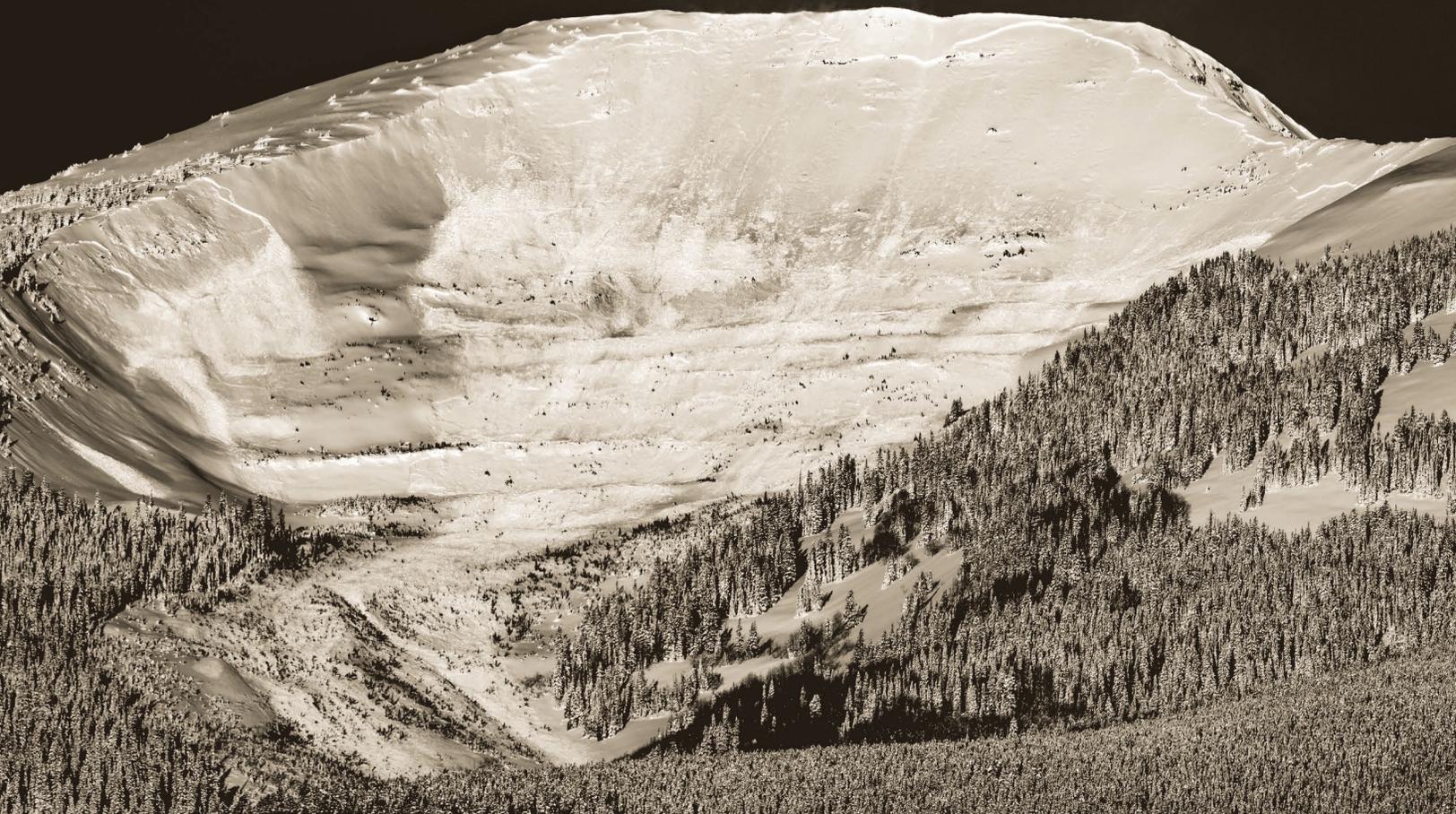




ANNUAL REPORT 2022 / 2023



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MISSION

The sole purpose of the Crested Butte Avalanche Center (CBAC) is to prevent the loss of life, limb, and property to natural and triggered occurrence of avalanches in Crested Butte and the surrounding backcountry.

The CBAC provides valuable and needed information and education to residents, visitors, and recreationalists in the Gunnison Valley, disseminating content through website, email, radio, TV, social media, newspaper, and outreach events. The CBAC issues daily avalanche advisories and mountain weather forecasts for two forecast zones in the Gunnison Valley. The CBAC provides additional resources, such as daily observations, weekly videos, weather stations, and educational events and material.



