrate understanding of key details in a text.

Reading - Informational Text Standard 3: Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

Reading - Informational Text Standard 7: Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

Speaking and Listening Standard 1: Participate in collaborative conversations with diverse partners about *grade 2 topics and texts* with peers and adults in small and larger groups.

- Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
- Build on others' talk in conversations by linking their comments to the remarks of others.
- Ask for clarification and further explanation as needed about the topics and texts under discussion.

Speaking and Listening Standard 2: Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Speaking and Listening Standard 3: Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

Speaking and Listening Standard 4: Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.

Science

Standard 1: Students will be able to apply scientific processes, communicate scientific ideas effectively, and understand the nature of science.

- Objective 2: Communicating Science: Communicating effectively using science language and reasoning.

Standard 2: Students will gain an understanding of Earth and Space Science through the study of earth materials, celestial movement, and weather.

- Objective 3: Observe, describe, and measure seasonal weather patterns and local variations.

Standard 4: Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

- Objective 1: Tell how external features affect an animals' ability to survive in its environment.
- Objective 2: Identify basic needs of living things (plants and animals) and their abilities to meet their needs.

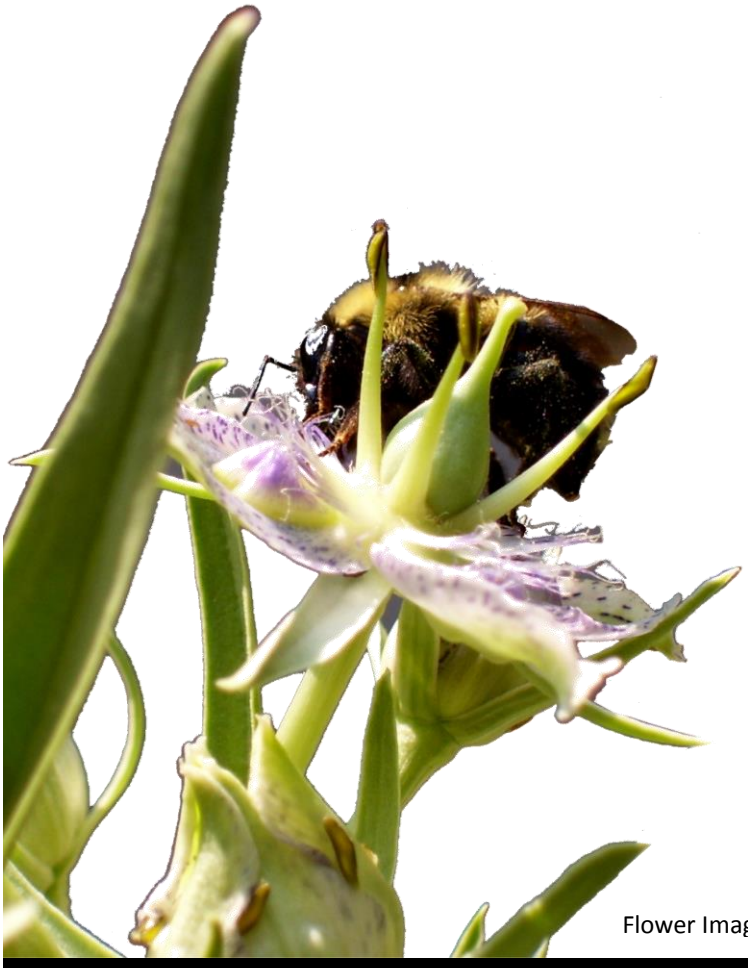
Social Studies

Standard 1: Students will recognize and describe how people within their community, state, and nation are both similar and different.

- Objective 2: Recognize and describe the contributions of different cultural groups in Utah and the nation.

Standard 3: Students will use geographic tools and skills to locate and describe places on earth.

- Objective 1: Identify common symbols and physical features of a community, and explain how they effect people's activities in that area.
- Objective 2: Demonstrate geographic skills on a map and a globe.



Flower Image: Green Gentian – *Frasera speciosa*

SKE-COLOGY

THIRD GRADE

Sign 1: Recreational Stewardship This sign introduces the Red Squirrel and how visitors can help protect their natural environment and watershed through appropriate behavior and recreational etiquette.	This sign satisfies 2 standards between Science and Social Studies and numerous common core standards in Language Arts. Students learn to recognize their roles and responsibilities of being a good citizen and protecting the environment around them.
	Why is it important to protect places like Alta? It is very important protect Alta from pollution and trash because Alta provides drinking water, diversity of beautiful plants and a scenic home for both people and wildlife.
Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies numerous standards within Language Arts, and 2 standards between Social Studies and Science. Students learn to investigate living things, and recognize the difference between people's basic needs (food, shelter and water) and wants (toys, games, treats).
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
Sign 3: Adaptation This sign introduces the Porcupine and how its unique characteristics help it to survive in the wild allowing students learn how animals adapt to an environment.	This sign satisfies numerous standards in Language Arts and 2 standards between Science and Social Studies. Students begin to get an understanding of Life Science's adaptation through the study of the porcupine's abilities.
	Can you think of adaptations that would be helpful in Alta? Alta can be very cold in the winter, so it would be helpful to have a warm coat. It would also be helpful to have the ability to camouflage to be a good hunter and find food.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students learn about another mechanism (hibernation or migrations) animals may do to survive winter.	This sign satisfies numerous standards in Language Arts and 2 standards between Science and Social Studies. Students start to investigate the alternatives for winter survival applying scientific process.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive.	This sign satisfies numerous standards in Language Arts and 2 standards between Science and Social Studies. This sign helps students to learn about the different relationships between plants and animals and gain an understanding of Life Science.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients.
Sign 6: Geologic History This sign introduces the Mountain Goat and its home of the rocky cliffs. Students learn to think about how the mountains were formed and how the goats survive in them.	This sign satisfies numerous standards in Language Arts and 2 standards between Social Studies and Science. Students begin to investigate non-living things to understand the changes to them over time and how it affects living organisms.
	Do you think that Alta's mountains are still changing? Our earth is constantly moving and shifting, along with new plants and animals living on the surface.
Sign 7: Climate This sign introduces the Mountain Cougar and how it hunts and survives in Alta's climate.	This sign satisfies numerous standards in Language Arts and 2 standards between Science and Social Studies. Students learn to compare changes in weather over time and investigate living things.
	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.

Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow is for the animals and us.	This sign satisfies numerous standards in Language Arts and 2 between Science and Social Studies. Students begin to recognize their roles and responsibilities of being stewards over their vital basic needs of food, water and shelter.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.
Sign 9: Cultural History This sign introduces the Coyote and how they like to live in communities. Students learn similarities between wildlife and humans and how living in a community is beneficial.	This sign satisfies numerous standards in Language Arts 3 standards between Science and Social Studies. Students will be introduced to roles and responsibilities in a community through the introduction of appropriate social skills for a group.
	How are you and the Coyote the same? We live in communities with leaders, work together communicate with others in our group.
Sign 10: Conservation This sign introduces the Moose and its history of having to adapt with the changes in Alta. Students learn about the history of Alta as a mining town.	This sign satisfies numerous standards in the subjects of Language Arts and 3 standards between Science and Social Studies. Students will learn about the role humans have in the natural environment and the responsibility we have to take care of our natural resources.
	Why is conservation important? If we don't conserve the places that animals like the moose live, they will no longer have a habitat to eat and find shelter.

CCSS Literature

Reading - Informational Text Standard 1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

Reading - Informational Text Standard 3: Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

Reading - Informational Text Standard 7: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Speaking and Listening Standard 1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

- Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
- Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
- Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.
- Explain their own ideas and understanding in light of the discussion.

Speaking and Listening Standard 2: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Speaking and Listening Standard 3: Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. Presentation of Knowledge and Ideas

Speaking and Listening Standard 4: Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
Speaking and Listening Standard 6: Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.
Language Standard 3 : Use knowledge of language and its conventions when writing, speaking, reading, or listening.

- Choose words and phrases for effect.
- Recognize and observe differences between the conventions of spoken and written standard English.

Science

Standard 2: Students will understand that organisms depend on living and nonliving things within their environment.

- Objective 2: Describe the interactions between living and nonliving things in a small environment.

Social Studies

Standard 1: Students will understand how geography influences community location and development.

- Objective 1: Determine the relationships between human settlement and geography.
- Objective 2: Describe how various communities have adapted to existing environments and how other communities have modified the environment.
- Objective 3: Analyze ways cultures use, maintain, and preserve the physical environment.

Standard 2: Students will understand cultural factors that shape a community.

- Objective 1: Evaluate key factors that determine how a community develops.

SKE-COLOGY

FORTH GRADE

Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies numerous standards within Language Arts, and 2 standards between Social Studies and Science. Students are introduced to the difference in physical characteristics of Utah's habitats to understand the link between geography and life.
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
Sign 3: Adaptation This sign introduces the Porcupine and how its unique characteristics help it to survive in the wild allowing students learn how animals adapt to an environment.	This sign satisfies numerous standards in Language Arts and 2 standards between Science and Social Studies. Students begin to get an understanding of Life Science's adaptation through the study of the porcupine's abilities.
	Can you think of adaptations that would be helpful in Alta? Alta can be very cold in the winter, so it would be helpful to have a warm coat. It would also be helpful to have the ability to camouflage to be a good hunter and find food.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students learn about another mechanism (hibernation or migrations) animals may do to survive winter.	This sign satisfies numerous standards in Language Arts and 1 standard within Science. Students can describe the physical characteristics an organism needs or have adapted to survive in it the environment in which they live.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive**.**	This sign satisfies numerous standards in Language Arts and 1 standard Science. This sign helps students to learn about the different relationships between plants and animals and gain an understanding of Life Science.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients.
Sign 6: Geologic History This sign introduces the Mountain Goat and its home of the rocky cliffs. Students learn to think about how the mountains were formed and how the goats survive in them.	This sign satisfies numerous standards in Language Arts and 5 standards between Social Studies and Science. Students are introduced to how wind, water and time can change the property of rocks and shape an ecosystem.
	Do you think that Alta's mountains are still changing? Our earth is constantly moving and shifting, along with new plants and animals living on the surface.
Sign 7: Climate This sign introduces the Mountain Cougar and how it hunts and survives in Alta's climate.	This sign satisfies numerous standards in Language Arts and 4 standards between Science and Social Studies. Students learn to compare changes in weather over time and understand that the elements of weather can be observed.
	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.
Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow is for the animals and us.	This sign satisfies numerous standards in Language Arts and 4 between Science and Social Studies. Students begin to recognize their roles and responsibilities of being stewards over their vital basic needs of food, water and shelter.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.

Sign 9: Cultural History This sign introduces the Coyote and how they like to live in communities. Students learn similarities between wildlife and humans and how living in a community is beneficial.	This sign satisfies numerous standards in Language Arts 2 standards within Social Studies. Students will be introduce to the relationship between the physical geography, natural resources in Utah and how it shaped Utah's history and the culture of Alta.
	How are you and the Coyote the same? We live in communities with leaders, work together communicate with others in our group.
Sign 10: Conservation This sign introduces the Moose and its history of having to adapt with the changes in Alta. Students learn about the history of Alta as a mining town.	This sign satisfies numerous standards in the subjects of Language Arts and 3 standards between Science and Social Studies. Students will learn about the role humans have in the natural environment and the responsibility we have to take care of our natural resources.
	Why is conservation important? If we don't conserve the places that animals like the moose live, they will no longer have a habitat to eat and find shelter.

CCSS Literature

Reading - Informational Text Standard 1: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

Reading - Informational Text Standard 2: Determine the main idea of a text and explain how it is supported by key details; summarize the text.

Reading - Informational Text Standard 3: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

Reading - Informational Text Standard 5: Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

Speaking and Listening Standard 1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

- Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
- Follow agreed-upon rules for discussions and carry out assigned roles.
- Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

Speaking and Listening Standard 2: Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Speaking and Listening Standard 3: Identify the reasons and evidence a speaker provides to support particular points.

