



TSX Student Treks

Inspiring the Next Generation of Environmental Stewards

tsxchallenge.com

2023 SUMMER ENROLMENT BEGINS NOVEMBER 17TH

**Our Summer
2023 educational
experiences are
designed to
inspire and
develop our next
generation of
environmental
stewards.**





TSX NextGen Education

Unifying Themes



Ecosystem Change

Engaging with ecosystems in flux, participants come to understand that climate change, both anthropogenic and natural, is real and is happening.



Interactions and Interdependencies

Building a framework for understanding interconnectedness in the biological world by engaging with community dynamics, abundance and distribution, competition, and symbiosis.



Ecological Methodology

Collecting environmental data through participation in longitudinal lab investigations related to biodiversity, soil chemistry, water quality, microcrustaceans, UV and glacial history.



Experimental Design

Developing an understanding of scientific processes while tapping into the curiosity and wonder of the experience to inspire new questions and explore future pursuits in the sciences.



Energy, Matter and Organization

Recognizing the role that the natural world, and anthropogenic processes play in nutrient cycling and imbalances in these cycles.



Stewardship and Communication

Empowering participants with knowledge and confidence to lead us into the next generation of wilderness stewardship.

TREK DATES & PRICING

	Length	Dates	Pricing*
JOHN MUIR WILDERNSS Outdoor Leadership	6 days	June 9 – 14 June 17 – 22	\$1649
MT. WHITNEY TRANS-SIERRA Environmental Science	9 days	July 8 – 16 July 17 – 25 July 29 – Aug 6	\$2250

*Excludes optional transportation to and from the San Francisco Bay Area (\$149 round trip).

*Financial assistance may be available for those who demonstrate need. We are actively working to secure funds and additional information will be provided upon acceptance.

*Deposit of 50% due upon acceptance with the balance due 60 days before the event. Our education experiences are eligible for our Amended COVID-19 Cancellation Policy. Cancel up until the day of the trip without the risk of lost money. 100% of any payment may be applied to a future TSX experience.

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SUMMER 2023 EXPERIENCES

MULTI-NIGHT IMMERSIVE BACKPACKING FOR STUDENTS AGE 13-17





JOHN MUIR WILDERNESS

OUTDOOR LEADERSHIP
JUNE 9 – 14 | JUNE 17 – 22, 2023

JOHN MUIR WILDERNESS

Outdoor Leadership | June 9 – 14 and June 17 – 22

Overview: There is no better setting than the lake-studded high basins of John Muir Wilderness for a week of hands-on experiential learning focused on leadership and environment, leave no trace, and life skills. On this experience we have a golden opportunity to connect with ourselves, our team of up to 10 participants and 2 instructors, and two gems of the High Sierra: Red Mountain Basin and Bench Valley. Our **John Muir Wilderness** experience is centered around leadership development and environmental education that includes:

- Self exploration including purpose building, group dynamics and mindful leadership training.
- Instilling confidence for future safe and self-reliant experiences in the outdoors along with best practices to minimize wilderness degradation, including Leave No Trace.
- Appreciation of Sierra diversity, including ecology, geology, and flora over elevations traversed.
- Stimulate critical thought on environmental, water and land management challenges facing the Sierra.
- Exploring off-trail travel of 6-8 miles to remote destinations in Red Mountain Basin and Bench Valley.

Our itinerary provides ample opportunity for students to explore their passions as they relate to wilderness.

Meetup Location
REI Dublin, CA or
Shaver Lake, CA

Start Time
9am, REI Dublin
12pm, Shaver Lake

Trailhead
Maxon / Courtright

Highest Camp Elevation
11,000'

Elevation Range
8,000'-12,000'

End Time
3pm, Shaver Lake
6pm, REI Dublin

Total Distance
40 miles

Miles/Day
4 to 12 miles

Lead Instructor
Andy Giordano

JOHN MUIR WILDERNESS

Outdoor Leadership | June 9 – 14 and June 17 – 22

Meeting point: We will meet at a designated location in Shaver Lake, California on the day of arrival for a pack-check, orientation and safety talk, before we depart to spend the first night on the trail. Shaver Lake, CA is a 3-4 hour drive from the Bay Area, 4-5 hour drive from Southern California, or 1 hour drive from the Fresno/Clovis area.

Transportation: We help facilitate carpool arrangements if need from the San Francisco Bay Area and the Fresno/Clovis area. Transportation is provided between the meetup point and our trailhead near Courtright Reservoir. If traveling by air, fly into Fresno (FAT). Contact us if additional arrangements are needed.

