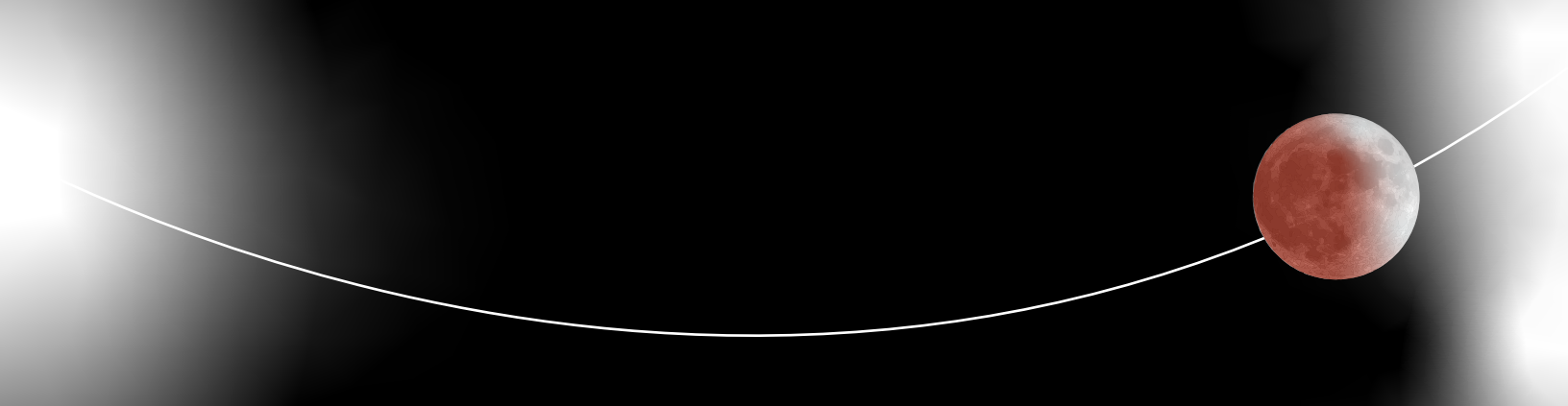


Desert Skies



Desert Skies

EJ Spence

Multi-disciplinary Design, University of Utah

DES 3520-001 Design Product Studio 2
Tsoutsounakis, Spring 2021

In partnership with Bureau of Land Management Utah

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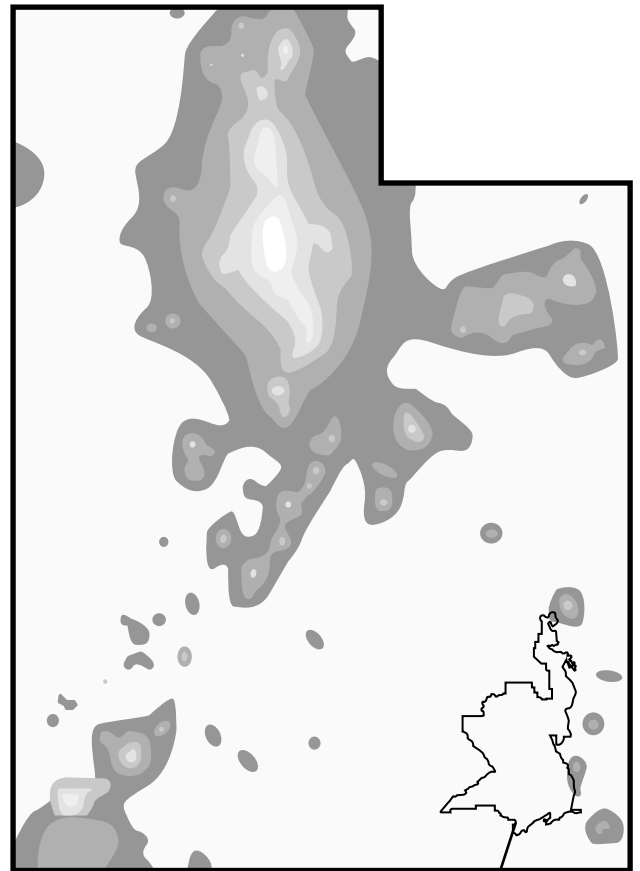
Stargazing

Bears Ears is located in one of the darkest areas in Utah making it a perfect location for enjoying the night sky. However on the BLM site there is no mention of specific places or ways to enjoy the night sky.

Navigating trails at night can be dangerous especially when a trail or landscape is new to the visitor. How can we enjoy the night sky in bears ears while also being safe?

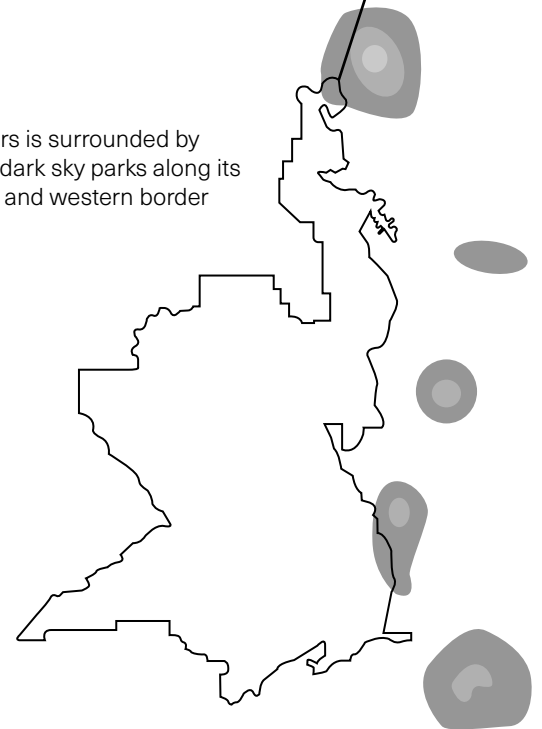


Images (darksky.org / visitutah.com)



Light Pollution Map (cleardarksky.com)

Bears Ears is surrounded by certified dark sky parks along its northern and western border



