SAN JUAN MOUNTAINS ASSOCIATION

Education Programs

Teacher Program Menu and Standards Crosswalk

Place-based classroom and field experiences across Southwest Colorado

Science, social studies, and nature connection through inquiry, observation, modeling, and outdoor exploration.

ABOUT THIS MENU

Learning rooted in place

SJMA programs connect classroom learning with the public lands, watersheds, ecosystems, and cultural landscapes of Southwest Colorado. Educators use hands-on materials, local examples, inquiry, and field observation to help students build knowledge through direct experience.

Standard format

Unless otherwise noted, each preset program includes a one-hour classroom visit followed by a three-hour field trip on a separate day.

Special formats

Programs can be adapted to fit time that works for your curriculum. Please inquire for any changes that would allow the program to fit your format better.

Suggested grade ranges

Grade ranges identify the strongest curricular fit for the standard version of each program. They are not participation limits.

Adaptability

Many programs can be adapted for high school, college, educator, and adult groups by increasing conceptual depth, field methods, data analysis, and independent investigation.

Standards language

The menu uses the word supports rather than aligned to unless the standard program routinely addresses the major components of a performance expectation. The appendix distinguishes Core, Supporting, and Conditional connections so teachers can see when a standard depends on a particular activity, extension, age adaptation, or field condition.

Activities, locations, and field methods may vary with group goals, accessibility needs, site capacity, weather, stream flow, snowpack, and other field conditions.

Contact SJMA for current scheduling, pricing, locations, and funding opportunities.

Quick-reference chart

Program	Suggested grades	Key topics	Older learner adaptation	Format / notes
1. Rock Cycle: Building Up and Breaking Down	2-8	Rock cycle; weathering; erosion and deposition; runoff; geologic history	Yes - through college/adult	Classroom + field
2. Plant Adaptations	3-6	Plant structures; water conservation; environmental factors; reproduction; seed dispersal	Yes - through college/adult	Classroom + field
3. Animal Adaptations	2-5	Physical and behavioral adaptations; skulls and teeth; camouflage; senses; predator-prey behavior	Yes - high school/adult	Classroom + field
4. Living Things Grow and Change: Life Cycles	1-3	Plant and animal life cycles; growth; reproduction; metamorphosis; parent-offspring patterns	Yes - through middle school	Classroom + field
5. Trophic Detectives	4-7	Producers, consumers, and decomposers; food chains and webs; trophic levels; energy flow; matter cycling	Yes - through college/adult	Classroom + field
6. Weather, Climate, and Habitat	4-6	Temperature; air pressure and wind; humidity and precipitation; clouds; weather, climate, and microclimates	Yes - through college/adult	Classroom + field
7. Water Connections: Watersheds, Habitats, and Human Impact	4-8	Watersheds; runoff and erosion; water quality; riparian habitats; water use and human impacts	Yes - through college/adult	Classroom + field
8. Ecological Relationships	5-8	Competition; mutualism and commensalism; parasitism; predation and herbivory; niches and interdependence	Yes - through college/adult	Classroom + field
9. Fire Ecology	4-8	Fire triangle; heat transfer; fire behavior; forest management; resilience and recovery	Yes - through college/adult	Classroom + field
10. Nature Through the Five Senses	Preschool-2	Sensory observation; animal senses; echolocation and vibration; color and pattern; nature exploration	Yes - through grade 4	Classroom + field
11. Snow Science: Snowpack and Winter Watersheds	5-8	Snowpack layers; snow crystals; density and snow-water equivalent; winter watersheds; runoff and infiltration	Yes - through college/adult	Classroom + field (winter only)
12. Surviving and Thriving in Winter	3-8	Heat transfer; winter adaptations; tracking; microhabitats; insulation and food caching	Yes - through college/adult	Classroom + field (winter only)
13. Canyons of the Ancients: Archaeology and Human History	3-8	Archaeology; primary sources; observation and inference; Indigenous cultures past and present; cultural landscapes	K-2 to college/adult	Field-based
14. Animals Have It Covered: Fur, Feathers, and Scales	Preschool-1	Fur, feathers, and scales; texture and pattern; insulation and waterproofing; camouflage and protection; animal design	Limited - through grade 2	Classroom; optional outdoors

PROGRAM DESCRIPTIONS

Classroom and field experiences

Each description summarizes the standard program. SJMA educators can adjust depth, methods, and examples to match students' ages and learning goals.