Speaking and Listening Standard 4: Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Speaking and Listening Standard 5: Add audio recordings and visual displays to presentations when appropriate to enhance the development of main ideas or themes.

SKE-COLOGY

Science

Standard 1: Students will understand that water changes state as it moves through the water cycle.

- Objective 1: Describe the relationship between heat energy, evaporation and condensation of water on earth.
- Objective 2: Describe the water cycle.

Standard 2: Students will understand that the elements of weather can be observed, measured, and recorded to make predictions and determine simple weather patterns.

- Objective 2: Interpret recorded weather data for simple patterns.

Standard 3: Students will understand the basic properties of rocks, the processes involved in the formation of soils, and the needs of plants provided by soil.

- Objective 1: Identify basic properties of mineral and rocks.

Standard 5: Students will understand the physical characteristics of Utah's wetlands, forests, and deserts and identify common organisms for each environment.

- Objective 2: Describe the common plants and animals found in Utah environments and how these organisms have adapted to the environment in which they live.

Social Studies

Standard 1: Students will understand the relationship between the physical geography in Utah and human life.

- Objective 1: Classify major physical geographic attributes of Utah.
- Objective 2: Analyze how physical geography affects human life in Utah.
- Objective 3: Analyze how human actions modify the physical environment.

Standard 2: Students will understand how Utah's history has been shaped by many diverse people, events, and ideas.

- Objective 3: Investigate the development of the economy in Utah.

Flower Image: Coneflower – *Rudbeckia occidentalis*

SKE-COLOGY

FIFTH GRADE

Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies numerous standards within Language Arts, and 1 standard within Science. Students are introduced to the difference in physical characteristics of Utah's habitats to understand the link between geography and life.
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
Sign 3: Adaptation This sign introduces the Porcupine and how its unique characteristics help it to survive in the wild allowing students learn how animals adapt to an environment.	This sign satisfies numerous standards in Language Arts and 1 standard within Science. Students begin to get an understanding of Life Science's adaptation through the study of the porcupine's abilities.
	Can you think of adaptations that would be helpful in Alta? Alta can be very cold in the winter, so it would be helpful to have a warm coat. It would also be helpful to have the ability to camouflage to be a good hunter and find food.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students learn about another mechanism (hibernation or migrations) animals may do to survive winter.	This sign satisfies numerous standards in Language Arts and 1 standard within Science. Students can describe the physical characteristics an organism needs or have adapted to survive in it the environment in which they live.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive**.**	This sign satisfies numerous standards in Language Arts and 1 standard within Science. This sign helps students to learn about the different relationships between plants and animals and how that pertains to their mutual survival.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients.
Sign 6: Geologic History This sign introduces the Mountain Goat and its home of the rocky cliffs. Students learn to think about how the mountains were formed and how the goats survive in them.	This sign satisfies numerous standards in Language Arts and 2 standards within Science. Students are introduced to how wind, water and time can change the property of rocks and shape an ecosystem.
	Do you think that Alta's mountains are still changing? Our earth is constantly moving and shifting, along with new plants and animals living on the surface.
Sign 7: Climate This sign introduces the Mountain Cougar and how it hunts and survives in Alta's climate.	This sign satisfies numerous standards in Language Arts and 2 standards within Science. Students learn to compare changes in weather over time and how this determines habitat and survival.
	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.
Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow is for the animals and us.	This sign satisfies numerous standards in Language Arts and 1 within Science. Students begin to recognize their roles and responsibilities of being stewards over their vital basic needs of food, water and shelter.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.

CCSS Literature

Reading – Informational Text Standard 1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

Reading - Informational Text Standard 2: Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

Speaking and Listening Standard 1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

- Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
- Follow agreed-upon rules for discussions and carry out assigned roles.
- Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.
- Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

Speaking and Listening Standard 2: Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Speaking and Listening Standard 3: Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.

Speaking and Listening Standard 4: Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Science

Standard 2: Students will understand that volcanoes, earthquakes, uplift, weathering, and erosion reshape Earth's surface.

- Objective 1: Describe how weathering and erosion change Earth's surface.
- Objective 2: Explain how volcanoes, earthquakes, and uplift affect Earth's surface.
- Objective 3: Relate the building up and breaking down of Earth's surface over time to the various physical land features.

Standard 5: Students will understand that traits are passed from the parent organisms to their offspring, and that sometimes the offspring may possess variations of these traits that may help or hinder survival in a given environment.

- Objective 2: Describe how some characteristics could give a species a survival advantage in a particular environment.

SKE-COLOGY

SIXTH GRADE

Sign 1: Recreational Stewardship This sign introduces the Red Squirrel and how visitors can help protect their natural environment and watershed through appropriate behavior and recreational etiquette.	This sign satisfies 1 standard within Social Studies and numerous common core standards in Language Arts. Students learn to recognize their roles and responsibilities of being a good citizen and protecting the environment around them.
	Why is it important to protect places like Alta? It is very important protect Alta from pollution and trash because Alta provides drinking water, diversity of beautiful plants and a scenic home for both people and wildlife.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive.	This sign satisfies numerous standards in Language Arts and 1 standard within Social Studies. This sign helps students to learn about the different relationships between plants and animals and how that pertains to their mutual survival.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients.
Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow is for the animals and us.	This sign satisfies numerous standards in Language Arts and 1 within Social Studies. Students begin to recognize their roles and responsibilities of being stewards over their vital basic needs of food, water and shelter.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.
Sign 9: Cultural History This sign introduces the Coyote and how they like to live in communities. Students learn similarities between wildlife and humans and how living in a community is beneficial.	This sign satisfies numerous standards in Language Arts 1 standard within Social Studies. Students will be introduce to the issues between the physical geography, natural resources in Utah and how it shapes human responsibility.
	How are you and the Coyote the same? We live in communities with leaders, work together communicate with others in our group.
Sign 10: Conservation This sign introduces the Moose and its history of having to adapt with the changes in Alta. Students learn about the history of Alta as a mining town.	This sign satisfies numerous standards in the subjects of Language Arts and 1 standard within Social Studies. Students will learn about the role humans have in the natural environment and the responsibility we have to take care of our natural resources.
	Why is conservation important? If we don't conserve the places that animals like the moose live, they will no longer have a habitat to eat and find shelter.

