Pacific Northwest SOTA Newsletter

October-November-December 2024

Photo by Amy-AG7GP of Mount Shasta-W6/CN-001 from Ball Mountain-W6/NE-036

UPCOMING EVENT – Besides **BONUS SEASON** that starts in most of the Northwest on December First, Ryan-W7RMR will be hosting an **Oregon North Coast Range Summit-to-Summit Party** on November 16th – starting at 11am (1900z). Post an alert if you'll be joining the Party!

UPCOMING EVENT "Zulu New Year" – Pick out a summit and mark your calendars (and clocks) for "Zulu New Year" when you can get points in both 2024 and 2025 around and about 4pm Pacific Time (or 5pm for our eastern associations). Allow enough time in 2024 to make four QSOs, and then do it again after 0000z. Post an alert with "Zulu New Year" in the comment field. A few years ago, we had about 30 folks across the region participate. Have a good headlamp and warm clothes if you venture out.

WHAT'S NEW? Snow Upgrade for the SOTA WeatherBot!
The SOTA WeatherBot has delivered 10,000+ weather forecasts since going online in May 2023. As a quick recap, it's a free service which emails activators a summit-specific weather forecast 24 hours in advance of activation time - assuming they are subscribed and have posted an alert on SOTAwatch3. The forecast summarizes terrestrial and space weather conditions for the 8+/- hours spanning the posted activation time. Forecast data is provided by the National Weather Service (NWS) and the National Oceanic and Atmospheric Administration (NOAA).

The forecast indicates whether snowfall can be expected during the activation. But what about existing snow depth? Will the hike to the summit be an easy walk or a post-holing nightmare? Bring the gaiters, micro-spikes, or snowshoes? The WeatherBot has recently been updated to help answer these questions. But to do that, it needs snow depth data. Where to get it?

Some of you may be familiar with the Snow Telemetry Network (SNOTEL) maintained by the National Resources Conservation Service (NRCS). The network comprises 900+ automated data collection sites across the western United States. The sites are typically in remote, high-elevation watersheds and send their measurements to data collection

centers in Idaho and Utah via, drum roll please, VHF meteor scatter. Sounds good, but this isn't sufficient for the WeatherBot as it doesn't cover the entire U.S. and is only useful if your SOTA summit happens to also be a SNOTEL site.

There's also the Citizens Weather Observer Program (CWOP) with 13,000+ stations worldwide contributing weather data. This too has an interesting amateur radio connection in that CWOP was originally created by amateur radio operators to share weather information via packet radio. Nowadays, the internet, APRS, and other means are used to submit weather observations to the NOAA Meteorological Assimilation Data Ingest System (MADIS). There the data is merged with other government and privately sourced meteorological data, coerced into a common format, and finally made available to the public. Sounds good as well, but few sites provide snow depth measurements.
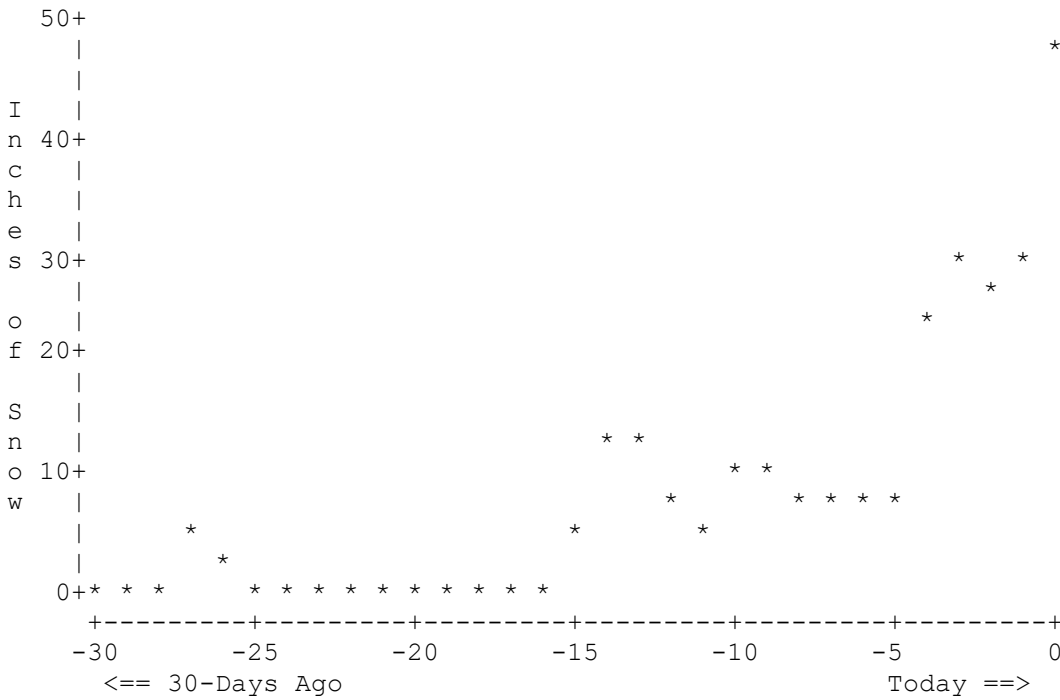
Then there's the Snow Data Assimilation System (SNODAS) from the National Snow Ice and Data Center (NSIDC). This system ingests daily ground-based, airborne, and satellite snow observations for the continental U.S. and portions of Alaska and Canada. The observations are fed into a sophisticated model which outputs a variety of snowpack related variables at an hourly time resolution and a 1-km square spatial resolution. The resulting data are typically used by hydrological experts to predict, for example, how much snowmelt there will be in a particular watershed. But you can probably see where this is going: use the lat/lon of a summit to identify the corresponding 1-km square, then plug in the activation time to get a snow depth estimate. Trivial!