1. Rock Cycle: Building Up and Breaking Down

SUGGESTED GRADES	FORMAT
2-8	Classroom + field

How do rocks and landscapes change over time?

Students explore the forces that build up and break down Earth's surface, from the formation of rocks and mountains to weathering, erosion, and deposition. During the classroom visit, students use rock samples, hands-on models, and a runoff simulator to investigate how rock becomes sediment and soil, how water moves materials across a landscape, and how vegetation can reduce erosion. In the field, students look for evidence of these processes in local rocks, soils, landforms, and layers, connecting what they observe to the rock cycle, landscape change, and the geologic history of the region.

2. Plant Adaptations

SUGGESTED GRADES	FORMAT
3-6	Classroom + field

How do plants survive in environments ranging from dry desert canyons to cool mountain forests?

Students investigate the structures and strategies that help plants obtain resources, conserve water, tolerate temperature extremes, reproduce, and avoid being eaten. During the classroom visit, students use hands-on models and plant examples to connect specific adaptations to environmental challenges and design a plant suited to a chosen habitat. In the field, students observe adaptations on living plants, compare the dispersal strategies of local tree seeds, and apply their knowledge through collaborative investigation and an active relay challenge.

3. Animal Adaptations

SUGGESTED GRADES	FORMAT
2-5	Classroom + field

How do animals' bodies and behaviors help them survive?

Students investigate the physical and behavioral adaptations of animals found in Southwest Colorado, from the teeth and forward-facing eyes of predators to the camouflage, movement, and heightened senses animals use to find food and avoid danger. During the classroom visit, students examine skulls, pelts, and other animal artifacts to compare structures, diets, and ecological roles. In the field, students search for signs of wildlife and use hands-on games and models to explore adaptations such as stalking, jumping, echolocation, web sensing, and predator-prey behavior.

4. Living Things Grow and Change: Life Cycles

SUGGESTED GRADES	FORMAT
1-3	Classroom + field

How do living things change throughout their lives?

Students compare the diverse life cycles of plants and animals while identifying the stages all organisms share: beginning life, growing, reproducing, and eventually dying. During the classroom visit, students sequence and compare the life cycles of local organisms, examine how young plants and animals resemble (but are not identical to) their parents, and connect different life stages to the habitats they need. In the field, students search for evidence of plant and insect life cycles, investigate seeds and small animals, act out stages of growth and metamorphosis, and compare the patterns found across different groups of living things.

5. Trophic Detectives

SUGGESTED GRADES	FORMAT
4-7	Classroom + field

Where does the energy in an ecosystem come from, and how does it move among living things?

Students investigate the feeding relationships that connect producers, consumers, predators, prey, and decomposers within Southwest Colorado ecosystems. During the classroom visit, students build food chains and food webs, organize local organisms into trophic levels, and use hands-on models to explore how energy flows while matter is recycled. In the field, students search for evidence of each trophic level, investigate relationships among plants and animals, and work together to model the interconnected web of life.

6. Weather, Climate, and Habitat

SUGGESTED GRADES	FORMAT
4-6	Classroom + field

What creates the weather we experience, and how does it shape where living things can thrive?

Students investigate the relationships among temperature, air pressure, wind, humidity, precipitation, and cloud cover while distinguishing short-term weather from long-term climate patterns. During the classroom visit, students use hands-on experiments to explore how heating and pressure cause air to move, create a cloud-type diagram, and connect different cloud formations to the atmospheric conditions that produce them. In the field, students use weather instruments to collect and compare data from several locations, observe the plants and animals associated with each microclimate, and use evidence to explain how atmospheric conditions influence habitats and outdoor decisions.

7. Water Connections: Watersheds, Habitats, and Human Impact

SUGGESTED GRADES	FORMAT
4-8	Classroom + field

Where does our water come from, and how do landscapes, living things, and human communities shape its journey?