OUR TEAM

FORECASTERS

Zach Guy Lead Forecaster
Evan Ross Forecaster
Eric Murrow Forecaster
Zach Kinler Outreach + Forecasting

STAFF

Than Acuff Executive Director
Karen Williams Development Director

BOARD OF DIRECTORS

Keitha Kostyk President
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Jim Duffy Treasurer
Tara Allman
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John Dugenske
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CBAC
CBAVALANCHECENTER.ORG

5 EASY WAYS TO STAY INFORMED...



ONLINE



DAILY EMAIL



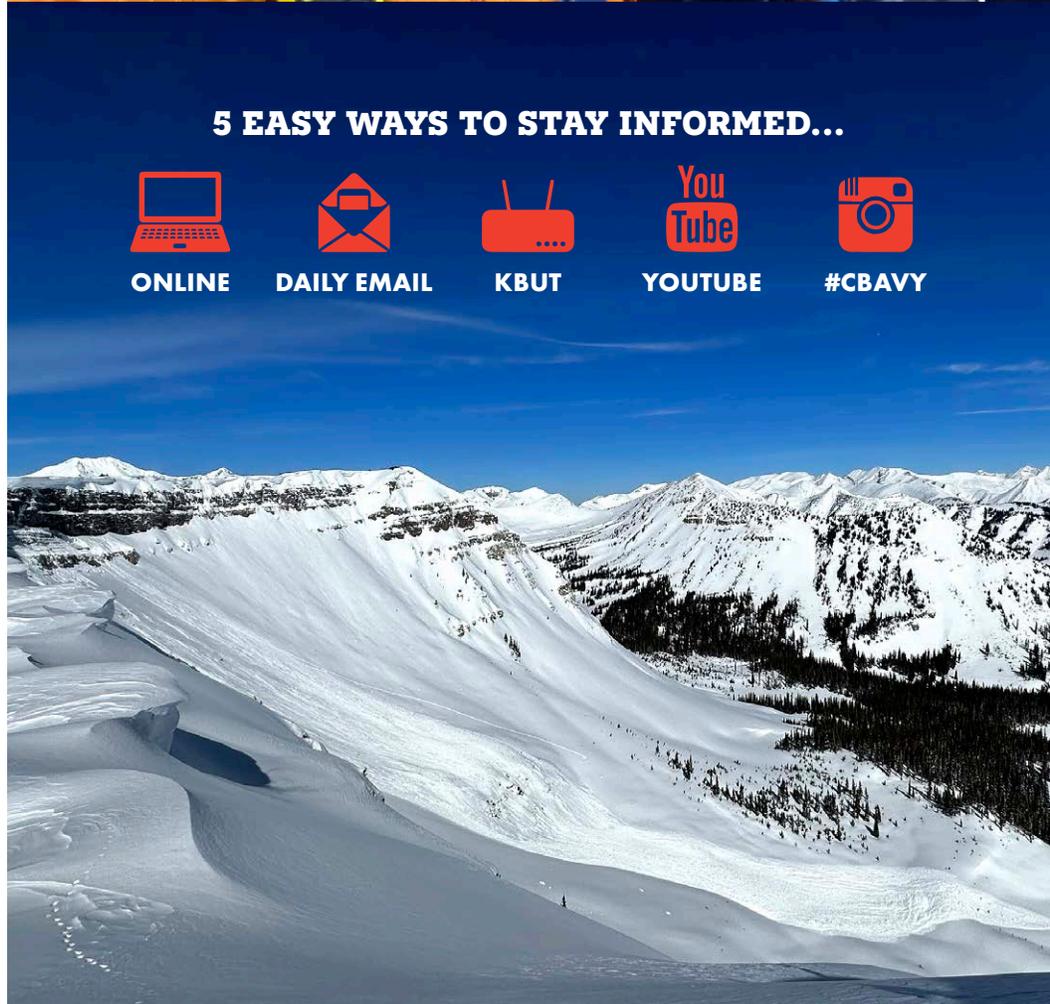
KBUT



YOUTUBE



#CBAVY



A MESSAGE FROM CBAC EXECUTIVE DIRECTOR



DEAR CBAC COMMUNITY,

Holy smokes what a season! We had one of our best winters in a while as consistent storms provided great conditions and our forecast team of Zach Guy, Evan Ross and Eric Murrow was in the field every single day of the season staying on top of it all.

Furthermore, I am so proud to say that, thanks to our forecast team and all of you who read the forecast and paid attention to conditions, we just closed out our second year of no avalanche related injuries, burials, or fatalities. This amidst a tragic season statewide with eleven avalanche fatalities this year exceeding the state average of six per year.

My personal highlight of the season was during a 10-day stretch at the end of February and start of March when we were, once again, in the crosshairs of a storm. The forecast team was busy getting extensive messaging out as avalanche conditions were ramping up and performing mitigation efforts on an avalanche area within the Crested Butte town limits above the CB Nordic Center.

During this same stretch, we hosted a snow science field trip outside with students at the Crested Butte Community School one day, took seniors from the Gunnison Senior Center on a snowshoe tour for some avalanche and snowpack instruction on another day and that weekend hosted a Trailhead Day and held a Fireside Chat at the billy barr lounge in Mt. Crested Butte. Within that 10-day stretch we had reached students, seniors, skiers, snowboarders, snowshoers, dog walkers and snowmobilers from ages 14 to 74 spanning Gunnison to the town of Mt. Crested Butte. It was a prime example of the CBAC hitting on all cylinders.

