

CENTRAL IDAHO DARK SKY RESERVE
ANNUAL REPORT

**20
21**



ALL-SKY CAMERA IMAGE - 4TH OF JULY CREEK IN SAWTOOTH VALLEY, MARCH 2021

*I never knew a man who felt
self-important in the morning
after spending the night in the
open on an Idaho mountainside
under a star-studded summer sky.*

Frank Church, U.S. Senator

CENTRAL IDAHO DARK SKY RESERVE

OVERVIEW – 2021

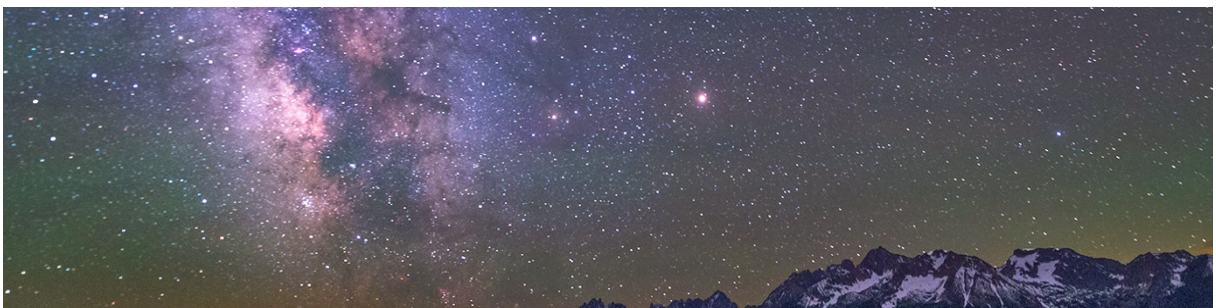
This past year was another challenging year in many ways with the continuing pandemic. Our plans and daily lives continued to shift throughout the year, as did everyone's plans and livelihoods and lives. The impacts to our operations were slight compared to the devastating impacts our community and the whole world experienced and are still experiencing. While some of our plans were scaled back or postponed, the extraordinary night sky in central Idaho provided a much-needed constant when our daily lives were turned upside down. People quickly realized that going out to enjoy the night sky was an enchanting and naturally social-distanced activity to enjoy with their family or designated pod.

We continue to focus on maintaining and building a core group of dark sky advocates. Through our combined efforts, we worked to:

- Preserve and enhance the natural nighttime experience to improve quality of life
- Highlight the benefits of reducing artificial light at night
- Enhance local educational opportunities through astronomy and other dark sky related programs
- Promote our dark skies as a unique community asset and part of our local and national heritage

The Central Idaho Dark Sky Reserve was designated in December 2017, the first such Reserve in the United States. Central Idaho constitutes one of the last large 'pools' of natural nighttime darkness left in the United States. The Central Idaho Dark Sky Reserve encompasses 906,000 acres (1,416 square miles) most of which is public lands within the Sawtooth National Forest. The Reserve includes the communities of Stanley, Lower Stanley, Smiley Creek, Ketchum, and Sun Valley and portions of Blaine, Boise, Custer, and Elmore counties.

The Reserve is situated in the spectacular scenery of the Sawtooth National Recreation Area (NRA). The Reserve's dual core areas are in the heart of Sawtooth Valley and include portions of two designated Wilderness areas in addition to other public land. In 1972, Congress established the 756,000-acre Sawtooth NRA with the passage of Public Law 92-400 which sought to preserve and protect the Area's "natural, scenic, historic, pastoral, and fish and wildlife values and to provide for the enhancement of the recreation values associated therewith." Preserving the natural night sky complements all of these values and contributes to the solitude and primitive quality of the associated Wilderness areas making the Reserve a particularly good fit for this area.



LIGHTING

PROJECTS AND MANAGEMENT

Lighting within the Reserve is improving as the various jurisdictions work to ensure that new lighting is dark sky friendly and work with homeowners to address existing problem lighting. The night-time environment is remarkably dark throughout the reserve and people are becoming more informed about appropriate dark sky lighting. Most questions and complaints are related to light trespass rather than light color or skyglow concerns. No new non-compliant lighting was installed within the Reserve in the past year to our knowledge.

