Interpretive Programs for Natural Resource Interpretation at Glacier Point, Yosemite National Park, California

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Interpretive Programs for Natural Resource Interpretation at Glacier Point, Yosemite National Park, California

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Preface

This guide for Natural Resource Interpretation at Glacier Point in Yosemite National Park, California, was designed to aid Interpretive Rangers in the development of Interpretive Programs in the Glacier Point Region as well as Yosemite National Park. The guide is designed to provide examples of the programs that have been developed and implemented in the Glacier Point Region of Yosemite and ways they have been implemented. The types of programs that are included are: formal, semi-formal, ranger led hikes/walks, activity based programs and informal visitor contacts.

Each program is explained briefly, materials required, if necessary are listed, and then an outlines of each program developed under each program type is provided. The programs have an overlying theme and take home point. The talking points and stops within the programs are designed to support that idea.

Below is a sample outline that is used for all types of interpretive programs.

Sample Outline for Program

- Introduction
    - Self introduction
    - Location and description of surroundings
    - What the program entails
    - Introduction to overlying theme and topics
- Talking point 1/ stop 1 on hike
    - Detailed information
- Talking point 2/ stop 2 on hike
    - Detailed information
- ……..
    - Detailed information
- Talking point X/ stop X on hike
    - Detailed information
- Conclusion
    - Recap of points covered
    - Comments on how the points lead to the overlying theme/topic
    - Thank for attending/listening.

Executive Summary

This document was developed as a guide for Natural Resource Interpretation in the Glacier Point Region of Yosemite National Park, California. It is aimed to aid Interpretive Park Rangers new to the region or park with an education on programs are typically conducted, how they can be presented, as well as a starting point for the development of programs.

This guide presents programs developed over three summers while researching and implementing the programs as an Interpretive Park Ranger at Glacier Point. The programs are categorized by presentation type. The categories include:

- Formal Interpretive Programs
- Semi-formal Interpretive Programs
- Ranger Led Hikes/Walks
- Activity Based Interpretive Programs
- Informal Visitor Contacts

The programs that have been developed all occur in the Glacier Point area. Many can be adapted to fit other regions of the park, such as sunset talks, night prowls and campfire programs. The programs can be adapted to fit the ranger's personality and preferred presentation style. The program outlines can be used as starting off points to aid in the development of new programs for the ranger's repertoire.

The approach taken in the development of these programs was that the more a visitor knows about a resource, the more they will understand, and the more they will be able to connect with the resource and want to preserve it and learn about it themselves. My background is from a collegiate setting that is based on lectures and the sharing of information and ideas.

The implementation of the programs included in this guide relies on the Ranger's background knowledge of the subjects as well as the setting of the program including weather conditions, location, what views are available as well as the audience.

Through an understanding of the resource, the audience, and goal of the program the presented programs can be used to connect a visitor to the Glacier Point region, Yosemite National Park, the Sierra Nevada mountain range, California, and the natural world.

Acknowledgements

I would like to thank the amazing Glacier Point Ranger Staff for all of the knowledge, time and passion they have shared with me over the past few years. Your great knowledge and kindness is unforgettable! Thanks Ranger Dick, Phaedra, David, George and Charlotte. I would also like to thank my parents for supporting me in the decision to live in the middle of Yosemite in my pursuit to enjoy the world around us.

My hope for this document is to help an Interpretive Park Ranger, new to Glacier Point, new to Yosemite establish a set of programs that will educate the masses and connect the visitor to the area I love.

Sincerely,

Shannon Glendenning

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SECTION 1: INTRODUCTION AND APPROACH

Introduction

The role of the Interpretive Park Ranger is to connect the visitor with the meaning of the resource. They play a role in ensuring that visitors have a meaningful, satisfying, and safe park experience, and inform them about the wonders that await their discovery. The Ranger is there to aid visitors in their understanding of the area and the National Park, and the reasons why these lands are protected, in perpetuity. A ranger can interact with the public through a wide range of means, connections, and experiences. For this manual, the wide range of interactions has been classified to include the following: formal interpretive programs, semi-formal interpretive programs, ranger led interpretive hikes and walks, activity based interpretive programs, and informal visitor contacts.

This guide will as an aid and resource for the development implementation of the above mentioned types of interpretive programs. The program's overlying goal is to inform and connect park visitors with the park, Glacier Point Region, and its resources. For each type of program there are outlines of interpretive programs that have been developed over three summers of working at Glacier Point.

The National Park Service began in 1916 with the passage of the National Park Service Organic Act. The National Park Service is charged with the responsibility to "conserve the scenery and the natural and historic objects and wildlife therein, and provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations"- National Park Service Organic Act. The National Park System describes the collection of all units managed by the National Park Service, a total of 84.4 million acres, 394 units that include National Battlefields, National Monuments, National Seashores, and National Parks. There are currently 58 National Parks.

Yosemite National Park is in Northern California in the Sierra Nevada Mountain Range. Yosemite is known for its waterfalls, deep valleys, grand meadows, ancient giant sequoias and vast wilderness. Summertime activities that can be enjoyed by visitors are hiking, camping, bird watching, rock climbing, and auto touring. Some of the main areas park visitors travel to include The Mariposa Grove of Giant Sequoias, Wawona, Yosemite Valley, Glacier Point, and Tuolumne Meadows.

Glacier Point is located at 7,214 feet from sea level in Yosemite National Park. The main attraction at Glacier Point is the grand view of the Sierra Nevada Mountain Range. From the area visitors can see approximately one third of the National Park.

At Glacier Point, a newly hired Seasonal Ranger is plunged into the area and the idea of developing their own programs. The ranger attends their co-worker's programs, hikes the trails, and reads as much information as possible and available in the small resource library in the small Glacier Point office. After about a week of self study and shadowing the Ranger is sent out to 'The Point,' the area including the parking lot, the gift shop, and the railing area, 3,200 feet above the Valley floor. There the ranger is asked questions by the visitors. During this study time the ranger is also asked to develop their own programs that they will be leading in the next week. Some of the programs presented by the Rangers are very similar but each Ranger has slight variations based on personal interest area and style.

The process of becoming familiar and prepared for the duties on an Interpretive Ranger requires a steep learning curve. This guide is to make the learning process easier and less stressful for a Ranger new to Interpretation or new to the region or park. The duties include roving, leading

scheduled hikes, presenting formal interpretive programs that include sunset talks and holding campfire programs.

One duty of an Interpretive Park Ranger working at Glacier Point includes roving, which is an informal visitor contact. While on this assignment the ranger is present at Glacier Point, in full Class A uniform, and available to answer visitor questions. These questions range from simple to extremely complex; irrelevant, to anything in the region.

Ranger led hikes in the Glacier Point area take visitors who read about the programs in the Yosemite Guide or are informed about the program by other means to several locations in the Glacier Point area. There are hikes to Sentinel Dome and Taft Point, both of which meet at the trailhead parking lot on Glacier Point Road. Other hikes include a hike to McGurk Meadow that begins at the trailhead on Glacier Point Road or from Bridalveil Campground, depending on if the campground is open or not. There is also a hike that begins at Glacier Point and takes the visitors down the 4-mile trail one mile to a "great view of El Capitan." The hikes cover topics that are seen along the hike. They can range from the wildflowers, the geology, ecology of the area, to history. The hikes are led by the ranger to the destination and the visitors are allowed to hike back at their own pace.

Formal Interpretive programs take the form of Sunset Talks at the railing of Glacier Point. They can draw a crowd of more than 300 people on busy summer weekends. The ranger speaks to the audience for half of an hour. The talks cover a wide variety of topics, which must be appropriate for a wide range of audience members.

Additional programs that are offered that are being considered semi-formal are campfire programs that take place at Bridalveil campground. Here, the ranger roves around the entire campground and invites every campsite to the program, starting about 2 hours before the program is scheduled to begin. At the program the ranger leads the group in attendance in a song, in questions and answers, and an interpretive program that the ranger develops. Another semi-formal program that is offered by Glacier Point rangers is an astronomy program. Here, the ranger teaches the audience about the stars above at Glacier Point by giving them a naked eye star tour, aided by a laser pointer.

The activity based programs put on by interpretive rangers at Glacier Point are night prowls and Jr. Ranger programs. Night Prowls meet at Bridalveil Campground at dusk and take visitors through the forest and explore during the night while exploring their senses and comparing them to the creatures of the night.

Interpretive Park Rangers aim to engage the public so that each park visitor can find a personal connection with the meanings and values found in the places and stories of that park. Park rangers provide the public with opportunities to care about the places they visit, promote stewardship and the opportunity for those visitors to care for park resources. Through interactions with visitors, personal stewardship ethics can be shared and developed as well as increasing public support for preserving park resources, so that they may be enjoyed by present and future generations.

This guide and programs aim to promote these goals and roles of Interpretive Park Rangers and the goals the National Park Service.

Approach

As an interpretive Park Ranger, the theology I have used to connect the visitor with the meaning of the resource is one of educating the visitor about the details with a natural science emphasis on the information.

The background I have in developing the programs are in the natural resource management field. I have had classes in plant and animal biology, multiple geology courses, conflict management, leadership and facilitation, ecology, watershed management, public speaking, soil sciences, physics, statistics, calculus, and environmental policy.

My approach to connecting visitors with the meaning of the resource is to teach them about the resource and through their increased knowledge and understanding they will recognize why it should be protected and what it means to them. The aim is that educating the visitors about the resources with the knowledge I provide will cause a snowball effect of learning and appreciation for the resources that abound.

The programs were developed and refined over three summers working at Glacier Point in Yosemite National Park. All of the programs have been presented and approved by the Supervising Ranger at Glacier Point who has been working in Yosemite for 35 years.

SECTION 2: FORMAL INTERPRETIVE PROGRAMS

Introduction

The formal interpretive program is a method for an interpretive ranger to present a large amount of information to a large audience. At Glacier Point the formal interpretive program takes place at the railing at glacier Point at sunset. The programs are scheduled for one half of an hour. The time the program begins depends on the time of the summer and when the sun is setting.

Sunset Talks

Introduction
A sunset talk at Glacier Point is a half hour long formal program that takes place at the Point. Here the ranger stands at the east railing facing west while the audience sits on the rocks facing east watching the sunset colors change on the face of Half Dome.

Before the program begins it is good to announce the upcoming program to those at the point and in the area. Anywhere between 5 and 10 minutes it is announced that in x amount of minutes the program will be starting, making sure to tell them where the program will be taking place and where the audience can sit.

The sunset talk can have an audience of 300 people or more on the busy holiday weekends and very few if the weather is foul. The ranger must be ready to adapt to interruptions by little children, barking dogs, talking people, and natural influences such as bad weather or smoke that decreases visibility to the natural features.

Sunset talks must capture the large audience's attention for half an hour. First, projection to this open air arena is difficult. There is no microphone available to aid in projection. The second factor in keeping the audience's attention is presenting a topic and speaking at an educational level where children, adults, and people whose first language is not English can understand.

Peaks Talk

- Sunset Talk on the Peaks
- Good evening everyone! Are you ready for a spectacular sunset?
    - How many people read about tonight's program in *Yosemite Today*? –This is a great resource with events, talks, and walks all over the park.
- How many people are in Yosemite for the first time?
    - Welcome to Yosemite, and to everyone else, welcome back!
- Where is everyone from?
    - Continents

    - North America….South America….Europe…Asia….Africa…Australia….did I miss anyone?
- Tonight's sunset; what colors are people expecting to see?
    - How a sunset works
    - Same reason the sky is blue
    - Won't see purple in the sunset, that's the shadow of the earth on the mountains
- This evening we are going to journey through the peaks that surround us and learn about the people these peaks were after, as well as why these people were important enough to get a peak named after them.
- Ready?
- Yosemite Falls
    - Named for the Indians who inhabited this valley who roamed these steep cliff walls and explored this area by the mariposa battalion. They thought it meant "grizzly bear" but after more research we now believe that Yosemite means "killer among them"
- North Dome
    - Named by the Mariposa Battalion in 1851 when they came into the valley.
    - Named North Dome because it was across the river from South Dome, or the early name of what is Half Dome.
- Basket Dome
    - Comes from an Indian legend of an Indian couple who were told of the great beauty that this valley held, and then started fighting and this dome is her over turned basket.
- Mount Hoffman
    - Named for Charles Fredrick Hoffman
    - He was a German born mapmaker who surveyed the Sierra Nevada as well as explored it.
    - His mapmaking made it so much easier for other explorers to come in.
    - It is the geographical center of Yosemite National Park
- Mount Watkins
    - Named for Carleton Watkins
    - Early photographer of Yosemite, he provided illustrations for the Whitney Survey as they surveyed this park for the first time.
    - He legitimized the stories that were being told about the region. Would you believe stories of waterfalls half a mile high, or granite walls a mile above the valley floor. I know I would need some proof before I'd believe some of these spectacular features.
- Tenaya Peak
    - Name of the lake and the peak.
    - The Mariposa Battalion named it for the great Chief Tenaya who was the chief of the Indians who lived in this valley before they were removed. When they told him they were naming it after him, he looked at them and said the lake already has a name; Py-we-ack that means "stream of the glistening rocks"
    - We do have pywiack cascades
- Mount Tressador
    - He was the President of Stanford University for five years in the 1940's.
    - He was also married to Mary Curry and became President of the Yosemite Park and Curry Company.
    - He was an extremely visible president of the concessions; guests would see them in the back country, cross country skiing, and all around the valley. They were true outdoors people who explored the park, and they represented the company well.