Meanwhile, Zach Kinler took our Outreach Program to new heights this year as he continued to expand its' messaging providing instruction and education for community school students, kids in the Crested Butte Nordic ski programs, the Gunnison Senior Center and GCEA linemen. In addition, Outreach hosted 10 trailhead days and six Fireside Chats partnering with Irwin Guides at two of the Trailhead Days and then our big Trailhead Day at the Kebler Pass trailhead with the USFS, Gunnison Snotrackers and the Crested Butte Mountain Rescue Team.

There's no question that our efforts would not be possible if it wasn't for the continued outpouring of support. Individual donations, business sponsorships, support from both towns as well as the county and the handful of Family Foundations that chip in year after year are what pays the forecasters and keeps our equipment working. But, it's also the occasional Facebook message, Instagram shout out or comment on the street in passing that keeps the energy high for our entire team. Especially during a winter like we had. So, thank you.

Have a great summer and we look forward to doing what we do, every day, next winter.

Sincerely,

A handwritten signature in black ink, appearing to read 'Than Acuff'.

Than Acuff
Executive Director

ONE OF THE DEEPEST WINTERS OF THIS CENTURY



The winter of 2022-23 will be remembered for years to come for its constant onslaught of winter storms and atmospheric rivers, producing exceptional snowfall amounts in the Elk Mountains. The Gunnison River Basin snowpack peaked at 142% of median, surpassing all but a few of the biggest winters since SNOTEL records began in 1986. Billy Barr measured 357 inches of snow and 30.2" of SWE, which was Gothic's 16th wettest winter since 1975. Irwin and CBMR reported 587 and 326 inches of snow, respectively. Constant loading brought relentless avalanche activity until a spring snowpack and quieter weather pattern developed in mid-April. Although our snowpack became uncharacteristically

deep as the season progressed, backcountry travelers still had to contend with several challenging weak layers throughout the winter along with frequent storm-related instabilities. The CBAC documented over 1,500 avalanches this winter, half of which were large enough to easily injure, bury, or kill someone. High avalanche danger ratings were issued on 12 days, and half of the season (78 days) saw dangerous avalanche conditions (Considerable or High danger ratings). While the state of Colorado saw one of its worst winters as far as accidents and fatalities go, our local forecast region was fortunate to have another accident-free winter.



THE SEASON IN STATS

142%
the snowpack,
relative to
median peak

1,532
Avalanches
documented
by the CBAC

12
High
danger
days

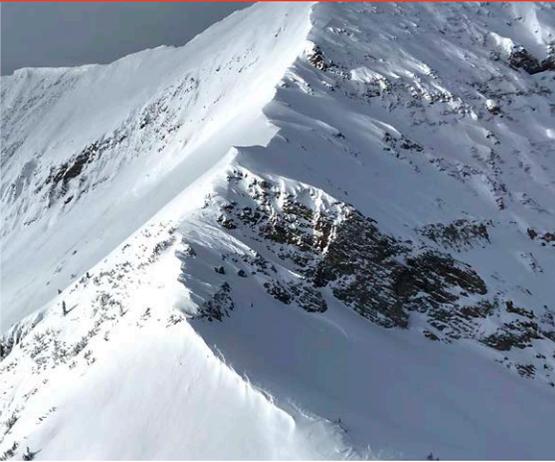
0
Fatalities or
accidents, for
the second
year in a row

573
Public and
forecaster
observations

233,129
Website page
views, an
all-time high

21
Outreach or
educational
events

95"
Snow depth
in Gothic on
March 31, the
deepest on
record for late
March



The weak foundation.

Following a short-lived storm and avalanche cycle in early December, our longest dry spell of the season - nearly 3 weeks - came in mid-December. Unfortunately, there was a shallow (1 to 4 foot) but sufficient base across the entire region to form weak layers on all aspects and elevations. This would make for challenging persistent issues for months to come. And unlike other recent seasons, there were no aspects to reliably hide from the persistent slab problems that would develop.

The atmospheric river floodgates open for the holidays.

The low tide changed abruptly starting on December 28th. Our largest storm of the season produced 3' to 6' of snow (up to 5.3" SWE) and six consecutive days of High danger. The storm produced extensive avalanche activity across all aspects and elevations, with 155 large to very large (D2 to D3) documented avalanches despite poor visibility. Highlights from the cycle include Red Lady Bowl breaking head high and wall-to-wall, Climax Chutes burying the nordic track with 15 to 20 feet of debris, several very large avalanches off of Schuykill Ridge impacting Slate River Road, and Ohio Pass Road buried by several large avalanches. This was a great storm but fell well short of our historic Santa Slammer last year. In contrast to last season, our early season weak layer concerns weren't completely eliminated, especially in the shallower parts of our forecast area.

January and February: The storms keep coming

January and February were characterized by a continued pattern of snowfall and wind events that waxed and waned in intensity. Although persistent slab activity diminished significantly, sporadic natural and triggered avalanches breaking on deep layers continued through the period, focused on shallower terrain. In early February, the danger dropped to Low for a handful of days in the deeper Northwest Mountains during short-lived lulls between storms. The Southeast Mountains would have to wait until mid-April before its first Low danger rating since early season. Though no storms or cycles were particularly remarkable, storm slabs, wind slabs, and persistent slabs continued to drive the danger during this intermittently stormy period, in which we documented over 75 large to very large avalanches.

March's madness.

