

# 2021-2022 ANNUAL REPORT





# Flathead Avalanche is a public safety service.

Our purpose is to prevent the loss of human life, limb, and property by human and naturally occurring avalanches by providing information and education for the community. Established in 2014, we are a partnership between the US Forest Service and a non-profit community group.

The Flathead Avalanche Center (FAC) is a program of the Flathead National Forest, operating out of the Hungry Horse Ranger Station. It is one of 22 regional USFS avalanche centers and 1 of 10 Type 1 Avalanche Centers, issuing a daily forecast with four full-time forecast staff.

The Friends of the Flathead Avalanche Center (FOFAC) is a 501c3 organization focused on funding and education. It is guided by a community board of directors.

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# **Winter** 2021-2022 THE 10,000-FOOT VIEW

## **126** DAILY FORECASTS DECEMBER 6 TO APRIL 10

## **1,380** EDUCATION ENROLLMENTS

AT 30 FIELD COURSES AND 16 COMMUNITY ED WORKSHOPS

# **12,596** Total digital Audience

SOCIAL MEDIA FOLLOWERS & NEWSLETTER SUBSCRIBERS

# Staff & Partners



Blase Reardon FAC DIRECTOR



Mark Dundas FAC LEAD FORECASTER



Emily Struss FOFAC DIRECTOR



Meg Killen FOFAC EDUCATION DIRECTOR



Cam Johnson FAC AVALANCHE SPECIALIST



Clancy Nelson FAC AVALANCHE SPECIALIST



Guy Zoellner FAC PROFESSIONAL OBSERVER



Clare Menzel FOFAC COMMUNICATIONS MANAGER

# special thanks to

FLATHEAD NATIONAL FOREST | CHRIS PREW, TERESA WENUM, SADIE WEHUNT OUR INTERNS | RICK ZIEGLAR, CHRISTINA MARIE SALZMANN, MEGAN GUINN

## FAC DIRECTOR'S SUMMARY

Whew. After the dramatic winter of 2020-21, it was a relief to see a season with only short-lived weak layers, straightforward access and riding conditions, and a reduction in near-misses and accidents. The FAC and FOFAC staff are, however, driven to provide high-level forecasts and education. So the season felt like a step-up rather than a coast. A huge thank you to the FAC forecasters and interns, FOFAC staff, FOFAC educators, and all the volunteers who assisted with FAC's fieldwork and classes. Similarly, we rely on our partners at Whitefish Mountain Resort, the program's supporters at the Flathead National Forest and Glacier National Park, and the nearly 100 riders who contributed observations, near-miss or accident information, or donations. We could not have fulfilled our mission without such contributions and support. We are looking forward to building on this



winter's lessons in coming winters, and continuing to find new ways to create more effective products. Please let us know if you have any ideas or suggestions.

**BLASE REARDON, FAC DIRECTOR** 

## FOFAC DIRECTOR'S SUMMARY

Every year, the Friends find a way to get a little better. We refine our programs and services. We find new, creative ways to engage with the Flathead community about avalanche safety, programs, and services. This year we kicked it up another notch.

We developed our in-house team. To help with communications, we welcomed Clare, who brings a background in media, writing, and design. Meg expertly handled our education programming in her third season with us. We're thrilled to bring Woody Hust and Steiner onto the FOFAC Ted Board this year. And we found a new stride working side-by-side with the FAC as Flathead Avalanche.



Beyond our internal successes, we found much joy connecting with the Flathead community as we returned to in-person classes and brought back youth programming.

This community's dedication continues to humble us. You show up for our mission. You donate your dollars, join our classes, and share your stories—we are so privileged to serve you and your winter pursuits. Thank you!

## **EMILY STRUSS, FOFAC DIRECTOR**

## THANK YOU TO THE FOFAC COMMUNITY BOARD OF DIRECTORS!

Dow Powell, President Ronald Bachrach, Vice President Woody Hust, Treasurer Becky Smith-Powell, Secretary Jenny Cloutier, Education Chair Zak Anderson Roland Frey Lloyd Morsett Ted Steiner Edward Visnovske **103** AVALANCHES REPORTED

**5** DAYS WITH HIGH AVALANCHE DANGER

## 74 MOST NATURAL D2 OR LARGER AVALANCHES REPORTED IN A SINGLE DAY

30

NUMBER OF DAYS WITH AT LEAST ONE D2 OR LARGER AVALANCHE REPORTED

D4 Largest Slides Reported

MID-JANUARY CYCLE & WET SLABS IN LATE MARCH

# 2021-2022 Avalanche Season

A very large natural avalanche released on Mount Grant in Tunnel Creek in the Flathead Range. This slide was one of the largest of the season. Photo by Thomas Yeoman.

## **October-November**

AN ATMOSPHERIC RIVER ENTERS STAGE LEFT

October snowfall saw temperatures and snowfall that were close to average. By Halloween, upper-elevation stations showed just a few inches of snow on the ground. The snowpack started building steadily in early November, and the FAC issued its first conditions update on Nov. 10.

In mid-November, an extremely powerful Atmospheric River sideswiped the northern tier of the forecast region, dumping about four inches of precipitation in the northern Whitefish Range. Much of that fell as rain because freezing levels were well above 6000 feet. Ridgeline stations recorded wind gusts of 80 to 90 mph during the event. The rain eroded most of the snowpack below that elevation. Two similar events occurred in the second half of the month, though these were slightly colder. By month's end, stations above 6000 feet reported 15 to 36 inches of snow on the ground. The FAC issued a total of four conditions reports during the month.

ATMOSPHERIC RIVERS are narrow but long columns of water vapor that originate in the tropics. They bookended the 2021-22 season with dramatic but warm storms that dumped feet of snow at the highest elevations. Between these end-pieces, the season saw roughly average snowfall but often cold temperatures, thanks to several episodes of Arctic air pouring south. The persistent weak layers that formed were short-lived. Most of the season's avalanche activity involved small to large avalanches. The largest reported slides were one very large hard slab reported January 29 but likely failed earlier in the month, and two natural wet slabs that failed in late March. Cool temperatures and late season storms delayed the transition to a summer snowpack; as of mid June, snowpacks in the region remain at 180 to 340% of median for the date, with 40-80 inches of snow still on the ground above 6000 feet.

