

# Crowdsourcing Alaska Trail Information

**Presenter: Becky Wilson, Resource Data**

Alaska GeoSummit 2023



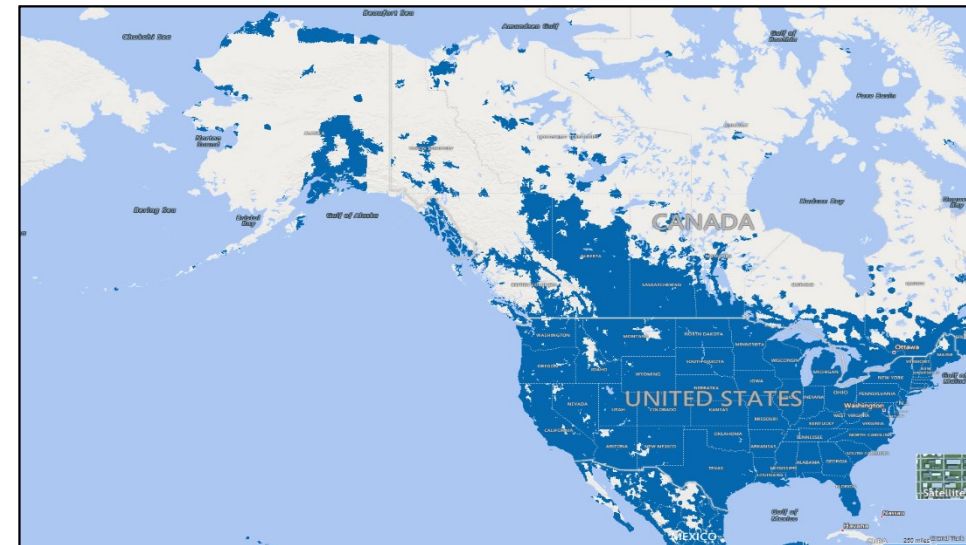
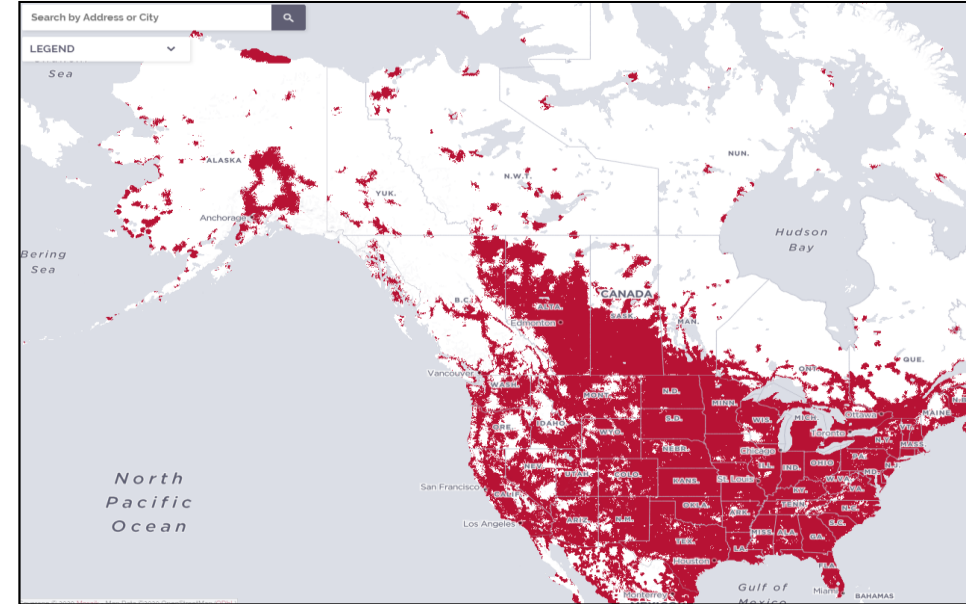
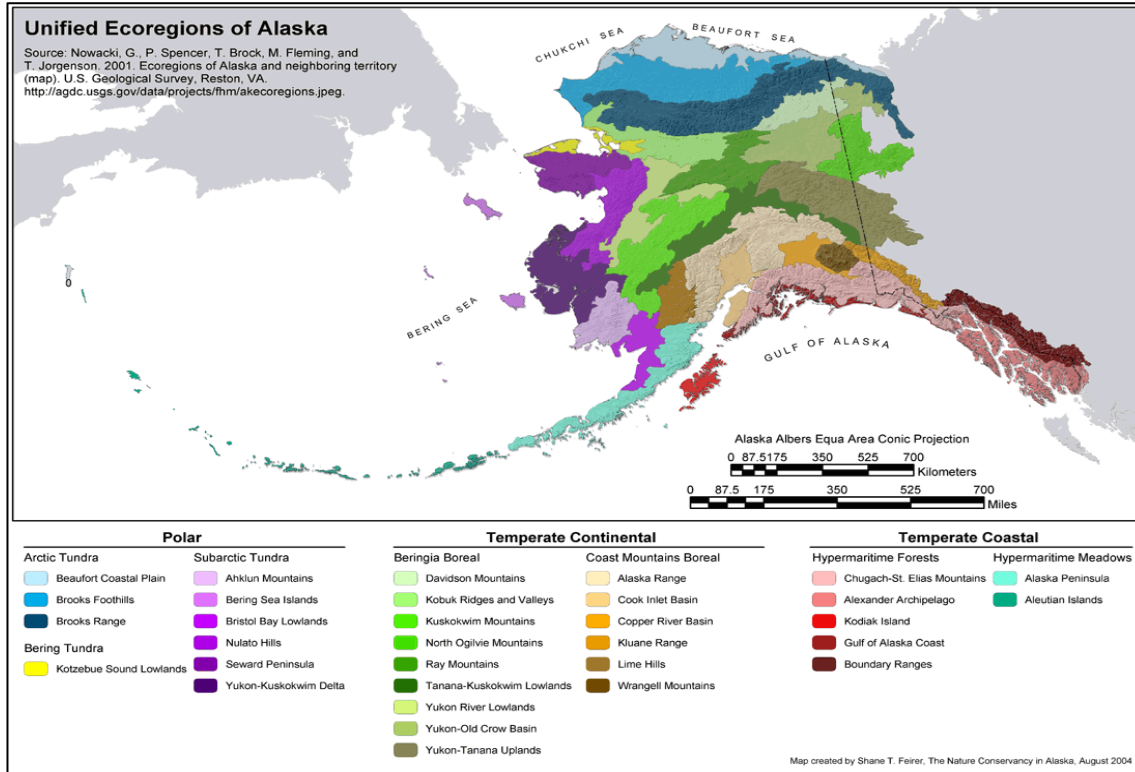