March was highlighted by a series of powerful atmospheric river events and avalanche cycles. Between these events, short windows of dry, spring weather fostered small-grained persistent weak layers to develop, particularly around crusts. The two largest loading events (3.5" SWE on March 9-11 and 3.6" SWE on March 21-22) spurred High danger ratings, significant avalanche cycles, and were each followed by a period of tricky persistent slab activity. Persistent slabs failed both on the March crusts and occasionally overwhelmed weak layers near the ground with destructive results. Many of these very large avalanches failed naturally from cornice falls during or after storms. However, on March 18th, a snowmobiler riding up a ridgeline on Mt. Baldy remotely triggered our most significant human-triggered avalanche of the season. The avalanche broke on a March crust layer up to 15 feet deep with debris estimated to be 30-40 feet deep, D3.5 in size. Tragically, several other accidents and two fatalities occurred during this time period on the Aspen side of the Elk Mountains, all involving very large persistent slabs.

Gothic townsite was reporting record snow depths by the end of March, and CBAC had documented 153 D2s and 13 D3s during the March madness. Highlights include Gothic Mountain producing a D3.5 avalanche to the ground that nearly crossed Gothic Road, Whetstone producing an impressive D3.5 crown that was visible from town for the remainder of the spring, and a large avalanche that crossed Cement Creek Road.

The April wet slab cycle.

April was highlighted by an abrupt and dangerous transition from a dry, winter snowpack to a wet snowpack. The meltdown was exacerbated by a significant desert dust layer that arrived early in the month during a wind event. A significant warmup from April 9th through 13th spurred an ongoing wet cycle, in which we documented 47 large to very large wet slabs breaking in midpack and basal weak layers, along with 29 large wet loose avalanches. This warmup put an end to our persistent slab concerns for the season and brought about a spring-like snowpack for the remainder of our operational forecasting season that ended on April 23rd.

A second accident-free winter.

Colorado is notorious for its tricky and deadly snowpack. December 18th, 2020 was our last avalanche fatality in the Crested Butte forecast area. Since then, Colorado has suffered 28 fatalities, with dozens more burials and injuries. Locally, we are fortunate to report back-to-back accident-free seasons. We owe this to some combination of effective outreach and forecasting, an engaged backcountry community, and luck. This winter, the CAIC's database documented 74 unique public incidents where one or multiple people were caught in avalanches. Two of those were within the CBAC forecast area. One involved a skier remotely triggering a slab while crossing below a small slope near Kebler Pass. The other was a skier who was caught in a small wind slab on "The Blob" above Yule Creek. Of course, some involvements may go unreported.

OPERATIONS





The CBAC has been operating since 2002, and is currently directed by Than Acuff.

The center strives to maintain a highly qualified and experienced team of forecasters; Zach Guy, Evan Ross, and Eric Murrow collectively have 24 seasons of forecasting for the CBAC. Additionally, the team brings years of guiding, instructing, snow safety, and/or forecasting experience from other organizations, both locally and from outside of the region. Zach Kinler led the Outreach Program, having been involved with the program since its inception three years ago.

The CBAC produces daily avalanche forecasts and makes daily field visits during its operational season from mid-November through mid-April. The center forecasts for two regions surrounding the valley: the Northwest Mountains and Southeast Mountains. This separation gives forecasters the ability to highlight spatial differences in avalanche danger or avalanche problems into more locally accurate products. The CBAC has established a strong field presence to improve forecast accuracy while supplementing the forecast products with publicly accessible observations. Field observations frequently include photos

of avalanche activity, signs of instability, or annotated snow profiles to help the public visualize written descriptions. The CBAC also produced 20 field videos to help demonstrate current and anticipated conditions. On two occasions, forecasters participated in helicopter flights over the region to document extensive avalanche cycles and search for unexpected avalanche behavior. Monitoring and documenting avalanche activity is critical for validating forecasts and predicting patterns of future activity.

The CBAC's website is the primary source for delivering avalanche information. We

utilize a mobile-friendly forecast platform consistent with most other avalanche centers around the country. The website also hosts an observation platform, a weather station platform, and educational resources. Last season, the CBAC designed an avalanche database with several data visualization tools that allow both the public and forecasters to explore trends in avalanche activity. In addition to the website, the CBAC disseminates information on a daily basis using emails, radio broadcasts, social media posts, local TV messaging, and a danger rating sign at the entrance of town to reach a broader audience.

OUTREACH

Website

www.cbalanchecenter.org

is our primary tool for disseminating avalanche information to the public. Our website usage has trended upwards over the past decade, with annual fluctuations influenced by external factors such as how big the winter is, newsworthy accidents, and Covid 19-related booms. This winter, the website saw 19,265 unique visitors (on par with last year), with 233,129 page views (an all-time high, up 14% from last year). A little over half of the traffic to the CBAC website is from the Gunnison Valley. The rest originates mainly from Colorado Front Range cities such as Denver, Fort Collins, Colorado Springs, etc. 68% of CBAC's users connected on a mobile device which is up from 54% last season.

Social Media

Our Facebook, Instagram, and YouTube presence continues to reach more users and drives a larger audience to our website. We post creative content on a daily basis to draw attention to conditions, share timely updates or observations, and steer users to read our forecasts. We have 18,337 social media followers (a 9% increase from last season).