## December

THE FAUCET TURNS ON

The lack of mid-elevation snow made accessing the backcountry difficult and forced a postponement of WMR's scheduled opening. Participants in FAC's annual observer training at the summit of Whitefish Mountain Resort wore boots instead of skis. The FAC issued another conditions report the first week of December before starting daily operations on December 6.

That seemed to be the switch that turned on the snow and cold temperatures. The rest of the month saw almost continuous snowfall, much of it low density, and snow heights climbed steadily to 60 to 80 inches by month's end. Temperatures remained well below freezing, even plummeting to -10 to -20 during the holiday week. Winds were generally moderate as well. The steady accumulations prevented persistent weak layers from forming, and with limited wind transport, storm and wind slab avalanches hazards were confined to upper elevations. The sustained snowfall prompted the FAC to issue six days with Considerable Danger (Level 3 of 5) in the third week of the month, with one day at High. We issued Moderate ratings for nearly all of the other days of the month, and heard numerous reports of fantastic riding conditions.



An early January profile in a shallow snowpack area below Hornet Lookout in the northern Whitefish Range.

## January OUR FIRST WIDESPREAD CYCLE OF THE SEASON

The pattern continued into the first week in January until a warm, powerful storm produced the first widespread natural avalanche cycle of the season. FAC issued High avalanche danger and avalanche warnings on Jan. 7 and 8 and recorded over 70 avalanches, most small, with two D3s. Snowfall tapered off after that, and temperatures remained mild. Conditions stabilized, and FAC issued Low danger ratings on 11 of the remaining days in the month, and Moderate for the most other days. The exception was January 21, when a storm that was warmer, windier and wetter than forecast led to a Considerable danger rating. The prior day's forecast would have been more accurate at Considerable than Moderate. In the northern reaches of the forecast region, SNOTEL stations closed the month with near- or above-normal snowpacks (northern half of the region). The snowpack further south was 85% of median.

## February

FROM HERO TO ZERO

A very cold storm started the month, burying surface hoar and facets that formed during January's dry conditions. The avalanche danger bumped to Considerable as winds picked up. On February 4, a party in the sidecountry east of WMR found one of the localized persistent weak layers; the third rider triggered a soft slab; the debris pushed her into a tree, though she was uninjured. Wind-transported snow triggered several very large (D3) natural avalanches on the leeward side of ridges in the same period.

Temperatures moderated the second week of February and for the most part, the avalanche danger stuck at Moderate or Low for the next few weeks. A second serious accident occured Feb. 25, when a guide at a mechanized operation triggered a slab of drifted snow that slammed him into a tree and left him with minor injuries. Another intrusion of Arctic air poured over the Continental Divide the last week in February, and temperatures plunged to -20 to -25 at stations above 6000 feet. Despite the cold, people found great riding conditions.

Then, as Cam put it in his February 28, forecast: "We went from hero to zero in a matter of 12 hours. The past few days, you could ride it if it was white. Today, plan your day to avoid all avalanche terrain." FAC issued Avalanche Warnings that day and March 1 as 1 to 3 feet of snow fell at mid and upper elevations and temperatures rebounded to near freezing.



A slab, likely triggered by a snowmobiler, below Stahl Peak in the northern Whitefish Range. Photo by Seth Carbonari.



Well-preserved surface hoar grains like this one made up the failure layer in a slide that caught and carried a skier in the southern Whitefish Range. While the layer was widespread, the slab above it was reactive only where thickened and stiffened by wind-drifted snow. Photo by Burket Kniveton.



From February 28 to March 4, FAC recorded over 230 avalanches, most natural and 27 of them D3 or larger. Snow heights jumped to 90 to 120 inches and the danger stayed at High or Considerable before tapering to Low on March 7. A warm storm in mid-March delivered rain to the valleys but 1 to 2 feet of dry snow to mid and upper elevations. The danger climbed back to Considerable and another, less widespread natural avalanche cycle ensued.

Then spring arrived, or so it seemed at the time. Stations above 6000 feet recorded temperatures in the mid 50s on March 27, and with strong solar inputs, wet snow avalanches ran on many slopes. Two of these were among the largest slides (D4) that FAC recorded during the season; they both ran on Mt. Stanton, in the McDonald valley. A gully channeled debris from one to within several hundred feet of Lake McDonald.



After the warm weather, it seemed we were on track for a gradual transition into springtime conditions. Instead, the region saw one of the coldest Aprils in 130 years. A storm the second weekend in the month dumped 1 to 2 feet of low density snow across the region, and people raved about the riding conditions. Snow heights reached their peaks for the season, with all stations over 6000 feet recording 115 or more inches of snow height. We ended daily forecast operations on April 10, as scheduled. We issued conditions reports the next two days, then five more as the month progressed. A diurnal melt-freeze cycle developed the third week of April, prompting a widespread cycle of natural wet snow avalanches. Motorized and non-motorized riders took advantage of the conditions, with one skier-triggered slide reported above the Going-to-the-Sun Road in Glacier National Park.



Though May started warm, powerful storms rolled through the region at weekly intervals, dumping feet of snow at upper elevations and prolonging the transition to a summer snowpack. The first week in May saw rain to at least 7300 feet followed by 1 to 2 feet of new snow, then a few days of sunny, warm weather. That combination produced several natural cycles of wet snow avalanches. The pattern repeated the third weekend in May, with stations above 6000 feet recording 1-3 inches of snow water equivalent. Three parties unintentionally triggered slab avalanches, with one person caught and carried in Skiumah Creek. Regional snowpacks finally peaked May 22, nearly 4 weeks later than typical. FAC issued 6 conditions reports during May, including the final report of the season on May 27.

The most sustained period of melt started the last week in May, and extended for the first ten days of June. It seemed like summer had finally arrived. Then, on June 13, a slow-moving closed low and an unusual late-season atmospheric river slammed into the region, dumping prodigious amounts of rain and snow in the mountains. SNOTELs in the Swan and Whitefish Ranges recorded 8 to 10 inches of precipitation and 2 to 4 feet of snow in less than 72 hours, with snow levels dropping to 4500 feet. All told, the storms from early May into mid-June produced 15 to 28 inches of precipitation in the region, and left snowpacks at 180 to 340% of median on June 18.