Students investigate the watersheds of Southwest Colorado and explore how water moves from mountain snowpack and rainfall into streams, rivers, habitats, and communities. During the classroom visit, students use a three-dimensional watershed map and hands-on models to trace local water sources, examine upstream and downstream connections, and explore topics such as freshwater availability, water use, runoff, and human impacts. In the field, students investigate riparian habitats, compare how different landscapes affect runoff and water quality, and (when conditions allow) sample aquatic macroinvertebrates as indicators of stream health. Activities are adapted to students' ages and class goals. Optional investigations for students may include calculating a macroinvertebrate-based water-quality index, testing and comparing water samples from sites along the Animas River to examine the effects of mining, and exploring how agriculture and other community needs shape water use in the Southwest.

8. Ecological Relationships

SUGGESTED GRADES	FORMAT
5-8	Classroom + field

What happens when different species interact?

Students investigate how interactions among organisms can benefit, harm, or have little effect on the species involved. During the classroom visit, students examine local examples and artifacts to distinguish among competition, mutualism, commensalism, parasitism, predation, and herbivory, while considering the ecological niche each organism fills. In the field, students search for real-life evidence of these interactions - such as pollination, insect galls, browsing, competition, and signs of predation - and participate in the Web of Reciprocity to explore how changes to one part of a community can affect many others. The program also examines humans as animals within Earth's ecosystems, including the resources we depend on and our responsibilities within the ecological communities we share.

9. Fire Ecology

SUGGESTED GRADES	FORMAT
4-8	Classroom + field

How does fire shape a forest, and what helps an ecosystem recover after it burns?

Students investigate the fire triangle, the ways fire moves through a landscape, and how forest structure and management influence fire behavior. During the classroom visit, students explore the roles of heat, fuel, and oxygen, learn how approaches to wildfire management have changed over time, and may use a matchstick-forest model to compare how tree density, ground fuels, and management choices affect fire intensity. In the field, students visit a wildfire burn scar or an area shaped by prescribed fire when possible, comparing burned and unburned areas and looking for evidence of fire's effects, forest resilience, plant adaptations, regrowth, and changing habitat. Through observation and hands-on modeling, students consider how practices such as prescribed fire and forest thinning can support healthier, more resilient forests.

10. Nature Through the Five Senses

SUGGESTED GRADES	FORMAT
Preschool-2	Classroom + field

How do our senses - and the senses of other animals - help us understand and navigate the world?

Students investigate how sight, sound, smell, touch, and taste provide information that helps living things find resources, communicate, and avoid danger. During the classroom visit, students use sensory clues to match sounds, scents, textures, and other observations while comparing human senses with those of local animals. In the field, students practice careful observation through a rotating selection of games and guided explorations, which may include sensory scavenger hunts, animal artifacts, echolocation and vibration activities, color matching, and Meet Your Tree. Students explore taste through discussion and sensory comparison rather than tasting wild materials.

11. Snow Science: Snowpack and Winter Watersheds

SUGGESTED GRADES	FORMAT
5-8	Classroom + field (winter only)

How does winter snow become the water that sustains our watersheds throughout the year?

Students investigate snow as a changing material, an important water reservoir, and a vital part of mountain ecosystems and communities. During the classroom visit, students explore snow density and snow-water equivalent, compare different snow-crystal structures, and use maps and models to trace how melting snow moves through a watershed as runoff and infiltration. In the field, students snowshoe to a winter study site and, when conditions allow, dig a snow pit to examine snowpack layers, crystal types, temperature gradients, density, and water content. Students use their observations and measurements to consider how the structure of the snowpack changes over time and how much water it may contribute to the watershed. Optional investigations may include avalanche science and comparisons with SNOTEL or other historical snowpack data. Activities are adapted during low-snow years.

12. Surviving and Thriving in Winter

SUGGESTED GRADES	FORMAT
3-8	Classroom + field (winter only)

How do animals stay warm, find food, and remain active through a Southwest Colorado winter?

Students investigate animal adaptations through the lens of thermal energy and the ways heat is gained and lost. During the classroom visit, students explore conduction, convection, radiation, and evaporation while examining how fur, feathers, fat, body shape, shelter, and behavior help animals conserve energy and survive cold conditions. In the field, students snowshoe through winter habitat, search for tracks and other signs of wildlife, and use evidence to interpret how animals move, feed, and find shelter. Students also design and test an insulated den for a model animal and usually participate in a seed-caching challenge to explore how local wildlife prepares for periods when food is scarce. Additional investigations of temperature, snow depth, and winter microhabitats may be included depending on the group and conditions. Activities are adapted during low-snow years.