Beacon Park

Last winter, we successfully launched a community beacon park, which we continue to maintain. The park is located in downtown Crested Butte, providing an accessible practice venue for all users.



Annual Awareness Night

CBAC's iconic kick-off event returned to a full house at the Center for the Arts. The event featured awareness talks by several forecasters, gear raffles, "ask a forecaster," and fun times connecting our backcountry users together.

Fireside Chats

One of our flagship events, we hosted five in-person events with featured speakers and snowpack updates from CBAC staff. The free, hour-long sessions also provide a fun venue for community members to interact with other backcountry users and forecast staff.





Beacon Brush-up

Our staff and local guides hosted a free rescue clinic that drew approximately 75 participants with all levels of experience. We offered a progression through five stations focusing on transceiver searches, strategic shoveling, evacuation techniques, rescue scenarios, and more throughout the day.

Trailhead Days

CBAC staff continued its weekend presence at popular trailheads to provide information and interact with the public. This was an effective way of engaging with different user groups spanning all levels of avalanche awareness and demographics. We logged 10 trailhead days and interacted with hundreds of backcountry travelers. At two of the events we partnered with Irwin Guides to provide free beacon clinics.



Education

We continue to provide avalanche education opportunities targeting broad user demographics. Last winter, our outreach staff provided field-based and indoor training to the following groups and organizations: the Gunnison Senior Center, the Crested Butte Community School 8th Grade, the Crested Butte Nordic Explorers, Gunnison County Electric Association, Crested Butte Land Trust, and a Women's Backcountry 101 clinic.

Videos

CBAC forecasters produced 20 field-based videos highlighting current or anticipated hazards or describing terrain management strategies. The videos were shared on YouTube, Facebook, Instagram, and on our website.

News and Radio Media

The Gunnison Valley's community radio station, KBUT, aired CBAC's avalanche forecasts every morning all winter, and CBAC staff also participated in several additional radio programs, including a special PSA during a very dangerous period in December. The CBAC authored regular "Backcountry Notes" for the Crested Butte News and interviewed with the Gunnison Times on several occasions throughout the season. The forecast bottom line is also published daily on CBTv.

Avalanche Danger Sign

Now in its third season, CBAC's large roadside sign at the entrance to town advertises the current avalanche danger and our website for more information. The sign helps inform and increase awareness for visitors and locals alike.

2022 FINANCIAL REVIEW 2023

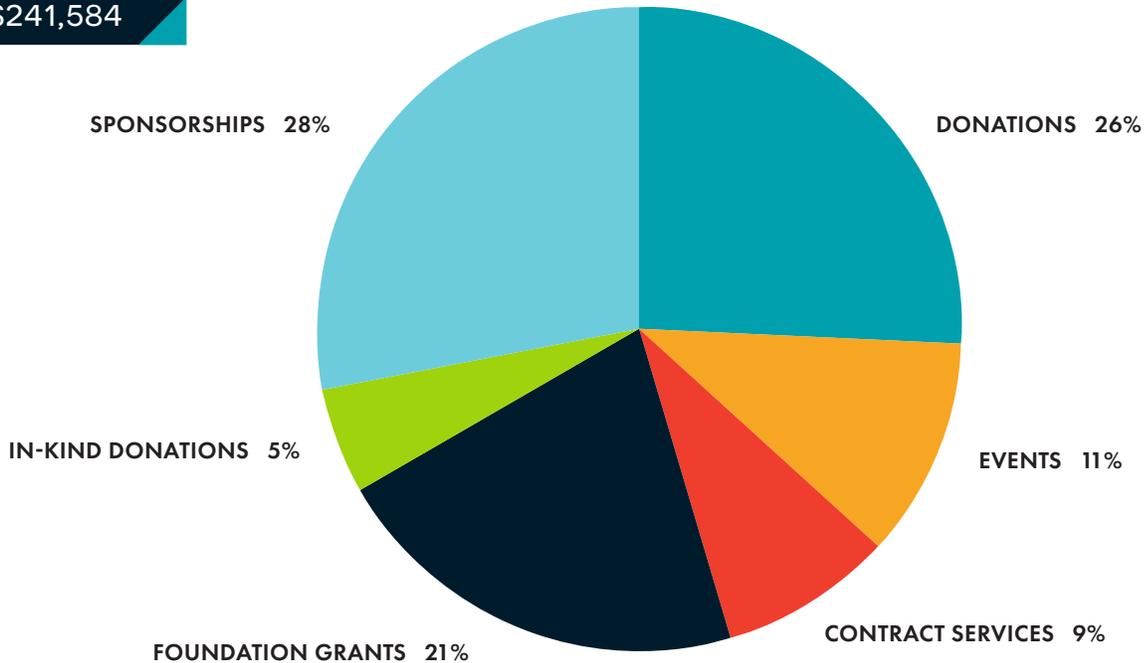
BUDGET

The CBAC continues to operate a well-staffed, Type 1 avalanche center while maintaining a modest budget relative to other centers around the country. The majority of expenses (68%) go directly to forecaster and staff salaries, followed by operating expenses (9%) such as vehicles, website, and office costs. Under this model, the center has maintained a highly experienced and well-qualified staff with a strong field presence in the Gunnison Valley.