SUN VALLEY

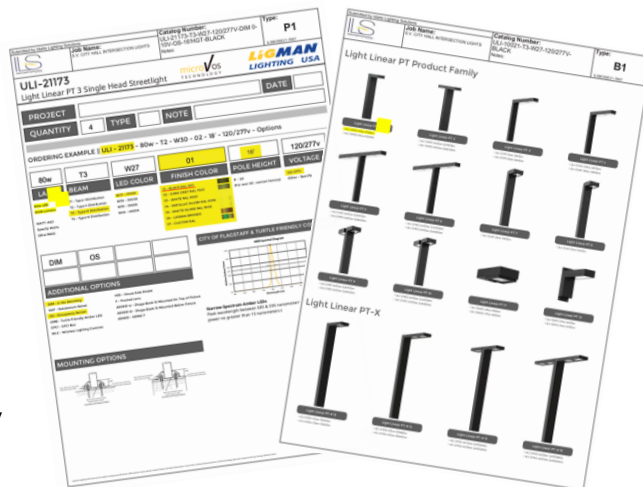
The City of Sun Valley continues to support the Central Idaho Dark Sky Reserve through education and enforcement of exterior lighting regulations. Promotional materials about the CIDSr are available to the public at City Hall and on the city website. On average, the city receives an inquiry each month from homeowners wanting to update their exterior lighting fixtures. Staff members in the Community Development Department address questions and provide information on Dark Sky compliant lighting. In 2021, staff added a Dark Sky Information Page on the City Website, including links to the exterior lighting code, information about the CIDSr, and various resources.

On April 1st, 2021 the City of Sun Valley City Council signed a [proclamation](#) celebrating April 5-12 as International Dark Sky Week and encouraged staff and citizens to implement practices and lighting improvements that reduce light pollution to preserve the night sky.

As part of the City Hall Intersection and parking lot remodel this past year, Community Development Department staff identified non-conforming public owned lighting and collaborated with city engineering staff to replace existing streetlights and parking lot area lights with fixtures approved by the IDA. The new fixtures have a correlated color temperature of 2,700 Kelvin, and the parking lot area lights auto-dim during inactive periods.

The City of Sun Valley continues their enforcement efforts by requiring that all existing exterior lighting be brought into compliance before a building permit or development application approval is issued. Over the past year, 22 projects, ranging from large additions and remodels to minor landscaping approvals, required exterior lighting upgrades. Out of the 22 projects, 21 residences and one commercial building, are upgrading existing non-compliant lighting with dark sky compliant fixtures.

Additionally, when the City receives a lighting complaint, the Police Department and the Community Development Department work together to investigate the issue, determine whether the lighting is noncompliant, and take enforcement action. The City sent 8 lighting enforcement letters in 2021 to address complaints/questions received. All letters sent were holiday lighting violations reminding homeowners that holiday lighting is only allowed November 20th through March 15th, and must be shut off nightly by 11:00 PM.



LIGHTING

PROJECTS AND MANAGEMENT

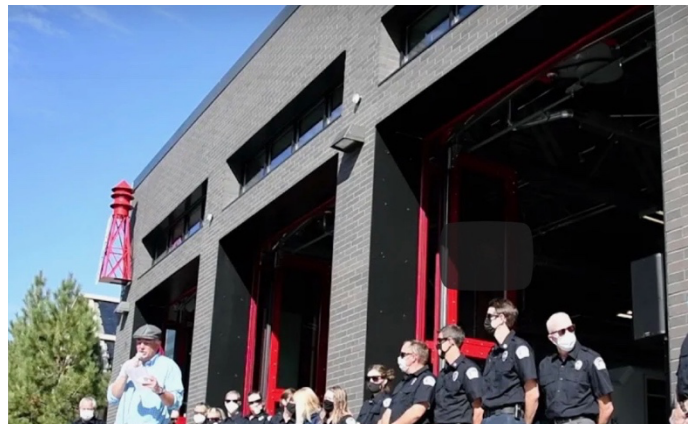
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KETCHUM

Ketchum addresses lighting compliance through the building permit process. The city also uses a complaint-based model to bring other lighting up to code. Since October 2020, Ketchum Community Service Officers (code enforcement) tracked dark sky complaints at only 2 properties – both of which were already in compliance. The CSO team has a new leader equipped with the ordinance knowledge and plans to enhance awareness, community relations and tracking of compliance successes.