The late-season storms marked a fitting end to a season marked by atypical weather, sharp spikes in the avalanche danger, few persistent avalanche hazards, and, in contrast to the 2020-21 season, no avalanche accidents that left riders seriously hurt or worse.

# Incidents

## HAPPILY, THE NUMBER OF REPORTED NEAR-MISSES AND ACCIDENTS DIPPED BACK TO MORE TYPICAL NUMBERS AFTER SPIKING LAST SEASON

Through our accident reports and this summary, the FAC aims to document what happened when things went wrong, in hopes readers can learn lessons that will keep them safer. Over the course of the 2021-22 winter, the FAC recorded seven near-misses, incidents and accidents. We're thankful to those who reported events and corroborated details. This information is valuable.

NEAR MISS: an unintentionally-triggered slide in which no one was caught but which had a high potential for burying, injuring or killing someone should something have gone differently

INCIDENT: any time a rider comes into contact with moving avalanche debris

#### ACCIDENT: a person is partially or fully buried, injured, or killed by an avalanche

Date	Location/ Zone	Outcome	D Size	Aspect	Elevation	Activity	Rating (band of incident)
Dec 29	Shed 11/ Flathead	Incident: 1 caught, 1 partial burial	1	SE	4300	Backcountry Rider	1
Feb 4	Kona Ridge/ Whitefish	Accident: 1 caught, 1 partial burial	2	NE	6450	Sidecountry Rider	2
Feb 16	Mt. Brown/ Flathead	Near miss	1	SE	7700	Backcountry Rider	2
Feb 20	Mt. Marson/ Whitefish	Near miss	1	NE	7100	Hybrid Rider	2
Feb 25	Stillwater State Forest Whitefish	Accident: 1 caught, 1 partial burial, 1 injury	2	NE	6200	Mechanized Guide	3
March 14	Mt Brown/ Flathead	Incident: 1 caught	1	WSW	5000	Backcountry Rider	1
May 20	Skiumah Creek/ Flathead	U: 1 caught	U	U	U	Backcountry Rider	None

Figure 1: 2021-2022 Incidents and accidents/ These numbers reflect all of the incidents that people reported to us. Where possible, we confirmed details with at least one member of the party involved. Undoubtedly, there are other near-misses or accidents that go unreported.

# Trends in Incidents

### SIX SEASONS OF INCIDENT DATA REVEAL TRENDS OVER TIME



#### NEAR MISSES & ACCIDENTS BY OUTCOME, 2017-2022

Figure 2: Reported near-misses and accidents by outcome for the 2017 through 2022 winters. The partial category also includes people injured or killed. The number of events in the 2021-22 winter returned to more typical levels after a spike in accidents in 2020-21.

#### NEAR MISSES & ACCIDENTS BY ACTIVITY, 2017-2022

Nearly all the reported events for 2021-22 were from non-motorized riders. The lack of reports from motorized riders likely reflects a reluctance to report events. The number of reported events involving hybrid riders, who use snowmobiles to access remote terrain, has grown steadily in the past five seasons as more people seeking out remote terrain to avoid crowding, perceived or actual.





Figure 3: The activity categories follow those used by the Colorado Avalanche Information Center, which maintains the record of fatal avalanche accidents for the U. S.



#### NEAR MISSES & ACCIDENTS BY FORECAST ZONE, 2017-2022

Figure 4: Most occurred in the Flathead zone, with two in the Whitefish zone and none reported from the Swan zone. The Flathead zone includes the Lake McDonald and southern Glacier National Park areas, though those areas are distinguished in this chart.



#### NEAR MISSES & ACCIDENTS BY MONTH, 2017-2022

Figure 5: Reported near-misses and accidents by month for the 2017 through 2022 winters. While 2022 saw most accidents in February, it was nothing like the spike in 2021.



#### NEAR MISSES & ACCIDENTS BY DANGER RATING, 2017-2022

Figure 6: The 2021-22 near-misses and accidents were distributed among the danger ratings similarly to other years, with one striking exception. Most occurred in terrain where the FAC rated the danger as Moderate (Level 2 of 5). None occurred at High, and three occurred at Low or No rating. Reported near-misses and accidents by danger rating for the terrain where the event occurred. In most cases, that rating equaled the highest rating for the day for that zone.

# Forecasting

# **177** Products

DAILY FORECASTS & LATE AND EARLY-SEASON CONDITIONS UPDATES & WEEKLY CONDITIONS VIDEO/SUMMARIES

**500** TOTAL OBS LOGGED

NUVEMBER 12 TU MAY 23

## **759** MILES ON LOANER SNOWMACHINE

THANK YOU DREAM MARINE AND BRP!!

> "You guys rock—engaging with the community and producing accurate, easy-to-read forecasts. Most impressive forecast center I've interacted with."

> > 2022 END-OF-YEAR SURVEY

## **FAC Products**

# **Forecast Region**

## MOUNTAIN-RANGE SPECIFIC AVALANCHE FORECASTS AND CONDITIONS REPORTS ARE POWERFUL PUBLIC SAFETY TOOLS



They allow forecasters to highlight which areas are most dangerous on a given day, giving travelers the resources to make more informed decisions. We issue daily forecasts for three zones. When conditions are similar, we combine them into one product.

We split the forecast into two or three distinct products when conditions between zones necessitate different bottom lines, avalanche problems, or problem descriptions. The discussion remains the same for all products, because it tends to highlight the rationale for different products or changes between days.