13. Canyons of the Ancients: Archaeology and Human History

SUGGESTED GRADES	FORMAT
3-8	Field-based

How can objects, buildings, and landscapes help us understand the people who have lived in this region?

During this field-based program, students explore archaeology, local history, Indigenous cultures past and present, and the importance of visiting cultural sites with respect. At the Canyons of the Ancients Visitor Center and Museum, students use observations and inferences to investigate museum collections, consider how removing an artifact from its context can change the story it tells, and hike to Dominguez and Escalante Pueblos. Depending on the students' ages and learning goals, activities may include exploration of approved teaching collections and replica materials, traditional games, atlatl use, or a plant walk examining how local plants were used by Ancestral Pueblo peoples and, in many cases, continue to be used today.

14. Animals Have It Covered: Fur, Feathers, and Scales

SUGGESTED GRADES	FORMAT
Preschool-1	Classroom; optional outdoors/field

What covers an animal's body, and how does that covering help it live?

Designed for preschool through first grade, this hands-on exploration introduces students to animals of Southwest Colorado through touch, observation, and play. During the classroom visit, students examine pelts, feathers, scales, shells, quills, skulls, bones, and other animal artifacts while comparing their textures, shapes, and patterns. Students explore how different body coverings and structures can help animals stay warm, remain dry, blend into their surroundings, move, eat, and protect themselves. Activities are adaptable and may include a story, sorting or matching games, and creating an imaginary animal with coverings suited to its habitat. This program is generally offered as a stand-alone classroom experience. An optional outdoor extension may include a nature scavenger hunt and guided observations of animals, signs, habitats, and patterns in the surrounding landscape.

CAS and NGSS program crosswalk

Core	Supporting	Conditional
Routinely addressed in the standard program.	Meaningfully reinforced, but the program does not consistently address every component of the expectation.	Applies only when the named activity, extension, age adaptation, or field condition is included.

EO = Evidence Outcome. Preschool NGSS performance expectations do not exist; preschool programs are crosswalked primarily to Colorado Academic Standards.

Program	Status	Colorado Academic Standards	NGSS	Program connection / condition
Rock Cycle	Core	SC.2.3.1 EO a	2-ESS1-1	Use multiple sources and observations to distinguish Earth events that happen quickly from those that occur over long periods.
Rock Cycle	Core	SC.2.3.2 EO a	2-ESS2-1	Use runoff and vegetation models to compare ways to slow or prevent water-driven land change.
Rock Cycle	Core	SC.4.3.1 EO a	4-ESS1-1	Interpret local layers, rock formations, and other evidence of landscape history.
Rock Cycle	Core	SC.4.3.2 EO a	4-ESS2-1	Observe and model weathering, erosion, and deposition by water, ice, wind, and vegetation.
Rock Cycle	Core	SC.5.3.3 EO a	5-ESS2-1	Model interactions among rock, soil, water, plants, and landforms.
Rock Cycle	Core	SC.MS.3.4 EO a-b	MS-ESS2-1; MS-ESS2-2	Model the rock cycle and explain how geoscience processes change Earth's surface across scales.
Rock Cycle	Conditional	SC.MS.3.3 EO a	MS-ESS1-4	Applies when rock strata and geologic history are developed into a substantial evidence-based timeline.
Plant Adaptations	Core	SC.3.2.4 EO b	3-LS4-2	Use variation in plant structures and traits to explain survival advantages.
Plant Adaptations	Core	SC.3.2.5 EO a	3-LS4-3	Connect plant traits with differing success in particular habitats.
Plant Adaptations	Core	SC.4.2.1 EO a	4-LS1-1	Relate plant structures to survival, growth, behavior, and reproduction.
Plant Adaptations	Core	SC.MS.2.2 EO a	MS-LS1-4	Examine how specialized plant structures affect reproductive success.
Plant Adaptations	Conditional	SC.MS.2.2 EO b	MS-LS1-5	Applies when students substantially investigate how environmental conditions affect growth.
Animal Adaptations	Core	SC.3.2.5 EO a	3-LS4-3	Use evidence to explain why particular adaptations support survival in a habitat.
Animal Adaptations	Core	SC.4.2.1 EO a	4-LS1-1	Connect internal and external animal structures with survival, behavior, growth, and reproduction.