The CBAC continues to draw a sustainable income that exceeds expenses. Funds are raised from a variety of sources including business sponsorships, local municipalities, donations, trusts/grants, events, and contract services. Contract services include regular avalanche mitigation work on avalanche paths that impact the Town of Crested Butte, along with snow safety work at local events such as the Gothic Mountain Tour.

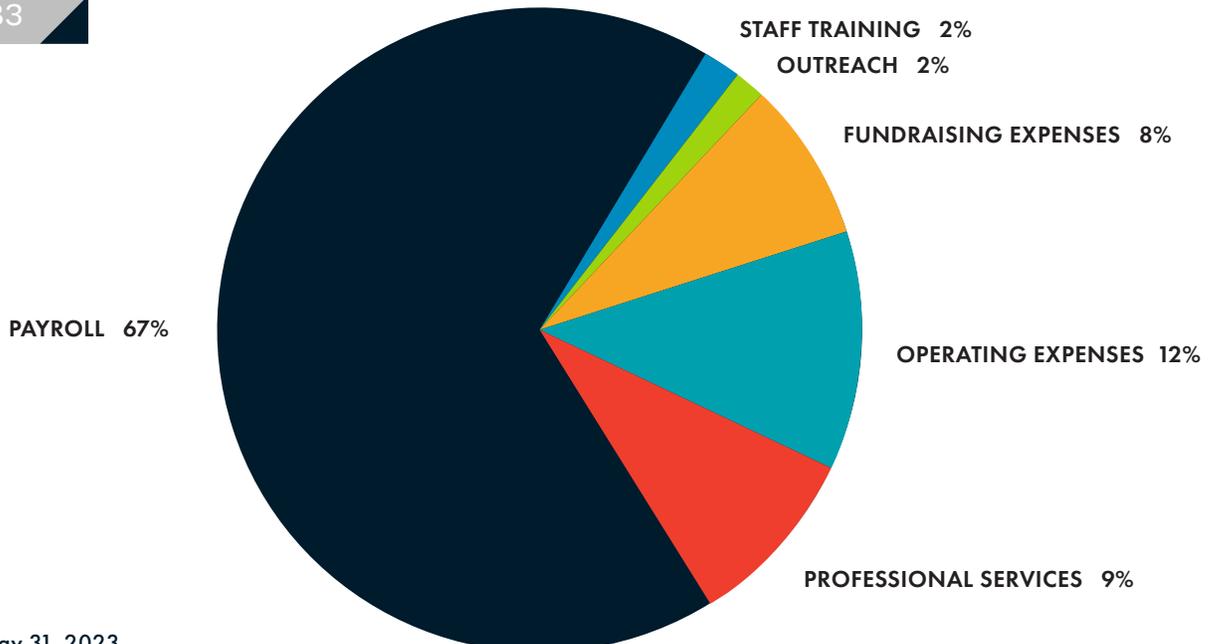
INCOME

\$241,584



EXPENSES

\$216,683



2022 DIGITAL REVIEW 2023

CBAVALANCHECENTER.ORG

WHO'S OUT THERE?

Overall traffic is concentrated in Colorado, including destinations the Gunnison Valley is marketing to.

58% Gunnison Valley

42% Denver, Boulder, Colorado Springs, Ft. Collins & beyond

WEBSITE PAGE VIEWS

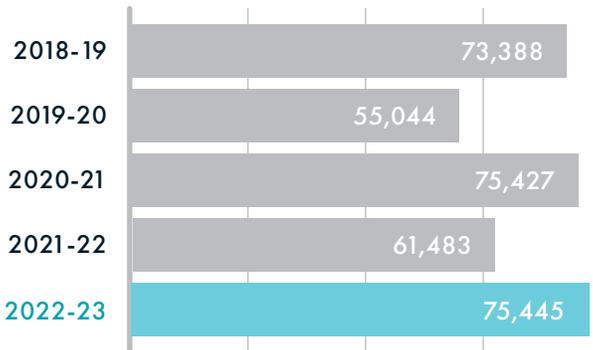
233,129
Up from 204,735 last season.

While we saw a decrease in website visitors, we reached an **all-time high of page views (up 14%)!**



PAGES VIEWED PER SESSION WAS 3.33 PAGES VS 2.45 PAGES LAST SEASON.

USER SESSIONS



TOTAL WEBSITE VISITORS **19,265**
Down from 19,936 last season

Our website usage has trended upwards over the past five years, with annual fluctuations driven by external factors such as how big the winter is, newsworthy accidents, and Covid 19-related booms and busts.



THE AVERAGE PERSON SPENT 3.09 MINUTES ON OUR WEBSITE
(up from 2.45 minutes last season)

SOCIAL MEDIA

We continue to post daily content each winter to help educate more users and draw a larger audience to the website. Community feedback has been overwhelmingly positive that our social media platforms are informative, creative, funny, relevant, and interesting.



68% OF CBAC'S USERS ARE CONNECTING ON A MOBILE DEVICE.