Tentative itinerary:

Day 1 – Afternoon arrival, pack-check, overnight on trail | +/- 6 miles

Day 2 – Post-Corral Creek to Disappointment Lake | +/- 7 miles

Day 3 – Disappointment Lake to LeConte Divide | +/- 5 miles

Day 4 – Off-trail traverse of Mt. Hutton and Bench Valley | +/- 3 miles

Day 5 – Bench Valley to North Fork Kings River | +/- 10 miles

Day 6 – North Fork Kings River to trailhead | +/- 9 miles



JOHN
MUIR
WILDERNESS
ROUTE MAP

Red Mountain

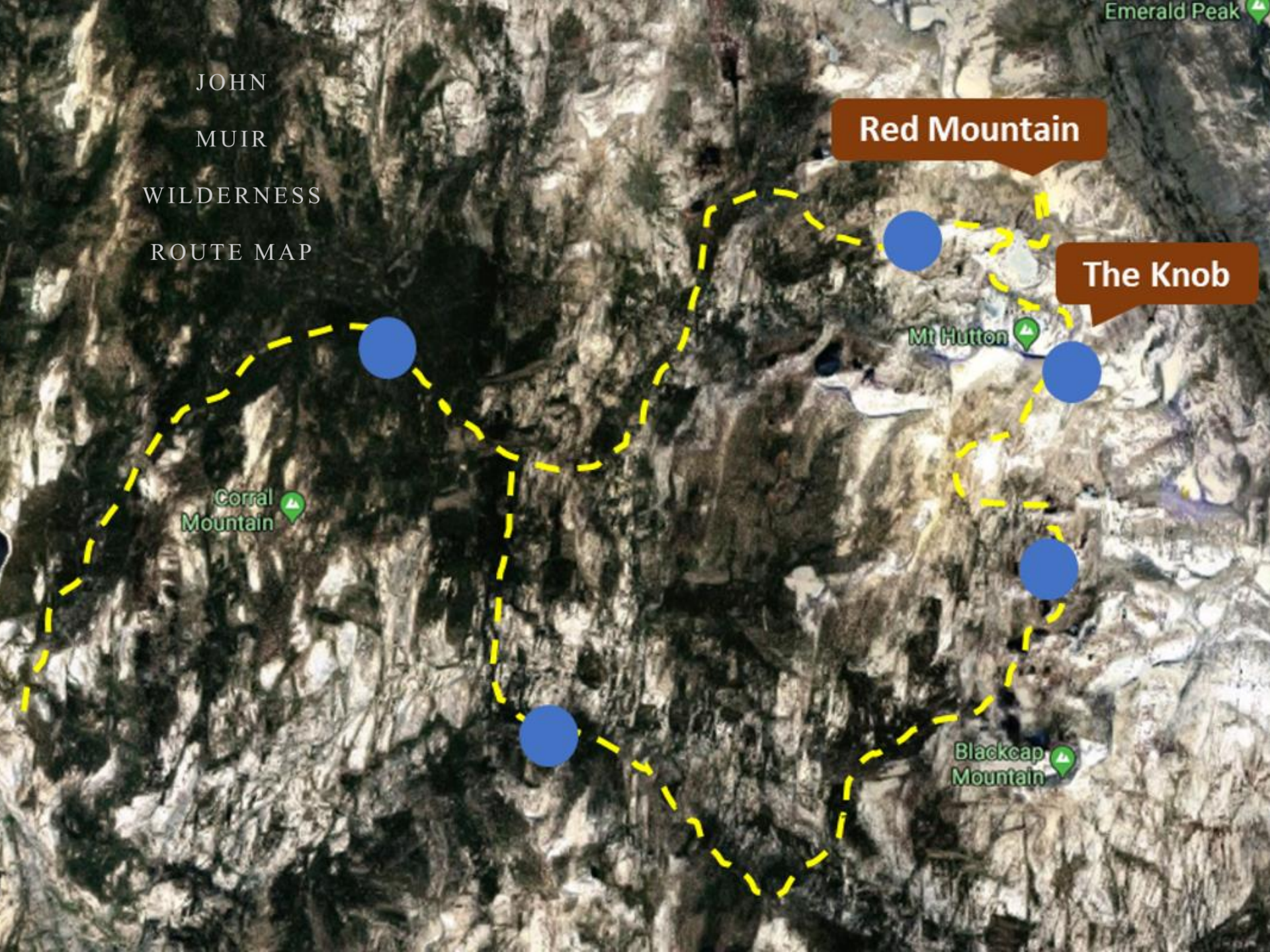
The Knob

Mt Hutton

Corral
Mountain

Blackcap
Mountain

Emerald Peak

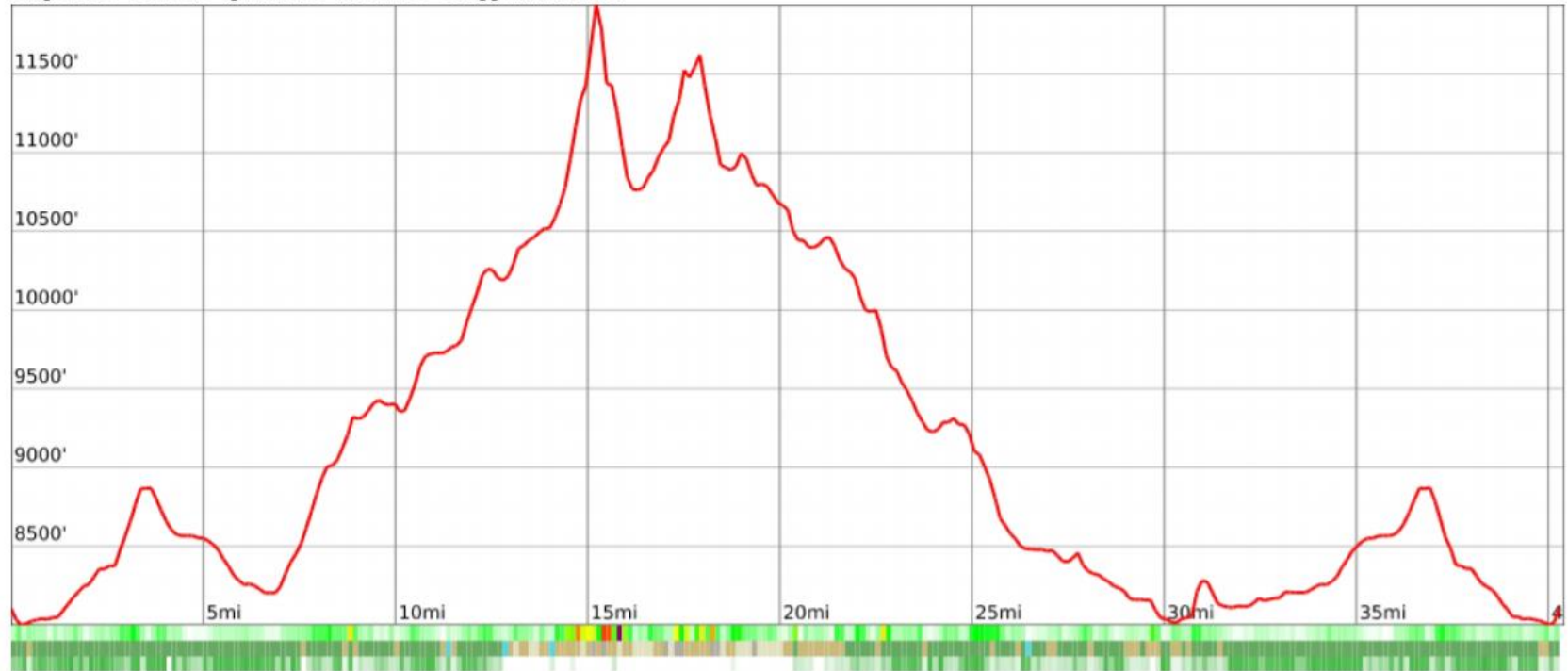


JOHN MUIR WILDERNESS

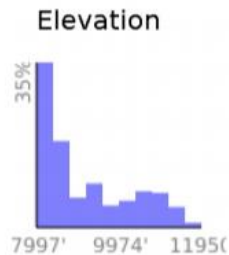
Outdoor Leadership | June 9 – 14 and June 17 – 22

Elevation Profile

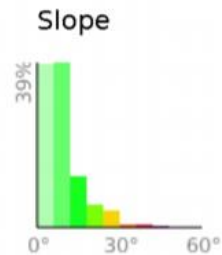
range 7995' to 11949' gain 7228' loss 7228' exaggeration 21.6x



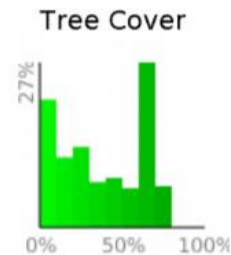
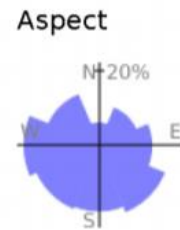
Slope Angle (top), Land Cover (middle), Tree Cover (bottom)



Min 7997'
Avg 9155'
Max 11950'
Delta 3953'



Min 0°
Avg 9°
Max 47°



Land Cover

- Forest 69%
- Shrub 21%
- Grassland 6%
- Barren 3%
- Wetland 1%



MT. WHITNEY | TRANS-SIERRA

ENVIRONMENTAL SCIENCE

JULY 8 – 16 | JULY 17 – 25 | JULY 29 – AUG 6

MT. WHITNEY | TRANS-SIERRA

Environmental Science

Overview: This wilderness educational trip traverses Sequoia and Kings Canyon National Park along our established **Trans-Sierra route**, which we have been operating on commercially since 2011, and includes a summit of Mt. Whitney (14,505'). Our curriculum is anchored in environmental science protocols and concepts, leveraging the intrinsic benefits of the wild (beauty, joy, peace, challenge) in order build an understanding of how ecosystem services lead to extrinsic value (timber, mineral resources, soil health, clean air, water, biodiversity, etc.), and how we sustain and protect this balance. Group size will be up to 12 participants with 2 to 3 guide instructors.

General lab investigations: Lab investigations are activities where the bulk of learning occurs as a function of student investigation in a hands-on fashion. Our labs will start with observations, leading to hypothesis testing as students build comfort with what they find. A detailed list of our lab investigations is included on the following pages.

Who this is for: We have designed this to be an intense, best-in-class wilderness educational experience. This trip is ideal for students with strong academic underpinnings, high personal character, and a demonstrated interest in environmental sciences or stewardship. In addition, students should be prepared to contribute and work together in a collaborative, team environment.