## OUR APPROX 1800 MI<sup>2</sup> REGION IS CHALLENGING TO ACCESS AND FORECAST

- ONLY TWO ALL-SEASON ROADS ABOVE 4000 FT
- SMALL FRACTION OF AVALANCHE TERRAIN VISIBLE FROM ROADS
- MOST FIELDWORK REQUIRES FULL DAYS TO ACCESS AVALANCHE
   TERRAIN
- START ZONES AND PEAKS OFTEN OBSCURED BY CLOUD COVER
- HUMAN-POWERED TRAVEL IN NPS AND WILDERNESS-A SIGNIFICANT PORTION OF OUR REGION

## **FAC Products**

# Daily Forecast Products

OUR EIGHTH SEASON OF ISSUING DAILY FORECASTS

## FIRST CONDITIONS UDPATE Nov 10

ABOUT A MONTH LATER THAN THE AVERAGE FOR PREVIOUS 7 SEASONS

LAST CONDITIONS UDPATE May 27 BECAUSE OF PROLONGED COOL AND STORMY WEATHER FIRST DAILY FORECAST Dec 6 Typical start

## LAST DAILY FORECAST April 10 Typcial end

Days of # Days of Total # of First **Start Dailv End Dailv** Season Last Product Dailv products Products product Forecast Forecast Forecast issued 2014-15 110 **Oct 29** Dec 6 **April 5 April 5** 120 95 2015-16 152 **Oct 28** Dec 9 April 10 April 11 123 135 2016-17 Oct 9 Dec 5 **April 9** 125 141 143 April 30 2017-18 205 Oct 2 Dec 9 **April 8** April 15 120 133 2018-19 198 **Oct 12** 118 133 Dec 9 **April 6** April 15 2019-20 258 Sept 22 Dec 7 **April 5** April 23 119 134 Oct 1 2020-21 183 Dec 9 April 11 **May 21** 123 143 **April 10** 2021-22 177 **Nov 10** Dec 6 **May 27** 125 143

Figure 7: Tallies comparing this winter to the previous seven seasons.

## **FAC Products**

# **Trends in Forecast Products**

## VISIT THE ARCHIVES TO VIEW 2021/2022 FORECASTS

We issued daily forecasts from December 6 to April 10, a 125-day period slightly above the average of 121 days for the past seven seasons. This winter's 143 days of products is about typical for the past seven seasons. The total number of products reflects the days when we issued different forecasts for all three zones, as well as weekly conditions summaries. The 2021-22 total (177) remained roughly equal from the 2020-21 season (183).



#### NUMBER OF DAYS WITH PRODUCTS AND TOTAL PRODUCTS 2015-2022

Figure #8: Columns represent the number of days the FAC issued products (orange) and the number of products issued (gray) for the 2015-22 winters. The FAC began issuing 7-day-a-week forecasts in the 2015-16 winter.

# **Danger Ratings**

THE FAC ISSUED 140 PRODUCTS THAT INCLUDED A DANGER RATING FOR ONE OR MORE OF THE FORECAST REGION'S THREE ZONES



Figure 10: Colors represent the percentage of total products issued with a given danger rating for the 2014-15 to 2021-22 seasons. Total number of products per season varies from 95 (2015) to 284 (2020).

# Observations

## WE RELY ON A HUGE COMMUNITY OF FIELD OBSERVERS THANK YOU, ALL!

Field observations are the key to accurate descriptions of avalanche hazards across the FAC's roughly 1600 mi<sup>2</sup> forecast region. They help validate predicted avalanche activity and alert forecasters to snowpack variations and changes in weather conditions.

In the 2021-22 winter, the FAC logged 500 observations from staff, partners, and the public.

Special thanks to Northwest MT snow workers, including Ted Steiner and Adam Clark for BNSF Railway and Dave Hamre Associates, Lloyd Morsett at Whitefish Mountain Resort, Charles Hlavac at Teton Pass Ski Area, and Zach Miller, Gabrielle Antononioli, and John Hageness of the GNP/ USGS Going-to-the-Sun Road program, and Sarah Williams for Glacier National Park. Thank you for sharing your expertise!

Public observations demonstrate a substantial investment by the parties who contributed them. We are grateful for the 97 individuals who took the time at the end of the day in the mountains to submit a collective total of 326 observations.

The FAC offers a heartfelt thank you to each of them.



## THREE CHEERS FOR THESE DEDICATED PUBLIC OBSERVERS!

## PUBLIC OBSERVER OF THE YEAR

Chris Gotschalk (lots)

MOST OBS Kevin Oberholser (27)

## 15+ OBS

Adam Clark (22) Zach Dugan (15) Jackson George (17) Rob Millsbaugh (16) Alex Slader (17)

## 10+ OBS

Paul Fotter Jeff Metsky Erich Peitzsch

## 5+ OBS

Ian Bartling Dan Cameron Pete Costain Jake Frerk Kim Givler David Kerner Burket Kniveton Zach Miller Mike Reavis David Steele Sarah Williams Tom Whipple

Figure 11: Observations by forecast region. Flathead/GNP includes two of our three partner agencies.

# Trends in Observations

OBS TALLY DECREASED FOR THE FIRST TIME SINCE WE BEGAN LOGGING THEM SIX SEASONS AGO

SEASON	PUBLIC & PARTNER OBS	FAC STAFF	TOTAL OBS	PERCENT PUBLIC & PARTNER/ STAFF	CHANGE # OBS	PERCENT CHANGE
2015-16	116	73	189	61/38%		_
2016-17	142	61	203	69/30%	+14	+7%
2017-18	246	148	394	62/37%	+191	+94%
2018-19	250	201	451	55/44%	+57	+14%
2019-20	307	184	491	62/37%	+40	+9%
2020-21	366	151	517	70/29%	+26	+5%
2021-22	348	152	500	69/30%	-17	-3%

Figure 12: Tallies comparing this winter to the previous six seasons.

For the third consecutive season, FAC received over 300 obs from public and partners. Those observations represent roughly two thirds of the total obs for the season.

The vast majority of this season's observations came from non-motorized riders. Women submitted less than 10%. For next season, Flathead Avalanche will address the barriers that influence these poor ratios.

FAC staff obs have notably decreased in the past two seasons. That decrease is in large part due to producing weekly conditions summaries and videos each Friday. The time needed to produce those 19 products comes at the expense of field time for FAC staff. Each summary typically keeps one forecaster and an intern from the field.

# Education

# 8 PUBLIC COURSES **124 STUDENTS**

## 18 COMMUNITY AVALANCHE ED WORKSHOPS **573 ATTENDEES**

## 11 YOUTH COURSES **584 STUDENTS**

"Seriously awesome class! This was a refresher for me and, honestly, I wish I would have done my initial course with these instructors."

# Field/Classroom Courses

AVALANCHE EDUCATION IS A CRUCIAL ASPECT OF OUR MISSION TO SAVE LIVES

#### PARTNER RESCUE 52 STUDENTS IN THREE COURSES

During this eight-hour field day, students learn and practice how to operate their rescue gear, perform a mock companion rescue, and walk away knowing how to keep their skills sharp.