    - He was responsible for the building of the Ahwahnee hotel and the dining room and cafeteria at Curry Village.
- Echo Peaks
    - I wonder how it got that name.
- Clouds Rest
    - Peaks at about 10,000 feet in elevation.
    - During a storm from the valley Clouds Rest is the highest visible point and as the storm clouds lower into the valley it is the first place upon which the clouds rest.
- Half Dome
    - No talk about the valley and the peaks would be complete without Half Dome.
    - The Symbol of Yosemite!
    - Peak 8,842 feet
    - Has had many names in its history; Rock of Ages, North Dome, South Dome, Sentinel Dome, Tis-sa-ack for the Indian legend, Cleft Rock, Goddess of Liberty, Mt. Abraham Lincoln, and Spirit of Yosemite. But Half Dome is the name that has stuck.
    - Whitney- California State geologist said half dome "never has been, and never will be trodden by the human foot" First person to climb half dome was George Anderson in 1875. He was a blacksmith in the valley and after many failed attempts started drilling eye-bolts into the granite every five to six feet. He would drill one in, pull himself up onto it, drill another one, pull himself up, and continued that way to the top.
    - People always wonder what happened to the other half. If geologists had their way they would call it "80 percent dome" because they believe that only 20% has actually been removed. The reason for the sheer face we can see here is because of almost vertical joints in the rocks that allowed the glaciers to clear off some of the dome and leave us with what we see today. The part that was carried away has washed down the river and is in the great Central valley providing nutrients for the crops being grown down there. You never know if that peach or almond you eat has some nutrient from half dome.
- Mount Florence
    - Named for Florence Hutchings, the daughter of James Mason Hutchings. She was the first white baby born in Yosemite Valley. She was a serious tomboy. She rode her horse astride, not side saddle; she wore pants, hung out with the cowboys, and smoked cigarettes. It is tradition to name peaks after men, and lakes and meadows after women, so you can tell how much of a tom boy she really was.
    - She was out on the trails with the men.
    - She died at the young age of 17 when she was climbing up the ledge trail that started in the valley and in one and a half miles climbed up here to glacier point; she was reaching for a fern for one of the women on the hike she was leading when a rock fell from above struck her and she died the next day.
- Mount Lyell
    - Tallest peak in YNP at 13,114 feet
    - Named for the great English Geologist- Sir Charles Lyell. Pioneer in his field.
- McClure
    - American- explored large parts of the park that were previously unknown and untraveled, he improved and constructed many trails and compiled maps.
    - Great American geologist. Produced the first geologic map of the United States.
- Clark Range
    - Named for the great Galan Clark, the first guardian of the Park and discoverer of the Mariposa Grove.

    - This range includes grey peak- because it is made out of granite and red peak- what do you think it's made of? It is made of granite, but it is very iron rich granite.
- Mount Starr King
    - Named for Thomas Starr King, a famous preacher and lecturer originally from Boston, then later moved to San Francisco. He wrote about Yosemite and this helped increase the park's popularity across the country.
    - Back then it was rare for a preacher to leave his congregation but Yosemite drew him in.
- Finish at Glacier Point
    - This area was once covered with glaciers; there was over 700 feet above us, if we were here one million years ago.
    - Also, this is also one of the best places to see the dramatic effects that glaciers have had on the valley.
- Conclusion
    - Now that we've gone through a lot of the peaks and mountains that surround us I hope you understand that it takes a lot to have a peak named after you. The people these peaks are named after have been extremely influential in Yosemite becoming a park, a destination for people from all over the world, and in its preservation.
    - They have mapped it, photographed it, helped Yosemite become a National Park, and they have spread the word about Yosemite across the country as well as the world.
- Just imagine the courage, self-confidence, and bravery required to be one of the first people to explore an unknown land. Do you think you have it in you??
- Good night

Natural Forces- Dynamic Change

- Welcome
- Yosemite Guide
- First time visitors
- Continents
- Sunset
- Tonight we're going to be watching the colors change on the mountains. The landscape we're looking at has been undergoing changes for millions of years, a lot larger time scale than the half hour of color changing tonight.
- This Yosemite Valley is always undergoing change. What we see tonight is the result of dynamic forces that are still working today.
- Before we can talk about forces acting on this valley today, we must first talk about how this valley was formed. Now, there have been and there are several theories as to how this valley was formed. Two early theories butted heads, along with the men who proposed these different theories. This battle was between the naturalist John Muir, and Josiah Whitney, California's State Geologist.
- Whitney--- during his time conducting the geologic survey of this area, he recognized the abundant evidence for past glaciations in the High Sierra, but he failed to recognize the degree to which glaciers had modified the topography. He said that the valley was the result of a "grand cataclysm" in which the bottom simply dropped down. During this time, a lot of

geologic principles were misunderstood compared to what we know now. His view was opposed by…

- Muir---- He believed that Yosemite Valley was entirely carved by glaciers. He over estimated the work and extent of the glaciers. Believing that the highest peaks in the park down to the central valley was carved by glaciers.
- So both men held views that were too extreme, but Muir's theory has held up a little better over time.
- From this conflict, more studies were done by a third party geologist outside of the feud and in these studies. Both men were extremely reputable and having a feud between the two was a little shocking. The other geologists determined that this landscape we gaze at today results from the combination of rivers and glaciers exerting their forces onto the landscape.
- These processes start after the Sierra had been formed under about 5 miles of parent rock, that parent rock had been eroded, and then the Sierra Nevada range has been uplifted and tilted. This great uplift and tilt resulted in the speeding up of rivers that eventually carved this valley in to a V-shaped valley, that was later, as we now understand it, carved into the U-shaped valley you see now that was carved out by glaciers.
- The process of river carved valleys finished off by glaciers has given us hanging waterfalls. Piweack cascade shows how waterfalls cascade down the side of a mountain into a v-shaped valley. Yosemite Falls is a great example of how the waterfalls just drop off since the gentle slope that was there is gone.
- Through just the basic formation of this valley we have included numerous forces such as uplift, erosion, and glaciers.
- The composition of the Sierra Nevada also plays a huge role in how this valley looks today. The different composition of the granites that make up this area control what happens to the rock as it is exposed to the elements as well as other forces. How the granite was formed, how long it took to cool, and composition determine how resilient it is, and how weathering effects it. El Capitan granite is one of the strongest rock types here in the park, making it perfect for rock climbers, and half dome granodiorite is very susceptible to cracking and rock falls since it is weaker and tends to break apart more easily.
- Things are still changing. Two forces are working on the rock walls that surround the valley. First, gravity. Gravity is always working on us and everything on the surface of the earth pulling us towards the center of the earth. The other force that is working on the rocks is the freeze thaw mechanism. This happens mainly during the winter when water gets into the crack of the granite, freezes, expands, and then melts. This makes the cracks get larger and eventually, can cause the rock to fall.
- We can see from up here at Glacier Point one of the most recent rockslides. This huge white strip that is on the skirt of half dome is where the second largest rockslides occurred March 29th. This registered as a 2.4 on the Richter scale. Luckily, it was during the winter and very early in the morning so no one was hurt.
- In November there was another huge rockslide that fell from the apron of Glacier Point to Curry Village, which is directly below us. This rock fall didn't seriously hurt anybody either but the great amount of rock that fell destroyed some cabins in Curry Village, and as a safety precaution, about 250 cabins in Curry Village were permanently closed.
- Rock falls are always happening. We can look across the valley and see even more evidence of rock falls.
- One natural force that acts on this area that affects the human population and buildings throughout the valley is Floods!!!
- In January of 1997 Yosemite had 120% of its average snowfall. Then came El Nino! This weather phenomenon brings with it warm storms from the equator, also known as the Pineapple express. This storm brought a warm rain that lasted for 3 days. The problem was

not rain in the winter; it was that it was raining at 8,000 feet. The length of the storm lead to the melting of the snow at high elevations. As you drive around the valley you can notice signs with red lines on them. These mark the depth of the water and the time of the reading. These depths are significant. On January at the Pohono bridge was 23.45 feet deep.

- The effects of this storm was truly felt by the human population of the park, this flood opened our eyes and made us realize that the high population and building density in the Valley is unnecessary and resulted in the movement of offices and buildings to areas outside of the park. Some campgrounds were closed or relocated to locations away from the rivers.
- The flood had ecological benefits. Floods act as natural "house-cleaning" which scours river channels, redistributes rock, soil, silt, and sand, and changes wildlife habitat.
- Another natural event that is sort of the opposite of floods is fire. Fire is a natural phenomenon in the mountains and in forests. When the first European visitors came to Yosemite they said that "you could ride your horse, at a gallop, in any direction through the forest." Before the pioneers entered this area and began suppressing fires, because…"how could fire be a good thing?" About 16,000 acres of land would burn in the Yosemite area annually. Around 1970 the National Park Service began to recognize the importance of fire and implemented a prescribed fire program. Today we see large fire scars on the hillsides because of our former fire management plan. We put every fire out and as a result we have accumulated over 130 years of debris that would have burned very slowly. Now fires come through and there is 130 years of fuel to burn so they are extreme fires that are devastating. Natural fires bring beautiful change to the landscape.
- Humans act as a strong force on Yosemite in other ways other than the fire management plans. One major one I can think of is traffic. Driving up here I'm sure you noticed that construction happening on this road. Humans are also responsible to the protection of the 1,200 square miles that make up Yosemite.
- Hopefully we become a more positive force in the park, along with all of the other natural forces that have shaped the landscape that we're observing right now.

Waterfalls

Introduction

This program is best in the late spring and early summer when all of the waterfalls are at their peak. The flowing water is a dramatic addition to the always beautiful sunsets seen at Glacier Point.

- Introduction
- Right now you are visiting Yosemite at the best time to see raging awe inspiring waterfalls in Yosemite. We got X % of average snowfall this winter and as a result we are surrounded by water. Yosemite's waterfalls are all fed by snow melt. A lot of the waterfalls in this region are ephemeral waterfalls, meaning that that are seasonal, when there is no more snow melting, there are no more waterfalls.
- Yosemite's unique geology is what gives us these dramatic drops of water around the landscape. Millions of years ago this valley was carved out my rivers. This gave us a large V-shaped valley and streams would cascade down the valley walls to meet the Merced River. Then glaciers came through here and carved out this valley. Glaciers are large masses of

moving ice that don't care what's in front of them and ground away and removed the valley walls leaving them almost vertical. This is how the U-shaped valley came to be. Now, those streams that were once cascades plummeted straight down. These types of waterfalls are called hanging waterfalls and give us the dramatic effects.

Entering Yosemite Valley from the South affords you with grand views of the sheer granite walls, a great forest and this time of year, snow capped horizon of the Sierra Nevada mountain Range. Traveling down to the valley the first waterfall you will come across is Bridalveil Fall. The water drops a total of 617 feet to crash upon a large pile of rocks. The water source for this perennial waterfall is Ostrander Lake. This grand waterfall is known to take people's breaths away and the Ahwahneechee tribe had several beliefs surrounding this great fall and breaths. They believed that Bridalveil Fall was home to a vengeful spirit named Pohono which guarded the entrance to the valley, and that those leaving the valley must not look directly into the waterfall lest they be cursed. They also believed that inhaling the mist of Bridalveil Fall would improve one's chances of marriage.

When the wind blows briskly, the waterfall will appear to be falling *sideways*. During lesser water flow, the falls often don't reach the ground. Because of this, the Ahwahneechee Native Americans called this waterfall *Pohono*, which means *Spirit of the Puffing Wind*.

Two waterfalls that can be seen from the Glacier Point area that might take your breath away if you stand near them in the Spring time is Nevada and Vernal Falls. My favorite viewpoint of these falls is over by the geology hut or from the amphitheatre.

Nevada Fall is the top waterfall of the pair. Nevada is an old Spanish word that means "snowy." The Indian name for this waterfall is "Yo-wy-ye," a name that commented on the twist and squirm of the falling water. The water, being fed from this huge area behind Half Dome plunges a total of 594 feet into Emerald Pool. Emerald Pool acts as a step between the two falls that have been called a giant staircase.

Vernal Fall, just below also lies at the head waters for the Merced River. The total drop traveled by the water is 318 impressive feet. Now, to give you an idea, Niagara Falls fall 176 feet. Vernal Fall is just about twice the height! Vernal Fall was named Yan-o-pah, meaning "little cloud" before it was renamed Vernal in 1851.

Another great water feature we can see here from Glacier Point is Pywiack Cascade. If you look at Half Dome, go left and follow Clouds Rest and that white ribbon cascading down, that's it. This is a special treat to see because it dries up every year. The water source is Tenaya Lake but is only a seasonal flow. The water slides down the granite walls for 600 feet before it reaches Tenaya Canyon.

Now, the waterfall that Yosemite National Park is so proud of we put our name on all three of the drops. Yosemite Falls!

Yosemite Falls is the tallest waterfall in North America, 5th tallest in the world. Whenever you say something is the tallest, greatest, or biggest there is always a bit of controversy. Yosemite Falls is 3 drops. But, the three drops of Upper, Middle, and Lower Yosemite Falls add up to a grand total of 2,425 feet. Upper Yosemite Fall drops for 1,430 feet into middle cascade that adds up to 625 feet. Lower Yosemite Fall, drops 320 feet to the valley floor.

Fire

- Introduction
    - Welcome visitors to Glacier Point
    - Introduce self
- Questioning/ crowd interaction
- Working at Glacier Point I get asked questions all day long, so tonight, I want to mix it up a little bit and ask all of you questions.
    - Who read about tonight's program in the Yosemite Guide? It's a great resource for you here in the park, there are ranger walks, talks, and hikes all throughout the park, all different interest, and if anything- it's a free map.
    - I want to get to know you all a little bit. Who here tonight, is visiting Yosemite for the very first time?
    - I want to get to know you all a little bit more but there's a pretty big group of people here tonight so I propose that we go by continent. Who is visiting from North America, South America…?
    - Tonight we're all here for the sunset…right? If not, you lucked out! With our sunset tonight, what colors are people expecting to see?
        - How a sunset works. When the sun is high in the sky the sun shines through the atmosphere and the blue light is scattered, giving us our gorgeous blue skies. Here is our visible light spectrum (hold up hands) our blues on this side and the reds on this side. As the sun goes lower down towards the horizon the light goes through more dust, more water, more smoke, hopefully not more pollution, and more atmosphere. Then the yellows are scattered then the oranges, the pinks, and then maybe some reds. Now the purple we'll be seeing tonight won't be part of the colors changing but will actually be the shadow of the Earth being cast on the mountains behind me- in front of you. And of course black is the final color that we'll see tonight, that's at the end of the program.
    - Tonight I have a beautiful audience to look at but I don't get to watch the sunset, al the end of tonight, will you let me know how it goes? Thanks!
- What season is it right now in California and Yosemite? Summer, yes, but what happens in the summer time, every year? Fire!
- Fire has a rich cultural and natural history in Yosemite and helps shape the distinctive landscape of Yosemite. Just as glaciers and floods have shaped the park, fire brings beautiful change.
- Before Humans
    - On average annually, 16,000 acres of land was burned by fire in Yosemite. The Sierra Nevada was typically hazy while fire burned throughout the summer
- American Indians use of fire
    - There is evidence of north American natives living in this area for around 8,000 years