CCSS Literature

Reading - Informational Text Standard 2: Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.

Speaking and Listening Standard 1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
- Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
- Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

Speaking and Listening Standard 2: Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.
Speaking and Listening Standard 3: Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.
Speaking and Listening Standard 4: Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
Speaking and Listening Standard 6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

Social Studies

Standard 4: Students will understand current global issues and their rights and responsibilities in the interconnected world.

- Objective 2: Explore current global issues facing the modern world and identify potential solutions.
- Objective 3: Determine human rights and responsibilities in the world.

SKE-COLOGY

SEVENTH GRADE

Sign 1: Recreational Stewardship This sign introduces the Red Squirrel and how visitors can help protect their natural environment and watershed through appropriate behavior and recreational etiquette.	This sign satisfies 1 standard within Utah Studies, 2 within Geography for Life, as well as numerous common core standards in Language Arts. Students learn understand the relationship between Utah's geography, human and wildlife interactions, and human responsibilities.
	Why is it important to protect places like Alta? It is very important protect Alta from pollution and trash to be responsible stewards over Salt Lake Valley's drinking water, Alta's ecosystem and community.
Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies 1 standard within Utah Studies and Geography for Life, 2 standards in Science, as well as numerous common core standards in Language Arts. Students will see first hand the relationship between geography, physical characteristics and survival.
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
Sign 3: Adaptation This sign introduces the Porcupine and how its unique characteristics help it to survive in the wild allowing students learn how animals adapt to an environment.	This sign satisfies 2 science standards, 1 standard in Geography for Life, and numerous standards in Language Arts. Students are introduced to how an animal's physical characteristics have adapted to their physical surroundings to increase survival.
	Can you think of adaptations that would be helpful in Alta? Alta experiences all seasons to the fullest with high precipitation, severe temperatures, and varying predators. Surviving such conditions would require warmth, camouflage, and other survival materials.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students are introduced to other mechanisms (hibernation or migrations) animals may do to survive winter.	This sign satisfies 1 standard each in Science, Utah Studies and Geography for Life, as well as numerous standards in Language. Students can describe the physical characteristics an ecosystem and how geography plays a role.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive**.**	This sign satisfies 1 standard within Science and Utah Studies, 2 standards for Geography of Life, and numerous standards in Language Arts. This sign helps students to learn about the different relationships between plants and animals and how that pertains to their mutual survival.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients and plants are dependent on sunlight for food.
Sign 6: Geologic History This sign introduces the Mountain Goat and its home of the rocky cliffs. Students learn to think about how the mountains were formed and how the goats survive in them.	This sign satisfies numerous standards in Language Arts and Geography for Life and 1 standard each within Science and Utah Studies. Students are introduced to how wind, water and time can change the property of rocks and shape an ecosystem.
	Do you think that Alta's mountains are still changing? Our earth is constantly moving and shifting, along with new plants and animals living on the surface.
Sign 7: Climate This sign introduces the Mountain Cougar and how it hunts and survives in Alta's climate.	This sign satisfies 1 standard each in Science and Utah Studies, 3 in Geography for Life, and numerous standards in Language Arts. Students learn to compare changes in weather over time and how this determines habitat and survival.
	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.

Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow plays a vital role in the water system and its role in a watershed.	This sign satisfies 1 standard each in Science, Utah Studies, and Geography for Life, as well as numerous standards in Language Arts. Students begin to understand how the presence in water yields social, environmental and economical success of an area.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.
Sign 9: Cultural History This sign introduces the Coyote and how they like to live in communities. Students learn similarities between wildlife and humans and how living in a community is beneficial.	This sign satisfies 1 standard in Science, and numerous standards in Utah Studies, Geography for Life, and Language Arts. Students will be introduced to how Utah's physical geography and natural resources helped spur human development of the past and will continue to do so for the future.
	How are you and the Coyote the same? We live in communities with leaders, work together, and communicate with others in our group.
Sign 10: Conservation This sign introduces the Moose and its history of having to adapt with the changes in Alta. Students learn about the history of Alta as a mining town.	This sign satisfies 1 standard in Science and numerous standards Utah Studies, Geography for Life, and Language Arts. Students will learn about the role humans have in the natural environment and the responsibility we have to take care of our natural resources.
	Why is conservation important? Conservation is the basis of protecting, maintaining and utilizing earth's natural resources responsible for continued generations of all living organisms.

CCSS Literature

Reading - Informational Text Standard 2: Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

Reading - Informational Text Standard 3: Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).

Speaking and Listening Standard 1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.
- Acknowledge new information expressed by others and, when warranted, modify their own views.

Speaking and Listening Standard 2: Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.

Speaking and Listening Standard 3: Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.

Speaking and Listening Standard 4: Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.

Speaking and Listening Standard 5: Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

Speaking and Listening Standard 6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

SKE-COLOGY

Science

Standard 4: Students will understand that offspring inherit traits that make them more or less suitable to survive in the environment.

- Objective 2: Relate the adaptability of organisms in an environment to their inherited traits and structures.

Standard 5: Students will understand that structure is used to develop classification systems.

- Objective 3: Classify organisms using an orderly pattern based upon structure.

Utah Studies

Standard 1: Students will understand the interaction between Utah's geography and its inhabitants.

- Objective 1: Investigate the relationship between physical geography and Utah's settlement, land use, and economy.
- Objective 2: Examine the interrelationship between Utah's climate, landforms, and life.
- Objective 3: Assess how natural resources sustain and enhance people's lives.
- Objective 4: Examine how people affect the geography of Utah.

Standard 2: Students will understand the contributions of Native American Indians, explorers, and Utah's pioneers.

- Objective 2: Investigate the importance of explorers to Utah's settlement.

Standard 4: Students will understand the diverse ways people make a living in Utah.

- Objective 1: Explore the components of Utah's economy.
- Objective 3: Examine aspects that have broadened Utah's economy.
- Objective 4: Investigate the current status of Utah's economy.

Standard 5: Students will understand the diverse nature of Utah's peoples and cultures.