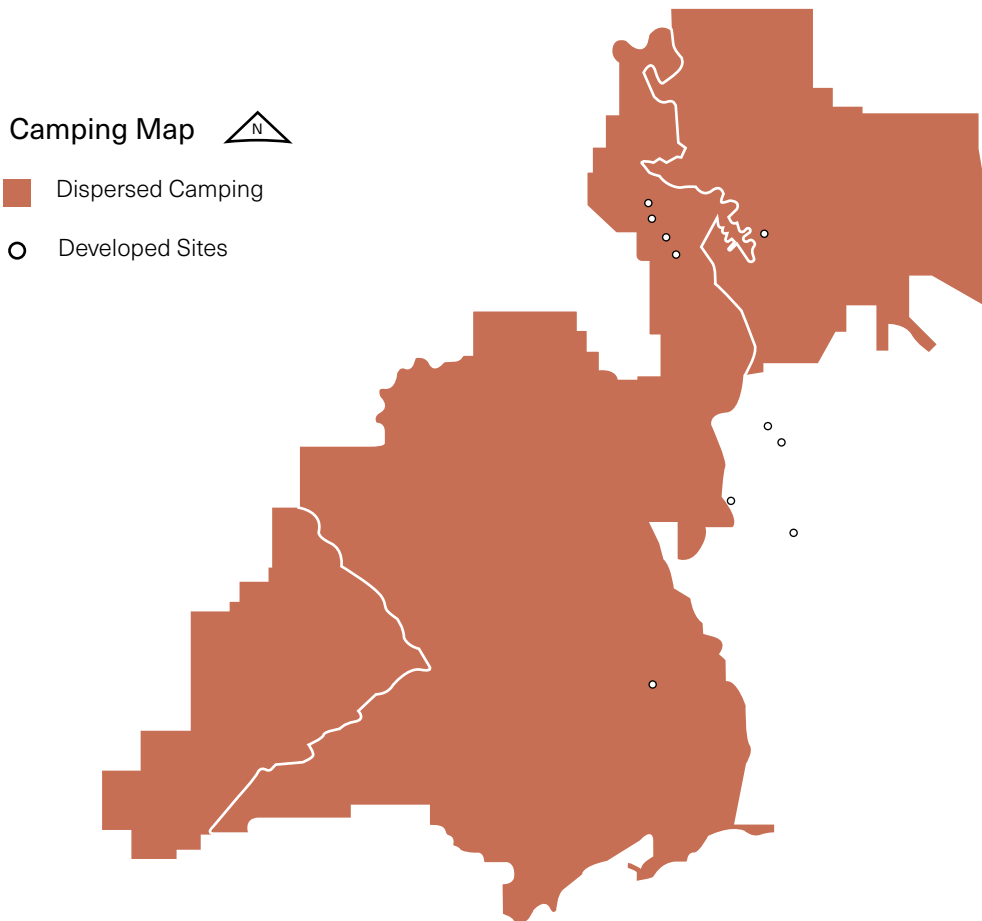
Camping

Focusing on dispersed and developed campers at Bears Ears, these groups are both out of vehicle campers. During a visit they establish a home site and use their vehicle to explore the rest of the monument.

Spread out across the entire landscape, these visitors are used to commuting around the monument. Dispersed campers can set up at any site on BLM land, Developed campers pay a fee for a reserved spot.

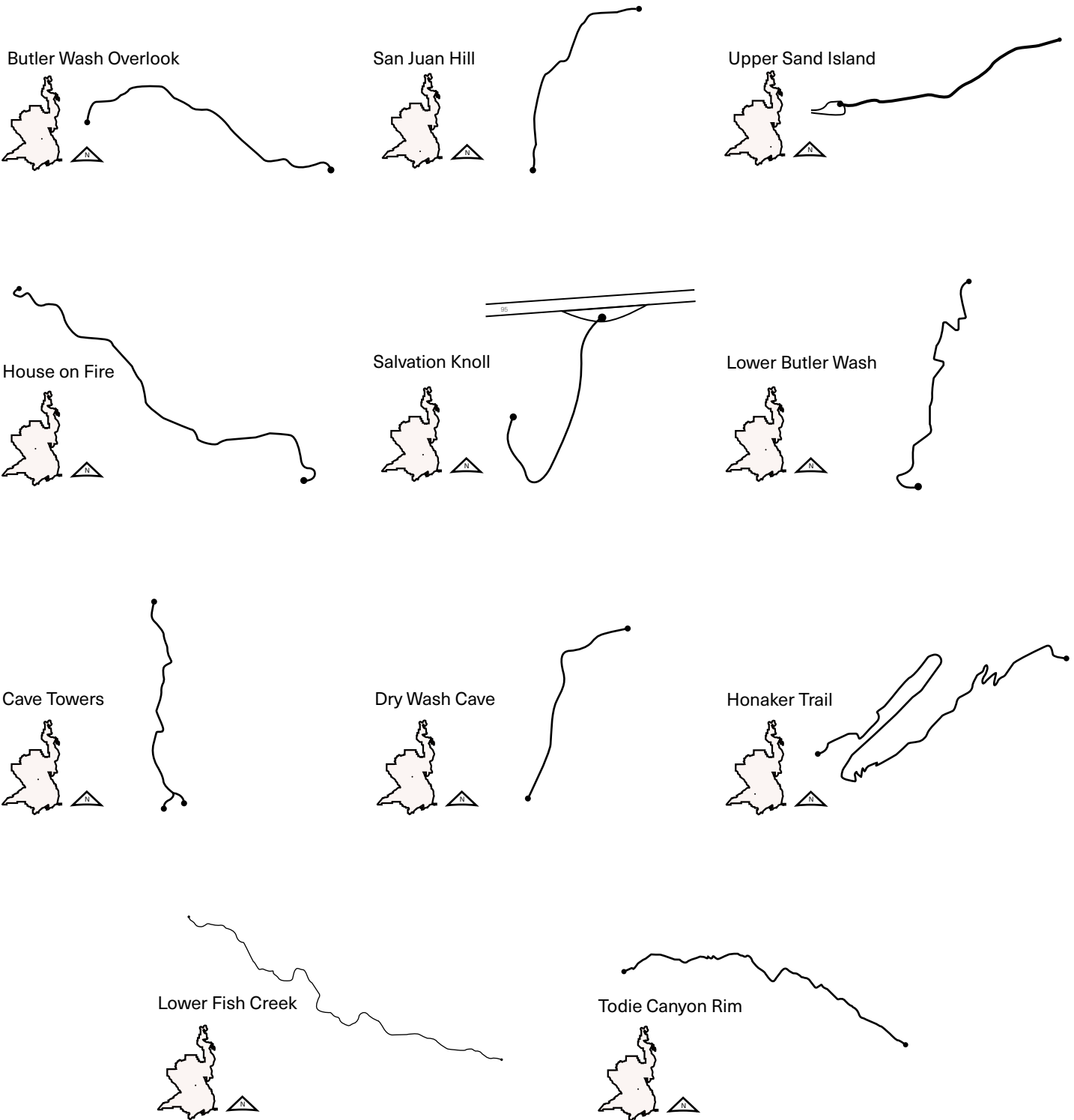


blm.gov / Cedar Mesa Trip Planner / alltrails.com



Hiking

Limitless hikes and walks are located in this region, although navigating which hikes are certified and which ones are social trails can be difficult. Finding proper trail heads is a key part of following the visit with respect principles. For this project I will be utilizing the 11 hikes referenced on the Bears Ears Education Center's website.