    - The American Indians in this area set fire to Yosemite Valley every year in the fall as they were leaving the area to head down in elevation for the winter. They did this for many reasons.
    - The American Indians ate the meat of acorns, a main source of food. To help the oaks grow in conditions they prefer, more open forest, to have new trees grow, and have healthier trees they set the fires. By burning the valley, the oaks were able to grow more and provide more acorns the following year and new trees world grow.
    - Basket weaving materials was also very important to the Ahwahneechee people. These materials grew faster and more densely the year after fire so the fires would help increase the number of materials so baskets could be woven.
    - Meadows served as a place that was good for hunting. The open spaces allowed the hunters to find their prey faster and easier. The fires kept the meadows more open and larger by preventing new trees from growing in the open spaces.
- European views of fire
    - The first European visitors came to Yosemite and said "You can ride a horse as a gallop in any direction through the forest." We can hardly walk any direction through the forest, let alone ride a horse.
    - When the Europeans came in here they saw this beautiful landscape and thought of how destructive fire was. How could fire be good? So to protect the land they put every single fire out. This has led to about 130 years of fuel being on the forest floor; trees that have died and fallen, more trees that are growing, making denser forests, and deep layers of duff, or forest litter that is made up of pine needles and branches. There is 130 years of fuel instead of the 15-20 years of fuel that would accumulate naturally and then burn slowly and in patches when lightning struck.
    - If a fire starts in the forest now where there is up to 130 years of debris on the forest floor a fire will climb up through the forest and be extremely devastating.
- Current fire management plan
    - Around 1970 Yosemite National Park began to recognize the importance of fire and implemented a prescribed fire program.
    - If you're out backpacking somewhere off in the wilderness and your campfire gets away from you and starts the forest on fire, we're going to put it out.
    - If lightning strikes during a summer storm and conditions are right to let it burn, we're going to let it burn.
- Flora and Fauna adaptations to fire
    - Animals
        - People always worry about the animals and what happens to them when a fire comes through. I think we can thank Disney for that.
        - The larger animals with long legs or animals with wings can get away from the fire by walking away.
        - The smaller animals, they do what they do in the winter when they hibernate; they burrow in the ground and wait out the fire. The fire's heat only goes about 4 inches deep in the soil so they are safe and comfortable under the ground.
        - You and I go to the grocery store and we can get the bags of spring mix salad greens, the really tender and young leaves are what we're after. After a fire, the animals will come back and have a feast on these tender shoots, so they don't mind too much.
    - Giant Sequoias
        - The protection of the groves of giant sequoias is one of the reasons that the Yosemite was established. When the groves were unhealthy there was a lot

of research done to see what could be preventing new trees from germinating.
        - Giant Sequoias are the largest trees in the world by volume. Their cones are the size of an egg. The seed of the giant sequoia is the size of a flake of oatmeal.
        - The scientists took these seeds, ran all sorts of tests on the seeds; looking for a fungus, a disease, looking for any reason as to why there were no new sequoias growing in the groves. There weren't any problems with the seeds.
        - In the labs, the tiny seeds of the sequoias had access to mineral rich soil. In the forest, where fire was being extinguished in an effort to protect the groves, the tiny seeds and their tiny tap roots didn't have access to the soil.
        - In the 1970's fire was introduced into giant sequoia groves in Sequoia National Park. There, the introduction of fire was successful in improving the health of the trees. New trees were growing.
        - If you visit one of the three groves in Yosemite you might notice fire scars on the bark of the trees. These scars can last for a long time but the bark isn't damaged because it can be up to 2 feet thick. These trees are adapted to fire and their existence is dependent upon it.
        - Every year the park service will start a fire in the grove, in a different area every year.
- Conclusion
    - Fire shapes the landscape and the natural resources that make Yosemite so unique. This area is always changing, sometimes we shape it, other times we just get to watch what happens and enjoy the results.

Protectors of Yosemite

- Introduction
    - Yosemite has affected the lives of people as much as people have affected Yosemite. People throughout history interacted with the environment in many ways. Tonight we'll discuss a few of the people involved in protecting Yosemite and try and find our role in the protection of the park in this day and age.
- First caretakers
    - The first relationships between people and nature in the Yosemite area began around 8,000 years ago. As hunter gatherers, these early inhabitants had little impact on the plants and animals, but when they began using fire, they changed the appearance of forests and meadows. The magnificent beauty that impelled early tourists to create a park here was a landscape influenced by American Indian caretakers.
- Fredrick Law Olmsted
    - When the Yosemite Grant was establishes in 1864, the governor of California appointed a volunteer board of directors to administer the new park. As a member of the board, noted landscape architect Fredrick Law Olmsted wrote a groundbreaking report outlining how the government should manage and reserve land of scenic value for its people. Olmsted's report was quietly suppressed being far ahead of its time, but his guidelines still serve as a model for national parks today.
- Abraham Lincoln
    - A few years after the first tourists rode into Yosemite Valley, a group of concerned citizens lobbied to spare Yosemite, and especially the giant sequoias, from exploitation. California Senator John Conness introduced a bill to set aside Yosemite

Valley and the Mariposa Grove of Big Trees for "public use, resort, and recreation…inalienable forever." In 1864, in the midst of the Civil War, President Lincoln signed the Yosemite Grant into law. With little fanfare, the national park idea was born. Later in 1890, Congress set aside over 1,500 square miles of "reserved forest lands" soon to be known as Yosemite National Park. The Valley and the Mariposa Grove were added in 1906.

- First Rangers
    - When Yosemite became a national park in 1890; the National Park Service did not yet exist. The Presidio of San Francisco dispatched the U.S. Calvary to Yosemite, General Grant, and Sequoia National Parks each summer from 1891 through 1913. In 1899, 1903, and 1904 over 400 Buffalo Soldiers (African-Americans serving in the 24th Infantry and 9th Cavalry), were the sole protectors of these parks. They constructed the first trail to the top of Mt. Whitney in Sequoia National Park and the first museum (an arboretum) in the National Park System in Yosemite.
- Galen Clark
    - Yosemite's First Guardian- During the Late 1800's, Galen Clark explored Yosemite and taught others about the mysteries of giant sequoias. He became the first official guardian of the Yosemite Grant in 1866. Clark and his "sub-guardian" worked tirelessly to protect, maintain, and administer the grant, all on their combined salary of $500 per year. Revered as a host, a tour guide, and a protector for most of his life, he was appointed again and again to this important office by different Boards of Commissioners. Clark was also a charter member of the Sierra Club.
- Conclusion
    - Yosemite depends on a legion of people to care for and protect it. Throughout its history, advocates, activists, stewards, and entrepreneurs have all made significant contributions. For all its grandeur, Yosemite is fragile and changing. It is important to keep the park beautiful and healthy for generations to come. Fortunately many organizations and individuals work tirelessly to manage and protect Yosemite National Park.

Full Moon Talks

Introduction

These programs take place after Sunset Talks in the same location as the Sunset Talks. The start time depends on when the moon is rising. The Yosemite Valley visitor center can give you the time of the moon rise, but since the mountains are not accounted for in this time, there is always some delay. It is best to watch the timing of the moon rise for a few nights prior to get the best timeframe of when the moon is going to become visible. The program can last for 15-30 minutes. It is best to have the program be over before the moon is visible since everyone's attention will be on the moon and their cameras.

Full Moon Talk

- Good evening everybody! Welcome to Glacier Point at night! Tonight we were lucky enough to have a beautiful sunset and tonight we get to see the moon rise over the high sierras! Get your cameras ready. Keep your eyes on the mountains over here. You'll see the glow of the moon before you see the moon. Just like shooting stars, if you miss the moon making its first appearance you'll hear it and know to look.
- The moon has a great effect on us in several ways.
    - One way is that it brings us up here to the top of sentinel dome at night, that doesn't happen too often. Another way is that it will affect our star gazing, it has an effect on the tides, and some people believe that the full moon makes us go a little crazy.
- The moon is the earth's only natural satellite and it orbits the earth every 27.3333333 days.
    - During that orbit we go from no moon, to a waxing moon where more and more of it is illuminated at more of the side of the moon we see is being hit by the sun with light.
    - The process climaxes at the full moon when the entire side of the moon that is visible to us here on Earth is illuminated and then it starts waning, reducing how much is visible to us.
- **fruit demo***
- The moon takes 27.3 days to orbit the moon once. We only see one side of the moon…as indicated by the man on the moon. It takes one day for the earth to spin around.
- As the moon comes up from over the mountain behind me it will look GIGANTIC!!!
    - That is because when the moon is near the horizon we can compare it to things we know the size of what is on the horizon.
    - But a fun game to play is to take a quarter hold it out at arm's length and it will cover the moon. This is an easy way to remember that the moon is a quarter the size of the earth.
- This size difference has a lot to do with another way that the moon affects us here on Earth.
    - The moon is responsible for the tides. The Earth's gravity keeps the moon in orbit because the Earth's gravity affecting the moon is much greater than the moon's gravity's effect on us.
    - The moon pulls the earth's water towards us and causes the high and low tides you see at the beach.
- I talked about how the moon is going to disrupt our star gazing tonight; this is because the moon is the second brightest object in our sky, after the sun.
    - Does the moon produce any of its own light?? The moon reflects 7% of the sun's light here to Earth.
    - New snow reflects 80% of the sun's light. Venus, the brightest planet that we see, its thick atmosphere reflects 65% of the sun's light.
- Another way the moon effects us is that it has this great pull on us, no not gravity, but to visit the moon. The moon was the first objects in space to be visited by humans in 1969.
- Similar to that pull to visit the moon some people say that it has a negative effect on us.
    - Emergency rooms are busier on full moon nights.
    - There are a lot of superstitions associated with the moon and the full moon…ever wonder where the word lunatic comes from… Luna is Latin for Moon.
- The moon has a great impact on us and I hope that tonight the full moon rising over Mt. Starr King impacts you with its beauty and the majesty of this area and the world we're living in.

SECTION 3: SEMI-FORMAL INTERPRETIVE PROGRAMS

Introduction

The semi-formal interpretive program takes place in several settings and locations throughout the area. One type of semi-formal interpretive program conducted in the Glacier Point area is a campfire program. Here the setting is more low-key than a sunset talk. The fire is burning, songs are sung, and questions are asked by the visitors at the campfire ring at Bridalveil campground. The other type of semi-formal interpretive program is the astronomy talk. This takes place at Glacier Point after the sunset talk. Here visitors are sitting or lying on the ground as the ranger guides them through the night sky.

Campfire Programs

Introduction

A campfire program is a semi-formal interpretive program. The programs in the Glacier Point area occur at Bridalveil Campground. There is no electricity hook up at the campfire ring that is located at the top of 'loop C' in the campground and is near the horse campground area. The set-up is a well defined campfire ring and then three columns of bench seating that surround the ring in a semi-circle. The quality that makes a campfire program at Bridalveil Campground special is that there actually is a campfire. The campfire programs in Wawona and in Yosemite Valley do not. It is the ranger's responsibility to build, light, and maintain the campfire as the program occurs. Bring firewood to the campfire ring and build a fire, lots of smaller pieces is better than a few large ones. Don't light the fire until about 15 minutes before the program that way the people arriving early can watch as the fire is built and then ignites. The goal is to have the fire almost dead about half an hour after the program is scheduled to end as to allow for questions after the talk. At the designated starting time get everyone to help remind the people finishing up dinner that there is a campfire program. Get everyone to yell as loud as they can "CAMPFIRE!" This also aids in getting people in a mood that allows them to relax, loosen up and feel comfortable. These programs generally include at least one campfire song sing-along because of how much they add to the ambiance of the old-timey campfire setting.
Before a campfire program the ranger roves the campground. This is when the ranger walks around the entire campground and invites each campsite to their program. Included in the invitation should be your name, the time it is going to start, detailed description of the location, and what the topic is. Bridalveil Campground has 100 campsites arranged in 3 loops, 2 large group campsites, and a horse camp area for people with horses. It normally takes an hour and a half to rove the entire campground.

The goal of the campfire program is for people to have a more low key interaction with a ranger and having a ranger accessible around the campground. The experience for the guest is to have an enjoyable evening where they can ask questions in a relaxed setting, sit around a campfire, and then hear a talk about a topic that is relevant to the area and what they might experience while camping or touring the park.

Bears

Materials

Materials that should or can be brought along to supplement this campfire program include:

- Wood
- Newspaper
- Lighter
- Yosemite Guide
- Black bear claw
- Grizzly bear claw
- Black bear pelt
- Flashlight

- Start the fire 5-10 minutes before the program is scheduled to begin.
- Welcome people as they arrive telling the visitors good places to sit.

- Introduction
- Hello everyone, my name is Shannon; I am your ranger for tonight! Earlier this evening I walked around this entire campground and invited every camp site that had people in it, to this campfire tonight. To remind everyone who I told and to put a little spring in their step getting here I want us to yell, as loud as
- Description
    - *Ursus americanus,*
    - Black bear- 90% of the black bears in Yosemite are not black, range from blonde, to cinnamon, to tan, to brown, to black
    - Hair is all about the same length.
    - Hair between toes and pads that's why we can't hear them really. Leaves a faint print in the dirt or snow.
    - Males get to be about 300-350 pounds….females 200-250 pounds
    - Largest reported 690 pounds!!! HUGE
- Comparison to grizzly
    - Used to have grizzly bears in Yosemite, even in Yosemite but hunted to extinction in CA. (1922)
    - Hair is jagged and rough→ grizzly name- lacks uniformity in color over body.
    - Largest bear species 350-700 pounds!! Largest 1,496 pounds
    - Long claws
- How many in Yosemite
    - Estimates- 200-400 or 300-500. Hard to keep track since man loves to make borders, but bears really don't care.
- When we see them
    - Diurnal vs. nocturnal
        - Lazy teenager analogy
- What they eat
    - Great hunters. They are opportunistic eaters.
    - Almost anything its paws can reach serves as food
    - They have vision similar to humans but rely on their nose more than their eyes to get them food or sense what is around them.