#### INTRO TO AVALANCHES 35 STUDENTS IN TWO COURSES

This two-day mixed classroom and field course is an opportunity for beginners to get their hands in the snow and gain familiarity with essential concepts and practices for safe winter travel.



#### AVALANCHE LEVEL 1 (MOTORIZED ONLY) 33 STUDENTS IN TWO COURSES

With two field days and a four-hour classroom session, students learn to recognize avalanche terrain, interpret the forecast, make field observations, and put all this into a solid plan for a day in the backcountry.

#### AVALANCHE LEVEL 2 (MOTORIZED ONLY) 6 STUDENTS IN ONE COURSE

With three field days and eight classroom hours, this course is for deepening skills in trip planning, terrain assessment, and group communication. We were stoked to host our first-ever Avalanche Level 2 with Six Points Avalanche Education.

## YOUTH EDUCATION 584 STUDENTS

After one season on hold, we were happy to bring back programming for schoolage students. Kids from nine local schools learned about snow, avalanches, and backcountry and life skills.

#### PRIVATE CLASSES 89 STUDENTS

We offer private classes for agency partners, sponsors, and other parties.



FVCC is an essential partner in Flathead Avalanche educational programming, helping us with registration, classroom space, and more.

# Sled Ed

Last year, our three motorized classes sold out with waiting lists, and we kept hearing from the community that they wanted more education. We realized that while other organizations exist to meet the needs of human-powered recreationists (like the Whitefish Patrol Fund and the Mountain Guides), motorized users were being left behind. This winter, the majority of our public field classes were geared towards motorized users, which represents a major pivot from our traditional ed programming.

For the Avalanche Level 2, we brought in Eric Knoff, who started Six Points Avalanche Education to provide field courses tailored to the way snowmobilers use avalanche terrain. He has 15+ years of professional avalanche experience, including forecasting for Gallatin National Forest Avalanche Center and the Going-to-the-Sun Road.

Best of all, the Friends of the Flathead Snowmobile Association offered scholarship reimbursements from a \$14,000 fund for every single seat in all our motorized classes this season. Huge thanks to them for putting support behind motorized avy ed!

# **41** Motorized students

# **Community Ed**

WORKSHOPS AND PRESENTATIONS THAT BUILD COMMUNITY & REFRESH, DEEPEN, AND EXPAND KNOWLEDGE

#### 11TH ANNUAL NORTHERN ROCKIES SNOW & AVALANCHE WORKSHOP 192 (DIGITAL) ATTENDEES

Kicking off the education season, NRSAW is a multi-day gathering that brings the community together every fall for presentations from avalanche experts. This year we heard from eight experts over two days. Thanks to Great Northern Bar for hosting the afterparty!

#### AVALANCHE AWARENESS SERIES 206 (IN-PERSON) ATTENDEES

During this one-hour presentation, attendees learn the Know Before You Go principles and other avalanche basics. Thanks to our hosts this season:



#### TOPICS WORKSHOPS 106 (DIGITAL) ATTENDEES

These workshops are like mini-NRSAWs, a mid-season in-depth dive on a single subject with an expert.

#### FIRESIDE CHATS: NEAR MISSES AND CLOSE CALLS—WHAT WE CAN LEARN 69 (DIGITAL) ATTENDEES

New this year, Fireside Chats are a intimate, conversational forum for open dialogue about human and avalanche factors. With skier/psychologist Dr. Sara Boilen as our facilitator, we dug into the tough decisions, tricky snow, and lessons learned from local near misses.

We could never have done this without community participants. Much gratitude to Maggie Dresser, Paul Fotter, and Burket Kniveton for sharing your stories. Many thanks as well to Kim Givler behind-thescenes!



In our final fireside chat of the season, Sara and Meg debriefed a near miss of their own with Cam.

## Education

## **11TH ANNUAL NRSAW**

#### SOCIAL MEDIA & AVALANCHE SAFETY

Three experts brought their experience and perspectives to a complex topic.

Mark Staples, Director of Utah Avalanche Center, reflected on the concept of "following," on Instagram and the skin track. Professional big mountain skier.

Parkin Costain, from Whitefish, talked about how athletes use media to model ways to think and talk about avalanche country.

Amélie Goulet-Boucher, a researcher in Pascal Haegeli's lab, presented six common social media behaviors that influence decision-making in the backcountry.

#### **BLASE REARDON, FAC DIRECTOR**

In his review of the 2020-2021 season, Blase presented key lessons learned from atypical avalanche cycles.

#### SPENCER LOGAN, FORECASTER, CAIC

Also reflecting on a historic season, Spencer dug into patterns of recreation, avalanche fatalities, and accident data.

#### KIM GIVLER, PT, DPT, CERT.DN.

In our body-focused session, Kim, a dedicated local backcountry skier and physical therapist, discussed the necessary balance between endurance, flexibility, and strength.

#### GRANT HELGESON, SENIOR FORECASTER, AVCAN

Emphasizing the ebb and flow of avalanche conditions over time, Grant shared his philosophies for conditionsfirst planning and being a student of the snowpack

#### LESLIE ATKINSON, IDAHO SNOW BIKER

A huge thanks to Leslie for sharing the story of her near miss, along with key lessons learned about technology, training, practice, and partners.

## **TOPICS WORKSHOPS**

#### **CHARLIE AVIS, ONX MAPS**

As senior product designer, Charlie knows the ins-and-outs of using mapapps for trip-planning.

#### **ERICH PEITZSCH, PHD, USGS**

Bringing together avalanche studies and climate science, Erich presented his work to create a longer historical record of major avalanche years in Northwest Montana.

#### MARK DUNDAS, FAC LEAD FORECASTER

At our only in-person workshop this season, Mark reviewed spring avalanche problems, how they differ from winter, and how to manage them. Thanks Kalispell Brewing Company and Sweet Peaks Ice Cream for hosting!

### A HUGE THANKS TO OUR HARD-WORKING NRSAW COMMITTEE!

Amy Moore | Chelaine Keyser | Dr. Erich Peitzsch | Jenny Cloutier | Lloyd Morsett | Sarah Williams | Zach Armstrong Blase Reardon | Emily Struss | Clare Menzel

# 66

I feel like I got really close to something that would really change my relationship with the mountains.

## I think it actually did.

I don't know if I can name it, other than an awareness of the consequences, and the closeness to consequences.