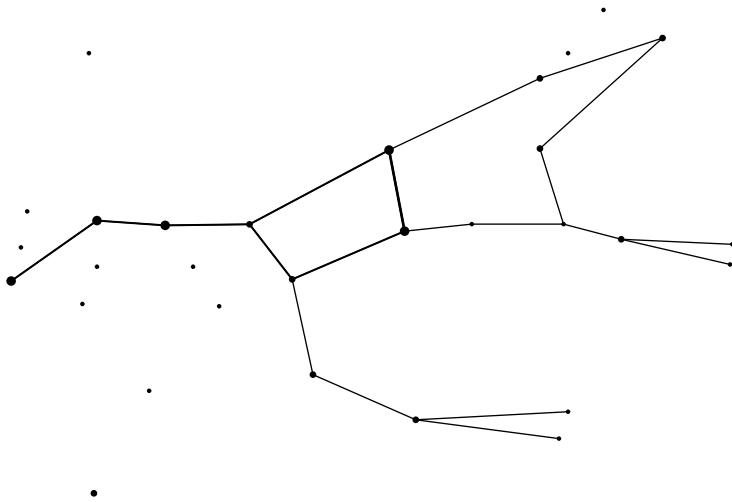
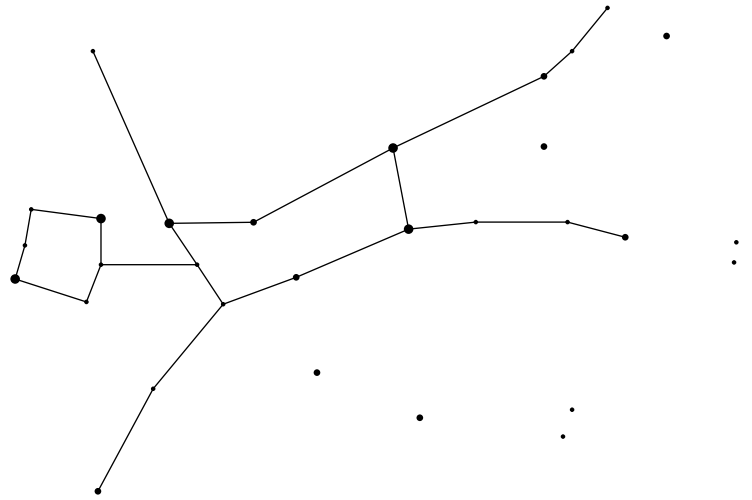


Sharing the Night Sky

Revolving Male

Navajo constellation.

Native connection to the stars often accompanied with oral storytelling. A lot of native constellations are sacred knowledge, Navajo is more public knowledge. Native constellations tend to have human forms.



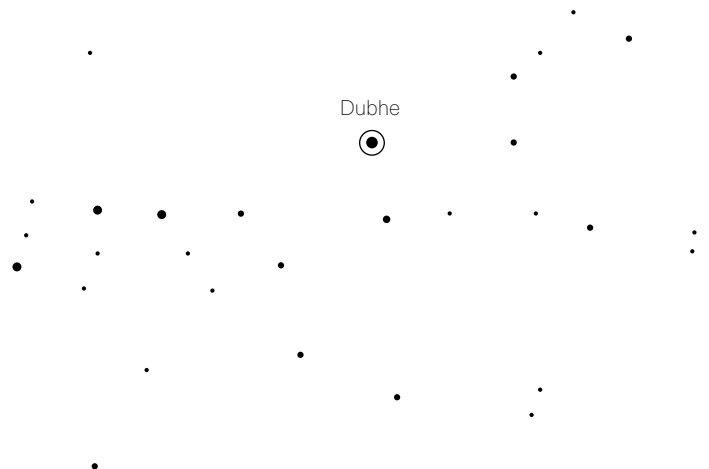
Bears Ears

Everyone on earth shares the same night sky, stars are a storytelling tool that every culture uses and interprets differently. To say one history of constellations is more important than another would be a disservice to all the others living in the sky at Bears Ears.

Ursa Major

Western constellation

This constellation holds the big dipper one of the most easily seen and well known constellations. The Dubhe star is used across 20 of the major constellation cultures

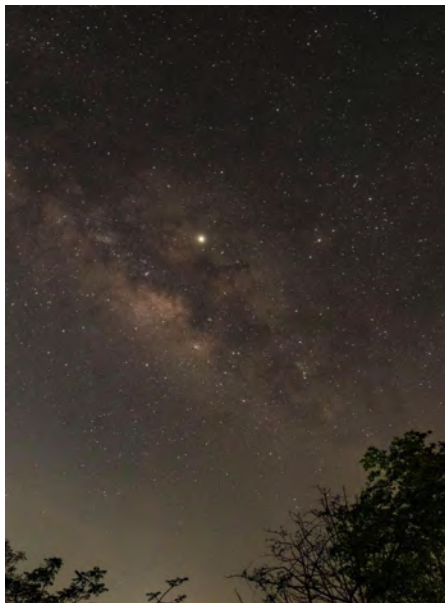


Celestial Events

A celestial event is an astronomical phenomenon that involves one or more celestial objects.

Whether it's a full moon, meteor shower, or a full solar eclipse celestial events invite people to look to the sky and see what is going on. A certain comradery shared when gazing up at the night sky looking for a planet, meteor or awaiting an eclipse.

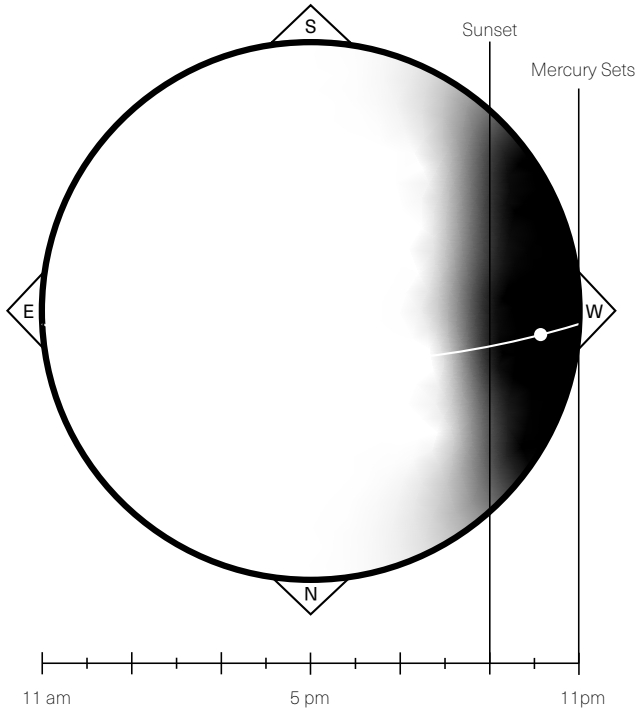
Bears Ears hosts some of the darkest skies in the United States why aren't more people talking about and utilizing it?