Meetup Location

REI Dublin, CA or
Clovis, CA

Start Time

10am, REI Dublin or
1pm, Clovis

Trailhead

Sugarloaf

Highest Camp Elevation

10,600'

Elevation Range

7,000'-14,505'

End Time

6-8pm, Date TBD

Total Distance

75 miles

Miles/Day

6 to 15 miles

Lead Instructor

Andy Giordano

MT. WHITNEY | TRANS-SIERRA

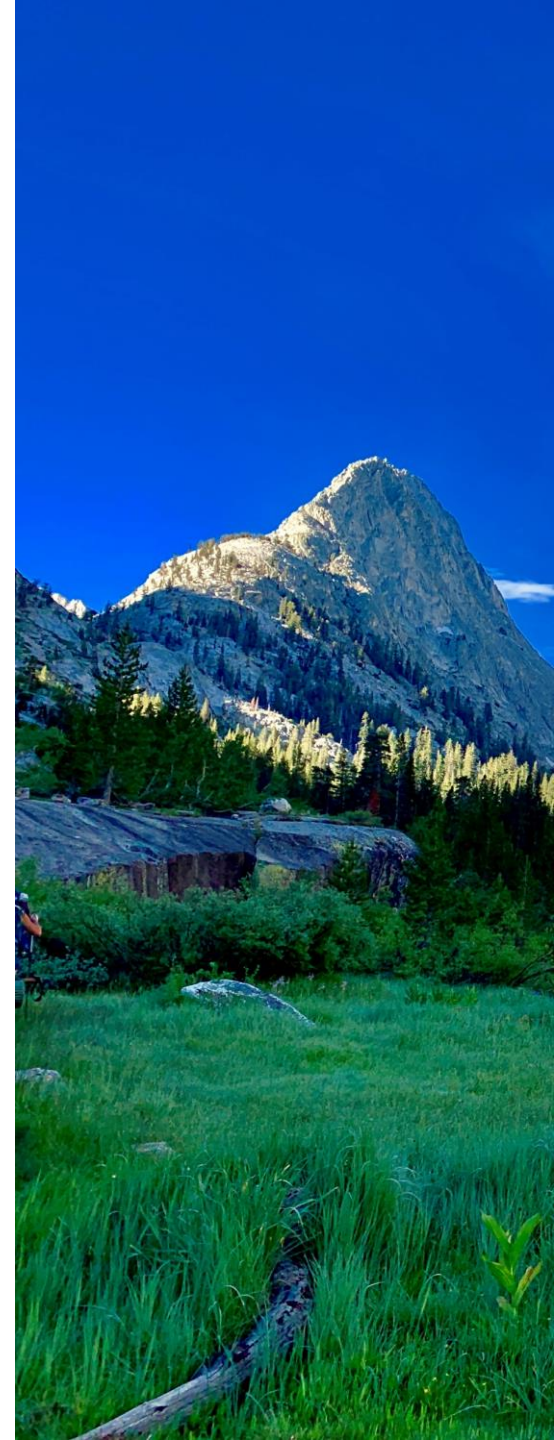
Environmental Science

LAB INVESTIGATION #1

Walking transect: The goal of our walking transect is to immerse students in the plant communities of the region as they walk through them, and to draw attention to the reasons why community assemblages shift as a result of abiotic conditions.

This lab takes place across the entire trip. At regular intervals during our trek, students will record a waypoint, including altitude, and do a quick survey of tree species present. By the end of the journey, they will have a data table that records the biodiversity across the length of the trek.

They will represent this data with a chart showing distance, altitude, and tree species. This is a 5 ft long chart, with species represented by color. Points of interest will be noted along the route, and the shifting assemblages become easy to talk about as a function of altitude, slope, aspect, etc. Students become familiar with abundance, distribution, and local naturalism.



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Environmental Science

LAB INVESTIGATION #2

Soil science: The goal of the soil science lab is for students to understand limiting factors in the environment, and to introduce ideas supporting soil retention (negative feedback) and understanding how runaway erosion can occur because of deforestation (positive feedback).

We will take soil chemistry indices, including nitrate and phosphate tests, as well as do a soil composition analysis. These analyses will take place in forests of different types along the trek, allowing students to create and test hypotheses relating to communities, succession, competition, and soil quality.