# Motivation

Unique challenges and risks of hiking in Alaska



# Challenges



Figures: (Above) Alaska's ecoregions. Source: Alaska Department of Fish and Game 2004. (Right) Maps showing a comparison of cellular coverage for Alaska and the lower 48 contiguous states from GCI [top (Source: GCI n.d.)] and AT&T [bottom (Source: AT&T n.d.)]

# Existing Applications

Alaska Hike Search



TRAILMAPPER.ORG

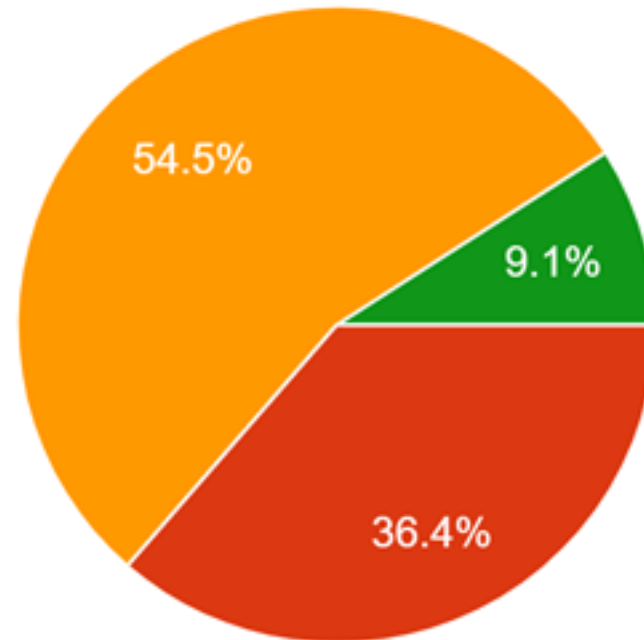


# Considerations

- **Functionality**
- **Detail**

How would you describe your skills towards technology? Select the best option

11 responses



- Beginner user: avoids technology, often needs help.
- Intermediate: Generally understands most technology. Self-reliant.
- Advanced: Works with technology as a profession. Developer.
- Advanced in work life; I use less-than-average tech in my personal life