    - Small mammals, insects, flesh or carrion, garbage, grasses, leaves, fruits, berries, acorns, and nuts.
    - Have learned that it is a lot easier to get calories from our cars and campsites than going and looking for berries, and bugs all day long
        - Food example. When going into winter…..require up to 20,000 calories a day.
            - Teddy grahams- 19 bags
            - Power bars- 80
            - 40 big macs!
            - Bags of marshmallows- 22
- Going into Hibernation/winter
    - There is very little food available in winter for a bear to stay full so bears go into quasi-hibernation.
    - It is not a true hibernation like other animals when their metabolism slows down to a crawl, along with respiration and heart beat and body temp cools to similar temp or ambient air.
    - The bears can and do awaken for short amounts of time during warm spells during the winter and then return to dormancy.
    - Through the winter months while they are inactive they can lose anywhere between 15-30% of their body weight…that's why they gain so much weight in the fall.
    - Something else that happens during their dormancy period is sows, or mother bears give birth!!
- Cubs
    - Bear cubs are normally born in litters of 2….almost always twins. It is a sign of good health for the sow when she gives birth to triplets.
    - When born the cubs weigh half a pound!
    - The cubs are born totally helpless in January or February: blind, toothless, deaf, and can't smell.
    - Their eyes will open in 3-4 weeks after birth.
    - They grow FAST!
        - Born .5 pounds. At 6 weeks they weigh 2 pound, at 8 weeks they weigh 5 pounds, at 6 months 40-60 pounds, at 3 years old they are sexually mature and at 5 years they are fully grown.
    - The momma bear provides the initial nourishment to the cubs as well as constant protection. That's why you don't want to get between a mother bear and her cubs.
    - Bear cubs can climb better than they can walk. The ability and knowledge to climb a tree is born into them.
- Intelligence
    - Super smart animals.
    - A few years ago a bear was successful in breaking into a small blue sports car. That summer, 27 of that same car were broken into. And the bear was almost always successful.
    - They can adapt to different situations and environments.
    - Since most of you are staying at the campground or around the park you're seen the bear boxes. Yosemite is currently on our 7th model/ design or bear box because the bears have been able to break into all of them!!
    - When people used to come and backpack in the park they would put all their food in a bag, get a long rope, and tie their food in a tree to keep it away from the bears. This procedure no longer works.

        - The bears have learned how to get the food down. The bear will push on the end of the rope that is tied to the tree, where the person would grab on to in order to get the food down, and this would send the food high in the tree swinging and the bear could then grab it.
        - Sometimes they work in team… there are accounts of 2 bears working together….almost like in a circus act one bear would stand on the other bear and reach the food. Not kidding! I've talked to campers who have seen it.
        - Now, bears are so smart and adapt to different plans set up by humans and the national park service and outside agencies it is no surprise that there have been numerous bear management plans established and implemented.
- Bear management history
- Early- 1922= dogging- using dogs to run bears out of campsites.
- 1920-1930's- bear shows occurred at open-pit garbage dumps, bear population started increasing, bears break into vehicles and buildings during the day. As a result, a feeding program was initiated to lure bears to the west end of the valley during the day. In 1937, the artificial bear feeding areas near El Capitan were using 60 tons of scraps per year.
- Bears were being trapped and relocated to Southern California. In 1940 the bear problem increased. Vigorous trapping programs resulted in 39 bears being relocated from the Valley.
- In 1945 the bear shows were discontinued. During this time, the Rangers were secretly killing bears in the Valley since it was a major problem. At one point there was as many as 60 bears in YV, in 1945, there were 3.
    - In the mid 70's dumpsters we bear-proofed
    - Mid 80's 1100 bear-proof food storage lockers purchased for campgrounds.
    - In 1988 bear canister developed and the next year along with the canister and the food storage lockers, bear-human incidents decrease by half.
- Current bear policy
    - Tagging/radio collars
    - Bear boxes
    - Trash cans with clips
    - Bear canisters
    - Human management
- Bear safety
    - What do you do when you see a bear?
        - In wild… stay 50 yards away
        - I say take a picture…with your zoom!

Astronomy Programs

Introduction

The astronomy program has been going on for more than 30 years at Glacier Point. The program began with a park ranger showing the night sky to visitors to Glacier Point. Soon, the ranger talked to astronomy clubs throughout California and offered them a pristine sky to gaze at and in return, the groups share their telescopes and knowledge with the public. Throughout the summer, different astronomy groups come up to Glacier Point, camp in Bridalveil Campground, and share their telescopes. The groups set up in the amphitheater because there is flat, paved ground and power outlets. Some groups have 30 telescopes, some have less than 10. Some groups have presentations some just are introduced and let the public talk to the owner of the telescope.

Once the sun has gone down enough and the first stars are becoming visible in the night sky the park ranger makes an announcement to the people viewing the telescopes that the ranger will be giving a naked eye star tour at the railing of Glacier Point. The ranger then walks the group out to the point to begin the naked eye star tour. The program is cancelled if there is more than 50% cloud cover, but waiting has proven successful.

People that attend the program have a diverse background and knowledge of the night sky, but most people are amazed by being able to find the constellations. The program is scheduled for one hour but can be dependent upon the group size, cloud cover, and temperature at the point.

I have developed two different star talks, one is for the early summer and one is for later in the summer to adjust for the different constellations that are visible at the time of the program.

Materials:

- Red flashlight
- White flashlight
- Laser pointer

Star Talk in the Early Summer

- Get everyone at the amphitheatre and invite them out to the point to a naked eye star tour.
- Walk out to the point
- Have people look over the edge of the railing down to the valley floor.
- Invite everyone people to sit down on the rocks, as close as possible without being on top of each other, although that is alright. This is so I don't have to talk as loud and we can enjoy the night sky.
- The rocks are uneven so don't be afraid to use your flashlight but if you do keep it pointed at the ground and keep it low, just enough so you can see where you're walking. Once everyone is seated we're not going to have any light sources out, this includes cameras, cell phones, and flash lights.

- Tonight I am going to be the only one speaking, I don't want to sound bossy, but if there are several people in the group pointing out the constellations you won't be able to hear me. If you want to see a constellation again just let me know and I'll point it out again.
- We are lucky to be up here at Glacier Point looking at the stars. Why is it that Glacier Point is ideal for star gazing??
    - Less atmosphere- compared to sea level there is 7,200 feet less air we're looking through. That's the reason the stars twinkle when you look at stars near the horizon up here or when you're lower in elevation
    - Very little pollution- some blows over from the central valley, some from the bay area, but there is very little up here at glacier point
    - No light pollution/ambient light. In the National Parks you can think of preserving the landscapes right away. We also preserve and work to protect our sound-scapes, in Yosemite we only have helicopters in the park for a fire or for a search and rescue or medical transport. Right now a big push is happening to preserve our light-scapes. There isn't a big glow coming up from the valley, we're away from the road with people's headlights in the parking lot.
- I want everyone to repeat after me—"my day in the park is not over when the sun goes down."
- Tonight we're going to work our way around the sky and familiarize ourselves with what is out here.
- Being up here makes finding the constellations a little difficult to find because there are so many stars. The constellations are made up of the brightest stars, they can be found even when there is ambient light.
- When working on a puzzle or on a project I always start with what I know first and then base everything off of the first piece. What is something that is easily found in sky??
- Big Dipper
    - 3 in the handle, 4 in the bowl.
    - Somewhere in the big dipper is a double star. One of the stars we're looking at in the Big Dipper is actually 2. SHH. Don't say it our loud just yet! Ok….which one is it? The double star is the middle star of the handle. This is Alzor and Meecor. This is said to be a test if you have 20/20 vision.
- From the big dipper we can find the North Star. Take the two bottom stars of the dipper and follow it out, just as if the dipper was pouring it out. This is Polaris.
    - Polaris is currently our pole star. This means that this star aligns with the earth's poles. Think of when you look at a globe of the Earth, the globe spins around but two points are stationary, the north and south poles.
    - Polaris is part of the constellation, the Little Dipper, it is the last star in the handle
    - The Big Dipper, as well as a few other constellations are circumpolar, meaning that they appear rotate around the North Star. This leads to a story of the natives of the Nova Scotia area in Canada. They used the movement of the stars to form a story of the passage of the seasons as well as the behaviors of animals.
    - One early spring day a lazy mother bear stretched slowly out of her den and awoke from her long winter nap. Little chickadee saw the bear and became hungry but because he was too small to hunt alone he called several other hunters to help. They soon began chasing the bear but made sure that chickadee remembered his cooking pot. All spring and summer the hunters followed the bear. By autumn, one by one, the slower and heavier hunters dropped behind. The only ones that remained was Robin, Chickadee, and Moose bird. These three eventually caught the bear in mid autumn. Seeing she had no choice, Mother Bear turned and reared up to fight the three. Taking careful aim, Robin shot and arrow and Mother Bear fell over on her

back. By now, Robin was hungry and tired of waiting; he jumped on Mother Bear and became covered in blood in the struggle. Robin quickly flew to a large maple tree and tried to shake the blood off his brown feather coat. He got most of the blood off but there was a spot on his breast that he could not reach. That is how Robin got his red breast. The blood that Robin scattered fell all over the maple tree he was sitting on. Some splashed on smaller trees far below, that is why every autumn maple leaves turn the brightest red of all trees. Chickadee came along with his cooking pot and the three began to eat. All winter Mother Bear's skeleton lay on its back while her spirit entered a sleeping bear. This same bear will amble forth in the spring and be chased and killed by the same hunters.

- Little Dipper
    - 3 in the handle, 4 in the bowl.
    - In the bowl there are 4 different magnitude stars. In the magnitude scale 0 is the brightest and 7 is the dimmest. There is a 2, 3, 4, and 5 magnitude.
- From the double star in the big dipper and the 2nd magnitude star in the little dipper we can find a star that was a pole star when the pyramids were being built, about 3,000 years ago. This is Thuban. Thuban is part of one of the grandest constellations…Draco the Dragon
- Draco- Thuban is the next to last star in the tail, that goes up and around down, and the head.
- This part of the sky is known for the carnivores that live up here. To find the next constellation we can look at the two stars in the bowl of the big dipper closest to the handle and draw a straight line we can find the star Regulus. Regulus is part of Leo the Lion. If we look for a backwards question-mark Regulus is the bottom.
- Leo actually looks like what he is named after. Numerous constellations are named in honor of gods, goddesses, and objects- not necessarily what they look like.
- Going back to the big dipper we look at the three stars in the handle and follow the arc to Arcturus. Arcturus is the rear end of Bootes the herdsman. Just because someone says that these groups of stars looks like this, doesn't mean we have to believe them. Seeing a herdsman is a little difficult, but with the same group of stars I can see a scoop of ice cream. It's a little scoop up there.
- From there we can drive a spike to Spica. Spica is the "ear of grain" of Virgo, the virgin.
- Virgo is known for her fertility. When she appears the ancient people knew when to plant and when to harvest.
- Libra is the next astrological sign that we come to in the night sky. Are there any Libras here tonight? This is a very simple constellation…one star, two stars.
- The stars of Libra were once the claws of Scorpio as the names suggest but as the Romans were developing the zodiac they needed 12 objects instead of 11 so they made Libra into the scales.
- There is a great deal of animals in the sky; the scales of Libra are the only non-living creatures in the Zodiac.
- We just mentioned this next constellation and it is another grand constellation that takes up a lot of the southern sky. Here in the sky is a red star. This is Antares. It means "rival to mars" and as we can see tonight, it rivals it. This is a red giant. Antares in the heart of Scorpio. So we just pointed out the former claws of Scorpio, let's find the rest of him. 4 in the head, the heart, a pincer and a pincer and a long tail that looks like an upside down question mark. The two stars at the end of the tail of Scorpio mean "sting."
- This brings us to the summer triangle. It is made of 3 bright stars. We can find this group of stars pretty easily because what it is named matches what we can find in the sky. The three stars are Vega, Deneb, and Altair. Vega is the brightest star in the constellation Lyra.
- Lyra is a musical instrument that was put in place by the Greek gods to commemorate the beautiful music that was played on it.

- Next in the summer triangle is Deneb-meaning tail. Deneb is the tail of Cygnus. Albireo is the eye of Cygnus. Flying at Cygnus is another large bird that is made up of the star Altair.
- Within Cygnus, is an asterism, the Northern Cross. Upright and cross arms.
- Aquila is recognized as an eagle. Altair is the eye of Aquila.
- Below Cygnus and the eagle is my favorite constellation, remember I told you to pick one out, and mine is Delphinus the dolphin. This dolphin saved the life of a Greek poet and was placed into the sky. Some people see a dolphin jumping out of the water; others can see a classic kite flying in the night sky.
- There has been a lot of royalty in tonight's sky and we'll finish with two. Back to near our starting point is an Ethiopian queen Cassiopeia. She was a most beautiful woman but she was also very vain. She resides in the stars today on her thrown. This large W in the sky. She is sometimes in her throne right side up and the other half, as a punishment for being so vain and boastful she is sitting upside down.
- And straight above us is Corona Borealis, the Northern Crown. In the Northern Crown the center star is Gemma the gem of the crown.
- Tonight we've pointed out constellations that look like what they are supposed to represent and also constellations that look nothing like what they are named for. Hopefully tonight you got to find one that you can connect to and when you're far from Yosemite you'll be able to find it and think of the time you spent here and the stars we got to observe.
- The astronomers are in the amphitheatre with their telescopes. Be careful walking on the uneven rocks. Keep your flashlights pointed down and have a safe drive back tonight.

Star Talk in the Late Summer

- Get everyone at the amphitheatre and invite them out to the point to a naked eye star tour.
- Walk out to the point
- Have people look over the edge of the railing down to the valley floor.
- Invite everyone people to sit down on the rocks, as close as possible without being on top of each other, although that is alright. This is so I don't have to talk as loud and we can enjoy the night sky.
- The rocks are uneven so don't be afraid to use your flashlight but if you do keep it pointed at the ground and keep it low, just enough so you can see where you're walking. Once everyone is seated we're not going to have any light sources out, this includes cameras, cell phones, and flash lights.
- Tonight I am going to be the only one speaking, I don't want to sound bossy, but if there are several people in the group pointing out the constellations you won't be able to hear me. If you want to see a constellation again just let me know and I'll point it out again.
- We are lucky to be up here at Glacier Point looking at the stars. Why is it that Glacier Point is ideal for star gazing??
    - Less atmosphere- compared to sea level there is 7,200 feet less air we're looking through. That's the reason the stars twinkle when you look at stars near the horizon up here or when you're lower in elevation
    - Very little pollution- some blows over from the central valley, some from the bay area, but there is very little up here at glacier point
    - No light pollution/ambient light. In the National Parks you can think of preserving the landscapes right away. We also preserve and work to protect our sound-scapes in Yosemite we only have helicopters in the park for a fire or for a search and rescue or medical transport. Right now a big push is happening to preserve our light-scapes.

There isn't a big glow coming up from the valley, we're away from the road with people's headlights in the parking lot.