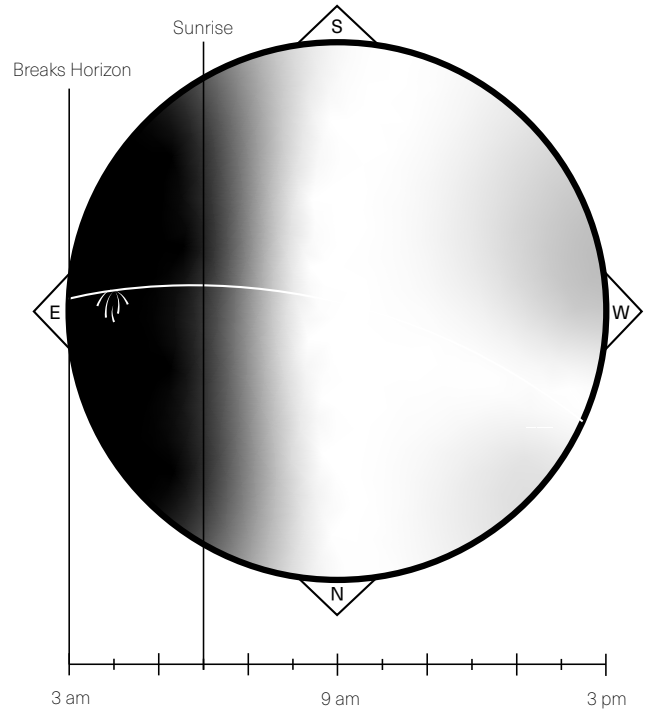
darksky.org

May Night Skies

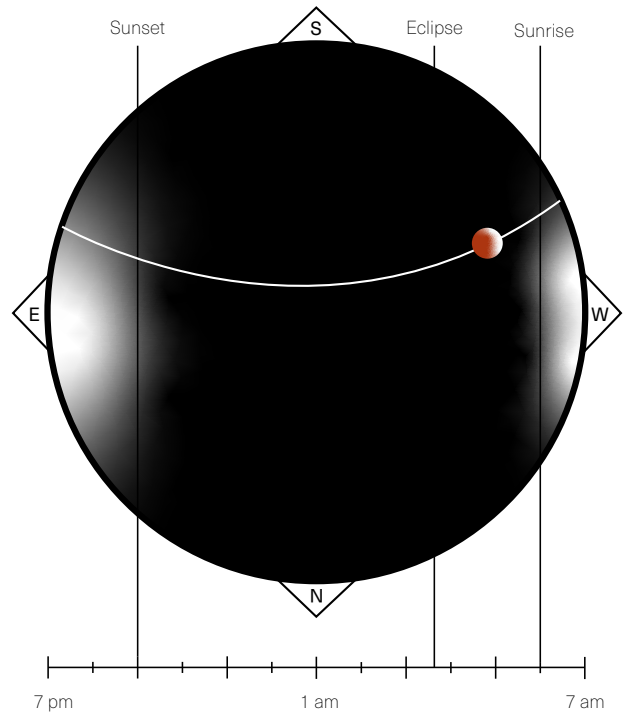
There are three major events in the month of May all of them travel east to west through the sky and are best viewed on the horizon. The rarest of three is the lunar eclipse which Bears Ears falls in the third most visible region.



Mercury Sunset
May 17th



Aquarids Meteor Shower
May 6th and 7th



Lunar Eclipse
May 25th night 26th morning



City of Monticello, Utah, USA

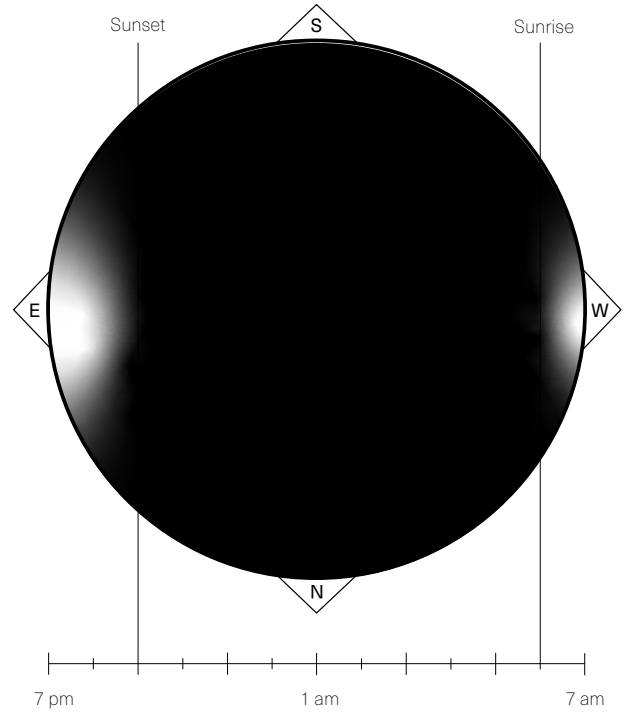
Total lunar eclipse visible
Magnitude: 1.0094

Duration:	3 hours, 19 minutes, 19 seconds
Duration of totality:	14 minutes, 28 seconds
Penumbral begins:	May 26 at 2:47:39 am
Partial begins:	May 26 at 3:44:58 am
Full begins:	May 26 at 5:11:26 am
Maximum:	May 26 at 5:18:42 am
Full ends:	May 26 at 5:25:54 am
Moonset:	May 26 at 6:06:58 am
Partial ends:	Moon below horizon
Penumbral ends:	Moon below horizon

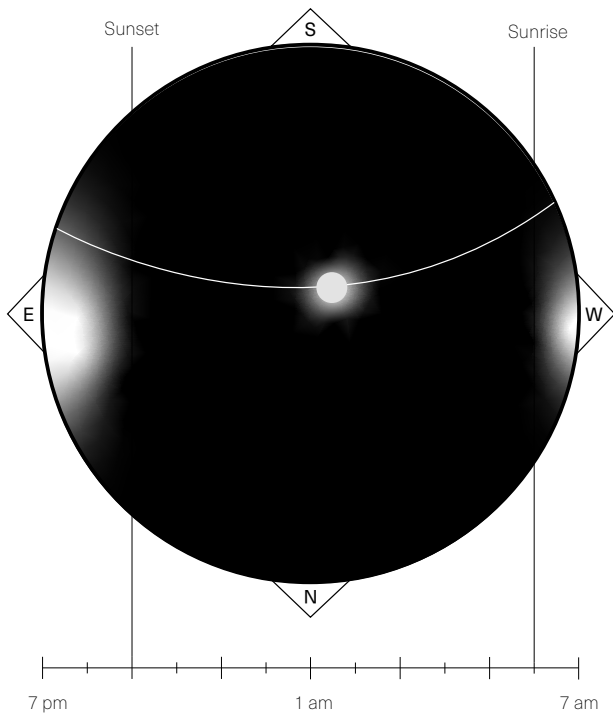
Times shown in local time (MDT)

Monthly Events

Each month there is a full moon and a new moon. Full moons are ideal for hiking and exploring the landscape. New moons are perfect conditions for stargazing. Associating full moons with longer hikes, and new moons with shorter hikes creates a safer experience.