- Objective 3: Assess the diverse cultural and recreational opportunities available in Utah.

Geography for Life

Standard 1: Students will understand the world in spatial terms.

- Objective 1: Use maps and other geographic tools to acquire information from a spatial perspective.
- Objective 3: Analyze the spatial organization of people, places, and environments on the earth's surface.

Standard 2: Students will understand the human and physical characteristics of places and regions.

- Objective 1: Interpret place by its human and physical characteristics.

Standard 3: Students will understand how physical processes shape the earth's surface.

- Objective 1: Examine the physical processes that shape the earth's surface.
- Objective 2: Assess the characteristics and locations of ecosystems.

Standard 4: Students will understand how human activities shape the earth's surface.

- Objective 1: Analyze the characteristics, distribution, and migration of human populations on the earth's surface.

Standard 5: Students will understand the interaction of physical and human systems.

- Objective 1: Explore how humans change the environment and how the environment changes humans.
- Objective 2: Assess the importance of natural and human resources.

Standard 6: Students will use geographic knowledge to connect to today's world.

- Objective 1: Apply geographic concepts to interpret the past.
- Objective 2: Apply geographic concepts to interpret the present and plan for the future.

SKE-COLOGY

EIGHTH GRADE

Sign 1: Recreational Stewardship This sign introduces the Red Squirrel and how visitors can help protect their natural environment and watershed through appropriate behavior and recreational etiquette.	This sign satisfies 1 standard each within Utah Studies and Geography for Life, as well as numerous common core standards in Language Arts. Students learn understand the relationship between Utah's geography, human and wildlife interactions, and human responsibilities.
	Why is it important to protect places like Alta? It is very important protect Alta from pollution and trash to be responsible stewards over Salt Lake Valley's drinking water, Alta's ecosystem and community.
Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies 1 standard within Science and Utah Studies, 2 standards in Geography for Life, as well as numerous common core standards in Language Arts. Students will see first hand the relationship between geography, physical characteristics and survival.
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students are introduced to other mechanisms (hibernation or migrations) animals may do to survive winter.	This sign satisfies 1 standard each in Science, Utah Studies and Geography for Life, as well as numerous standards in Language. Students can describe the physical characteristics an ecosystem and how geography plays a role.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive**.**	This sign satisfies 1 standard within Science and Utah Studies, 2 standards for Geography of Life, and numerous standards in Language Arts. This sign helps students to learn about the different relationships between plants and animals and how that pertains to their mutual survival and earth systems.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients and plants are dependent on sunlight for food.
Sign 6: Geologic History This sign introduces the Mountain Goat and its home of the rocky cliffs. Students learn to think about how the mountains were formed and how the goats survive in them.	This sign satisfies numerous standards in Language Arts and Geography for Life and 1 standard each within Science and Utah Studies. Students are introduced to how wind, water and time can change the property of rocks and shape an ecosystem.
	Do you think that Alta's mountains are still changing? Our earth is constantly moving and shifting, along with new plants and animals living on the surface.
Sign 7: Climate This sign introduces the Mountain Cougar and how it hunts and survives in Alta's climate.	This sign satisfies 1 standard each in Utah Studies and Geography for Life, and numerous standards in Language Arts. Students learn to compare changes in weather over time and how this determines habitat and survival.
	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.
Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow plays a vital role in the water system and its role in a watershed.	This sign satisfies 1 standard each in Science and Utah Studies, two standards in Geography for Life, as well as numerous standards in Language Arts. Students begin to understand how the presence in water yields social, environmental and economical success of an area.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.

Sign 9: Cultural History This sign introduces the Coyote and how they like to live in communities. Students learn similarities between wildlife and humans and how living in a community is beneficial.	This sign satisfies numerous standards in Utah Studies, Geography for Life, and Language Arts. Students will be introduced to how Utah's physical geography and natural resources helped spur human development of the past and will continue to do so for the future.
	How are you and the Coyote the same? We live in communities with leaders, work together, and communicate with others in our group.
Sign 10: Conservation This sign introduces the Moose and its history of having to adapt with the changes in Alta. Students learn about the history of Alta as a mining town.	This sign satisfies numerous standards Utah Studies, Geography for Life, and Language Arts. Students will learn about the role humans have in the natural environment and the responsibility we have to take care of our natural resources.
	Why is conservation important? Conservation is the basis of protecting, maintaining and utilizing earth's natural resources responsible for continued generations of all living organisms.

CCSS Literature

Reading - Informational Text Standard 3: Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).

Speaking and Listening Standard 1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
- Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

Speaking and Listening Standard 2: Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.

Speaking and Listening Standard 3: Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence and identifying when irrelevant evidence is introduced.

Speaking and Listening Standard 4: Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.

Speaking and Listening Standard 5: Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

Science

Standard 2: Students will understand that energy from sunlight is changed to chemical energy in plants, transfers between living organisms, and that changing the environment may alter the amount of energy provided to living organisms.

- Objective 2: Generalize the dependent relationships between organisms.
- Objective 3: Analyze human influence on the capacity of an environment to sustain living things.

Standard 3: Students will understand the processes of rock and fossil formation.

- Objective 2: Describe the nature of the changes that rocks undergo over long periods of time.
- Objective 3: Describe how rock and fossil evidence is used to infer Earth's history.
- Objective 4: Compare rapid and gradual changes to Earth's surface.

Utah Studies

Standard 1: Students will understand the interaction between Utah's geography and its inhabitants.

- Objective 1: Investigate the relationship between physical geography and Utah's settlement, land use, and economy.
- Objective 2: Examine the interrelationship between Utah's climate, landforms, and life.
- Objective 3: Assess how natural resources sustain and enhance people's lives.
- Objective 4: Examine how people affect the geography of Utah.

Standard 2: Students will understand the contributions of Native American Indians, explorers, and Utah's pioneers.

- Objective 2: Investigate the importance of explorers to Utah's settlement.

Standard 4: Students will understand the diverse ways people make a living in Utah.

- Objective 1: Explore the components of Utah's economy.
- Objective 3: Examine aspects that have broadened Utah's economy.
- Objective 4: Investigate the current status of Utah's economy.