## The gravity of it.



BURKET KNIVETON, FIRESIDE CHATS SESSION #2 KONA RIDGE, FEBRUARY 4

## Communications HOW WE SHARE PUBLIC SAFETY INFO & OUR STORY 5:34 flatheadavalanche Total Snow Accumulation (in)

This post reached 20K

accounts

View insights

View all 5 comments cember 4, 2021

flatheadavalanche

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QP

Liked by b00tpacker and 558 others flatheadavalanche Hooray, we're back in the game!

Expect around a foot of fresh snow by Sunday morning above 6000 feet. The avalanche danger is increasing and we've got the scoop in this mornings snowpack

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C

3

Boost post

1/3

 $\square$ 

We use digital and traditional channels to...

- convey timely avalanche safety info
- direct traffic to website
- promote educational opportunities
- maintain development relationships
- build culture and community

Newsletter Subscribers	Instagram Followers	Facebook Followers	Twitter Followers	YouTube Subscribers	News Media	Radio Broadcasts x4 stations
1,571	6,886	4,255	885	232	18	125



### FLATHEADAVALANCHE.ORG

The FAC website is the primary source for communicating avalanche information to the public. The website houses all of the avalanche forecasts, observations, media, reports, and other information provided by the FAC. FOFAC owns the website and funds website maintenance and development.

Website statistics have been collected since the introduction of the new site in November 2012. The site has evolved significantly in the past decade and seen significant growth, a trend which continues today. Over the past five years, we have seen a 33% increase in unique visitors and an 18% increase in page views.

#### **KEY WEBSITE RESOURCES AND FEATURES**

A data visualization tool called Snowpack Tracker allows forecasters and public users to view trends in weather station data, avalanche activity, and danger ratings.

The FAC uses the National Avalanche Centers Avalanche Forecasting Platform to produce its products and manage media. This back-end platform platform publishes the products as a widget on our website. We can make changes to how products are created or displayed without having to restructure the website. The NAC is developing an integrated obs platform for the 2022-23 winter. FORECAST SEASON BY THE NUMBERS NOV. 10 - MAY 27

## **284,805** Total page views

**61,954** VIEWS OF Forecast pages

**1,157** MOST VIEWS ON A SINGLE DAY

## **31,723** UNIQUE VISITORS

## Communications

# **Digital Outreach**

JOINT FLATHEAD AVALANCHE ACCOUNTS COMBINE FAC AND FOFAC CONTENT, STRIKING A NATURAL BALANCE BETWEEN SAFETY INFO AND COMMUNITY DEVELOPMENT

Our audience grew 14% across all our platforms this season, with the strongest growth on Instagram, as per usual. We gained most of our new followers— 1,200—on Instagram. During the daily forecast season, we produced 917 social media products, including videos.

We saw the most dramatic growth on YouTube, with a 65% bump in subscribers. Given this growth trend as well as the increasing importance of video in social media—especially on Instagram Reels—we plan to focus more attention on this medium in future seasons.

New this year, we trialed a weekly conditions quiz via Instagram/Facebook stories. On Friday evening, we posted three questions targeting relevant snow, weather, or travel knowledge. During a seven-week pilot period, we drew 5,398 engagements and directed more users to the weekly conditions blog and video.

Our digital content steers users to our website and our courses, while engaging them with avalanche information and short learning moments. The goal of posts and videos is to form a holistic message incorporating snowpack observations into decision making and terrain selection. We also promote upcoming education, recognize sponsors, and drive merchandise sales. FORECAST SEASON BY THE NUMBERS NOV. 10 - MAY 27

**Instagram** 98,237 REACH @FLATHEADAVALANCHE

Facebook 66,972 REACH @FRIENDSOFFLATHEADAVALANCHECENTER

Twitter 104,912 IMPRESSIONS @facavalanche

YouTube 5,393 VIEWS @FLATHEADAVALANCHE

Newsletter 42% HIGHLY ENGAGED

CLICK TO SUBSCRIBE



## Communications

# News Media Coverage

## 16 STORIES FOCUSED PRIMARILY ON AVALANCHE CONDITIONS, PARTICULARLY DURING PERIODS OF HEIGHTENED DANGER. SOME HIGHLIGHTS:

#### DECEMBER 20

"We've literally gone from 0-to-60 with our snowpack and that's like 0 inches to 60 inches on the ground at a lot of mid-elevations in the last 2½-weeks," *Blase told KPAX-TV*.

#### DECEMBER 20

"Every time traveling in the mountainous terrain in the winter, (take a) shovel, beacon, probe, up-to-date equipment, not broken equipment or stuff from 10 years ago, get some newer quality equipment. Have a repair kit, extra layers, food, water, just in case something does happen, you're also able to survive the elements that the winter brings," *Cam told NBC-MONTANA*.

#### **FEBRUARY 28**

"We have a very powerful storm impacting northwest Montana right now. The storm has very unusual amounts of water and very warm air. These are not uncommon in northwest Montana. It's a classic storm pattern, it just doesn't happen very often... the primary issue with that is that melting produced by radiation and warm air at the snow surface puts liquid water in the snowpack and we get wet snow avalanches," Blase told *NBC-MONTANA*.

#### JUNE 14

"It may say June on the calendar, but in the mountains, everything says it's more like late April or early May," *Blase told NBC-MONTANA* 

#### TWO FEATURE STORIES HIGHLIGHTED HOW WE'RE GROWING AND PUSHING THE ENVELOPE:



SNOWMOBILERS FOR SAFETY



VULNERABILITY IN THE BACKCOUNTRY

# Here's what it takes FINANCES, SUPPORTERS, AND DEVELOPMENT

# **25 331**RATE INDIVIDUAL SORS DONATIONS

## CORPORATE SPONSORS

ESSENTIAL PARTNERSHIPS

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THANK YOU FOR YOUR SUPPORT!

## **Thank You Essential Partners**

# **BNSF**

#### JOHN F. STEVENS CANYON

### A PARTNER IN EVERYTHING - FROM FORECASTING AND FIELD WORK TO FUNDING AND EDUCATION

We can't thank BNSF enough for their support this season!

They are such a solid partner. In addition to their financial contribution to our program, their team of avalanche specialists also works closely with our forecast team in the field, collecting data as well as sharing information from overlapping zones. We benefit greatly from their expertise and time.