Based on initial user survey (n=11)



# Data Sources

SOURCE	DATA AVAILABLE	DATA DOWNLOAD TYPE	DATE ACCESSED
Alaska Department of Natural Resources	Trail (ln), Trail Features (pt), Park Boundaries (poly)	Shapefiles	December 2019
US Forest Service	Trail (ln), Forest Service boundaries (poly)	Geodatabase	December 2019
Municipality of Anchorage	Trail (ln), Trailheads (pt) Park Boundaries (poly)	Portal Item (.pitem)	December 2019
National Park Service	Trail (ln) and Park Boundaries (poly)	Portal Item (.pitem)	December 2019
US Fish and Wildlife Service	Trail (ln) and Refuge boundaries (poly)	REST URL	December 2019
AllTrails	Trail (ln)	GPX	February 2020

# Formatting and Compilation

# Attribute Fields

Left: Trail lines - Below (left to right): Trailheads, Trail Features, and Boundaries

Field Name	Alias	Data Type
OBJECTID	OBJECTID	Object ID
Shape	Shape	Geometry
TRAIL_NAME	Trail Name	Text
LENGTH_MI	Length (mi)	Double
ROUTE_TYPE	Route Type	Text
TRAIL_TYPE	Trail Type	Text
DIFFICULTY	Difficulty	Text
TRAILHEAD	Trailhead	Text
TRAIL_SYS	Trail System	Text
MANAG_SYS	Park System	Text
AHS_LINK	AHS Link	Text
ALT_NAME	Alternate Name	Text
Z_Min	Min Elev (m)	Double
Z_Max	Max Elev (m)	Double
Min_Slope	Min Slope	Double
Max_Slope	Max Slope	Double
Avg_Slope	Avg Slope	Double
ElevChange	Elevation Change (m)	Double
Z_Min_Ft	Min Elev (ft)	Double
Z_Max_Ft	Max Elev (ft)	Double
ElevChangeFt	Elevation Change (ft)	Double
Entity	Entity	Long
DifficultyCalc	Difficulty Score	Long
Shape_Length	Shape_Length	Double

Field Name	Alias	Data Type
OBJECTID	OBJECTID	Object ID
SHAPE	SHAPE	Geometry
TRLHEAD_NAME	Trailhead Name	Text
Entity	Entity	Text
TRL_SYS	Trail System	Text
MNG_SYS	Park System	Text

Field Name	Alias	Data Type
OBJECTID	FID	Object ID
Shape	Shape	Geometry
FEATURE	Feature	Text
FTRTYP	Feature Type	Text
FEATURE_ID	Feature ID	Double
PHOTO	Photo	Text
RuleID	RuleID	Long
Override	Override	Blob

Field Name	Alias	Data Type
OBJECTID	OBJECTID	Object ID
Shape	Shape	Geometry
MNG_Entity	Entity	Long
Boundary	Park System	Text
SUB_UNIT	Sub-Unit	Text
Shape_Length	Shape_Length	Double
Shape_Area	Shape_Area	Double



# Difficulty

Classification	Numerical Rating	Average Pace
Easiest	Less than 50	1.5 mph
Moderate	50-100	1.4 mph
Moderately Strenuous	100-150	1.3 mph
Strenuous	150-200	1.2 mph
Very Strenuous	Greater than 200	≤1.2 mph

Source: National Park Service 2017

$$\sqrt{(\text{elevation gain (ft)} \times 2 \times \text{distance (mi)})}$$

# Hazards Feature Class

Field Name	Alias	Data Type
OBJECTID	OBJECTID	Object ID
HazardType	Hazard Type	Text
Date	Date Observed	Date
Comment	Comment	Text
Location	Location	Text
SHAPE	SHAPE	Geometry