Standard 5: Students will understand the diverse nature of Utah's peoples and cultures.

- Objective 3: Assess the diverse cultural and recreational opportunities available in Utah.

Geography for Life

Standard 1: Students will understand the world in spatial terms.

- Objective 1: Use maps and other geographic tools to acquire information from a spatial perspective.
- Objective 3: Analyze the spatial organization of people, places, and environments on the earth's surface.

Standard 2: Students will understand the human and physical characteristics of places and regions.

- Objective 1: Interpret place by its human and physical characteristics.

Standard 3: Students will understand how physical processes shape the earth's surface.

- Objective 1: Examine the physical processes that shape the earth's surface.
- Objective 2: Assess the characteristics and locations of ecosystems.

Standard 4: Students will understand how human activities shape the earth's surface.

- Objective 1: Analyze the characteristics, distribution, and migration of human populations on the earth's surface.

Standard 5: Students will understand the interaction of physical and human systems.

- Objective 1: Explore how humans change the environment and how the environment changes humans.
- Objective 2: Assess the importance of natural and human resources.

Standard 6: Students will use geographic knowledge to connect to today's world.

- Objective 1: Apply geographic concepts to interpret the past.
- Objective 2: Apply geographic concepts to interpret the present and plan for the future.

SKE-COLOGY

NINTH - TWELFTH GRADE

Sign 1: Recreational Stewardship This sign introduces the Red Squirrel and how visitors can help protect their natural environment and watershed through appropriate behavior and recreational etiquette.	This sign satisfies 1 standard each within Biology, Utah Studies and Geography for Life, as well as numerous common core standards in Language Arts. Students learn understand the relationship between Utah's geography, human and wildlife interactions, and human responsibilities.
	Why is it important to protect places like Alta? It is very important protect Alta from pollution and trash to be responsible stewards over Salt Lake Valley's drinking water, Alta's ecosystem and community.
Sign 2: Habitat This sign introduces the Snowshoe Hare and what it needs to survive which is the basis of a habitat. Students learn what makes a habitat and about the many different habitats that exist within Alta.	This sign satisfies 1 standard within Biology and Utah Studies, 3 standards in Geography for Life, as well as numerous common core standards in Language Arts. Students will see first hand the relationship between geography, physical characteristics and survival.
	Where Do you Live? People live in many different types of homes (condos, town houses, single homes), but no matter the differences all living things require shelter, food, and water.
Sign 3: Adaptation This sign introduces the Porcupine and how its unique characteristics help it to survive in the wild allowing students learn how animals adapt to an environment.	This sign satisfies 2 Biology standards, 1 Geography for Life standard and numerous standards in Language Arts. Students are introduced to how an animal's physical characteristics have adapted to their physical surroundings to increase survival.
	Can you think of adaptations that would be helpful in Alta? Alta experiences all seasons to the fullest with high precipitation, severe temperatures, and varying predators. Surviving such conditions would require warmth, camouflage, and other survival materials.
Sign 4: Winter Survival This sign introduces the Yellow Bellied Marmot and how it survives the cold winter by hibernating. Students are introduced to other mechanisms (hibernation or migrations) animals may do to survive winter.	This sign satisfies 1 standard each in Earth Sciences, Utah Studies and Geography for Life, 2 standards in biology, as well as numerous standards in Language. Students can describe the physical characteristics an ecosystem and how geography plays a role.
	What do you do to prepare for winter? Many people prepare for the winter by making sure their home is warm and secure for when they rest and they make sure they have warm clothes for when they go outside to work, travel or play.
Sign 5: Interdependence This sign introduces the Clark's Nutcracker and its relationship to the Limber Pine. Students learn the idea that animals have relationships with other plants and animals to survive**.**	This sign satisfies 1 standard in Utah Studies, 2 standards in Biology and Geography of Life, and numerous standards in Language Arts. This sign helps students to learn about the different relationships between plants and animals and how that pertains to their mutual survival and earth systems.
	Can you think of other relationships where living things are dependent on each other? Humans are dependent upon plants to provide us food with good nutrients and plants are dependent on sunlight for food.
Sign 6: Geologic History This sign introduces the Mountain Goat and its home of the rocky cliffs. Students learn to think about how the mountains were formed and how the goats survive in them.	This sign satisfies numerous standards in Language Arts and Geography for Life and 1 standard each within Science and Utah Studies. Students are introduced to how wind, water and time can change the property of rocks and shape an ecosystem.
	Do you think that Alta's mountains are still changing? Our earth is constantly moving and shifting, along with new plants and animals living on the surface.
Sign 7: Climate This sign introduces the Mountain Cougar and how it hunts and survives in Alta's climate.	This sign satisfies 1 standard in Biology and Utah Studies, 2 standards in Earth Science and Geography for Life, and numerous standards in Language Arts. Students learn to compare changes in weather over time and how this determines habitat and survival.
	Can you describe how climate affects your life? Our winter climate in Utah makes our environment outside very cold and we have to deal with lots of snow. Our summer climate is very warm and dry.

Sign 8: Watershed This sign introduces the Ermine and how it uses snow in different ways to survive. Students learn how important snow plays a vital role in the water system and its role in a watershed.	This sign satisfies 1 standard in Biology and Utah Studies, 2 standards in Earth Science and Geography for Life, and numerous standards in Language Arts. Students begin to understand how the presence in water yields social, environmental and economical success of an area.
	Why is the snow in Alta important to you? The snow is important because Alta is located in a watershed, which means that we drink the water that comes from the snow melting from Alta.
Sign 9: Cultural History This sign introduces the Coyote and how they like to live in communities. Students learn similarities between wildlife and humans and how living in a community is beneficial.	This sign satisfies 1 standard in Biology and numerous standards in Utah Studies, Geography for Life, and Language Arts. Students will be introduced to how Utah's physical geography and natural resources helped spur human development of the past and will continue to do so for the future.
	How are you and the Coyote the same? We live in communities with leaders, work together, and communicate with others in our group.
Sign 10: Conservation This sign introduces the Moose and its history of having to adapt with the changes in Alta. Students learn about the history of Alta as a mining town.	This sign satisfies 1 standard in Biology and numerous standards in Utah Studies, Geography for Life, and Language Arts. Students will learn about the role humans have in the natural environment and the responsibility we have to take care of our natural resources.
	Why is conservation important? Conservation is the basis of protecting, maintaining and utilizing earth's natural resources responsible for continued generations of all living organisms.