Since the adoption of the updated Dark Sky Ordinance (No. 1171) on May 15, 2017, all new construction projects and remodels/alterations that have gone through the building permit process have been required to fulfill the International Dark Skies Association minimum standards for lighting. Since October 1, 2020, 67 building permits were issued that required the installation of new dark sky compliant lighting and/or required that existing exterior lighting be brought into conformance.

The Ketchum Fire Department recently moved into their brand new and dark sky compliant station. The remaining Ketchum staff looks forward to moving into the newly-renovation City Hall building that will serve as another example to the community of how public safety and dark sky preservation can coexist.



BLAINE COUNTY

Blaine County is in the process of revising a substantial amount of the current outdoor lighting regulations. The changes include:

- Update “applicability” section
- Add new definitions, including LED and Kelvin
- Update and more clearly define the lighting standards
- Update graphics within code text
- Add a new prohibited lighting section
- Update and tighten exempted lighting

The County receives a limited amount of lighting complaints throughout the year. This January, staff conducted a site visit after dark to inventory lighting of County residents north of Ketchum. Letters were sent out to each of the properties that exhibited non-compliant lighting. Although much of the lighting was considered legally non-conforming, the owners voluntarily updated their lighting in an effort to comply with current regulations. County staff continue to focus on education as the most effective strategy to gain compliance with the outdoor lighting ordinance and preserve the darkness of the Reserve.

SKY QUALITY READINGS

There has not been any noticeable increase in sky brightness within the reserve. Continued sky quality measurements confirm that the night sky within the reserve is exceptionally dark. While additional non-compliant lighting within the reserve would certainly diminish the darkness of the night sky, lighting from outside the Reserve boundaries is a more immediate threat. With that in mind, reserve representatives actively reach out to surrounding communities to share information about the Reserve and how those communities can help limit outside threats to the central Idaho's pristine night sky.



The sky quality meter (SQM) data collected this year is shown in the table and has been added to the master record of CIDS SR SQM data. Even after we have permanently installed meters, we will still rely on volunteers to collect additional sky quality information at these and other designated locations throughout the reserve.

Central Idaho Dark Sky Reserve 2021 Sky Quality Readings

Date	Location	SQM Reading	Notes
27-Aug-21	Stanley Ranger Station	21.61	Waning gibbous moon, not visible, sky clear
27-Aug-21	Stanley Ranger Station	21.26	Waning gibbous moon, not visible, sky clear
29-Aug-21	Stanley	21.83	Moon waning Crescent, not visible, sky clear
29-Aug-21	Stanley	21.8	Moon waning Crescent, not visible, sky clear
29-Aug-21	Stanley	21.82	Moon waning Crescent, not visible, sky clear
7-Sep-21	Stanley	21.43	Moon waxing Crescent, not visible, smoke
7-Sep-21	Stanley	21.39	Moon waxing Crescent, not visible, smoke
7-Sep-21	Stanley	21.46	Moon waxing Crescent, not visible, smoke

OUTREACH

MEDIA

Media interest in the Reserve continues to be strong. We receive inquiries from both local and national media at least once a month through our website or other contacts with requests for dark sky related stories. Many visitors who travel to the area have heard about the Reserve and are interested in experiencing the night sky in Central Idaho.

This is a sampling of print and online articles that have featured the Central Idaho Dark Sky Reserve:

[MSN Travel](#) Nov 12, 2020

Socially distanced holiday road trips

[Visit Idaho Website](#) Nov 12, 2020

Sleep under Idaho's starry skies

[Totally Boise](#) Dec 1, 2020

The most magical destinations

[Business Insider](#) Feb 25, 2021

Best places to travel in March

[Visit Idaho Guide](#) March 16, 2021

Idaho night sky is the gold standard for stargazing

[Visit Idaho Blog](#) March 30, 2021

An Idaho star-studded summer adventure

[Mtn Express Newspaper](#) April 2, 2021

Stewards of the sky – UCLA student research project

[Idaho Conservation League](#) April 9, 2021

Celebrate Dark Sky Week

[Tamarack Lodge](#) May 2021

Ketchum's Dark Sky Reserve

[Twin Falls Times News](#) May 27, 2021

Astrotourism on the rise in southern Idaho

[Wired.com](#) June 2021

72 hours to total brain rejuvenation

[Mountain Express News](#) June 9, 2021

UCLA students study impact of light pollution

[Visit Sun Valley](#) June 22, 2021

What will you find in Sun Valley

[Seattle Times](#) July 2, 2021

A ski destination with world-class stargazing

[USA Today](#) July 14, 2021

Five charming American towns with mountain views

[National Geographic](#) July 29, 2021

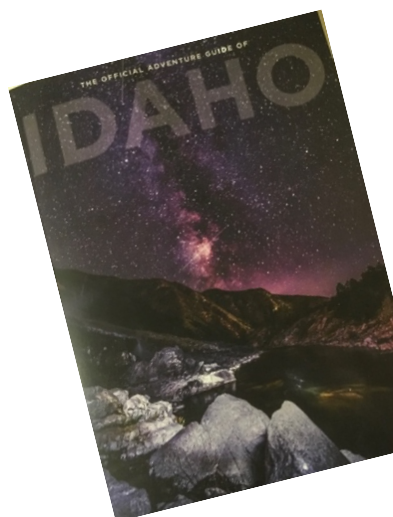
Dark sky tourism is on the rise in the US

[Sawtooth Adventure Company](#) July 29, 2021

Outfitter blog – Idaho's dark sky reserve

[Sun Valley Airport website](#) August 12, 2021

On the Fly newsletter – Idaho's gem in the sky



The Idaho Tourism Office often features stargazing opportunities in its statewide promotions. The 2021 Visit Idaho website posted several blogs and articles that showcased the Central Idaho Dark Sky Reserve as well as other locations throughout the state to get out and enjoy the night sky.

OUTREACH

PROGRAMS & EVENTS

Since the designation of the Central Idaho Dark Sky Reserve, there has been growing interest in astronomy and dark sky related programs in the area. This year some of the planned programs and events were restructured due to COVID-19 concerns but we were still able work with several partners who provided a number of programs and events throughout the year. Over 500 people were reached through 15 events and programs. Although that is lower numbers than past years, partner organizations were nimble and creative in their efforts to offer programs that allowed for social distancing and safe practices.

IDSA and the Boise Astronomical Society hosted *A Night of Stargazing* on July 9 & 10 at the Stanley Pioneer Park. The star party event was a success, even with extreme heat and some smoky skies. BAS members provided five telescopes for two nights of stargazing over the Sawtooths plus a solar viewing session on Saturday. In addition to these activities, the Sawtooth Interpretive and Historical Association also offered two dark sky interpretive programs that weekend at the Redfish Center & Gallery.

On Friday, the night sky and Milky Way were surprisingly clear given the smoke haze during the day and the stargazing was amazing. Unfortunately, on Saturday night the smoke rolled in around 11:30, just as the Milky Way started to light up the sky.

Approximately 55 people attended over the two nights and 8 people came for the solar viewing session on Saturday afternoon. Although it would have been nice to have a larger audience, the folks who came were excited to be there. Two families, one from Idaho Falls and one from Washington DC had specifically come to the area to experience the Reserve's dark sky and participate in the star party.

IDSA plans to partner with the Boise Astronomical Society and the Magic Valley Astronomical Society on future events. We've discussed adjusting the format to include additional activities and the need to consider a different time of year or location that would attract more participants and be dark earlier.