- I want everyone to repeat after me—"my day in the park is not over when the sun goes down."
- Tonight we're going to work our way around the sky and familiarize ourselves with what is out here.
- Being up here makes finding the constellations a little difficult to find because there are so many stars. The constellations are made up of the brightest stars, they can be found even when there is ambient light.
- When working on a puzzle or on a project I always start with what I know first and then base everything off of the first piece. What is something that is easily found in sky??
- Big Dipper
    - 3 in the handle, 4 in the bowl.
    - Somewhere in the big dipper is a double star. One of the stars we're looking at in the Big Dipper is actually 2. SHH. Don't say it our loud just yet! Ok….which one is it? The double star is the middle star of the handle. This is Alzor and Meecor. This is said to be a test if you have 20/20 vision.
- From the big dipper we can find the North Star. Take the two bottom stars of the dipper and follow it out, just as if the dipper was pouring it out. This is Polaris.
    - Polaris is currently our pole star. This means that this star aligns with the earth's poles. Think of when you look at a globe of the Earth, the globe spins around but two points are stationary, the north and south poles.
    - Polaris is part of the constellation, the Little Dipper, it is the last star in the handle
    - The Big Dipper, as well as a few other constellations is circumpolar, meaning that they appear rotate around the North Star. This leads to a story of the natives of the Nova Scotia area in Canada. They used the movement of the stars to form a story of the passage of the seasons as well as the behaviors of animals.
    - One early spring day a lazy mother bear stretched slowly out of her den and awoke from her long winter nap. Little chickadee saw the bear and became hungry but because he was too small to hunt alone he called several other hunters to help. They soon began chasing the bear but made sure that chickadee remembered his cooking pot. All spring and summer the hunters followed the bear. By autumn, one by one, the slower and heavier hunters dropped behind. The only ones that remained was Robin, Chickadee, and Moose bird. These three eventually caught the bear in mid autumn. Seeing she had no choice, Mother Bear turned and reared up to fight the three. Taking careful aim, Robin shot and arrow and Mother Bear fell over on her back. By now, Robin was hungry and tired of waiting; he jumped on Mother Bear and became covered in blood in the struggle. Robin quickly flew to a large maple tree and tried to shake the blood off his brown feather coat. He got most of the blood off but there was a spot on his breast that he could not reach. That is how Robin got his red breast. The blood that Robin scattered fell all over the maple tree he was sitting on. Some splashed on smaller trees far below, that is why every autumn maple leaves turn the brightest red of all trees. Chickadee came along with his cooking pot and the three began to eat. All winter Mother Bear's skeleton lay on its back while her spirit entered a sleeping bear. This same bear will amble forth in the spring and be chased and killed by the same hunters.
- Little Dipper
    - 3 in the handle, 4 in the bowl.
    - In the bowl there are 4 different magnitude stars. In the magnitude scale 0 is the brightest and 7 is the dimmest. There is a 2, 3, 4, and 5 magnitude.

- From the double star in the big dipper and the 2nd magnitude star in the little dipper we can find a star that was a pole star when the pyramids were being built, about 3,000 years ago. This is Thuban. Thuban is part of one of the grandest constellations…Draco the Dragon
- Draco- Thuban is the next to last star in the tail, that goes up and around down, and the head.
- Going back to the big dipper we look at the three stars in the handle and follow the arc to Arcturus. From there we can drive a spike to Spica. Spica is the "ear of grain" of Virgo, the virgin.
- Virgo is known for her fertility. When she appears the ancient people knew when to plant and when to harvest.
- Libra is the next astrological sign that we come to in the night sky. Are there any Libras here tonight? This is a very simple constellation…one star, two star.
- The stars of Libra were once the claws of Scorpio as the names suggest but as the Romans were developing the zodiac they needed 12 objects instead of 11 so they made Libra into the scales.
- We just mentioned this next constellation and it is another grand constellation that takes up a lot of the southern sky. Here in the sky is a red star. This is Antares. It means rival to mars and as we can see tonight, it rivals it. This is a red giant. Antares in the heart of Scorpio. So we just pointed out the former claws of Scorpio, let's find the rest of him. 4 in the head, the heart, a pincer and a pincer and a long tail that looks like an upside down question mark. The two stars at the end of the tail of Scorpio mean "sting."
- Does anyone know the next zodiac? Sagittarius is the archer from Mesopotamia and according to the Greek it is centaur, half human half horse. Anybody see one of those up there?? Most people can find the tea pot. And it is a classic tea pot because there is steam coming out of the spout.
- After this one is Capricorns. The goat fish. The gods were reclining on the banks of a river when all of a sudden a large monster appeared to attack the gods. Pan, a god known for inventing musical instruments was half man half goat. To escape this attacking creature he jumped into the river ad tried to transform into a fish to aid in his escape. The transformation only partially worked and he had the front of a goat and the strong tail of a fish. Pan swam back to the shore and helped save Zeus from this creature. To reward him for his help, Zeus put him into the sky! I don't see a fish goat up there, but I do see a bikini bottom or an apple turn-over.
- This area of the sky is known as the sea because there are all sorts of water-related constellations.
- Another one that is definitely related to water is Aquarius, the water carrier. There are many stories and versions of this water carrier. The Greeks saw him as the server of wine to the Gods, the Babaloynians saw that when the sun was rising through this constellation that great floods and destruction would occur. But the Egyptians saw this as a sign of good fortune because they saw the water that was pouring from the bowl as the water that would flood the Nile river and bring life and nutrients to the area so they could continue farming. Aquarius can be found by looking for the Mercedes sign in the sky.
- And of course, Pisces, the fish are in the sea as well. This one is a little difficult but we can look for the circlet. This is supposed to be Venus and her son cupid who, again, were escaping a monster of some sort and transformed into fish. In order to not be separated they connected themselves with a ribbon. The name of this star in the knot of the ribbon is named Alrescha which means "cord."
- This brings us to the summer triangle. It is made of 3 bright stars. Vega, Deneb, and Altair. Vega is the brightest star in the constellation Lyra
- Lyra is a musical instrument that was put in place by the Greek gods to commemorate the beautiful music that was played on it.

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- Within Cygnus, there is an asterism, the Northern Cross. Upright and cross arms.
- Aquila is recognized as an eagle
- Below the Lyra Cygnus and the eagle is my favorite constellation, remember I told you to pick one out, and mine is Delphinus the dolphin. This dolphin saved the life of a Greek poet.
- There has been a lot of royalty in tonight's sky and we'll finish with two. Back to near our starting point is an Ethiopian queen Cassiopeia. She was a most beautiful woman but she was also very vain. She resides in the stars today on her thrown. This large W in the sky. She is sometimes in her throne right side up and the other half, as a punishment for being so vain and boastful she is sitting upside down.
- This time of year we have a saga in the sky. There are several constellations that are all related to each other and that's why they are up there as a big group. One of the landmarks in the sky is the great square of Pegasus. Pegasus is a winged horse, don't ask me how to ride him, that was born when the blood from the head of Medusa
- And straight above us is Corona Borealis, the Northern Crown. In the Northern Crown the center star is Gemma the gem of the crown.
- Tonight we've pointed out constellations that look like what they are supposed to represent and also constellations that look nothing like what they are named for. Hopefully tonight you got to find one that you can connect to and when you're far from Yosemite you'll be able to find it and think of the time you spent here and the stars we got to observe.
- The astronomers are in the amphitheatre with their telescopes. Be careful walking on the uneven rocks. Keep your flashlights pointed down and have a safe drive back tonight.

SECTION 4: RANGER LED INTERPRETIVE HIKES/WALKS

Introduction

The Ranger led interpretive walk is a great interpretive experience for all who attend. These programs are advertised in the Yosemite Guide Newspaper provided to people entering the park free of charge. The programs are also advertised and promoted at sunset talks as well as campfire programs at Bridalveil campground when programs are being offered there.

These hikes are generally led one way by the ranger. The ranger meets the visitors at the trailhead that is advertised in the Yosemite Guide. From the meeting point the ranger leads the attendants to the destination. The hikes take at least one hour to get the people to the destination. From there the ranger can leave the area and let the people hike back at their own pace. Make sure to point at how to get back on the way there if the hike

The ranger led hike or walk, depending on the destination, is a great way for the public to get some close one-on-one time with a ranger. The average pace of an interpretive hike is one mile per hour. This allows time for stops every 50 to 100 yards with varying amounts of time at each stop.

The interpretive hikes and walks can have any theme the ranger wishes. One thing to remember when planning an interpretive hike is to have tangible objects that you are talking about. If the audience cannot connect with the ideas and information being offered they will not remember the ideas and the goal of interpretation will not be met; to connect the visitor with the resource.

The following programs have been developed and for some of the hikes, all of the rangers in the Glacier Point area have similar programs with similar themes. Other hikes have different subjects and themes because the landscape and natural resources being observed and passed can offer different lessons.

The ranger led hike is an opportunity to connect the visitor with the meaning of the resource.

Moon Rise on Sentinel Dome

Introduction

This is a hike that has a great history at Glacier Point. This hike took place for 20 years but grew too popular and was discontinued for 15 years because of concerns for the safety and the enjoyment of the large groups. This hike has the attendants meet at the Sentinel Dome/Taft Point parking lot. The attendants are gathered up told of what is to come and then the group gets back in their cars and is driven towards Glacier Point on Glacier Point Road and parked in the large dirt turn-out about 1 mile down the road. This turn out is across the road from the access road that was once used when people were able to drive to just below the top of Sentinel Dome. From the new parking area the group is gathered and it is smart to get a head count of people going up to make sure they can all get down. Two rangers leading this program is ideal because the crowd can get large. Of the two summers that it has been happening that I have been at Glacier Point the largest group was 50 people. The people are then hiked up the access road; this is because the road is shorter, cuts out the rougher sections of the path that starts at the trailhead, and is easier to hike back down in the dark. There are no interpretive stops to the top of Sentinel Dome. Once everyone has arrived at the top of the dome people are allowed to walk around on the dome, time allowing. Then one ranger gathers the people on the dome and conducts a mini-sunset talk. A great topic for this is the peaks because from the top on Sentinel Dome over 1/3 of Yosemite is visible. Then the ranger segues into a full moon talk where the moon is discussed. The timing of the moon talk is to be done or finishing up at the moon is first being seen because once the moon is up no one is listening. The Yosemite Valley Visitor Center can provide times that the moon is supposed to rise but the mountains affect the timing so watching the timing on the moon a few

nights before is a good idea. After sufficient time for the moon to rise the group is notified that the rangers are leading people down the trail and if they don't come they are on their own. The moon rise on Sentinel Dome is a magical night to remember.

Moon Rise on Sentinel Dome

- Welcome to sentinel dome…at moon rise!
- We're here to see the full moon rise. It will be coming up near Mt. Starr king over here behind me. You'll have to let me know when it comes up.
- The moon is earth's only natural satellite. Right now, in the grander scheme of things the moon is orbiting around us, we are orbiting around the sun; the sun is orbiting around the Milky Way, and the Milky Way is orbiting around the Universe.
- Our gravity is keeping the moon in our orbit but at the same time, the moon is having an effect on us here on earth. Anyone know what that force is??? THE TIDES!!!!!
- The reason that we have different effects on each other is the size difference. The moon is about a quarter of the size of the earth. That size comparison, given on a more tangible scale is the difference in size between a basketball and a tennis ball. Or a head and a fist.
- Now, when the moon is rising it will look HUGE as it is near the horizon. That's because we know how large trees are and how big that mountain is over there so in relation, the moon looks huge. Now, as the night continues, the moon will rise higher into the sky. At that point it will look smaller since there is no frame of reference to judge size off of.
- One cool way to test this is reach into your pocket, grab a quarter and put it at arm's length in front of the moon. Squint a little bit and the quarter will cover the moon completely! Later tonight do the same thing when the moon is high in the sky. Now you can understand that the moon is a quarter the size of the earth.
- We're lucky to be able to watch the moon rise tonight and look at its features because the moon does not emit any of its own light! I hope everyone knows not to look at the sun as you might go blind! The moon only reflects 7% of the sun's light hitting it. To give you a comparison, new snow reflects 80% of the sun's light hitting it…another reason to wear goggles or sunglasses.
- Now, if you do look at the sun, and compare the size of the moon with the size of the sun you see they look about the same size. This is because the sun is 400 times larger than the moon, but it is 400 times farther away!
- Being able to look directly at the moon gives us an opportunity to observe craters on the moon. There are about .5 million craters larger than one mile in diameter. And there are 3 trillion larger than one meter!!!
- No Atmosphere
- Along with the craters the moons landscape is affected by its natural varying terrain. The lighter areas being rough and mountainous like here in the Sierras and the darker areas being flat, sort of like our deserts.
- These features result in us being able to use our imaginations and see different images and figures on the moons face. People see a rabbit up there, Greek and roman gods and goddesses on the moon, some see a lobster, and others see the man in the moon. No matter what you see, hopefully you can watch it from somewhere magical like here at sentinel dome with someone you care about. Have a great night!

Hike Sentinel Dome
Materials

- Jeffry Pine Cone
- Ponderosa Pine Cone

- Start at Trail Head
    - Thank you for joining me today. Today I am going to be leading a nature hike up to Sentinel Dome and along the way we're going to discover and witness the adaptations that the plants have made and you will have to decide if these adaptations were made to live in either the cold long winters or the hot dry summers in the Sierra Nevada.
    - The hike is 1.1 miles and will take about an hour to get to the top because we will be stopping and talking about a lot of the things we see along the way.
    - Can we have someone define adaptations for us? ---adaptations are improvements that a plant or animal has made to become better suited at living and surviving in its home/environment.
    - Questions?
- Stop at dead tree
    - Does anyone think they know why this tree is dead?
        - Better than my guess.
        - We don't know the answer because we can't find the specific cause, there was something that pushed it over the edge, but it could have been anything. It looks as if it had lived a long and healthy life.
    - identify
- Stop at Stream
    - Water is the life blood of the Sierras. This water is coming from melting snow. This stream eventually feeds Sentinel Falls.
    - Look at the plants around this stream. They have adapted to lots of water. But once the water is gone they're in trouble. Now look up the trail. Notice the difference between the plants near the stream and the plants and trees growing on the rocks where there is no water. Quite a difference.
    - Remember this sight. It is the last water we'll see on the rest of this hike.
    - Find white pine
        - 5 needles
- Stop at Manzanita and chaparral
    - Define chaparral – plant that lives low to the ground, in hot, dry places.
    - Notice that both plants have waxy leaves (have people come feel)
    - Manzanita has leaves that point up. This makes it so less of the leaf is in direct sunlight. Think of when you're at the beach lying on your beach towel. You'll get sunburned all over your body, instead of if you're just standing up when you'll just get burnt on a few places.
        - These adaptations allow the plants to lose less water than they would without these special changes.
    - Both plants use these adaptations to live in this hot and waterless area.
    - Mention Jeffery Pine
        - Pine = needles grow together in a
        - 3 needles= yellow. In the valley we have the ponderosa that also has 3 needles in a bunch. Or it is a Jeffery Pine.

- There are a few ways to tell the difference. First we think about our elevation. Then we can look at the pine cones. If you can hold onto the pine cone without bleeding or being in pain it is a Jeffery. "Gentle Jeffery, prickly ponderosa" and then lastly, we need to smell it. Jeffery's are one of the best smelling trees in the forest.