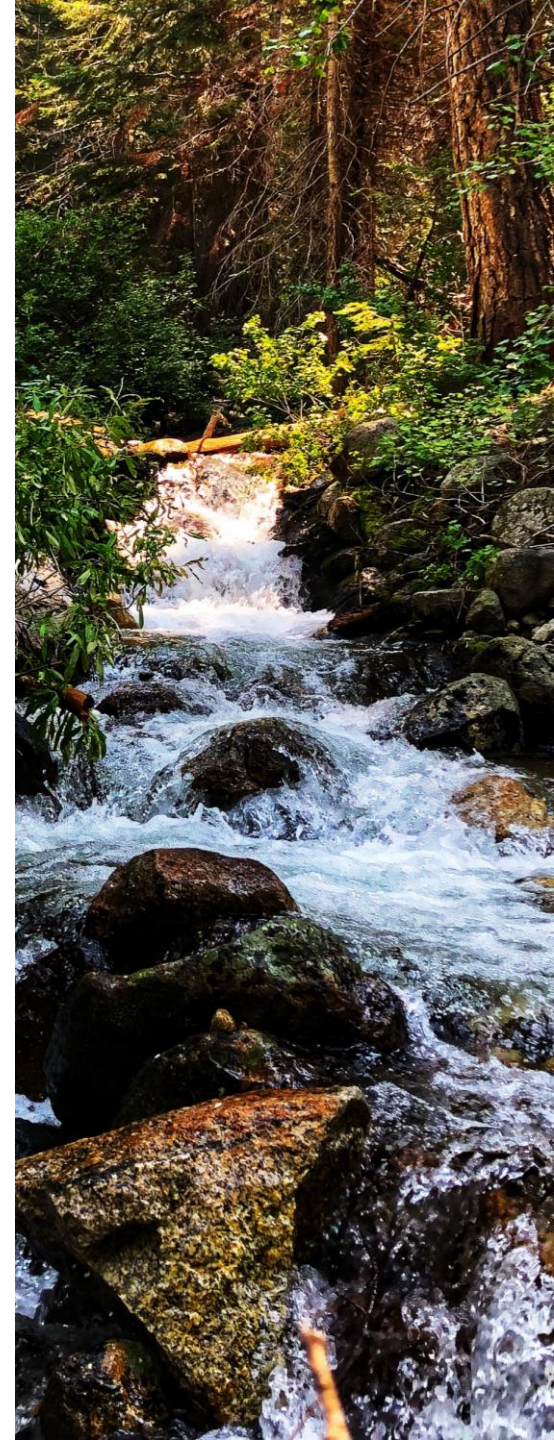
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Environmental Science

LAB INVESTIGATION #3

Water quality indices: Water quality indices are a hallmark of secondary science and outdoor education programs. Collecting water chemistry and temperature data, and surveying macroinvertebrates is a great, low tech and fun way to engage student groups with science.

We will be using these indices as a baseline for student question asking, hypothesis testing and comparative analysis. Along with soil chemistry data, water chemistry data will be retained to establish a longitudinal data set from our programs moving forward.



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Environmental Science

LAB INVESTIGATION #4

Microcrustaceans, UV and glacial history: This activity is an extension of our water quality studies, to include lakes. Students will collect all standard water quality indices at the lakes along our trek. By design we will be steering them towards indices that respond to human pressure as we approach the second half of our trek (nitrates, phosphates, BOD).

Lakes also offer us an interesting opportunity to study different fauna, such as the microcrustaceans that typically populate still water. Studying these organisms with field microscopes gives us a launching point to discuss glacial history in the region. These organisms are easy to collect, and allow us to discuss glacial expansion and retraction, refugia and post glacial dispersal.

Students will also use a Secchi Disk to measure turbidity and allow us to discuss UV penetration into high altitude lakes. We will also be doing comparative analyses on pH of streams, lakes, and snow to discuss acid deposition, and the connectedness of global systems (atmosphere, water).



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Environmental Science

LAB INVESTIGATION #5

Snow science: While we hope to encounter snow on Colby Pass, this may not be the case every year. However, when conditions permit, we will perform various analyses on the snow.

Students will focus on density, dissolved solids, and we will use surface temperatures of variably reflective surfaces to discuss albedo and negative feedback.

DISCUSSION AND DIRECT TEACH

Discussions and direct teach: The glue that holds all these activities together is discussions and direct teaching. Each lab connects to a crucial function of the ecosystem. We zoom out and fill in the blank spaces in student understanding by communicating these connections and reflecting upon our learning. We will cover discussion topics throughout our trek, at points of interest, and in daily briefs and debriefs. Topics we will cover are built into the detailed learning plan.