## Attribute Fields (top) Table (below)

HazardType	Date Observed	Comment	Location
Bear(s) sighting	2/18/2020 4:29:54 AM	Test -update	Test
Moose sighting	2/25/2020 10:06:43 PM	Da Moose was swimming in d...	The Dome
Trail hazard	2/21/2020 12:57:19 AM	Sheer Cliff Dropoff	<Null>
Bear(s) sighting	3/19/2020 2:44:18 AM	Two sleepy black bears on trail	West side of trail at the top of hangi...
Trail hazard	3/19/2020 2:46:12 AM	Outhouses locked	East Fork Eagle River Trail Head
Bear(s) sighting	3/26/2020 12:35:39 AM	Brown bear sighting	North end of Hidden Lake
Bear(s) sighting	3/30/2020 4:06:08 AM	Mobile testing	Mobile testing
Bear(s) sighting	3/29/2020 11:00:00 PM	Black Bear Sow with cubs	West side of trail after first picnic ta...
Moose sighting	4/8/2020 6:41:07 PM	<Null>	<Null>

### Drawing Info:

#### Renderer:

Unique Value Renderer:

Field 1: HazardType

Field 2: null

Field 3: null




Field Delimiter: ,

Default Symbol:

N/A

Default Label: null

UniqueValueInfos:

- Value: Bear Activity  
Label: Bear(s) sighting  
Description:  
Symbol:  

- Value: Moose Activity  
Label: Moose sighting  
Description:  
Symbol:  

- Value: Warning  
Label: Trail hazard  
Description:  
Symbol:  


Transparency: 0

Labeling Info:

### Advanced Query Capabilities:

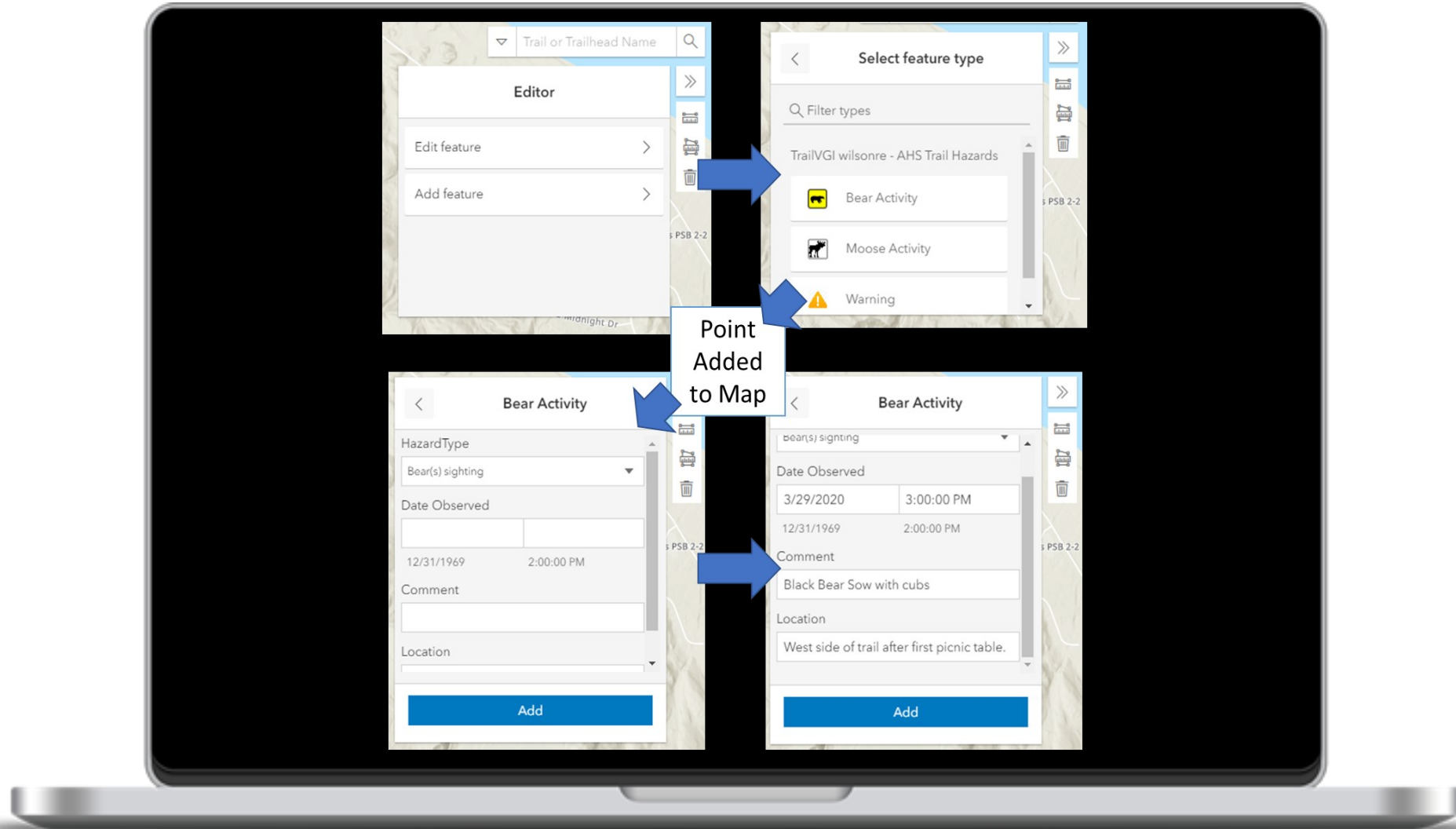
Supports Statistics: true  
Supports OrderBy: true  
Supports Distinct: true  
Supports Pagination: true  
Supports TrueCurve: true  
Supports Returning Query Extent: true  
Supports Query With Distance: true  
Supports Sql Expression: true  
Supports Query With ResultType: true  
Supports Returning Geometry Centroid: false