- Stop at Fir trees
  - We know it's a fir because the needles are growing individually from the branch, just like the fur of an animal.
  - Are the needles flat and long it is the white fir.
    - Can't roll needles in hands, enter branch with a twist
      - Watch out for white firs in the sun!!!
  - If the needles are shorter and looks like it could clean a bottle it is the red fir.
    - Red fir needles are round and enter the branch head on.
    - Red fir bark was used in the Fire Fall
  - These trees have adapted to living in the snow and the dry by their needles.
    - Don't allow water to escape from the needles
  - Cones
    - Sit high on the branches and don't fall off intact unless a chickaree chews if off.
    - This is a symbiotic relationship. Both species benefit. The chickaree gets food and the tree has its seeds distributed.
    - If a chickaree hasn't chewed off the pinecone it will slowly fall apart.
- Stop at granite
  - Identify flowers
    - Groundsel
      - "Puss absorber"
      - Tall stem- easily pollinated
      - Small leaves- don't allow water to be lost
    - Stonecrop
      - Succulent saves all of the water it can get when there is water and saves it for when there isn't any.
    - Manzanita
    - Monkey flower
      - Small leaves
    - Pussy paw
      - Lifts its flowers off of the ground during the day.
      - Why do you think it does that?
        - The ground is hot
- Stop at natural Bonsai
  - Identify type of tree
  - Living in a small crack.
    - How do you think it has adapted to living in this small space?
  - Count its age
    - It is small for being 35 years old because it does not have the large root system of other trees and it does not have the readily accessible nutrients from the soil.
  - Find a lodge pole pine
    - 2 needles
- Stop at fallen tree with massive root
  - Fell in 1996

    - Adapted to this rock by growing the huge root outward to get all the water it can because the granite it is growing on is impermeable.
    - Now there are 3 new trees growing where this one was.
        - Identify the trees
        - Ask if they think they will all survive
- Remind the hikers that as they are returning to veer right and not hike down the paved road.
- Stop at brown cube rot
    - Fungus that eats along the cell walls of the tree
    - Pass around sample- break it apart
    - Talk about how long it takes for a tree to decompose up here since there is very little water.---about as long as it takes to grow
- End at Jeffery Pine
    - Most photographed tree in the world- made famous by Ansel Adams
    - Show picture
    - Age= 450 years old PLUS because center is hollow
    - Died in 1977, because '76 and '77 were dry years??
    - Fell in 2003
    - Discuss its adaptations
        - Stayed small, grew sideways because of the wind
- Name the peaks
- Review the different ways the plants have adapted
    - Small leaves, rising off of the ground during the day, waxy coating…..
- Think about it, when it is cold we can put on a sweater or turn on the heater. Or when it gets really hot we go inside, turn on the air conditioning or jump in a pool. These plants aren't able to do this because well, they're plants. These adaptations that they have developed help them survive the hot and the cold up here because they have no other place to go.

Hike to Taft Point

Materials

- Jeffry Pine Cone
- Ponderosa Pine Cone
- Hand lens
- Sample of Taft Granite
- Sample of El Capitan Granite
- Sample of Quartz
- Sample of Sentinel Quartz Diorite
- USGS Geologic map of Yosemite Valley

- Start at trailhead
    - Welcome
    - Hike today is 1.1 miles to the end of Taft Point. Along the way we are going to walk through the forest and see the differences that come from what you're standing on make. The end of our hike will bring us out to some steep granite cliffs. You can go as far as you'd like out to the edge. We'll have to be careful where we walk because

we'll also see the fissures, these large cracks in the granite that have formed over millennia.
    - First stop ~ 100 yards. Today we start our hike on Sentinel Quartz diorite. This is the same material that you'd walk on to get to Sentinel Dome, but sentinel dome isn't made out of Sentinel Quartz Diorite.
        - The rocks in this area are granitic. There is a fairly large range of rocks and materials that can fall into the granitic classification. All of them are igneous.
            - Granite comes from an Italian word meaning "grain"
            - This is a result from the slow cooling of the molten rock underground.
        - Sentinel Granodiorite is 95 million years old
- Quartz pillows
    - Large quartz intrusions normally form at boundaries between two types of rocks, usually metamorphic. Here we are not anywhere near a boundary.
    - Quartz is a major component of granite and granodiorite but intrusions like this are uncommon. Well, they are common in this area for some reason, but uncommon overall.
- Stop at Stream
    - This stream is Sentinel Stream the eventually feeds Sentinel Falls. All of the waterfalls in Yosemite are fed by snow melt, when the snow is done melting so are the waterfalls.
- Next stop- Change in granite type
    - Just past the stream
    - El Capitan Granite
        - It is darker than Taft granite and has long pieces of feldspar. ~102 million years old.
            - Lots of quartz, plagioclase, orthoclase, and biotite. Not much hornblende in the region.
    - Stop- Sentinel intruding upon Taft
        - This is one feature that allows geologists and you and I alike to determine what rock is older. Here the Taft granite was already formed and cooled then the Sentinel Granite came in and filled up a crack leaving us clues about which one came first. These are called intrusions.
- Stop at Fir Trees
    - Red and white fir trees
        - Red firs have needles that come off of the branch from point on the branch and the way I like to remember them is that the red fir looks like a bottle brush, and Coca-Cola bottles are red.
        - White Firs have the needles growing off the branch flat. I don't have a good memory tool for that one.
- Stop near Manzanita and flowers
    - Manzanita is extremely common around this area. One reason is because it has adapted to living out here in the warm, dry sun. Earlier I mentioned that the waterfalls are fed by snow melt. Snow is where the Sierra Nevada Mountains get a lot of their water. When the snow is melted there isn't much water left the plants have to make do with what they have.
        - The Manzanita plant has waxy leaves to prevent water escaping through the leaves. Also, the leaves do something that I have learned over my lifetime. Now, I don't tan. When I go to the beach is I lay out I get sun burnt all over

my body. If I am standing up only my shoulders and forehead and nose get sun burnt. That is what the leaves on the Manzanita do. They aren't lying out, they are standing straighter up so they aren't getting all of the sun, only a little bit.

    - Some of the flowers around this area are Mountain Pennyroyal, Groundsel, Pussy Paws…
- Pine trees
    - Jeffry Pine- it is a Yellow Pine. The needles grow in bundles of 3, an easy way to remember that is if you bend the needles it makes a 'Y.' I think this is one of the best smelling trees in the Sierras! What do you think it smells like?
    - If you were in Yosemite Valley, at a lower elevation you would see a tree similar to this one. It has the needles growing in the same group of 3 but it doesn't smell as sweet. The barks are a bit different, the Ponderosa Pine; the one that grows at lower elevations has a more armored bark, larger puzzle piece like bark. If you forget which one is which an easy way to remember is finding a pine cone. => Prickly ponderosa, gentle Jeffry.
- Stop at the top before descent to fissures and Taft Point.
    - When walking around here we have to pay close attention because coming up are large cracks in the ground, 3000 feet down. These fissures are a result from the natural jointing in this region. If you look at a map you can see that these cracks are parallel with Vernal Fall, the face of Mt. Watkins (the large rock wall that is opposite Half Dome, as well as parallel with the face of Half Dome. These large cracks have become larger over time as water has cracked away at the rocks.
- At ledge
    - Have people crawl to the edge taking off sunglasses and hats and putting cameras around their wrists.
    - From here we can look across and see the Three Brothers and see that there are more joints over there.
    - Listen for Peregrine Falcons around this area; I hear them more than I see them.
- At point.
    - On El Capitan Granite. Where the benchmark is located is made of Taft Granite.
    - See the difference between the two. El Capitan Granite is stronger and more ideal for rock climbers.
    - Because of what we're standing on and what happened here over millions of years we can see the west end of Yosemite Valley, the world's largest unbroken cliff, and the world's tallest waterfall, Yosemite Falls. This is all here because of what it is made of.

Hike to View of El Capitan

Materials

- Jeffery Pine Cone
- Ponderosa Pine Cone
- Book or images from Hank Johnston's "Yosemite's Yesterdays

- Welcome to today's hike. Today we will be walking down the first mile of the 4 mile trail. As we progress I'll be giving you a taste of the history of this region and of the park as we make our way down this historic trail. The final destination is a fantastic view of El Capitan and view down the west end of the valley.
- We start our hike at the beginning of the 4-mile trail. Now, depending on what sign you read this trail is actually 4.6 or 4.7 miles long.
- This is a historic trail that is being maintained by the Royal Robins Foundation, the National Park Service and Yosemite Association.
- Down here a little bit, before we get to the breathtaking views of the valley we'll stop and smell this tree. That's right, smell a tree. In my opinion this is one of the best smelling trees in the Sierra Nevada. What do you smell? Vanilla, butterscotch, sugar cookies…all sorts of sweet smell. This is a Jeffery Pine. Down at lower elevations there is a similar tree but doesn't have the distinct delicious smell. Both trees have needles that grow in groups of three and have similar bark. The easiest way to remember which one is which is by the pine cones. Here is one cone, and the other. The way I remember is "Prickly Ponderosa and Gently Jeffery."
- Down here we can see how the vegetation varies as water is present. There is a great abundance of green and lush vegetation and wildflowers where water is prevalent.
- Here is the top of the infamous ledge trail. Earlier I told you that we are on the 4-mile trail that takes you from Yosemite Valley up to Glacier Point in 4.6 miles. The ledge trail brought you from just behind Curry Village all the way up to Glacier Point, 3,200 feet in a mile and a half! When there used to be a hotel at Glacier Point the staff had to hike up the ledge trail every day to get to work.
    - The ledge trail was built in 1918 by the Washburn Brothers and was closed in 1956 because it kept being covered by rocks. This was an unsafe trail.
    - This trial was made infamous by Florence Hutchings. She was the first white baby born in Yosemite Valley. Florence grew up in the valley and knew it extremely well. One day Florence was bringing a group of people up from the valley to Glacier Point. Someone above her on the trail let loose a rock, it fell and struck her. She died the next day at 17 years old. Florence was a lively spirit and people had written home about her and even proposed she get a mountain named for her. Her untimely death secured her a spot in out park and I'll point it out to you when we can see it
- Looking back up the trail we're coming down we can see Glacier Point, where we were about 20 minutes ago. There have been some crazy acts that have taken place at Glacier Point, especially at the overhanging rock. Up where all of the people are that rock that is jutting out is the overhanging rock. The rock below it is the photographer's rock. That is where the camera man set up to capture stunts like ones in this book.
    - Pictures of militia, pictures of acrobat group, women dancing.
    - From here you can see that it is a long drop, 3,200 feet down.
- From here was can see the traffic in Yosemite Valley. Cars have a long history in this area. At first they were admired, then banned for almost 6 years and then allowed back into the park and roads were developed.
    - The first car to Yosemite was the Locomobile in 1900. It took 5 hours to drive from Raymond to Wawona, a trek of 44 miles. Then it took 3 hours to travel the 30 miles from Wawona to Yosemite Valley. The group decided to travel up to Glacier Point and it 5 hours to travel from Yosemite Valley to Glacier Point. From there, the car was pushed out onto overhanging rock to get a great picture.
    - Lippincott said "the unassuming little machine will probably inaugurate a new era in the mode of conveyance into the Yosemite. Cleanliness and comfort will be better subserved by swifter modes of travel. But whatever the new style of conveyance it

cannot detract from the sublimity of the great Valley or lessen the majesty of the eternal walls"
    - In June of 1907 cars were banned from Yosemite National Park because they were "constituted a menace to life and safety" This ban stayed in effect until April of 1913 when the auto clubs that were popping up pushed for equal access to the parks since people coming in on wagons had access and people with cars didn't. The same auto clubs pushed for improved roads with pavement, grading, and shallower slopes.
    - Cars are now a big part of Yosemite's management. In 2010 there were 4,047,880 visitors; the highest level of visitation in the park since 1996. (Yosemite first hit the 1 million mark in 1954; 2 million in 1967; 3 million in 1987; and 4 million in 1996.)
- Yosemite Falls is different from every perspective in the valley. From here we can see Upper and Lower Yosemite Falls. Yosemite Falls is the tallest waterfall in North America falling for a total of 2,425 feet. Now, there's always controversy when you say you're the greatest or the tallest, or the biggest. That height is the total height a drop of water makes over all three falls.
    - The fall's heights have been greatly underestimated. Early tourism posters advertised the falls as a 1,000 foot drop! Upper Yosemite Fall is 1,500 feet down.
    - From this trail as well as around the valley there are great views and in a couple of minutes of hiking we'll be able to see the view we advertised for today's hike.
- Here is El Capitan! There is great intrigue and awe associated with this granite wall. It was named El Capitan by the Mariposa Battalion in 1918 but the Awhaneechee people called it "To-tock-ah-noo-lah"
    - That name originated from the story of "To-tock-ah-noo-lah" the inch worm that rescued two bear cubs that were trapped on top of the rock.
    - Climbing this rock face has been of great interest and desire for those in the rock climbing community. El Capitan was first ascended in 1957 by Warren Harding, Wayne Merry, and George Whitmore. It took then 47 days of climbing over 16 months to reach the top.
    - That was a long time to get to the top and since then people have been trying to get up there as fast as possible. On November 6, 2010, Dean Potter and Sean Leary established the current record at 2:36.45, breaking the old record held by Hans Florine and Yuji Hirayama by a mere 20 seconds. Prior to that, the Huber brothers (Alexander and Thomas) held the record with a time of 2:45.45 (2007)
- This trail has provided us with some spectacular views of the great Yosemite Valley and given us a chance to look back at the history that has happened because of the grandeur of this region. Have a great hike back.

Wildflower Walk to McGurk Meadow

Materials

- Key to pollination (Appendix A)
- Wildflower identification books

Wildflower Walk to McGurk Meadow

Description

This hike begins at Bridalveil Campground, usually at 10am. The hike takes you past the water treatment shed, past the meadow with the well for the campground. At the junction where the trail splits and goes towards "horse Camp and eventually Wawona, take the right trail that takes you to Glacier Point Road. From here a stream crossing is required. Some people are more apt and willing to cross and jump. Before reaching the Glacier Point Road there is a long dry and sandy part of the trail and making sure people drink water is a good idea in the warm sun. Once you reach the Glacier Point Road cross and begin down the trail towards McGurk Meadow. From here there is about .8 miles left until McGurk's Cabin, of McGurk Meadow. The final destination of the hike is McGurk's Cabin but people often want to continue on into the meadow.

Glacier Point Rangers have developed a table that lists plants and flower common names, where they are generally found along the trail, scientific names and edibility. It is available from the Glacier Point Office or other Glacier Point Rangers.