The central image is a poster for the "A Night of Star Gazing" event. At the top, it says "CENTRAL IDAHO DARK SKY RESERVE" in white text on a dark blue background. Below this are logos for Stanley Pioneer Park, Sawtooth Interpretive and Historical Association, Idaho Dark Sky Alliance, and Boise Astronomical Society. The main title "A Night of Star Gazing" is in a large, white, cursive font. Below the title, it says "FRIDAY & SATURDAY, JULY 9 & 10" and "DUSK UNTIL MIDNIGHT AT STANLEY PIONEER PARK". The poster also mentions "Stargazing with Boise Astronomical Society astronomers and numerous telescopes to see stars, constellations, planets and other wonders of the night sky". At the bottom, it lists "Astro-Activities" for Saturday, July 10, from 2:00 PM to 5:00 PM at the Stanley Museum, including solar observing and light pollution tips. It also lists interpretive programs at the Redfish Center & Gallery for Thursday, July 8, and Saturday, July 10. The website "IDAHODARKSKY.ORG" is at the bottom right. To the left of the poster is a photo of a telescope on a tripod in front of a white tent. To the right is a photo of people looking through a telescope outdoors.

CENTRAL IDAHO DARK SKY RESERVE

STANLEY **SAWTOOTH INTERPRETIVE AND HISTORICAL ASSOCIATION** **IDAHO DARK SKY ALLIANCE** **Boise Astronomical Society**

A Night of Star Gazing

FRIDAY & SATURDAY, JULY 9 & 10
DUSK UNTIL MIDNIGHT AT STANLEY PIONEER PARK
Stargazing with Boise Astronomical Society astronomers and numerous telescopes to see stars, constellations, planets and other wonders of the night sky

Astro-Activities

SATURDAY, JULY 10 - 2:00 PM TO 5:00 PM - STANLEY MUSEUM
Solar Observing with BAS astronomers plus kid's astro-activities, tips to reduce light pollution and Central Idaho Dark Sky Reserve information

INTERPRETIVE PROGRAMS - REDFISH CENTER & GALLERY
Thursday July 8, 7:00 PM - Evening program with SIHA Naturalists
Saturday July 10, 1:00 PM - Ranger Talk in the amphitheater

IDAHODARKSKY.ORG

A new astronomy observing group was organized in the fall of 2020. The Central Idaho Night Sky Seekers (CINSS), an informal astronomy group based in the Wood River Valley, meets about once a month throughout the year. Spring through fall, participants gather outdoors to observe stars, planets, meteor showers, constellations and the Milky Way Galaxy.

In the winter, the group plans to offer virtual talks via Zoom by tying into presentations by the Twin Falls Astronomy Society and other groups. Typically, the events attract 25 to 30 participants from the local area and occasionally from the Boise and Twin Falls areas. The observing nights are great opportunities for folks to share knowledge and questions about astronomy and equipment, and to take time to just look up and be amazed at the stunning Central Idaho night sky.



Sawtooth Interpretive and Historical Association (SIHA), our primary education partner, offered four dark sky related interpretive programs during the summer.

Tim Frazier (astronomer and IDSA board member) also did a presentation about meteors for their Forum and Lecture Series at the Stanley Museum.

SIHA and Idaho Rivers United hosted the Sawtooth Salmon Festival at the Stanley Museum in August and IDSA had an information booth again this year. After being cancelled last year due to COVID concerns, an enthusiastic crowd of over 300 attended the event this year. The festival is always a good opportunity to share dark sky and light pollution information with a new audience and to highlight the impacts of light pollution on wildlife. Of the many threats to the survival of salmon, reducing artificial light at night is a small piece of the puzzle. But this impact has an easy fix and salmon need all the help they can get.



OUTREACH

PROGRAMS & EVENTS

continued

Forest Service Interpretive Programs

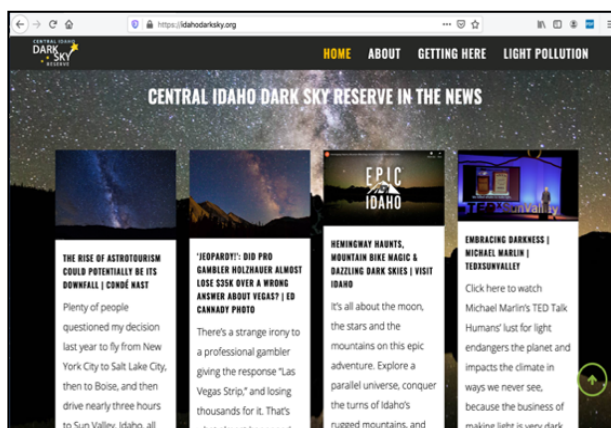
One of the Sawtooth National Recreation Area Visitor Center volunteers this year was an enthusiastic astronomer from North Carolina. He offered two astronomy and dark sky-related programs during the summer at Wood River Campground Amphitheatre and at the Sawtooth NRA office/visitor center north of Ketchum. The visitor center also had a temporary display about the night sky during the summer. IDSA helped publicize the programs and was able to share some dark sky and light pollution information at the visitor center.