New Moon
May 11th

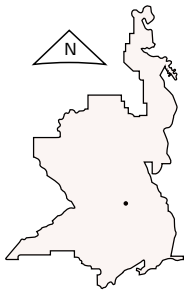


Full Moon
May 26th

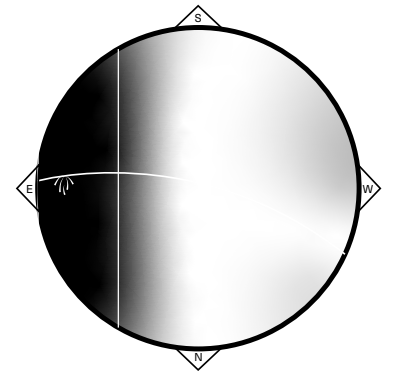
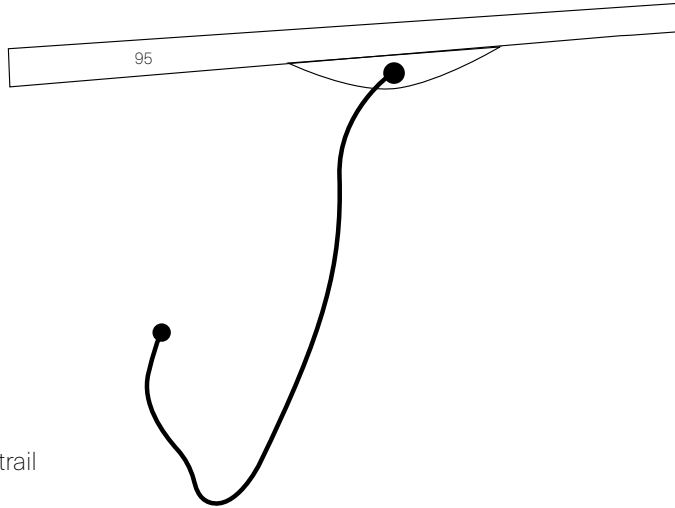


Salvation Knoll

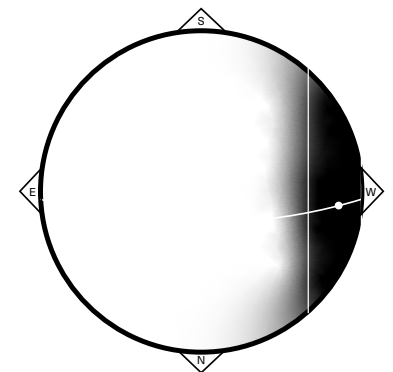
A very short and accessible trail near Bluff. This trail is ideal for the month of May because of its overlook point giving a great view of both east and west horizons. Good for families and less experienced visitors to navigate in the dark.



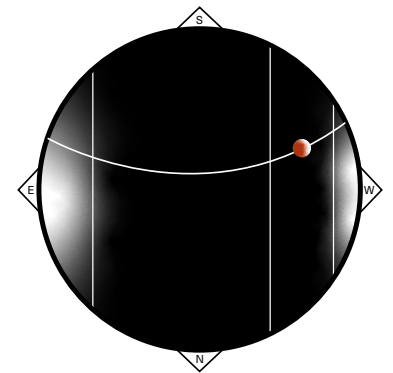
.6 miles out and back trail
88 ft elevation gain



Aquarids Meteor Shower



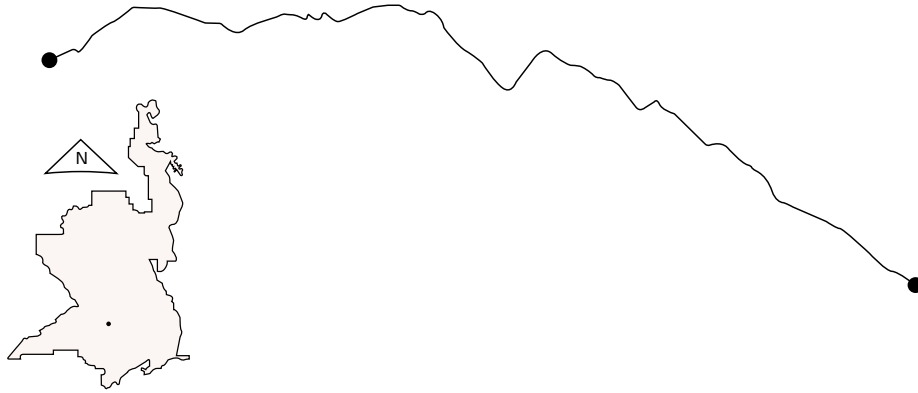
Mercury Sunset



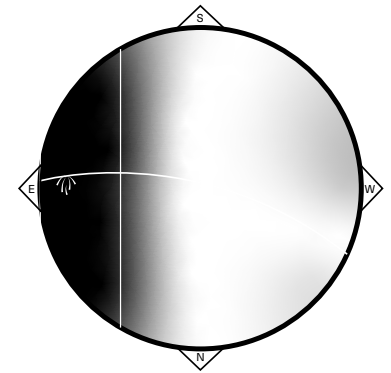
Lunar Eclipse

Todie Canyon Rim

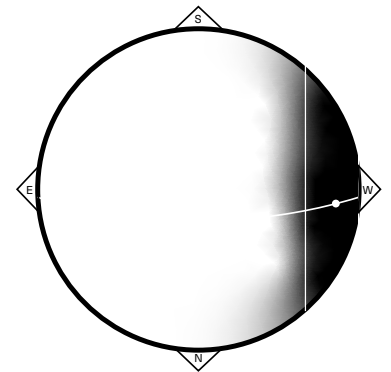
Todie Canyon Rim is a much longer hike for more experienced visitors who want have a more secluded experience. Hiking the rim of the canyon allows for both horizons to be visible for the duration of the hike.