Program	Status	Colorado Academic Standards	NGSS	Program connection / condition
Animal Adaptations	Core	SC.4.2.1 EO b	4-LS1-2	Model how animals receive sensory information, process it, and respond.
Animal Adaptations	Conditional	SC.2.2.2 EO a	2-LS4-1	Applies when students compare organisms or signs across more than one habitat or ecosystem.
Life Cycles	Core	SC.1.2.2 EO a	1-LS3-1	Observe that offspring resemble, but are not identical to, their parents.
Life Cycles	Core	SC.3.2.1 EO a	3-LS1-1	Develop and compare models of diverse life cycles with shared stages.
Life Cycles	Conditional	SC.2.2.1 EO b	2-LS2-2	Applies when students model how animals pollinate plants or disperse seeds.
Trophic Detectives	Core	SC.5.1.4 EO a	5-PS3-1	Use food-chain and trophic models to trace energy in animals' food back to the sun.
Trophic Detectives	Core	SC.5.2.2 EO a	5-LS2-1	Model the movement of matter among plants, animals, decomposers, and the environment.
Trophic Detectives	Core	SC.MS.2.6 EO a	MS-LS2-3	Model matter cycling and energy flow among living and nonliving ecosystem components.
Trophic Detectives	Conditional	SC.5.2.1 EO a	5-LS1-1	Applies when students support the claim that plant matter comes chiefly from air and water.
Weather, Climate, and Habitat	Core	SC.5.3.3 EO a	5-ESS2-1	Use weather and microclimate observations to explain interactions among atmosphere, land, water, and living things.
Weather, Climate, and Habitat	Conditional	SC.MS.3.7 EO a	MS-ESS2-5	Applies when older groups use pressure, air movement, and weather data to explain changing conditions.
Water Connections	Core	SC.4.3.2 EO a	4-ESS2-1	Use models and field evidence to examine how water, slope, vegetation, and land use affect erosion and sediment.
Water Connections	Supporting	SC.4.3.3 EO a	4-ESS2-2	Use a three-dimensional watershed map to interpret ridgelines, valleys, waterways, and drainage patterns.
Water Connections	Core	SC.5.3.3 EO a	5-ESS2-1	Model interactions among land, water, living things, and human communities.
Water Connections	Conditional	SC.5.3.4 EO a	5-ESS2-2	Applies when students describe or graph the distribution of freshwater.
Water Connections	Core	SC.5.3.5 EO a	5-ESS3-1	Examine ways communities use science to protect water resources and environmental quality.
Water Connections	Conditional	SC.MS.3.10 EO a	MS-ESS3-3	Applies when students design or evaluate methods to monitor or reduce runoff, pollution, or water withdrawal.
Water Connections	Conditional	SC.MS.2.7 EO b	MS-LS2-5	Applies when older groups evaluate competing watershed-management solutions using explicit criteria.

Program	Status	Colorado Academic Standards	NGSS	Program connection / condition
Ecological Relationships	Core	SC.MS.2.5 EO b	MS-LS2-2	Explain and compare recurring patterns of competitive, predatory, and mutually beneficial interactions.
Ecological Relationships	Conditional	SC.MS.2.5 EO a	MS-LS2-1	Applies when students collect, graph, or interpret evidence about resource availability and populations.
Ecological Relationships	Conditional	SC.MS.2.7 EO a	MS-LS2-4	Applies when students use evidence to explain how changing one ecosystem component affects populations.
Ecological Relationships	Supporting	SC.5.2.2 EO a	5-LS2-1	Applies when students explicitly model matter moving among organisms, decomposers, and the environment.
Fire Ecology	Core	SC.4.1.2 EO a	4-PS3-2	Observe heat transfer during fire-triangle demonstrations and forest-fire models.
Fire Ecology	Core	SC.5.3.5 EO a	5-ESS3-1	Investigate how prescribed fire, thinning, and fuel reduction can protect forests and communities.
Fire Ecology	Core	SC.MS.2.7 EO a	MS-LS2-4	Use burned and unburned areas to explain how disturbance changes habitat, resources, and populations.
Fire Ecology	Conditional	SC.3.3.2 EO a	3-ESS3-1	Applies when students make an evidence-based claim about a strategy for reducing wildfire impacts.
Fire Ecology	Conditional	SC.MS.2.7 EO b	MS-LS2-5	Applies when older groups compare management options using ecological, social, or economic criteria.
Nature Through the Five Senses	Core	SC.P.1.1	No preschool NGSS PE	Use the five senses and simple tools to observe, compare, and describe materials and phenomena.
Nature Through the Five Senses	Core	SC.P.2.1	No preschool NGSS PE	Observe and describe living things, their characteristics, habitats, and ways of gathering information.
Nature Through the Five Senses	Supporting	SC.P.3.1	No preschool NGSS PE	Use sensory observation and simple tools to investigate the outdoor environment.
Nature Through the Five Senses	Conditional	SC.4.2.1 EO b	4-LS1-2	Applies to older adaptations that explicitly model sensory input, processing, and response.
Snow Science	Core	SC.5.3.3 EO a	5-ESS2-1	Use relief maps, snowmelt models, and snowpack evidence to connect Earth systems.
Snow Science	Core	SC.MS.3.6 EO b	MS-ESS2-4	Model water cycling through melting, runoff, infiltration, evaporation, condensation, precipitation, and sublimation.
Snow Science	Conditional	SC.5.3.5 EO a	5-ESS3-1	Applies when students substantially investigate snow monitoring, water management, or conservation.