IDAHO DARK SKY WEBSITE www.idahodarksky.org

The CIDSr website provides information about program opportunities, astronomical events, light pollution, and other reserve updates. The website received 29,400 visits by over 23,000 users from October 2020 through September 2021.

We are currently working on potential updates and adjustments to refresh the look and function of the website. The goal is to develop a more current and consistent look across all of our online platforms in an effort to share stories and images of the Central Idaho Dark Sky Reserve with a broader audience. It's important to inspire people to be advocates for the natural night sky resource both here in the heart of Idaho and in their own backyards.



CONSERVATION & RESEARCH



Steve Pauley, IDSA board member, worked with Travis Longcore PhD, Associate Professor, UCLA Institute of the Environment and Sustainability (IoES), to sponsor a student practicum project to evaluate the current level of light pollution and develop a strategy to track the long-term impacts within the Central Idaho Dark Sky Reserve. The Dark Sky Warriors team worked on the project from Oct 2020 to June 2021. While most of the research was performed remotely, five members of the team traveled to Idaho in March to collect on-site data and share an in-person project update. The teams' final report was completed in June and presented as part of the IoES public forum with reports from all the research teams.

(Executive summary from the project [final report](#))

Preserving the Night Sky: Monitoring Light Pollution Affecting the Central Idaho Dark Sky Reserve

UCLA Institute of Environment and Sustainability Senior Practicum Project Team: Maria Carias, Shawn Fujioka, Jacob Phaneuf, Megan Potter, Ieva Vaiciunas, Lynn Wilder, Cassidy Woods, Jacqueline Yu
Project Advisor: Dr. Travis Longcore, Associate Adjunct Professor at the UCLA IoES

The purpose of our project was to develop a long-term strategy to track light pollution trends affecting the CIDSR that achieves the goals of Dark Sky Reserves outlined by the IDA. Such goals are to mitigate light pollution threats to astronomy and the environment and to promote the value of the reserve for cultural, educational, and eco/astrotourism purposes (IDA, 2018). By creating a comprehensive analysis of the CIDSR and by including recommendations for the future, we hope the reserve can continue to mitigate surrounding light pollution long-term and remain certified as a Dark Sky Reserve under the IDA. Giving the CIDSR the ability to monitor light pollution trends would make this reserve unique among Dark Sky Reserves and would also set a precedent for developing ways for such reserves to monitor and regulate light pollution. Furthermore, we hope our work can be transferred to other dark sky areas, promoting a larger support for preservation of our night skies.

Our project's objectives were to (1) track light pollution over time in and around the reserve and predict levels of light pollution into the future; (2) analyze the effectiveness of existing light pollution ordinances; (3) research the response to light pollution of economically and culturally significant species in Idaho; (4) explore opportunities for tourism and the promotion of dark skies; and (5) establish a replicable approach to monitor light pollution. We achieved this by analyzing Visible Infrared Imaging Radiometer Suite Day-Night Band (VIIRS DNB) data and ground-based observations collected using a Sky Quality Camera (SQC), comparing ordinances at county and city levels, conducting an ecological assessment, creating a suitability model to assess tourism potential within the reserve, and properly documenting our steps to allow for future replicability.

Ultimately, the purpose of this report is to not only develop a method of tracking light pollution, but also raise awareness about the importance of continued efforts to protect and improve the reserve as well as draw attention to its sheer beauty and value.

Additional information can be found in the associated documents.