HOW YOU FOUND US:

60% DIRECT SEARCH
21% ORGANIC SEARCH
11% SOCIAL MEDIA LINK

20
VIDEOS

THE CBAC FORECASTERS PRODUCED 20 YOUTUBE VIDEOS.

While FB link was down, Instagram is up significantly, and continues to show us that social media linking is critical to connecting with our user groups.

18,337
SOCIAL MEDIA FOLLOWERS

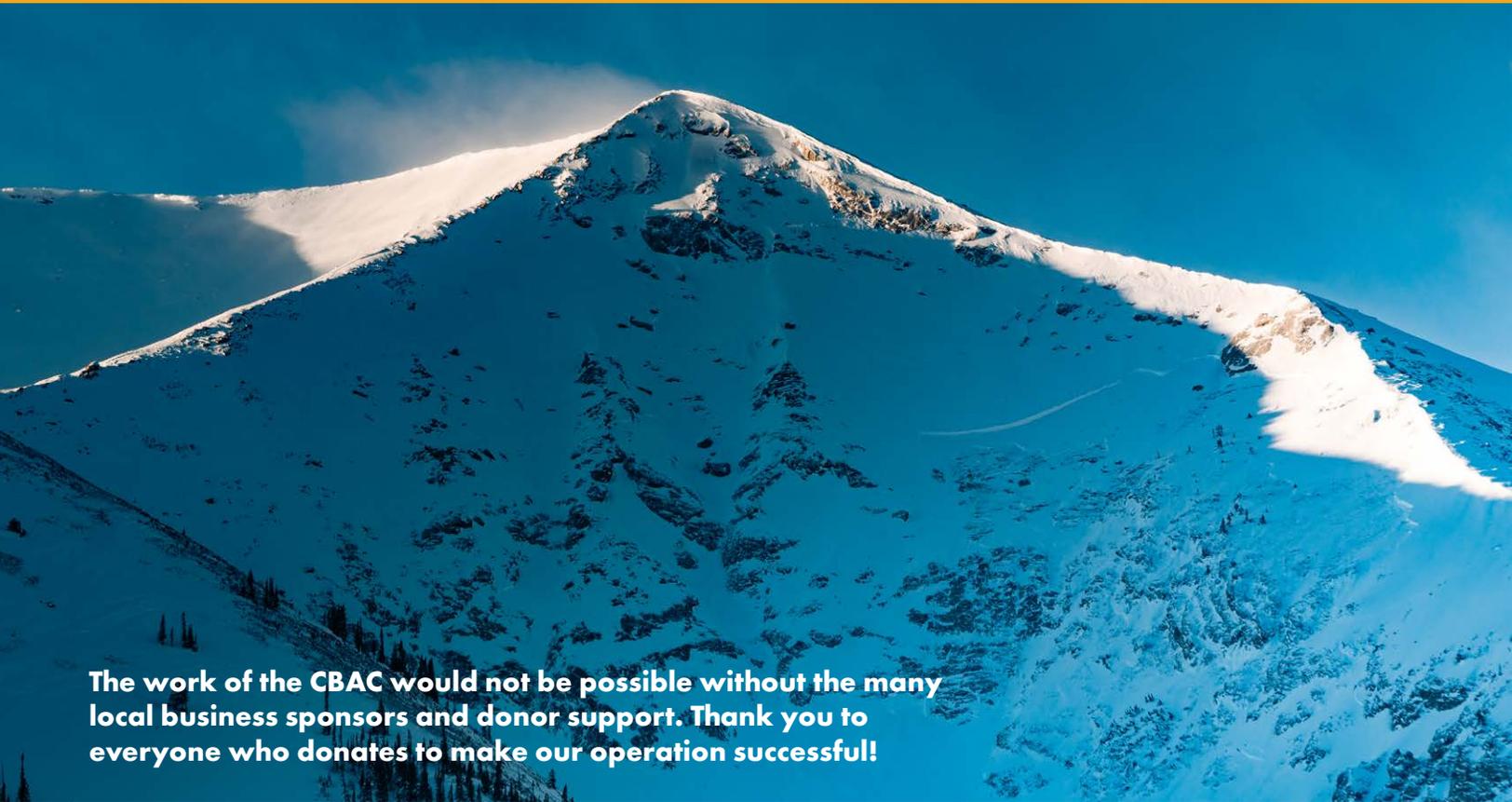
1,582
NEW FOLLOWERS

WEBSITE TRAFFIC FROM SOCIAL MEDIA INCREASED BY

9.5%   

PARTNERSHIPS + SPONSORSHIPS

The CBAC collaborates with local, state, and national snow safety organizations to share resources, observations, and guidance.



The work of the CBAC would not be possible without the many local business sponsors and donor support. Thank you to everyone who donates to make our operation successful!

The CBAC is a member of the National Avalanche Center (NAC) which provides guidance, support, and cost-sharing opportunities for the website platform and associated products. The CBAC works with the Colorado Avalanche Information Center (CAIC) through observation sharing and regular forecaster consultations. The CBAC also exchanges observations and benefits from weather stations operated by Irwin Guides, Crested Butte Mountain Resort, and Billy Barr/Rocky Mountain Biological Laboratory.