SECTION 5: ACTIVITY BASED INTERPRETIVE PROGRAMS

Introduction

For purposes of this paper Ranger led programs that are not standard hikes or formal programs are being classified as activity based interpretive programs. This includes the Junior Ranger Program as well as the Night Prowl. These are programs that get the participants moving, thinking, understanding and relating to the topics being explored and activities conducted. The Junior Ranger Program takes confidence in handling children. In Yosemite Valley they have large groups of children attend the programs but at Glacier Point the programs are attended by very few children. The Night Prowl is a chance for visitors to venture into the forest at night with a ranger. Just knowing the ranger is present is a form of comfort for most. The night prowl can explore the senses that are heightened in night animals. The activities presented in each program allow for more focused insight and learning compared to larger themes and ideas. Depending on the time allotted for each program, attendance, and weather conditions all or some of the activities can be used. These programs do require materials, most of the time from around the park and the area.

Jr. Ranger Program

Introduction

The junior ranger program is designed to be for children ages 7 to 13. Depending on the ranger's preference, parents accompany the junior ranger on the activity. The program can be scheduled for one hour to two hours. Glacier Point does not have a set schedule of when and where the program takes place. This makes it difficult to have a formal outline because some activities are not possible in some areas of Glacier Point region.

Materials:

- 5x7 index cards
- colored pencils
- collection of cones found in Yosemite region
- samples of types of rock form the region
- Piece of twine with length of 65 feet with marks at average circumferences for trees
- Junior Ranger Handbook (free in visitor center)
- Jr. Ranger Badges

Jr. Ranger Program

- Introduction
    - Welcome to Junior Ranger Program! I'm Shannon, your ranger for today.
    - Has anyone see an animal while you've been here? What kind of animals have you seen? Have you seen a squirrel? A steller's jay? This is the blue bird with the black crown on its head that makes a lot of noise? Have you seen a deer? Has anyone seen a bear here in Yosemite?
    - In Yosemite we have all different types of animals and plants; there are almost 2,000 different types. When people come to Yosemite they come here to see the great views of the mountains and the trees and Half Dome and the rocks. Today I want to look with all of you at the littler parts of Yosemite that people sometimes miss when they are looking at the big views!
- Activity 1- drawing flowers
    - Location: small meadow with well for Bridalveil Campground

- Does anyone have a favorite flower? Can you tell me about it? How big is it? What color is it? Does it have big leaves or small leaves? When you are telling someone about a flower or a plant you have to tell them little details so they can imagine it and know what flower you're talking about.
- Today we're going to try and draw a flower that you find in this meadow as best we can so someone can see your picture and then go and find the flower you drew. On your card you can put information like if it grows in the shade or the sun, is the ground wet or dry where it is growing, how tall it is, and don't forget the leaves!
- When we go look for the flower you can't go farther than that yellow snow marker and that yellow snow marker up in the tree. Be careful not to step on any flowers while you're out there.
- I have some paper and pencils for you. Now in 15 minutes we're going to look at everyone's drawings and try and find their flower.
- After 15 minutes call the Junior Rangers back and find their flowers in the meadow and tell them about the flower they chose. The children get to keep their card as a souvenir from the trip.

- Activity 2- Cones
  - Location: anywhere
  - Walking around today we have passed x many different types of trees. To make new trees, most trees send out seeds so they can grow. Conifer trees, or trees that make cones, come in all different sizes and shapes, just like the cones that they make.
  - Go through the bag of cones and talk about the tree that the cone comes from.
  - Cones include:
    - Jeffery Pine
    - Ponderosa Pine
    - Lodgepole Pine
    - Giant Sequoia
    - Sugarpine
    - Red Fir
    - White Fir
    - Black Oak acorn
- Activity 2.5- average circumferences and heights of the tree for each cone

Tree	Average circumference range (in feet)	Average height range
Sugar Pine	9.5-19	100-200
White Pine	3-9	50-80
Jeffrey Pine	12.5-16	100-150
Ponderosa Pine	12.5-19	150-180
Lodgepole Pine	3-9	30-100
Douglas Fir	6-16	80-200
White Fir	5-13	70-150
Giant Sequoia	31-63	150-250
Black Oak	3-9	50-80

- Activity 3- types of rock around us
  - When you look around Yosemite Valley and travel around the park you can see differences in the rock that is around. A lot of people just think it is granite and that is it. But the rock around us is similar to cookies. You can have chocolate chip cookies, oatmeal raisin, white chocolate macadamia cookies; they are all cookies they

all have the same basic ingredients, but it's the little additions that make them different and delicious.
    - Here is one type of rock from this area.
    - As you walk around Yosemite look at the rocks around you and you can see some of the differences.
- Activity 4- Walk Back
    - Location: anywhere
    - On our way back to where we started I want us to listen carefully. Today we've been thinking about using our observation skills to look at different flowers, different types of cones from trees that are around us, and the different types of rocks that are under our feet. Walking back I want us to listen carefully and try to listen to the forest. I don't want anyone to talk. Try to figure out what is making the noises and where they are coming from. To help the people around you, when you hear a noise point in the direction where it came from. We'll talk about them when we get to our final destination.
    - When you get back, talk about what noises were heard and where they were coming from
- Conclusion
    - Give them the Junior Ranger badges for completing the program.
        - "*OATH"*
    - Yosemite is full of great views that make everyone look up and out, I want you to enjoy the great views as well as the little details that make up the great views and this great place.

Night Prowl

Introduction

The Prowl Program that takes place in the Glacier Point area is normally based out of Bridalveil Campground. The program is advertised in the Yosemite Guide but is not advertised too much more because large groups are difficult to handle. The program starts at 8:00 or 8:30 PM, depending on the time of summer because it is ideal when the program is starting at the end of dusk. Included here is a list of different activities and discussion points that can take place during the hour to hour and a half long program. Depending on the size of the group, age level, and temperature all or some of the activities can be conducted. This program also requires confidence in handling a large crowd in the dark. Clear instructions are vital to make sure it is a safe and fun environment for all participants. This program also requires materials to aid in the learning and understanding of the topics being presented.

Materials

- Red plastic and rubber bands to put on flashlights
- Different colors of paper, ideally cut into different shapes
- Cotton balls
- Water
- Satchels with different aromatic materials inside

- Welcome-

- Entering an area where most of us aren't familiar with. Being in the forest during the day is a new experience for many, and tonight we are going to be in a forest without the sun which is a little disconcerting for most.
- When you hear the word "night" or "night time animals" what do you think?
  - Dark, scary, mysterious, unknown,
    - How about: great vision, great hearing, and adaptations?
- The animals that are out at night, or nocturnal, have found their niche in the forest ecosystem and have adapted to being out at night.
  - What are some adaptations that you think of?
  - Hearing, smell, vision?
- Humans are diurnal and aren't as well adapted to the night time environment but during the night, when our vision is impaired, other senses take over.
- Cones and rods
  - Eyes are made of two types of photoreceptors…cones and rods.
  - Cones are found concentrated on the back of our eye. These pick up colors and are less light sensitive than rods. They adapt rapidly to changes in the light, (ex. When going from outside to inside)
  - Rods are concentrated on the sides of our eyes. That's why at night our periphery is better for looking at the stars. If you look directly at a dim star it might disappear. There are more rods than cones and are 1000 times more sensitive than the cones. Rods don't pick up red light, they are more sensitive to the blues and greens that's why we use red lights because it doesn't mess up our night vision that takes 30-45 minutes to adjust.
  - Rules on flashlights…red plastic.

- Tonight we are taking a little stroll through the forest. We're going to try and avoid using our flashlights. We'll only have a few people using them and we'll have them scattered throughout the group.
  - When walking through a forest at night we have to step differently than if it were daytime, and even more differently than if we were in a city or town during the day.
  - Tonight as we walk we're going to walk slowly and pick up our feet higher than we normally do and place then down gently. Your step should start on your heel and slowly roll forward to your toes.
  - Let's get moving into the darkness!
- Next stop!!! Hearing!
  - When you're walking in a forest, humans are not the quietest animals out here.
  - In the forest we don't hear the animals around us too often…definitely some like the coyote.
    - This is one night time animal that lets its presence known. Keep your ears open while you're here at the campground.
  - We don't hear bears when they're walking through the forest because they have fur between the pads of their feet. This extra cushioning makes their walking silent.
  - Why don't we want to be heard?
    - Neither predators nor prey want to be heard. Either as you're sneaking up on your dinner or you're moving around the forest like the flying squirrel.
      - Nocturnal.
      - Don't actually fly, they have a flap of skin that connects their front legs to their back legs. When they are just walking around it looks like they're bundled up in a blanket. But when they want to travel from tree to tree, they climb high into the tree and fling themselves at their landing spot on a tree farther away. As they fall, they use this

flap of skin to slow themselves down and to land on that next tree they use their long tail as a rudder. Allowing them to land vertically against the next tree. Then scurrying up higher into the tree to stay out of sight.

- Types of ears.
  - Our ears are designed the way they are so they can accurately pinpoint where the noise came from.
  - Other animals have different shaped ears. Looking at the ears of mule deer we can see the difference with the shape and SIZE!!
  - Coyotes can move their ears.
- Can anyone think of an animal that uses its great sense of hearing to eat and fly around the dark forests??
  - BATS!
    - 15 species in the Sierra Nevada.
    - Use echolocation to find their food and miss all the trees.
    - Like sonar…sends our supersonic sound waves and then listen for the sound to bounce back with their sensitive ears to then figure out where the object is.
    - While in flight they can stop, flip, or change direction rapidly so they can capture their prey since they are eating flying moths and insects.
    - Thankful for that night time animal and its adaptations because it eats a lot of insects that bother us here at the campground and around the park.

- On the walk to our next stop we're going to try and walk silently like the bear and try to have great hearing abilities like the deer or coyote or bat by cupping our hands around our ears. As we're going, if you hear something in the woods, help your neighbor out and point to where you heard the noise.

- Next stop! SMELL!!
  - Here at the meadow, different plants around here….cooler, more humidity.
  - Night time animals have adapted to have a great sense of smell.
    - At night, when it is cooler there is more humidity in the air and this helps our sensory glands in our noses to be more sensitive.
    - I'm passing around different socks- never been used- that have different objects in them.
    - They should be coming around. Now after you have smelled the different baggies, I'm going to come around with coyote nose juice on a cotton ball.
    - Take this cotton ball and wipe it around the outside of your nose as well as your upper lip right before you re-smell the baggies.
    - Is there a difference??
    - I'll come around with a trash bag to put your used coyote nose juice cotton balls into so we don't litter.
  - Tonight as it has been getting darker our cones have become less sensitive and our rods are absorbing more and more light. At our next stop down the road, heading back to the campground we're going to witness and experiment with another change that happens at night to our vision.
- Vision!!!
  - As our cones stop working as it gets darker we start to lose our color vision. Think about it, these trees, you and I are all in black and white and grays.

    - To test this I have cut out of paper animals. Every animal is the same color. See if you can identify what animal or object is what color. I need all of these back!! Pass them around! Talk it over with your neighbors!
    - Earlier, I mentioned that our cones are for color and that they are found in the back of your eye. Have everyone face out of the circle and stare straight at an object across from you. If you stare long enough, the object should disappear!!! Crazy!!
    - At our last stop coming up I'm going to have a little fun with you and the night vision you've developed. Let's go!
- Destroy night vision
    - Facing into circle…cover one eye! Now keep this eye covered!! I'm going to ruin your night vision in the eye that is not covered. I'm going to shine my bright, white light flashlight around. Now uncover your other eye. Switch back and forth between your adapted eye and the other one. Strange isn't it? Let's go over the colors of the animals and objects now that we have our color vision back.
- Last stop!
    - We can see just from our last experiment that we can adapt to the night time. Think about the other animals that live in the forest at night. They have great adaptations that make it easier for them. Tonight, we have going into a forest, at night, and have had new experiences in a place we're not too familiar with. I hope that by exploring our senses that we can use in the dark we have become more comfortable with the world at night.

SECTION 6: INFORMAL VISITOR CONTACTS

Description

The informal visitor contact is a major part of working at Glacier Point. These contacts can occur anywhere in the park at any time. Roving, or walking around, looking available and approachable at open spaces in the park is often done for hours on end in the sun without shade. The contacts made in these ways are sometimes the only Ranger contacts park visitors make and are important to their visits.

The role of roving as an Interpretive Ranger is to connect with the visitor, provide answers to their questions, and give direction and guidance to the park's tremendous resources. The range of questions asked during informal visitor contacts is immense. Often the questions are limited to how close is the closest gas station and "is that Half Dome". These contacts are often the only National Park Service employee interactions except for entering at the gate. As such, great patience and love for the resource and area is required. Being able to read a visitor on the level of knowledge a person wants is important. Telling someone about the components of granite and how it was formed is way more than the person wanted, to what they thought was a yes or no question. By being attune to the visitor their connection to the park and the resource will increase- the goal of interpretation.