SEQUOIA & KINGS
CANYON NATIONAL
PARK
ROUTE MAP

Mt. Whitney

Sugarloaf

Roaring
River

Whaleback

Colby Pass

Kern Canyon

Whitney
Portal

Sequoia &
Kings Canyon
National Park

Rock
Creek

Cottonwood
Pass

MT. WHITNEY | TRANS-SIERRA

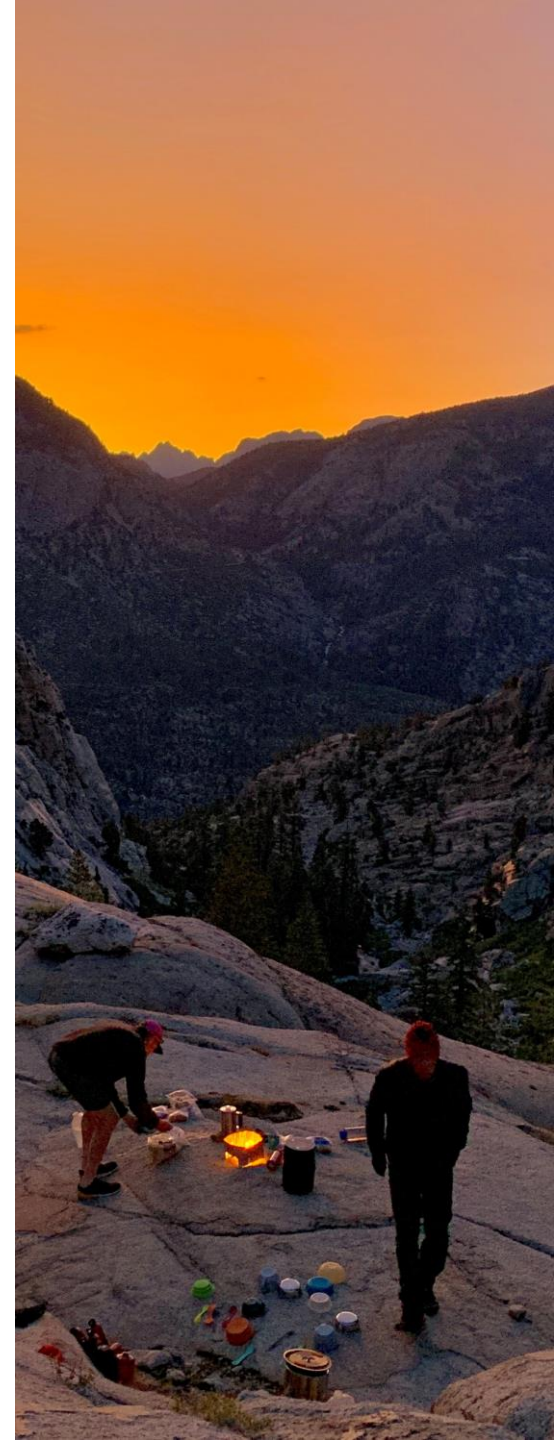
Environmental Science

ROUTE AND LOGISTICS

About our route: The journey traverses some of the most remote, least-traveled regions of the Sierra before culminating with an ascent on Mt. Whitney (elevation 14,505 feet), the highest point in the lower 48 states. You'll cover 75+ miles in one week, with over 20,000 feet in cumulative elevation gain and 18,000 feet in cumulative elevation loss. No matter your age, completing this journey will be a life-changing experience. Excellent physical conditioning is a prerequisite to join this experience.

Meeting point: We will meet at a designated location in Clovis, California on the day of arrival and immediately transport to our trailhead in Kings Canyon National Park for a pack-check, orientation and safety talk. Our first night will be camping at the trailhead.

Transportation: Transportation is provided between the meetup point and our trailhead. If traveling by air, fly into Fresno (FAT). Contact us if additional arrangements are needed. Our return transportation will meet us as we exit the trail on the eastern side of the Sierra. We will descend to Lone Pine to shower and share our last group meal. Finally, we'll head back our meetup location in Clovis. This is a five-hour+ car ride. We anticipate returning to Clovis between 6-8pm.



MT. WHITNEY | TRANS-SIERRA

Environmental Science

TENTATIVE ITINERARY*

Day 1 – Transport to trailhead

Day 2 – Horse Corral to Ferguson Creek | +/- 11 miles

Day 3 – Sugarloaf to Big Wet Meadow | +/- 10 miles

Day 4 – Big Wet Meadow to Colby Lake | +/- 5 miles

Day 5 – Colby Lake to Junction Meadow | +/- 11 miles

Day 6 – Junction Meadow to Crabtree | +/- 9 miles

Day 7 – Crabtree to Mt. Whitney and back | +/- 15 miles

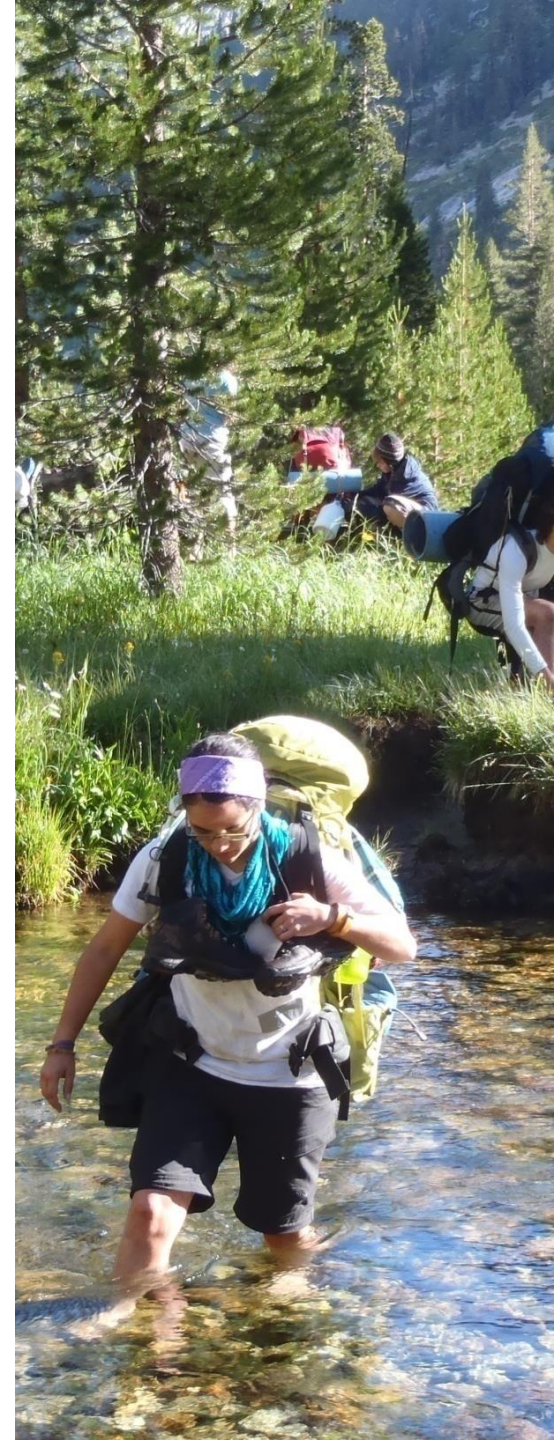
Day 8 – Crabtree to High Desert Camp | +/- 9 miles