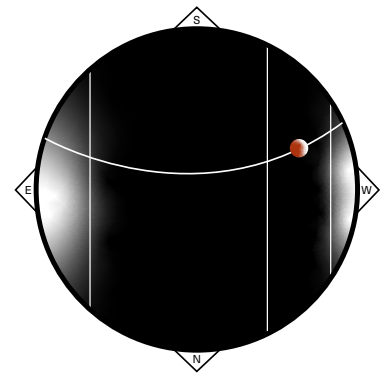
4 mile out and back trail
100 ft elevation gain



Aquarids Meteor Shower



Mercury Sunset

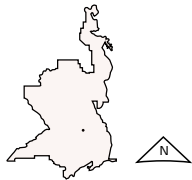


Lunar Eclipse

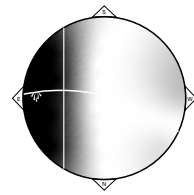
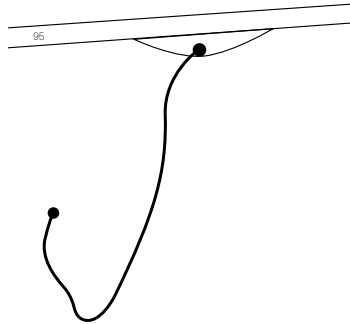
Short East and West

These are accessible options for less experienced visitors, more equipped to handle large groups, children, and people with mobility issues. Some of the advantages of walking east and west is the ability to follow the moons path in the sky. May celestial events also live on the east west axis.

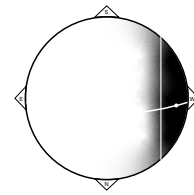
Salvation Knoll



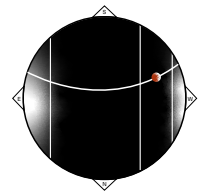
.6 mile out and back trail
88 ft elevation gain



Aquarids Meteor Shower

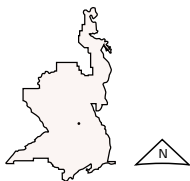


Mercury Sunset

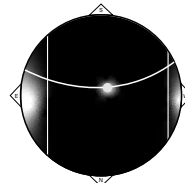
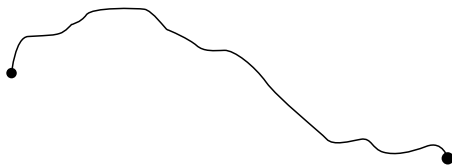


Lunar Eclipse

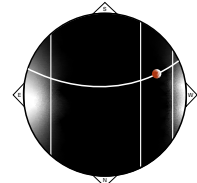
Butler Wash Overlook



.8 mile out and back trail
108 ft elevation gain

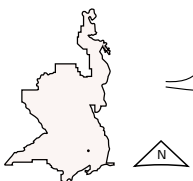


Full Moon

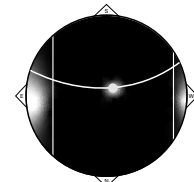
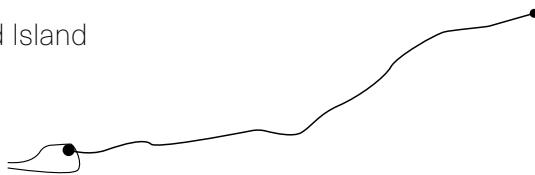


Lunar Eclipse

Upper Sand Island



1.2 mile out and back trail
0 ft elevation gain

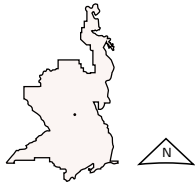


Full Moon

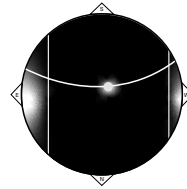
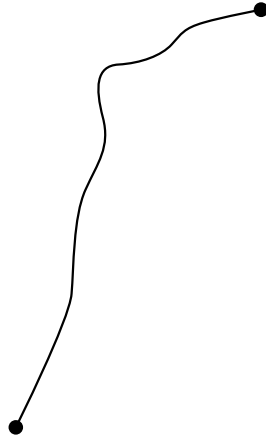
Short North and South

Additional options that are accessible choices for less experienced visitors. In the month of May no events fall near the north or south horizons so these trails are better suited for full and new moons. Matching the direction of the trail with the path of the sky makes for a better viewing experience.

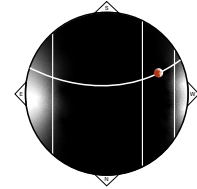
Dry Wash Cave



1.6 mile out and back trail
300 ft elevation gain

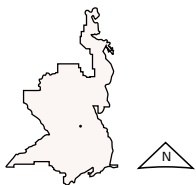


Full Moon

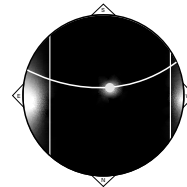


Lunar Eclipse

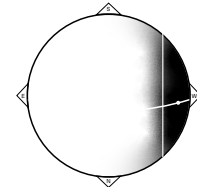
Cave Towers



1.6 mile out and back trail
98 ft elevation gain



Full Moon

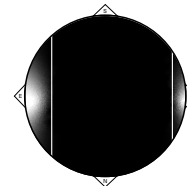
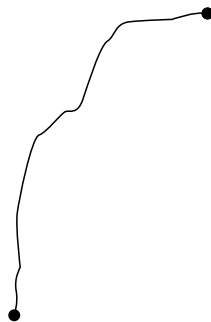


Mercury Sunset

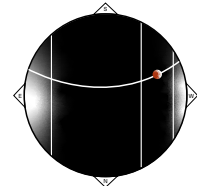
San Juan Hill



1.35 mile out and back trail
385 ft elevation gain



New Moon

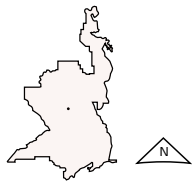


Lunar Eclipse

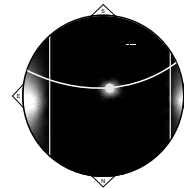
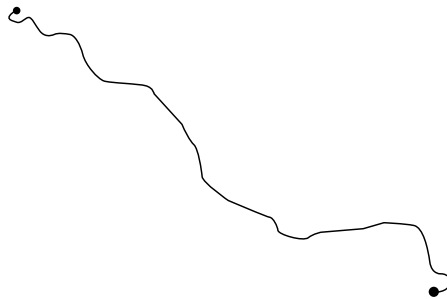
Long East and West

Hikes over two miles better suited for experienced visitors familiar with the landscape and know how to safely visit with the right behaviors and supplies. These trails follow the sky path of the May events but because of their length may make timing the events difficult.