We look forward to many more seasons of collaboration with BNSF.



# **Dream Marine**

#### LIBBY, MONTANA

#### STEPPING UP FOR THE SECOND YEAR IN A ROW WITH ESSENTIAL MOTORIZED SUPPORT

This season, low inventory levels at motorized dealerships across the country put our avalanche forecast sled program at risk. Snowmachines are essential gear, so this was a significant concern.

Dream Marine stepped up for the second season in a row to support Flathead Avalanche with a sled for the 21-22 season. A HUGE thanks to them for helping our forecast team go full throttle this winter. The loaner Ski-Doo helped our educators teach more motorized avalanche courses than ever before, and our forecasting team put about 750 miles on it collecting forecast data.



## **Thank You Essential Partners**



### HELPING CONNECT OUR WINTER COMMUNITY

The support of the Whitefish Convention & Visitors Bureau helped us create spaces and resources for community education in a variety of mediums:

- Fireside Chats
- NRSAW
- New signage at popular trailheads communicate a clear message to a high volume of users. We developed a "Welcome to Avalanche Country" messaging with a focus on applying four Know Before You Go principles to the trailhead 1) Beacon On, Car to Car;
  2) Review Your Trip Plan 3) Look for Red Flags 4) Make New Friends.





## **Great Fish** Community Challenge

#### CONNECTION AND IMPACT COMBINED IN ONE POWERFUL CAMPAIGN

The Great Fish Community Challenge is the single most important fundraising event in our season.

Every fall—conveniently just before the beginning of our forecasting and education season—it connects us with our amazing user base and amplifies their impact. Matched by the Whitefish Community Foundation, individual donations take on a new meaning when run through the Great Fish. Thank you to all who participate!

Thank you as well the Foundation for facilitating such a meaningful and valuable community fundraising opportunity.

## **Thank You Agency Partners**

# NPS & Glacier Park

A formal inter-agency agreement allows GNP and FAC to support each others operations. GNP contributes significantly to FAC's annual budget. FAC provides technical assistance and education to GNP staff. In 2020-21, FAC taught a 3-day avalanche safety class to GNP Rangers that included two field days. GNP also funds a winter ranger intern program; this past winter, that ranger assisted FAC staff with fieldwork and observations, and served as an instructor for FOFAC education classes. GNP forecasters for the Going-to-the-Sun Road also provide muchneeded observations during the spring.

# Fish, Wildlife & Parks

FWP supported FAC again this season with a Recreational Trails Program grant. For the last five years, this grant has helped us pay for a large portion of our seasonal staff salaries.

# U.S. Geological Service

FAC and USGS have an in-kind partnership. FAC relies on data from three high-elevation automated weather stations maintained by the USGS (Snowslip, Sperry, and Garden Wall). FAC also supports the USGS Sperry Benchmark Glacier Mass Balance Program with expertise and field assistance.





thank you community!

## DIRECT DONATIONS

#### \$500

Erin Bodman Noah Bodman Robin Cross Steven Lefever

#### \$100-400

Alexander Corbelli Alexander Nutt Annika Silverman Charles Hlavac Chris Gotschalk Client Outreach Curt Oliveira Erik Sanders John Dickson Joshua Nielsen Lynda Montgomery Nicholas Goodwin Rachael Gifford Scott Rowley

### \$50-100

Ben Johnson Donald Lewis Donovan Sliman Gary B. Moore Kelsey Grode Kent Hamman Kristen Stuart Kyle Haugen Michael Reavis Paul Travis Sam Kavanagh Zach Armstrong

### UNDER \$50

Becky Petrashek Caroline Hill Clifford Kipp Daniel Cirenza Elizabeth Sasseman Designs Kasey Nadjadi Kristen Barbaree Lindsay Carlson Marc Sugars Matthew Williams Monica Preisendorf Patrick Fesler Trent Miller Tyler Lucas Uriah Rosenzweig Wendi Brassington Will Urbanski

### WHITEFISH COMMUNITY FOUNDATION GREAT FISH CHALLENGE

#### \$5,000

AGL Foundation

#### \$1,000-\$2,000

Dow Powell and Becky Smith-Powell Jean Agather Quinn Family Fund Richard and Lisa Steiner The Patrol Fund, Inc.

#### \$200-500

Alan Myers-Davis and Frances Montanye Andrea Goodrich Andrew and Gina King Bavne Family Fund Dan and Ann Fagre Don and Colleen Scharfe Ed and Kelly Ingham Blair Eli Judge and Annika Silverman Felicia Ennis Glacier Guides and Montana Raft James and Catherine Heitel Foundation Janet Mayo Kim Givler Larry and Val Parsons Michael and Lindsey Hromadka Morsett Whitefish Lake Services **Richard Gordon and Cheryl Watkins Rolland Andrews** Seth Carbonari Spring Brook Ranch Fund Tamarack Foundation Inc. Timothy Strand and Sukey Pfirman Wheeler, Scott and Jane

## \$75-150

Adam and Aubrev Clark Allyson Hakala Bank of America Charitable Gift Fund Beth Sobba **Bill Sugars** Brian and Heidi Miller Charles and Linda Maetzold Cole Schneider and Maggie Doherty David Grady and Linda Engh-Grady Don Lewis Gary and Annell Danczyk Jeremy Rossman Jerry and Jennifer Croskrey Jordan Real Estate Joseph and Deanne Sramek Judah and Tanya Gersh Kenny Gasch Marc and Kelly O'Brien Matt and Sadie Baldwin Mindful Designs, Inc Noah and Erin Bodman North Valley Hospital Roland Frey Ronald and Katherine Bachrach Stan and Liz Makman Stephanie Sunshine Superior Specialty Pharmacy of Montana Sydney Lillard and Karen Perser Terry Knupp The GoodWood Companee The Towne Printer Will and Leslie Hunt