Program	Status	Colorado Academic Standards	NGSS	Program connection / condition
Snow Science	Conditional	SC.MS.3.9 EO a	MS-ESS3-2	Applies when avalanche studies require hazard-data analysis, forecasting, and mitigation evaluation.
Surviving and Thriving in Winter	Core	SC.3.2.5 EO a	3-LS4-3	Use winter habitat conditions and animal traits to explain differing survival success.
Surviving and Thriving in Winter	Core	SC.4.1.2 EO a	4-PS3-2	Observe conduction, convection, radiation, and evaporation as forms of thermal-energy transfer.
Surviving and Thriving in Winter	Core	SC.4.2.1 EO a	4-LS1-1	Relate fur, feathers, fat, body shape, and shelter-building structures to winter survival.
Surviving and Thriving in Winter	Core	SC.MS.1.6 EO a	MS-PS3-3	Design, construct, test, and revise an insulated den that minimizes thermal-energy transfer.
Canyons of the Ancients	Core	SS.3.1.1	N/A	Use artifacts, buildings, images, and other sources to make observations and inferences about the past.
Canyons of the Ancients	Supporting	SS.3.1.2	N/A	Examine the history, interactions, and continuing contributions of Indigenous peoples and cultures.
Canyons of the Ancients	Core	SS.4.1.1	N/A	Investigate Colorado history through primary and secondary sources and multiple perspectives.
Canyons of the Ancients	Supporting	SS.4.2.2	N/A	Examine relationships among settlement, architecture, resources, and the physical landscape.
Canyons of the Ancients	Core	SS.6.1.1	N/A	Analyze artifacts and historical sites while considering context, reliability, perspective, and evidentiary limits.
Canyons of the Ancients	Conditional	SS.6.1.2	N/A	Applies when older groups substantially investigate continuity, change, and connections between past and present.
Animals Have It Covered	Core	SC.P.1.1	No preschool NGSS PE	Use senses to compare textures, shapes, colors, and patterns in animal coverings and artifacts.
Animals Have It Covered	Core	SC.P.2.1	No preschool NGSS PE	Observe animals' unique characteristics and connect them with basic needs and environments.
Animals Have It Covered	Supporting	SC.P.3.1	No preschool NGSS PE	Applies when students use natural materials or complete an outdoor observation extension.
Animals Have It Covered	Conditional	SC.K.3.2 EO a	K-ESS3-1	Applies when an animal model explicitly connects a covering or structure with needs in a particular habitat.
Animals Have It Covered	Conditional	SC.1.2.1 EO a	1-LS1-1	Applies to a biomimicry extension in which students design a human solution inspired by an animal covering.

Standards use note

This crosswalk is a planning aid for teachers and program staff. A field experience may strongly support a standard without completing every element of the associated performance expectation or classroom assessment. For formal reporting or curriculum adoption, review the full expectation, clarification statements, and assessment boundaries.

Primary standards references: Colorado Department of Education Colorado Academic Standards and the official Next Generation Science Standards website.