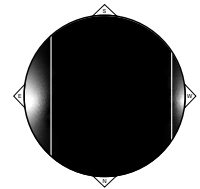
House on Fire



2.37 mile out and back trail
98 ft elevation gain

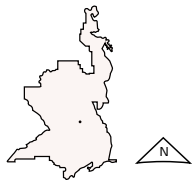


Full Moon

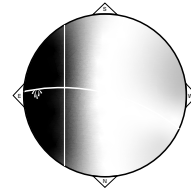
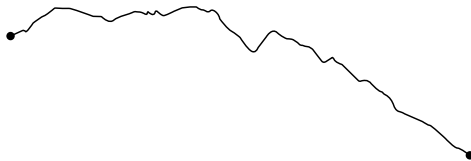


New Moon

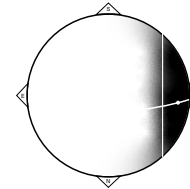
Todie Canyon Rim



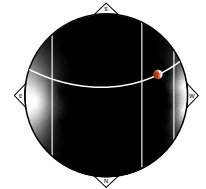
4 mile out and back trail
100 ft elevation gain



Aquarids Meteor Shower



Mercury Sunset

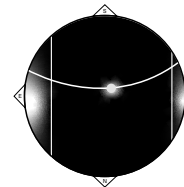
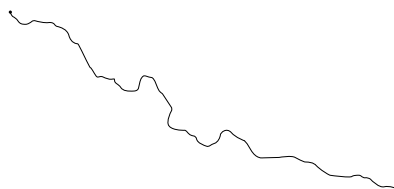


Lunar Eclipse

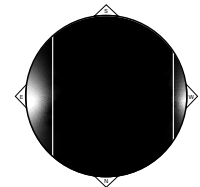
Lower Fish Creek



9 mile out and back trail
521 ft elevation gain



Full Moon

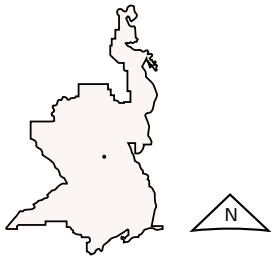


New Moon

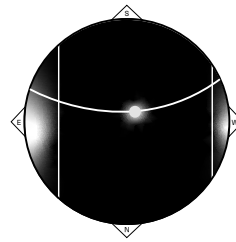
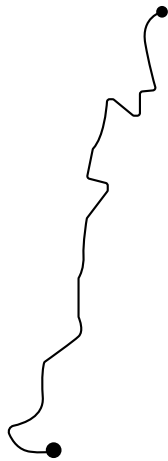
Long North and South

These trails both contain steep elevation changes, Butler Wash would be good for hiking up at sunset to see the overlook and down at night. Honaker trail begins at a lookout for viewing a sunrise or sunset and the trail descends down.

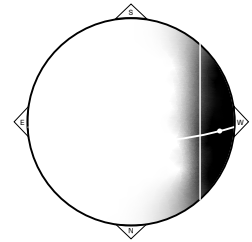
Lower Butler Wash



2.6 mile out and back trail
357 ft elevation gain

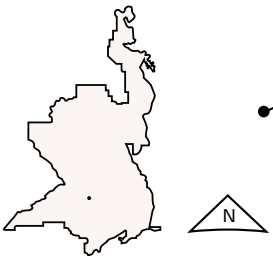


Full Moon

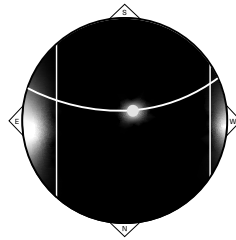
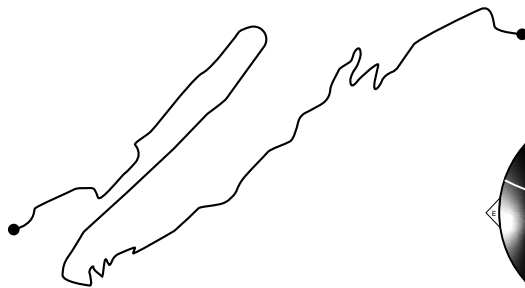


Mercury Sunset

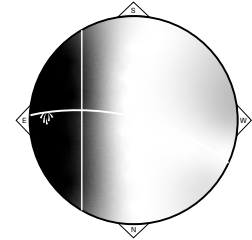
Honaker Trail



4.5 mile out and back trail
1,600 ft elevation gain



Full Moon

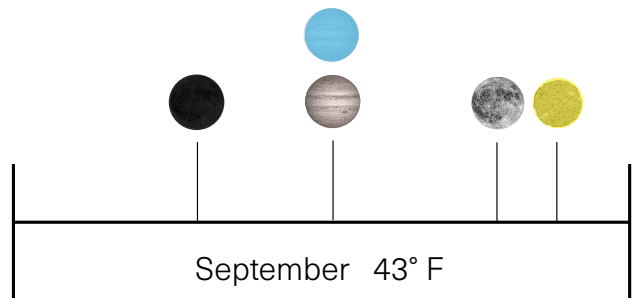
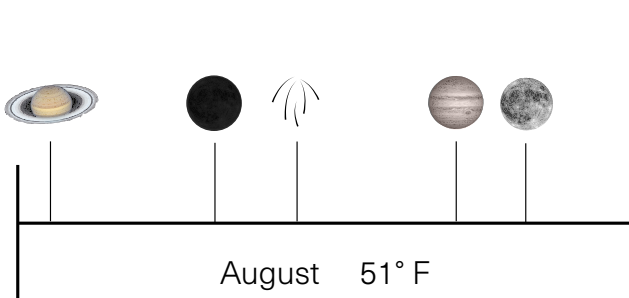
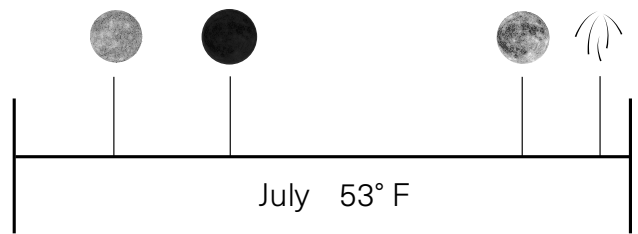
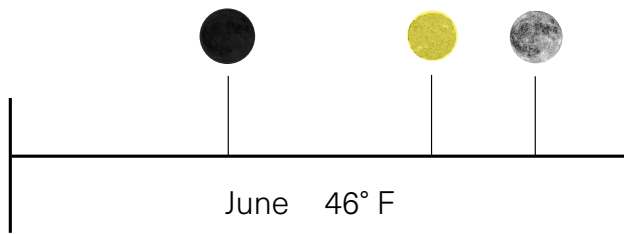
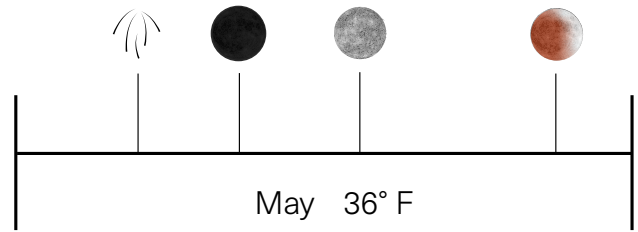


Aquarids Meteor Shower

Planning

2 to 5 celestial events are visible each month in Utah, these events are predicted years in advance. All of which can be seen with the naked eye, making them very accessible with no tools required.

Events for the summer months are shown here, as well as the average low temperature for that month. Exploring at night can be dangerous for newer visitors especially when temps are low.