HasZ: false

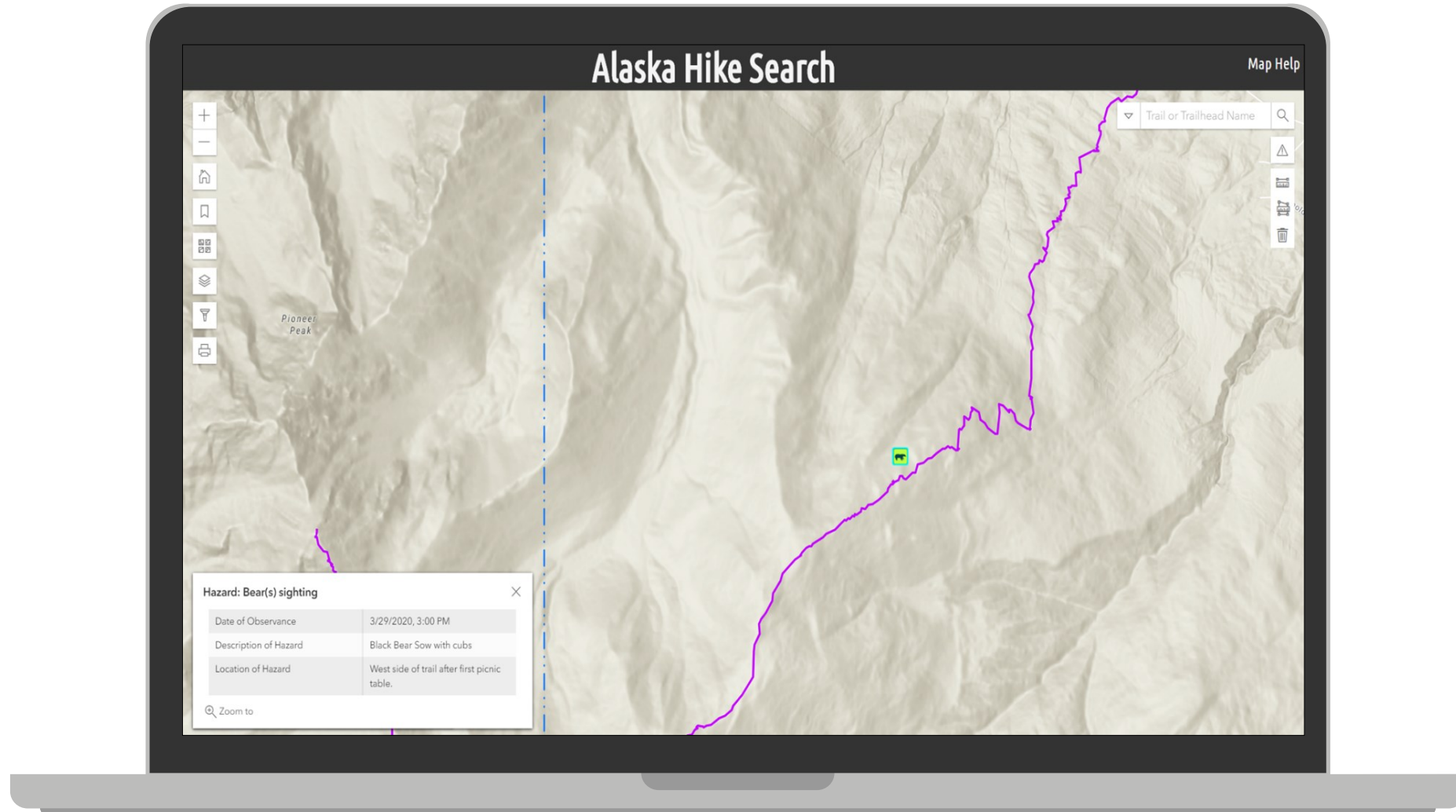
HasM: false

**Has Attachments: true**

# Trail Hazard User Input Experience



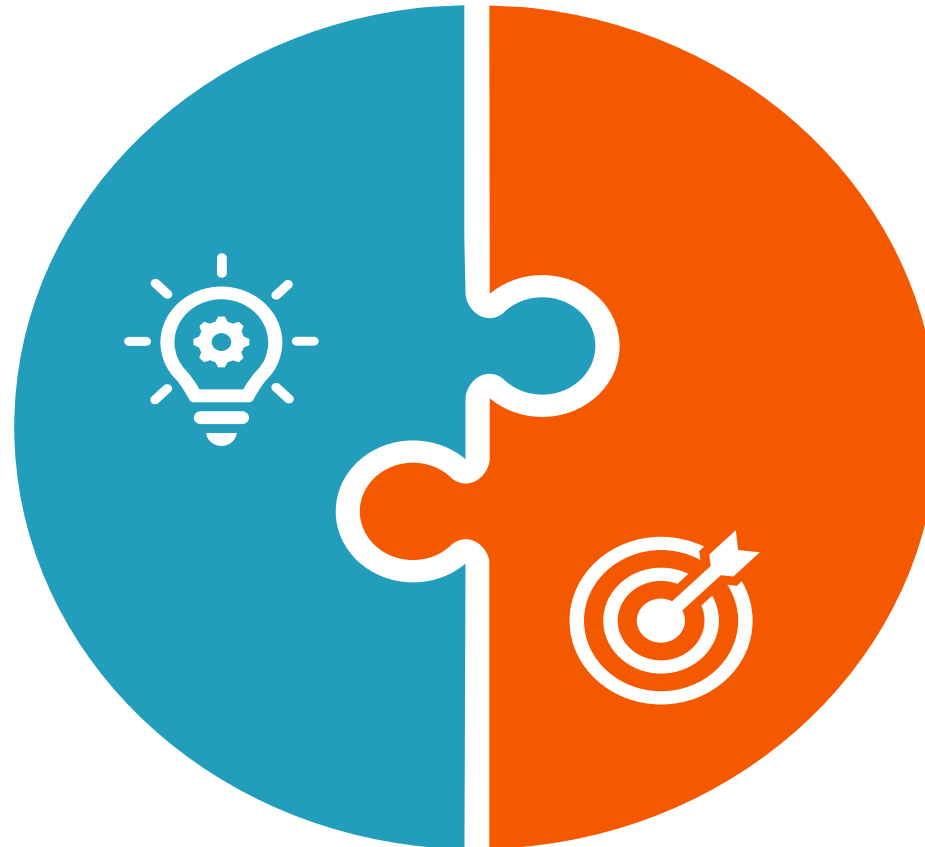
# Map With Output Feature



# Successes and Challenges

## Successes

- Application



## Challenges

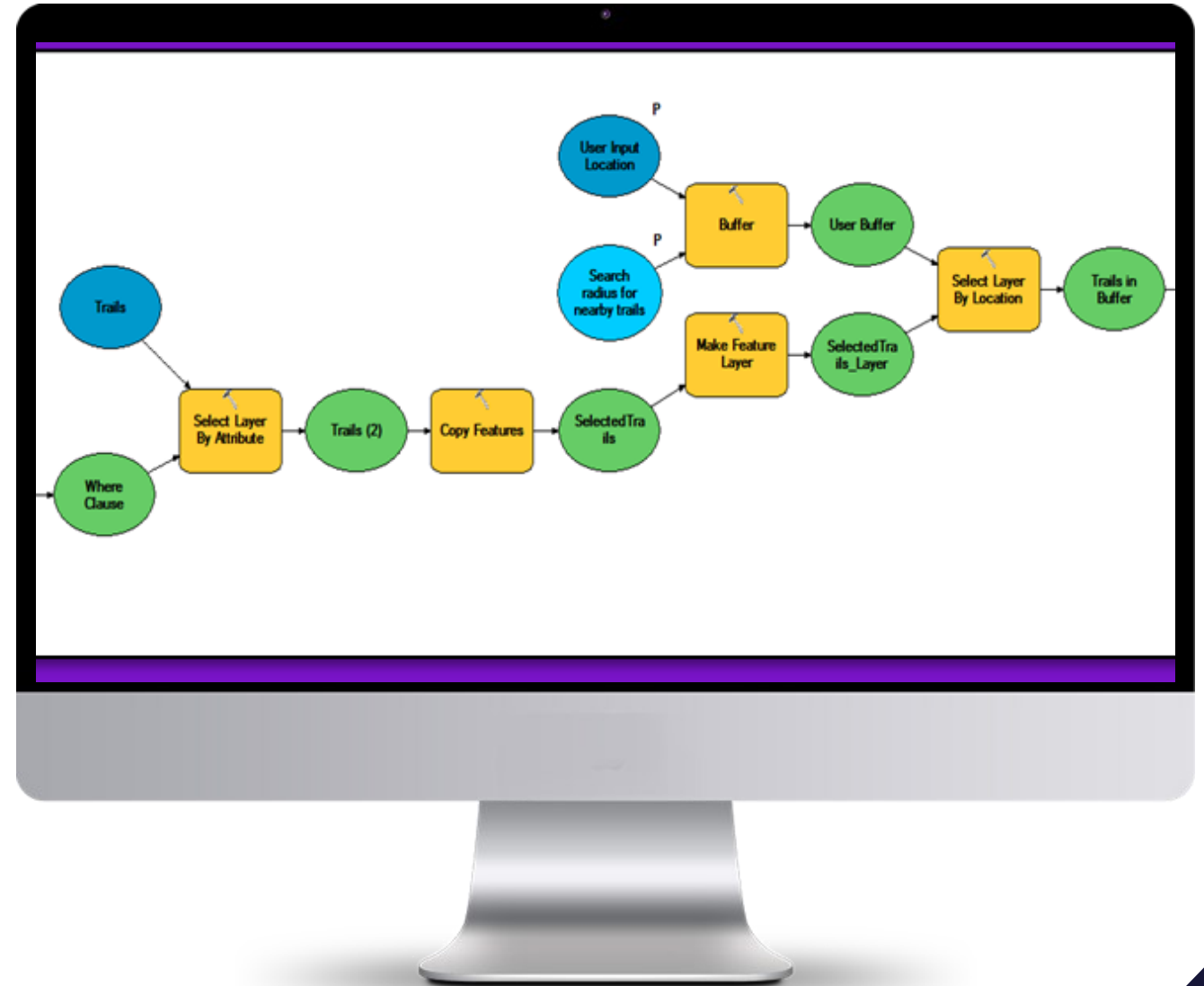
- Measurement tool
- Coded Domains
- Accuracy of VGI points
- Editor limitations

### Known Limitations

The Editor widget is not yet at full parity with the functionality provided in the 3.x [Editor](#) widget. For example, there is currently no support for editing attachments or related feature attributes. There is also currently no support for editing feature layers derived from feature collections and is currently only supported when working with [MapViews](#).

# Future Work and Improvements

- Expanding Trails database
- Advanced Search
- “Add Trail Hazards” functionality and improvements
- VGI Trail Features
  - Benches
  - Signs
  - Water Crossings
  - Cairns



# Conclusion

## Implications for use with Park and Wildlife Management

- Trail Conditions
- Nuisance Animals

## Increased VGI functionality

- Trail hazards
- Trail features
- Submit missing trails



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- Free Resource Data **Camping Mugs**
- Free sparkling waters



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