CCSS Literature

Reading - Informational Text Standard 1: Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

Reading - Informational Text Standard 2: Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

Speaking and Listening Standard 1: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

- Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
- Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.
- Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
- Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.

Speaking and Listening Standard 2: Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

Speaking and Listening Standard 3: Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
Speaking and Listening Standard 4: Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
Speaking and Listening Standard 6: Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.

Earth Systems

Standard 2: Students will understand that the features of Earth's evolving environment affect living systems, and that life on Earth is unique in the solar system.

- Objective 1: Describe the unique physical features of Earth's environment that make life on Earth possible.
- Objective 2: Analyze how ecosystems differ from each other due to abiotic and biotic factors.
- Objective 3: Examine Earth's diversity of life as it changes over time.

Standard 3: Students will understand that gravity, density, and convection move Earth's plates and this movement causes the plates to impact other Earth systems.

- Objective 2: Describe the processes within Earth that result in plate motion and relate it to changes in other Earth systems.

Standard 4: Students will understand that water cycles through and between reservoirs in the hydrosphere and affects the other spheres of the Earth system.

- Objective 1: Explain the water cycle in terms of its reservoirs, the movement between reservoirs, and the energy to move water. Evaluate the importance of freshwater to the biosphere.

Biology

Standard 1: Students will understand that living organisms interact with one another and their environment.

- Objective 1: Summarize how energy flows through an ecosystem.
- Objective 2: Explain relationships between matter cycles and organisms.
- Objective 3: Describe how interactions among organisms and their environment help shape ecosystems.

Standard 5: Students will understand that biological diversity is a result of evolutionary processes.

- Objective 1: Relate principles of evolution to biological diversity

Utah Studies

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- Objective 1: Investigate the relationship between physical geography and Utah's settlement, land use, and economy.
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Standard 6: Students will use geographic knowledge to connect to today's world.

- Objective 1: Apply geographic concepts to interpret the past.
- Objective 2: Apply geographic concepts to interpret the present and plan for the future.

Flower Image: Monkshood – *Aconitum columbianum*

SKE-COLOGY

RESOURCES

This section rounds out the Alta SKE-COLOGY program with additional resources for curriculum, environmental education programs, professional development, literature, and general information on important environmental issues. Alta is pleased to offer SKE-COLOGY to all ages and abilities and these resources hope to help educators, visitors, and students gain a greater understanding to the vast opportunities and applications that come with environmental education by "building awareness and appreciation for this place we call Alta."[1]

1. **Brochure Map**: The adjoining two-page brochure is included so educators or visitors may print a copy of their own in preparation of a visit. (Available as link on Website)
2. **SKE-COLOGY Signs**: Since Alta sits atop a long-winding canyon; it may be difficult for all groups to make the trip up. To bring Alta to your classroom, playground or backyard all ten signs are included in the handbook for educators to print and use. (Available as link on Website)
3. **Organization Resource Guide**: Local and national environmental education organizations are listed and marked if they provide additional curriculum, website information, kids programs and professional development opportunities.
4. **Literature Resource Guide**: Everyone is always looking for a good book to read. This list of literature is provided in recommendation from other experienced environmental educators to help students or teachers gain a better understanding for grades K-12 and adults.
5. **Glossary**: A short list of definitions for words and concepts that directly relate to this program or are referenced within the SKE-COLOGY signs.
6. **Photographic Works Cited**: Alta's resources are your resources too. Please feel free to visit the websites of the program images.
7. **References**: A great resource for additional information on Utah State Educational Core Standards, wildlife, alpine ecosystems and more.

Flower Image: Paintbrush – *Castilleja* sp.

[1] Alta Earth Day slogan - www.alta.com/pages/altaearthday

SKE-COLOGY

ORGANIZATION RESOURCE GUIDE

Organization	Curriculum	Website EE information	Kids Programs	Educator Training & Certification
Alderleaf Wilderness College www.wildernesscollege.com Phone: (360) 793-8709		X		X
Alta Historical Society www.altahistory.org		X		
Cottonwood Canyons Foundation www.cottonwoodcanyons.org Phone: (801) 947-8263	X	X	X	
Friends Of Alta www.friendsofalta.org Phone: 801.742.9719	X	X		
Friends Of The Great Salt Lake www.fogsl.org Phone: (801) 583-5593	X	X	X	
If Trees Could Talk www.foresthistory.org/education/curriculum/index Email: coakes@duke.edu	X	X		
Outdoor-Nature-Child www.outdoor-nature-child.com	X	X	X	
Tree Utah www.treeutah.org Phone: (801) 364-2122		X		
Utah Society For Environmental Education www.usee.org Phone: (801) 328-1549	X	X	X	X
The Ogden Nature Center www.ogdennaturecenter.org Phone: 801-621-7595		X	X	
The Stokes Nature Center www.logannature.org Phone: (435)755-3239				
The Swaner Ecocenter www.swanerecocenter.org Phone: (435) 649-1767		X	X	X
The Living Planet Aquarium www.thelivingplanet.com Phone: (801) 355-3474			X	
Tracy Aviary www.tracyaviary.org Phone: (801) 596-8500			X	