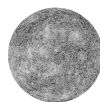
Full Moon



New Moon



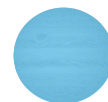
Meteor Shower



Mercury



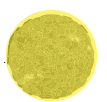
Saturn



Neptune



Lunar Eclipse



Solstice / Equinox

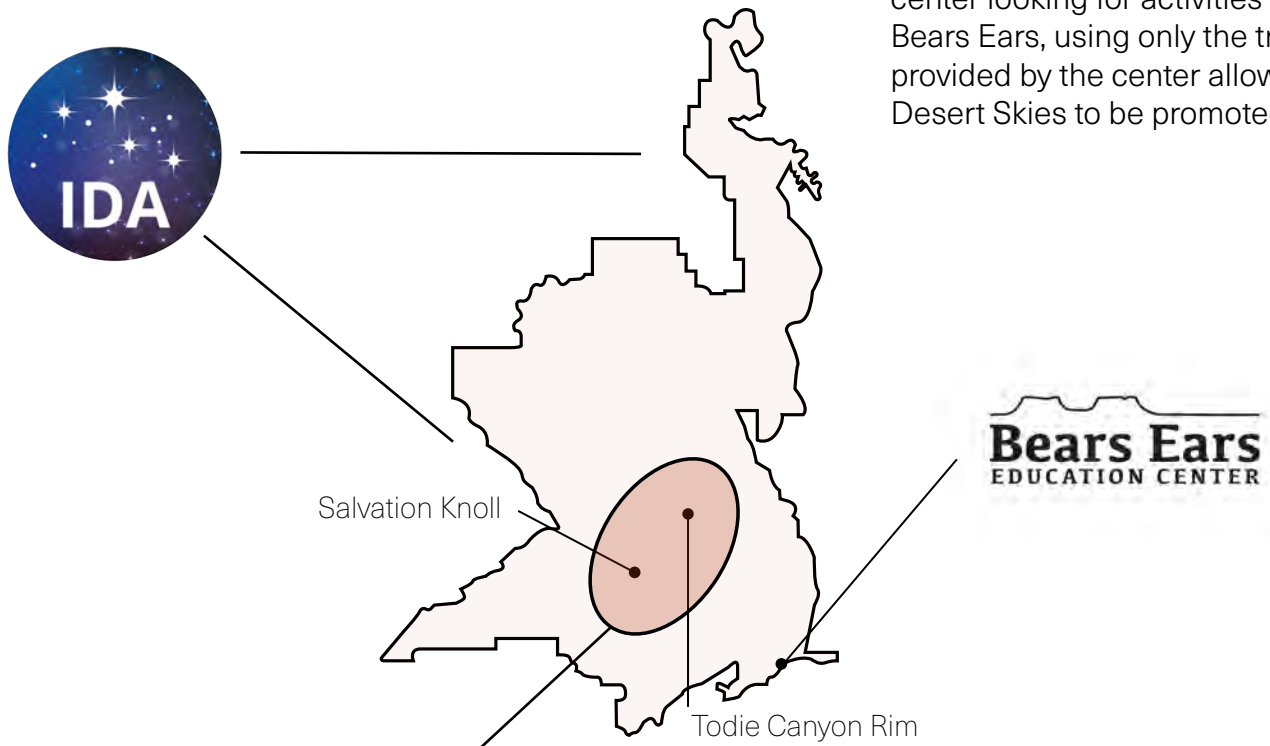
Impact

IDA Parks

Surrounded by other Dark Sky parks, Bears Ears should also be showcasing their unique location in the world by offering a night time experience.

Education Center

People often go to the education center looking for activities in Bears Ears, using only the trails provided by the center allows Desert Skies to be promoted there.



Increased Foot Traffic

Keying off the dark skies of Bears Ears creates a platform and space to connect, educate, and showcase the monument. Event locations would draw visitors to certain areas of the monument, which is rare for the region where people are usually very spread out. Making visitors much more accessible for spreading visit with respect principles, patrolling, etc...



Bibliography

"AllTrails: Trail Guides & Maps for Hiking, Camping, and Running | AllTrails." AllTrails.Com, <https://www.alltrails.com/?ref=header>. Accessed 30 Apr. 2021.

"Astronomy Calendar of Celestial Events 2021 - Sea and Sky." Sea and Sky - Explore the Oceans Below and the Universe Above, <http://www.seasky.org/astronomy/astronomy-calendar-2021.html>. Accessed 30 Apr. 2021.

"Bears Ears National Monument - Visitors Information." Bears Ears Education Center, <https://bearsmonument.org/>. Accessed 30 Apr. 2021.

"Clear Sky Charts in Utah (Map)." ClearDarkSky, http://www.cleardarksky.com/csk/prov/Utah_map.html?Mn=lenses. Accessed 30 Apr. 2021.

"Dark Skies Over the Bears Ears | International Dark-Sky Association." International Dark-Sky Association, <http://facebook.com/idadarksky>, 31 Aug. 2016, <https://www.darksky.org/dark-skies-over-the-bears-ears/>.

Ford, Dominic. "Charts of the Night Sky - In-The-Sky.Org." In-The-Sky.Org, In-The-Sky.org, 1 Aug. 2018, <https://in-the-sky.org/skymap2.php>.

"Home | Bureau of Land Management." Home | Bureau of Land Management, <https://www.blm.gov/>. Accessed 30 Apr. 2021.

"Illuminated River." DS+R, <https://dsrny.com/project/synchronizing-the-city>. Accessed 30 Apr. 2021.

"International Dark Sky Association | International Dark-Sky Association." International Dark-Sky Association, <http://facebook.com/idadarksky>, <https://www.darksky.org/>. Accessed 30 Apr. 2021.

Nadieh Bremer - Visual. "Figures in the Sky." Visual Cinnamon, <https://figuresinthesky.visualcinnamon.com/>. Accessed 30 Apr. 2021.

"Night Skies (U.S. National Park Service)." NPS.Gov Homepage (U.S. National Park Service), <https://www.nps.gov/subjects/nightskies/index.htm>.

"Pareidolia: Seeing Shapes in the Cosmos | NASA." NASA, <https://www.nasa.gov/image-feature/pareidolia-seeing-shapes-in-the-cosmos/>.

"See the Stars at Cedar Breaks, Utah's Newest Dark-Sky Park - The Salt Lake Tribune." The Salt Lake Tribune, <https://www.facebook.com/saltlaketribune>, <https://archive.sltrib.com/article.php?id=5061146&itype=CMSID>.

"Stargazing in Utah - Dark Sky Parks | Visit Utah." Utah Events, Attractions, Hotels, Restaurants and Things to Do | Visit Utah, <https://www.visitutah.com/things-to-do/stargazing>.

"Timeanddate.Com." Timeanddate.Com, <https://www.timeanddate.com/>.

Williamson, Ray A. *Living the Sky*. University of Oklahoma Press, 1987.

"Reviews of Bears Ears" Campsites and Trails, <https://www.google.com/reviews/bears-ears>.

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