### UNDER \$50

Aidan Myhre Amanda Wilson Ben and Jennifer Osburn Ben Johnson Becca Wheeler Brandon and Kathryn French Brian and Lyndsay Schott Brigid Fray Burket and Claire Kniveton Carl and Kellsey Perkins Chantel McCormick Charles Cameron and Vita Wright Courtney Moch Daniel Moore Danielle Hobbs David and Heidi Hust David Marx David Streeter Doug and Lizzy Muir Doug Griesel Elise Anderes Gerald Askevold Gordon Johnson Grant Hughes Heidi Van Everen lan and Antonia Dennis Jane Kollmeyer Jennifer Parsons Jenny Brand Jenny Cloutier Jerry Lundgren Jim and Becky Lang John Gangemi and Robin Bissell Josie Bestwick Kate Atha Katie Plett Keith Meehan Kim Ullman Larry and Molly Bruce Lindsay Carlson Louis Schmidt Madison Grady Marcie Jackson Martha Hunt Meg Killen Megan Chaisson Michael and Kristi Barham Nathan and Betsy Russell Patrick Muri Paul Fotter Peter Francisco Rebecca Powell **Richard Hipwell** Roderick Hines Rose Grant Scott and Caroline Lawhead Sheena Pate The Cuisine Machine Last Chair Kitchen & Bar Thomas, William Tim and Hilary Shaw Tobin and Molly Hoppes Tom and Sue Harding William Urbanski Will and Bonnie Smith William and Catherine Love Zachary Miller and Grete Gansauer

# Whitefish Mountain Resort

## A WORLD-CLASS VENUE FOR AVALANCHE EDUCATION

Thank you for helping us host

- Partner Rescue
- Intro to Avalanches

KTOVO

- Avalanche Level 1
- Youth Education



EST 1047

## Finances

# **FAC Season Financials**

### THE FLATHEAD AVALANCHE CENTER IS FUNDED THROUGH FEDERAL DOLLARS, PUBLIC AND PRIVATE GRANTS, AND COMMUNITY PARTNERS

The Flathead National Forest (FNF), U.S. Forest Service Region 1, Glacier National Park (GNP), and the Montana Department of Fish Wildlife and Parks Recreation Trails Program (RTP) provide most of the funding for the FAC. Funding from the FNF is the primary source for forecaster wages; the RTP grant and an interagency agreement with GNP supplement that. The Region 1 contribution funds discretionary expenses, like weather station and snowmobile maintenance. The FNF also provides significant operational support outside of FAC's budget including office space, administrative and vehicle support, and resources from other USFS programs.

As a 501(c)3 organization, FOFAC leverages funding through grants, private donations, sponsorships, events, and other fundraising opportunities. FOFAC also financially supports the avalanche center by absorbing the costs of the website, education programming, and various purchases and travel expenses.

## 2021-2022 FUNDING CONTRIBUTIONS



## Finances

## 2021-2022 NON-SALARY EXPENDITURES

\$8,000 Website upgrades \$2,000

TRAINING & TRAVEL

\$2,900 Fofac snowmobile & trailer agreement

**\$2,000** Glaciernet agreement

\$2,000 SNOW SAFETY & FIELD EQUIP

\$900 IN-REACH SUBSCRIPTION

\$200 SNOWMOBILE, TRAILER REPAIRS/MAINT.

\$200 Office supplies

\$2,000 WEATHER STATION MAINTENANCE CONTRACT

## Finances

# **FOFAC Contributions**

## WE GET BY WITH A LITTLE HELP FROM OUR FRIENDS

In the last three years, we have almost doubled our annual budget to support our community's thirst for our programs and services. Growing to three core employees, plus a suite of local instructors, staffing is one of our top expenses. Neck and neck is our support of the avalanche Center through direct cash support, snowmachines, the website, micro-purchases, and the weather station network. When you support our mission, you support the following program categories:

<b>Education Programs</b>	<b>FAC Support</b>
\$35,000 ANNUALLY *	\$25-40,000 ANNUALLY
Youth, adult, motorized, human-	Website, snowmachines, field
powered, field, and classroom	supplies, operations support, and
there's something for everyone!	more
Weather Ctations	
Weather Stations	<b>Staff Time</b>
\$25,00 NEW   \$5,000+ REPAIRS	\$55-65,000 ANNUALLY*

## **FOFAC Finances**

# Development

## MAINTAINING AND GROWING FLATHEAD AVALANCHE PROGRAMS IS A MATTER OF PUBLIC SAFETY

Community support has grown steadily over the last few years, but we are at a crux. With so much growth in the Flathead Valley and in winter sports, there is an uptick in demand for our avalanche education programming and forecast product. We need amplified development to meet the challenges and opportunities of this growth.



## TOTAL ANNUAL FUNDRAISING GOAL APPROX. \$130,000

## GRANTWRITING

Granting partners primarily focus on a specific piece of our work like a communications campaign or a weather station. This frees up our community support for the core of our mission.

## 22%

## CORPORATE SPONSORSHIPS

We could not do any of this without the support from our community and national sponsors. With granting going toward focused areas of our work, our sponsorship dollars directly benefit our classes and organizational operations.



## INDIVIDUALS

There are three main areas we engage with individual donors: the Great Fish Challenge, merchandise, and online or mailed-in donations. It might seem like a drop in the bucket but these donations play a huge role in our success.

## 8%

## STRATEGIC PARTNERSHIPS WITH NONPROFIT AND PROGRAM PARTNERS

Why go it alone when you could work with other awesome groups and people to amplify your impact? These partnerships are priceless. This is another area of focus for us as we seek to amplify our impact on the community.

## DEVELOPMENT

Fundraising season is upon us. We are rounding corner on the grant writing, and will soon our sponsorship make requests for next winter. With revised levels and benefits, now is a great time to sign up as season sponsor or support as an individual donor. Thanks in advance for your support!

## EDUCATION

Our calendar is mapped out and we're already excited for next season. Many things will stay the same, but we do have some exciting changes on the horizon. We're excited to launch a State of the Snowpack series, hosted by local libationaries every other Friday starting in December. A forecaster will present for 30-40 mins on recent trends in the snowpack, then open the floor for audience questions and discussion.

## FORECASTING

FAC plans similar а forecasting schedule for winter. next early December to early April. At a minimum, we'll publish products each day WMR is open, because of the to easy access avalanche terrain from the resort. If conditions warrant, we'll expand that schedule. A new weather station in the Whitefish Range (Details soon!) will improve our picture of conditions there. And a fifth forecaster will allow staff to conduct more fieldwork and regularly less-traveled reach corners of the forecast region.



FLATHEADAVALANCHE.ORG