Day 9 – High Desert Camp to Horseshoe Meadows | +/- 9 miles

**75 miles total according to Tom Harris Maps, actual mileage may vary*

SUPPLEMENTAL RESOURCES

Primary resources including the 1920 Sierra Club report of “Colby Pass and the Black Kaweah,” annual ranger reports, and historical accounts of Shorty Lovelace will be incorporated throughout the journey.



MT. WHITNEY | TRANS-SIERRA

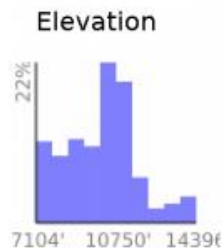
Environmental Science

Elevation Profile

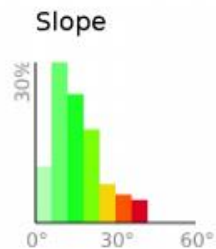
range 7103' to 14393' gain 16529' loss 14380' exaggeration 21.2x



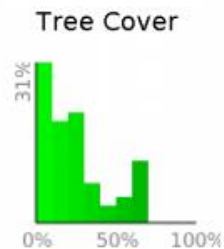
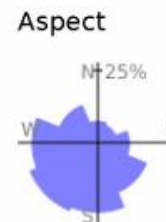
Slope Angle (top), Land Cover (middle), Tree Cover (bottom)



Min 7104'
Avg 10102'
Max 14396'
Delta 7292'



Min 1°
Avg 15°
Max 41°



Shrub 46%
Forest 29%
Barren 20%
Grassland 2%
Wetland 2%



JOINING A TSX EXPERIENCE



What's included.

We aim to make our educational treks as easy as possible for motivated students of all experience levels to join. Here is what's provided on each trip:

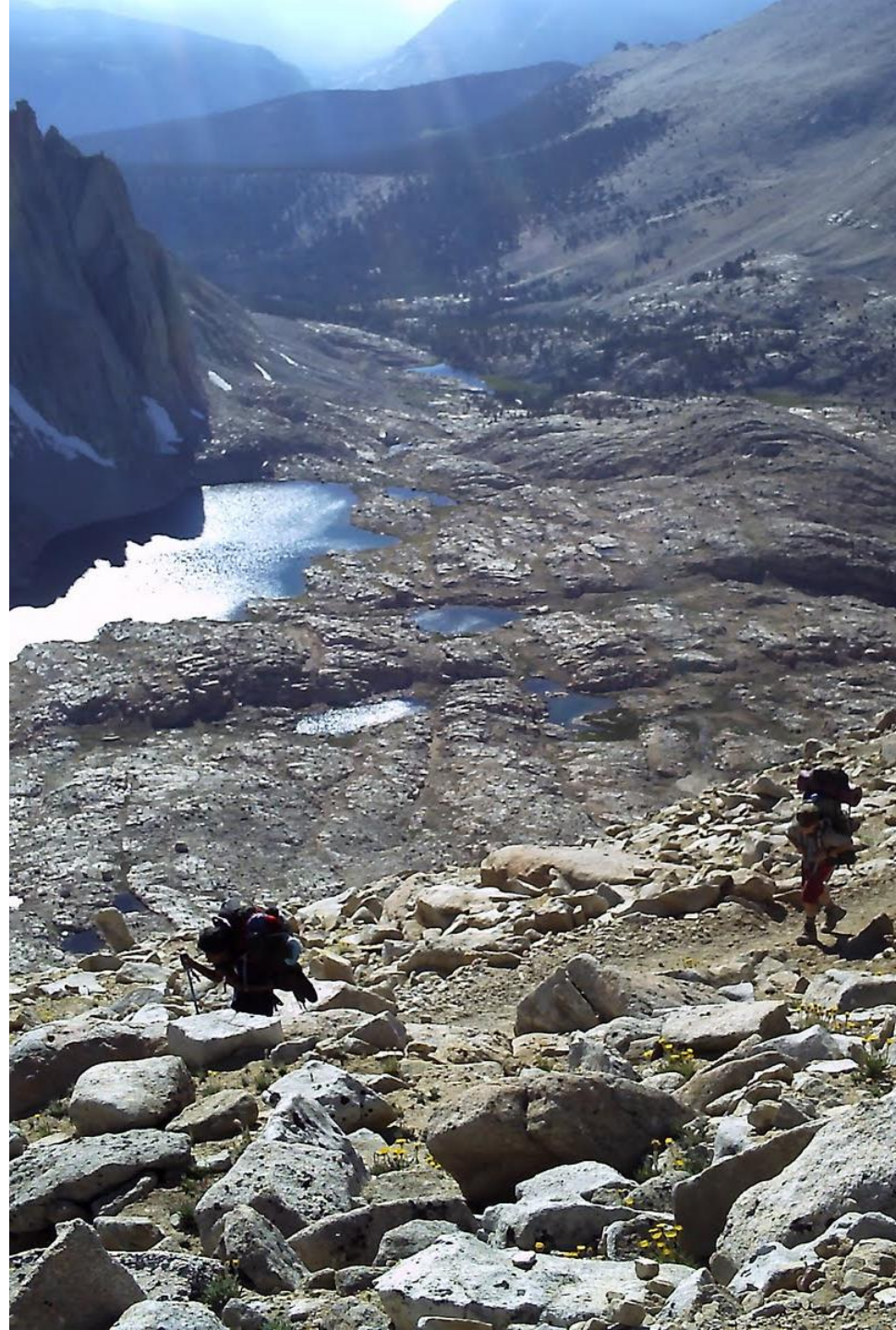
- Guided multi-night educational trek
- Personalized pack-check prior to departure
- All meals & snacks in the back-country
- Accommodations for vegetarian diets
- Group gear and equipment
- Individual gear as needed including a backpack, tent, sleeping bag, and pad
- Optional post-hike shower in Lone Pine
- Wilderness First Responder and Safe Sport certified instructors
- Dedicated academic instructor
- Flexible cancellation policy