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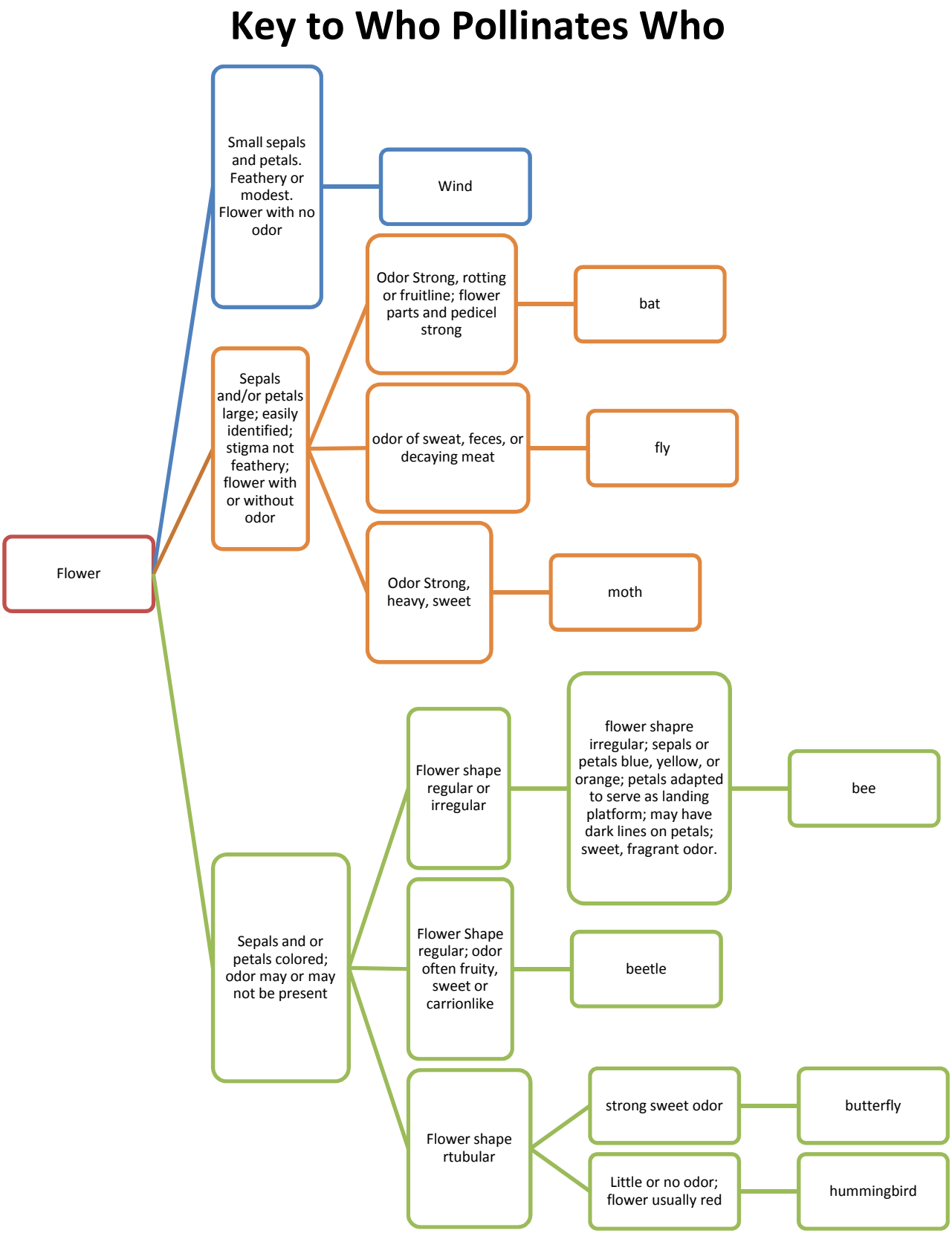
SECTION 8: APPENDICES

Appendix A: Key to Who Pollinates Who



Appendix B

The Most Asked Questions At Glacier Point

The National Park Service and the Glacier Point Naturalists welcome you to one of the most impressive "View Points" in the world.

1. What is there **to see and do** here near Glacier Point?

   a. See **The Valley View.** Walk to the **end** of the trail. You haven't seen the valley until you go to the **rock wall** with the square iron railing.
   b. **The Geology Hut.** A great view of Half Dome, Nevada and Vernal Falls, and the High Sierra with a location sign below the building. On the rear wall is an explanation of Glacial Geomorphology.
   c. **Taft Point and Sentinel Dome Trail** (2 miles back along the road on your way out) A 35 minute one way walk will lead to one of two great views for those who want some exercise. Elevation difference about 300' (100m).

2. What is the **elevation here**? 7,214' (2,400 m)

3. What is the **elevation of Yosemite Valley**? About 4,000' (1,333 m)

4. How far is **the drop** to the valley? 3,214' (1,070 m)

5. Where in the valley is the **swimming pool** seen directly below Glacier Point?
   At Curry Village (and the deep end is on the far side from here).

6. What is the **big "Castle" like building** across the valley? The Ahwahnee Hotel

7. Where is **Yosemite Lodge**? To the left of the base of the lower Yosemite Fall

8. What are the **names of the two water falls** to the east (right side of Half Dome)?
   Top = Nevada Fall (597'), Bottom Vernal Fall (317'). They are part of the Merced River.

9. Where is **El Capitan**? You cannot see it from Glacier Point. It is 5 miles due west of here. Walk along the Four mile trail (see #17 this sheet) or go to Taft Point or Sentinel Dome to view El Capitan.

10. Why is the **Valley so Flat**?
    It was once **a lake** which filled in with sand and gravel over the last 10,000 years.

11. Where is **Mirror Lake**?
    Just below Half Dome in Tenaya Canyon is a "sand trap, water hazard and green" (if you play golf you will find it easily); that's the site of Mirror Lake. Sand and gravel transported by Tenaya Creek caused the lake to fill in over the last 20 years. Before that the Park Service removed the silt annually to sand the roads in winter.

12. What Happened to the **Glacier Point Hotel**?
    It burned down on July 9, 1969. It stood to the south of the current Glacier Point Concession Stand and blocked the view of Half Dome from the parking lot.

13. **Where** did they push off the Glacier Point **Fire Fall**?
    At the upper railing at Glacier Point Valley Overlook. The location is marked with the date "1982" on the horizontal rail, the year that the new railing was installed at Glacier Point.

14. **What was** the **Fire Fall**?

From 1872 - 1968 (end of January) from time to time a fire was built at the edge of Glacier Point and its coals scraped over the edge around 9 P.M. This was a nightly event in the summer, weekends in spring and fall, and occasionally in winter. The fire was built and pushed over by the concessionaire, The Fire Fall was stopped in 1968 because it was not a natural event and it was causing great congestion of park visitors and vehicles in Yosemite Valley. If you want to "see" a fire fall, watch the movie "The Caine Mutiny" Humphrey Bogart (ca. 1954). About 45 minutes after opening credits is a 7 second fire fall, in Technicolor.

15. Where do the **Hang Glider** Pilots take off?

Just below the lower trail by the Geology Hut.
As many as 19 pilots may fly per day. They must be flying by 9 A.M. The sport is self regulating. Most flights are on weekends during the summer. Pilots land in the meadow to the west of Yosemite Lodge. Their safety record is excellent. There have been more than 6000 flights since the program began in 1973.

16. What is a **Star Party**?

On selected weekend evenings, amateur astronomy clubs from California bring their telescopes to Glacier Point to provide the park visitors with an evening's observation of the summer sky. There is no charge for the event. A **Sunset Talk** given by the Glacier Point Naturalists at the railing usually precedes the Star Party. Please see the Yosemite Guide Newspaper for times and dates.

Hikers

Where do I catch the **Panorama Trail**?

The trailhead is signed and is located along the pathway between the lavatories and the concession building.

Trail notes: It is 8 miles long, allow about 4 hours walking, figure 1 hour to enjoy the view The trail terminates at Happy Isles, 6/10^{ths} of a mile from Curry Village. If you want to go down the Mist Trail (foot trail only, many steps, hard on knees, hips, ankles) go over bridge above Nevada Fall, continue for 1/10 mile. Trail marked "Yosemite Valley 2.5 miles, Foot Trail Only".

Where is the **Four Mile Trail head**?

Behind the Concession building. (To your right as you face the front doors)
Trail notes: Its distance is 4.4 Miles, Walking time 2-3 hours, 3,200' elevation **loss**. Wear good, well broken in shoes, **carry water**. Caution - rocks with sand cover are very slippery - especially when you are walking downhill.

James McCauley paid to have this trail built in 1872. It was the first "easy" way to Glacier Point. In the 1920's the trail was improved, and lengthened, that's why the "Four Mile" trail is 4.4 miles long. You can see wild flowers (in season), and 20 minute's walk down the trail will afford a great view of El Capitan and Sentinel Rock. Beyond, steep switch backs will lead you to Yosemite Valley. At trail's end, walk to your right (direction of traffic on the one way valley road) for 1/8 mile, cross the bridge over the Merced River, and continue to Yosemite Lodge for the nearest shuttle bus stop.

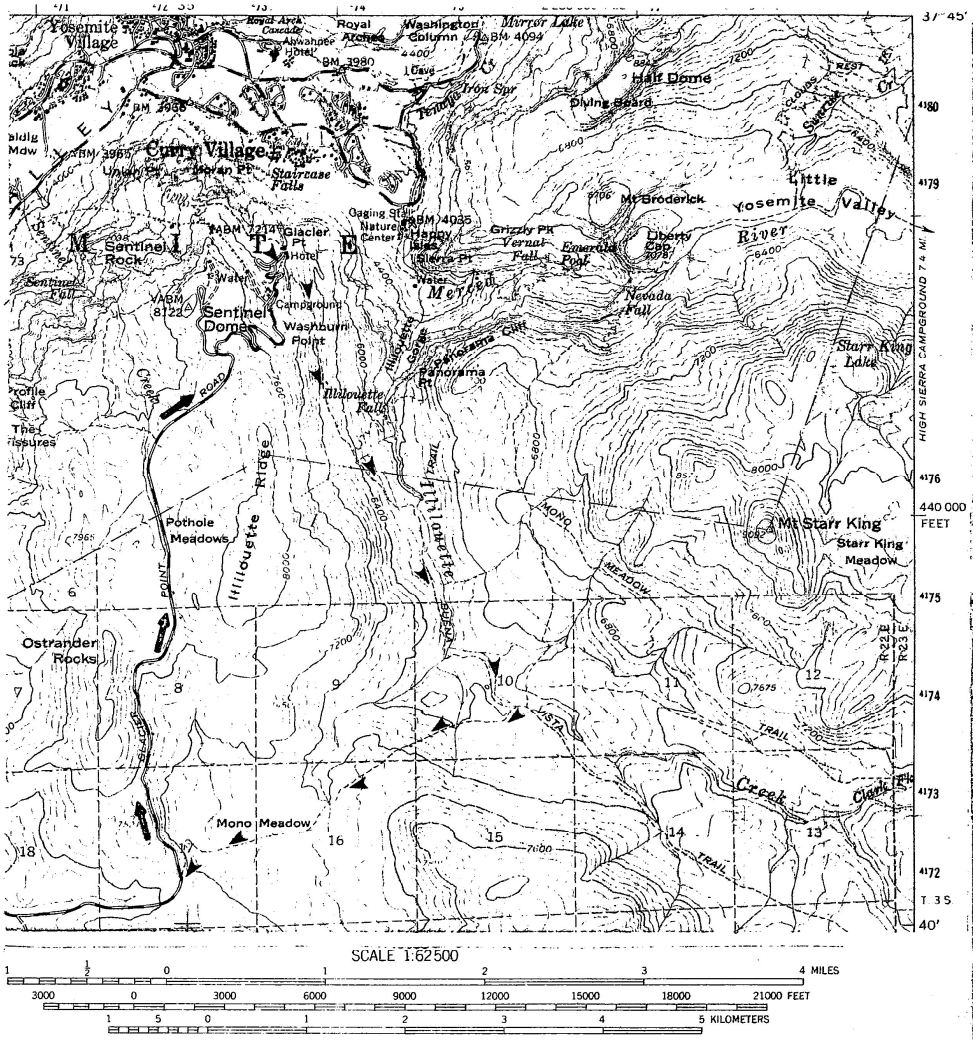
Dave Balogh, N.P.S.

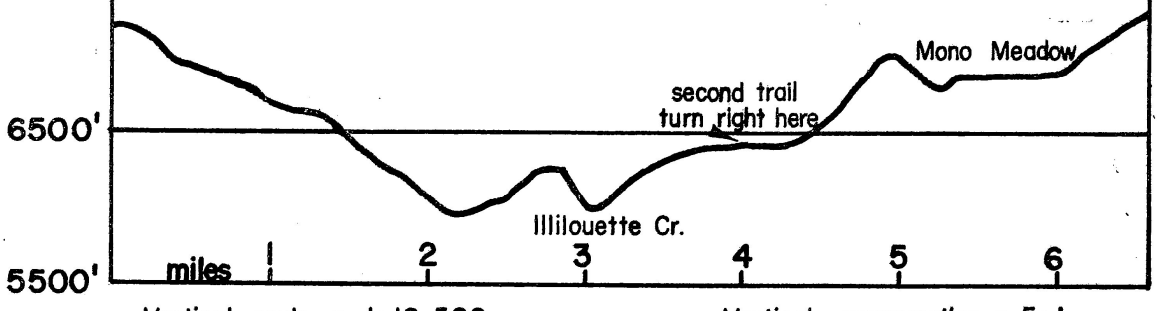
Appendix C

Glacier - Mtn. Valley.
6
7
A
B
C
CHANNEL
VALLEY
CROSS-SECTION OF STREAM VALLEY SHOWING V-SHAPED PROFILE
CROSS-SECTION OF GLACIER SHOWING U-SHAPED PROFILE VALLEY WIDENED AND DEEPENED
CROSS-SECTION OF U-SHAPED GLACIATED VALLEY WITH ALLUVIAL FILLING
ALLUVIUM
TRUNCATED SPUR
D
LONGITUDINAL SECTION OF STREAM VALLEY - SHOWING STEEP GRADIENT
E
LONGITUDINAL SECTION OF GLACIER - SHOWING GENTLE GRADIENT OF VALLEY
F
BERGSCHRUND
LONGITUDINAL SECTION OF GLACIER - SHOWING CUTTING "DOWN AT THE HEEL"
G
LONGITUDINAL SECTION OF GLACIATED VALLEY - SHOWING FLAT FLOOR OF ALLUVIUM
THE DEVELOPMENT OF GLACIAL TROUGHS
FULL-BODIED MOUNTAIN FORMS
SMOOTH-FLOWING SLOPES
DEEP SOIL
INTERLOCKING SPURS
V-SHAPED VALLEYS
ACCORDANT VALLEY FLOORS
1
BEFORE GLACIATION
PEAK, SPITZ OR HORN
AMPHITHEATRE OR CIRQUE
BERGSCHRUND
SNOW-FIELD OR NEVE
ARÊTE OR COMB
GLACIER
Marginal Lake
LATERAL MORAINE
MAIN
MEDIAL MORAINE
2
DURING GLACIATION
MATTERHORN PEAK
ARÊTE
CIRQUE
CIRQUE
Rock STEP
NON-GLACIATED VALLEY
HANGING VALLEY
POST-GLACIAL
TROUGH
Waterfall
TRUNCATED SPUR
GLACIAL TROUGH
Landslide
Landslide Lake
ALP
LATERAL MORAINE
Finger Lake
3
AFTER GLACIATION
After W. M. Davis
A MOUNTAIN REGION BEFORE, DURING, AND AFTER GLACIATION

Appendix D

Mono Meadow Trail





Vertical scale = 1:12,500 Vertical exaggeration = 5:1

Total miles : 6 1/2 Time (at 2mph) : 3 1/4 hr.

Road mileage from Glacier Pt. to Mono Meadow Trail : 5.3 mi.

Appendix E

Panorama Trail

to Yosemite Valley

Total miles = 7

Time (at 2mph) = 3.5

PLEASE NOTE:

Cross bridge at Nevada Fall, go 1/4 mile to Mist Trail foot path, then onto the valley.