The CBAC is contracted by the Town of Crested Butte to perform avalanche mitigation and forecasting for several avalanche zones within town limits. There

were no incidents, public involvement, or structural damages at any municipal avalanche zone this winter, and no road or terrain closures were implemented.

The CBAC is partnering with OnX Backcountry to develop an Avalanche Terrain Exposure Scale map for the CBAC forecast area. The map relies on a terrain modeling approach validated by historical data to categorize terrain exposure into simple, challenging, complex, or extreme avalanche terrain. The map is expected to be freely available to the public next season.

The CBAC also has an email alert system for notifying other local agencies of exceptionally dangerous conditions.

We deployed this system on a number of occasions through the winter to warn organizations that could be impacted by large-magnitude avalanches. On January 4th, Climax Chutes produced 15 to 20 feet of debris across the CB Nordic Trail system, one of the largest avalanches in their operational history. The trails were closed at the time. Several other popular routes groomed by other organizations, such as Ohio Pass and Cement Creek Road, were impacted by destructive natural avalanches this winter without human involvement.



The CBAC will always strive for more effective outreach and more accurate forecast products with the ultimate goal of eliminating avalanche fatalities in our valley. With that in mind, we've outlined a handful of goals that we accomplished this season along with objectives for the coming year.

Continue a heavily field-based approach to avalanche forecasting to better understand and forecast for local avalanche patterns. This season the center added a second powder snowmobile to its fleet to further support extensive fieldwork.

This season, we installed a weather station on Carbonate Hill to collect valuable wind and temperature data from a data sparse portion of our forecast zone. We continued to successfully operate two remote game cameras for monitoring storm totals in the Upper Slate and West Brush Creek drainages.

Through the support of the Dan K Memorial Fund, we purchased a precipitation sensor to supplement existing instruments at the Elkton weather station. Unfortunately, we encountered technical difficulties with the station this winter, and plan to revamp and relocate the station to a more reliable site in the next year.

Last season, we successfully engineered an avalanche database and designed several avalanche visualization tools,

including an avalanche rose and table with filters. This year, we further developed the visualization tools to make them more mobile friendly, with the help of Reggie Park, Michael Futch, and Rob Strickland. In the coming years, we plan to work with the National Avalanche Center to integrate a more robust and user-friendly observation system to support the visualization tools.

This summer, the Northwest Avalanche Center is developing a mobile app that will integrate with the National Avalanche Center website platform. Our goal is to work with these organizations to develop and deploy the app for our local users in the next two years.

We are currently working with OnX Backcountry and Beacon Guidebooks to develop a local Avalanche Terrain Exposure Scale (ATES) map. We expect to make the map available to the public by next season on our website. The map will serve as an additional resource to help users recognize and plan around the severity of avalanche terrain.

The CBAC will continue to explore for ways to meet the increasing salary needs of staff associated with the rising cost of living in the Gunnison Valley.

The Outreach Program looks to continue its efforts through trailhead days, fireside chats, and education opportunities while looking for further opportunities to reach or enhance education for other users, with particular focus on youth (ages 8-15) and the motorized community.

DONORS + SUPPORTERS

The work of the CBAC would not be possible without the many local business sponsors and donor support. Thank you to everyone who donates to make our operation successful!

SNOWPOCALYPSE \$5,000 +

Andrico Wines
Community Foundation of the
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Tourism and Outdoor Recreation
Gunnison Valley Hospital
Irwin Guides
Skyhigh Offroad

WHITEROOM \$3,000 +

Alpineer
Blister Review
Club at Crested Butte
Gunnison/CB Tourism Association
Midnight Marketing Solutions
Moosejaw
OnX Maps

WAIST DEEP \$1,500 +

Beacon Guidebooks
City of Gunnison
David Gross Contractor
Dynafit
Flylow
Glacier Earthworks
Hargrove and Kidd Construction
High Alpine Brewing Co.
Intuition Consulting
Kebler Corner
KNS Reps
Laggis Design and Construction
Michael Weil Custom Homes
Moosejaw
Organic Housekeepers
RMBL
Top Tier Construction
Tributary Coffee Roasters
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Action Learning Associates
Altitude Auto
Crested Butte Bank
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Crossroads Construction
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IBar Ranch
KBUT
Law Offices of Michael Vaughn
Mountain Nugget Body Work
Mountainside Concrete
Mountain Tree Scapes
Nunatak Alternative Energy Solutions
Pinnacle Orthopedics
POC
Precise Painting
Resource Engineering Group (REG)
ROMP Skis
Steadfast Flooring
Teocalli Tamale
Uphill Motorworks
West Elk Soccer
Weston Backcountry

KNEE DEEP \$500 +

Beckwith Builders
Old Town Inn
Ortovox
Paradise Interiors
Smithworks Natural Homes
Vermont Sticky

BOOT TOP \$250 +

Get Bent Blacksmith

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Black Tie Ski Rentals + Delivery
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Town of Mt CB
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Gunnison County

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Dea Family Foundation
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IN-KIND DONATIONS

West Elk Soccer Association
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Mountain Nugget Body Work





CBAC

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