Report: <https://drive.google.com/file/d/19kd5cluH5RuXv9jcQoDsRQHvjX0FReCo/view>

Story Map with additional information and interactive features:

<https://drive.google.com/file/d/19kd5cluH5RuXv9jcQoDsRQHvjX0FReCo/view>

Project data is available for download at: cidsr-data-hub-gis UCLA.hub.arcgis.com

FUNDING & OVERSIGHT

Local officials from Stanley, Ketchum, Sun Valley, Blaine County, and the Sawtooth National Forest continue to work together as the **Jurisdictional Oversight Group** to address dark sky matters in central Idaho. Nearly two decades of planning efforts and policy decisions by city and county leaders, local businesses and organizations, and public land managers culminated in the designation of the Reserve in 2017. Working together, these partners continue to focus on preserving the quality of the night-time environment and reducing the impact of light pollution in central Idaho.

In the past year IDSA worked with the Oversight Group to submit funding requests for education and outreach efforts, to enhance monitoring capabilities and improve data management. All three cities (Ketchum, Sun Valley and Stanley) and Blaine County approved our requests in their 2022 budget planning so we will be able to move forward with several projects in our workplan.

We received **Idaho Travel Grant funds** through the Stanley-Sawtooth Chamber of Commerce to support *A Night of Stargazing* and other community outreach efforts. We also received funding through the **Sawtooth Society** to install a dark sky interpretive sign at the Bethine and Frank Church Overlook.

NASA Science Activation Program Grant

IDSA is working with Brian Jackson, a professor in the Physics Department at Boise State University and an IDSA board member, on a NASA grant he received. His proposal to NASA's Science Activation Program was selected and will support an effort to build an astronomy and STEM outreach network centered on the Central Idaho Dark Sky Reserve. This partnership will involve supporting public stargazing, astronomical presentations and NASA-related STEM education.

The proposal is to develop a network of STEM engagement efforts throughout the state of Idaho. In particular, the program would forge a cornerstone partnership with the Central Idaho Dark Sky Reserve, which spans an under-served rural region and is thus an ideal venue for STEM engagement. The program would combine several, mutually supporting strands: (1) ongoing community education efforts hosted at Boise State; (2) adapting NASA Science Mission Directorate (SMD) materials and infrastructure to Idaho's Content Standards for Science curriculum; (3) citizen science light pollution monitoring to support the Reserve's mission; and (4) an astronomer-in-residence program within the CIDSR.

To help run these programs, a training course in STEM outreach for Boise State students would be established. Student training would come in the form of presentations and practicum led by a variety of experts on topics including public speaking, social media, fund-raising and K12 curriculum development, in addition to running an active astronomy outreach program based at Boise State.

The light pollution monitoring and engagement, combined with the astronomer-in-residence program, would engage locals in citizen science work with research-active space scientists. IDSA looks forward to building an active partnership with BSU in 2022 to achieve the goals of this exciting program.

FUNDING & OVERSIGHT

The **Idaho Dark Sky Alliance (IDSA)** was established in March 2021 as a 501(c)(3) nonprofit organization to help manage the day-to-day operations and fundraising needs of the Reserve. The Alliance has a volunteer Board of Directors and meets quarterly. The board is currently developing a three-year operations framework to help focus our efforts as we move forward. IDSA continues to work closely with local partners including the Sawtooth Interpretive and Historical Association and the Idaho Conservation League, and private individuals.

IDSA functions under the general direction of the CIDS R Oversight Group which includes representatives from Sun Valley, Ketchum, Stanley, Blaine County, and the Sawtooth National Forest. The IDSA board proposes and implements projects that accomplish portions of the Reserve's Lightscape Management Plan and support dark sky outreach and education efforts in the area.

Telescope Donation

On July 28, IDSA received an email inquiry offering the donation of a telescope and personal observatory. The person requested that the donation remain anonymous. She said that her brother who lived in Challis had passed away recently and she was hoping that we would be interested in the equipment since she said she "can't think of anyplace else I'd rather donate it."

It is an incredibly generous donation that includes a 14-inch Celestron telescope with a CGE Pro mount plus a camera, numerous eyepieces and other accessories. The SkyShed Pod observatory is also in good shape. The equipment is in storage for the time being until we determine an appropriate location for the telescope. The IDSA board has identified some potential locations and hopes to have the telescope available for use in 2022.



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CENTRAL IDAHO DARK SKY RESERVE - - www.idahodarksky.org

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