SKE-COLOGY

LITERATURE RESOURCE GUIDE

Title	Curriculum Components	Age
The Lorax By: Dr. Suess	Corporate greed and environmental destruction	Ages 4 to 8
Dear Children of the Earth By: Schim Schimmel	Ecology, improving the environment, and Earth Day	Ages 4 to 12
A drop around the world By: Barbara Shaw McKinney	Water cycle, water science, geography, and multicultural awareness	Ages 5 to 12
The Tree in the Ancient Forest By: Carol Reed-Jones	Forest ecology, habitat, interdependence, conservation, and cumulative verse	Ages 4 to 10
Places of Refuge: Our National Wildlife Refuge System By: Dorothy Hinshaw Patent	Impact of logging, farming, mining, hunting and recreational activities on protected areas and wildlife	Ages 9-12
Ubiquitous: Celebrating Nature's Survivors By: Joyce Sidman	Natural history, living things, and biology	Ages 9-13
Common Ground: The Water, Earth and Air We Share By: Molly Bang	Consumption, careful use, and conservation	Ages 5 - 8
Flush By: Carl Hiassen	Human waste, water pollution, and conservation	Ages 11-14
Last Child in the Woods By: Richard Louv	Children in the outdoors and community action	Ages 12+
Sand County Almanac By: Aldo Leopold	Land ethics, ecology, and conservation	Adult
The Maine Woods By: Henry David Thoreau	Accounts of exterior and interior discoveries of the wilderness	Adult
Walden Pond By: Henry David Thoreau	Accounts of ice harvesting, ecology, and conservation	Adult
Silent Spring By: Rachel Carson	Pesticides, pollution, birds, and chemical industry	Adult
Changes in the Land By: William Cronon	Sustainability, resource management, and changes in ecology	Adult
Eaarth By: Bill Mckibben	Climate Change, conservation, and energy use	Adult
The Structure of Scientific Revolutions By: Thomas Kuhn	History, philosophy and evolution of history	Adult
Science as a Process: An Evolutionary Account of the Social and Conceptual Development of Science By: David L. Hull	Evolution and cultural/conceptual change	Adult

SKE-COLOGY

GLOSSARY[2]

Adaptation	The ability of a species to survive in a particular ecological niche, especially because of alterations of form or behavior brought about through natural selection.
Avalanche	A fall or slide of a large mass of snow or rock, down a mountainside.
Alpine Ecosystem	A biome occurring in the cold upper altitudes atop mountains. This zone can vary with the location of the particular mountain chain.
Climate	The composite or generally prevailing weather conditions of a region (temperature, air pressure, humidity, precipitation, sunshine, cloudiness, and winds) throughout the year, averaged over a series of years.
Commensalism Relationship	A class of relationship between two organisms where one organism benefits but the other is neutral (meaning no harm or benefit).
Conservation	The careful utilization and protection of a natural resource in order to prevent depletion.
Conservation Steward	An individual or group aimed at protection and development through innovative conservation agreements developed in partnership with communities and others who own or rely on natural resources.
Cultural History	A study combines the approaches of anthropology and history to look at popular cultural traditions and cultural interpretations of historical experience
Cross-Reference Chart	An easy, explanative way to see which signs will satisfy particular grades and their core standards.
Ecosystem	A community of living and non-living things that work together.
Elevation	The altitude of a place above sea or ground level.
Environmental Education (EE)	A curriculum that creates a fluid connection between individuals and their environment.
Erosion	The process by which the surface of the earth is worn away by the action of water, glaciers, winds, waves, etc.
Geologic History	The science that deals with the dynamics and physical history of the earth, the rocks of which it is composed, and the physical, chemical, and biological changes that the earth has undergone or is undergoing.
Glacier	A large persistent body of ice that forms where the accumulation of snow exceeds its ablation (melting and sublimation) over many years, often centuries.
Habitat	The natural environment of an organism.
Herbivores	Animals that feed only on plants.
Hibernation	A time when animals 'sleep' through cold weather. Hibernating animals conserve energy, especially during the winter when food supplies are limited. An animals' heart rate slows and they must tap in to different energy reserves and use body fat to survive.

[2]All definitions were referenced or cited from the following locations: www.dictionary.com, Grand Teton National Park Fire Management: SKE-COLOGY Workshop PDF, www.thefreedictionary.com, www.lnt.org

Interdependency	The relationship between two or more animals depending upon each other for survival within an ecosystem.
Leave-No-Trace (LNT)	Is a national and international program designed to assist outdoor enthusiasts with their decisions about how to reduce their impacts when they hike, camp, picnic, snowshoe, run, bike, hunt, paddle, ride horses, fish, ski or climb. The program strives to educate all those who enjoy the outdoors about the nature of their recreational impacts as well as techniques to prevent and minimize such impacts. Leave No Trace is best understood as an educational and ethical program, not as a set of rules and regulations. LNT Principles: • Plan Ahead and Prepare • Travel and Camp on Durable Surfaces • Dispose of Waste Properly • Leave What You Find • Minimize Campfire Impacts • Respect Wildlife • Be Considerate of Other Visitors • Visit www.lnt.org for more information and curriculum.
Migration	The seasonal movement of a complete population of animals from one area to another. Migration is usually a response to changes in temperature, food supply, or the amount of daylight and is often undertaken for the purpose of breeding. Mammals, insects, fish, and birds all migrate.
Niche	The position or function of an organism in a community of plants and animals.
Parasitic Relationship	A relationship between one organism (the host) and a parasite that lives on or in the body of the host.
National Forest	A large expanse of forest owned and maintained by the federal government.
Recreational Stewardship	The roles and responsibilities that are expected of a citizen who is recreating in the outdoors in order to protect that environment.
SKE-COLOGY	Is a program is used at ski resorts across the country and is modified at each resort to address local wildlife, habitat, and environmental issues. The SKE-COLOGY curriculum is centered on explanatory signs that give information on local animals and their habitats. The signs are designed for use by formal/non-formal educators and by the general public.
Sustainable	To be able to use methods, systems and materials that won't deplete resources or harm natural cycles.
Soil Erosion	Soil that is naturally removed by the action of water or wind.
Vegetation	All the plants or plant life of a place, taken as a whole
Watershed	The area of land where all of the water that is under it or drains off of it goes into the same place. Alta is located in a National Forest and within the Salt Lake City watershed area.
Wetlands	Areas of ground that are saturated with water either permanently or seasonally.

PHOTOGRAPHIC WORKS CITED

Sign 1

- Red Squirrel. 2 March 2011. Cottonwood Canyons Foundation
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Flower Image: Showy Golden Eye – *Viguiera multiflora*

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Image: Mt. Baldy and Collins Lift in Collins Gulch