What you need.

Here are the items each participant will need:

- Hiking shoes (broken-in)
- Lightweight camp shoes
- Hiking socks (2 pairs)
- Underwear (2 pairs)
- Long sleeve base layer top
- Shorts and lightweight pants
- Shirts (1-2 short or long sleeve)
- Insulating jacket (puffy synthetic/down)
- Poncho
- Sun hat and sunglasses with UV protection
- Warm hat (beanie/toque)
- Basic toiletries
- Lightweight flashlight
- Water containers (2; minimum 1 liter capacity)
- Insect repellent and sunscreen
- Bandanna (handkerchief)
- Lightweight gloves
- Optional items (camera, notebook, etc.)



Meet our academic director, Andy Giordano.

Andy is a multidimensional educator and leader with over 14 years of experience in independent schools and athletic academies. He has a deep understanding of the development of young people with proven capacity to connect with, motivate and inspire teens. Andy specializes in science education, social emotional learning, and experiential education. Andy combined his experience as an educator with his passion for backpacking and the outdoors to help create the curriculum that powers our NextGen experiences.

Andy's professional experience includes over a decade teaching high school classes such as Biology, Chemistry, and AP Environmental Sciences at Tahoe area academies including Sugar Bowl and Tahoe Expedition. He is also the founder of Truckee Education Group and volunteer Board President with [Headwaters Science Institute](#). Outside of work Andy is a dad, and an outdoor enthusiast with great passion for [landscape photography](#), fly fishing and herding dogs.

Andy holds a M.S. degree in Zoology from Washington State University, and received his B.S. in Biology, Ecology and Evolution from SUNY Buffalo.



ADDITIONAL RESOURCES

Website	<u>https://tsxchallenge.com/</u>
Policies	<u>https://tsxchallenge.com/policies/</u>
Gear checklist	<u>https://tsxchallenge.com/38e7b1eb7d0cc1978dbd368eaf05f9f9/</u>
Gear checklist video	<u>https://www.youtube.com/watch?v=04L0juuGqIQ</u>
Podcast	<u>https://www.hikingradionetwork.com</u>
Online classes and events	<u>https://tsxchallenge.com/events</u>
Instagram	<u>https://instagram.com/tsx.challenge</u>
FAQs	<u>https://tsxchallenge.com/frequently-asked-questions/</u>
Our story	<u>https://tsxchallenge.com/about-us</u>
Team pictures	<u>https://tsxchallenge.com/family-portriats/</u>



CONTACT US!

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We work among a resource that touches each one of our lives personally, often without us noticing.

Since 2011, TSX Challenge has been leading inspirational backpacking treks across the Sierra for individuals of all ages and experience levels. Our appreciation of this incredible resource runs deep. The Sierra Nevada range:

- Delivers water to our most populous cities.
- Delivers energy to our homes.
- Enables agriculture in California's Central Valley, which feeds the nation.
- Provides wonderful opportunities for recreation, and self-discovery.
- Is subject to wildfire, blanketing our cars with ash and clouding our air with smoke.

Understanding and appreciating the intersection between human society and the resources we all depend on is personal to our team.





How we develop the next generation of environmental stewards makes a difference.

In a nation increasingly polarized around environmental issues, the ability to ask clear questions, evaluate information, and communicate potential impacts has never been more important.

We believe in cultivating stronger stewardship and communication outcomes through TSX NextGen Education experiences by integrating inquiry labs, thoughtful curriculum and relevant themes, including:

- Recognizing natural systems interface with, include, and are impacted by humans.
- Solutions to challenges like land use conflict, natural resource management, and climate change are complex and require innovation to continue to meet human community needs.
- Developing an informed and enfranchised citizenry is required to close the trust gap that exist between scientific and American communities.

Coming soon!



GRAND CANYON

HISTORY & CULTURE



tsxchallenge.com

TSX Challenge LLC operates under permit on Sequoia and Kings Canyon National Parks, Grand Canyon National Park, John Muir Wilderness and Inyo National Forest.