Well, not really. For one, the data sets are ginormous. Consider that there are 23,239,185 1-km squares in the coverage area multiplied by a dozen snow variables for every hour of every day, 365 days per year. And extracting the "efficiently encoded" data would make a good computer science curriculum exam question. Lucky for you, the WeatherBot distills all of this down to two (hopefully) useful charts.

The first is a tabular snow depth history showing minimum, average, and maximum snow depths by month for the past three years. The example below is for Oregon's Larch Mountain, W7O/WV-062, with all values in inches. Values for the current month are to-date only. Keep in mind that these values are estimates derived from satellite imagery, extrapolations from regional physical measurements, and other data. So, a reasonable interpretation would be that Larch Mountain is reliably snow free in September, can be expected to have from 1' to 4' of snow in February, and October is iffy leaning towards ankle level snow.

```
-----       ----------      ----------      ----------
Month          2022            2023            2024
-----       ----------      ----------      ----------
            min avg max     min avg max     min avg max
            --- --- ---     --- --- ---     --- --- ---
  Jan        26  39  54      10  19  24       0  27  48
  Feb        27  36  44      19  28  47      12  21  35
  Mar        25  33  39      47  55  70      30  38  47
  Apr        24  41  53      55  72  82      14  27  37
  May        11  31  45       0  25  53       0   8  25
  Jun         0   1   8       0   0   0       0   0   0
  Jul         0   0   0       0   0   0       0   0   0
  Aug         0   0   0       0   0   0       0   0   0
  Sep         0   0   0       0   0   0       0   0   0
  Oct         0   1   1       0   1   4       0   1   1
  Nov         0   8  14       0   1   1       3   3   3
  Dec        17  27  37       0   2   9
```

The second representation is a snow depth history for the last 30 days. The example below is for Mount Hood, W7O/CN-001, with the usual caveats about estimates being valid. Past proceeds to present from left to right. This chart was generated on 11/1/24 so a reasonable interpretation would be that Mount Hood was mostly snow free until the middle of October, and that in the last two weeks snowfall has begun in earnest resulting in more than 4' of snowpack. (FWIW, the three-year snow depth chart for W7O/CN-001 tops out at 218", or 18 feet.) The chart is rendered in simple ASCII graphics so that lightweight, plaintext-only mail clients on tenuous cell connections can still receive something useful in the field.

```
  50+
I    |
n  40+
c    |
h    |
e    |                                                                    *
s  30+                                                         *     *
     |                                                            *
o    |                                                      *
f  20+
     |
S    |
n    |                                    *   *
o  10+                                           *   *
w    |                                 *              *   *   *   *
     |                *                     *           *
     |                    *                                  *
   0+*   *   *          *   *   *   *   *   *   *   *
     +---------+---------+---------+---------+---------+---------+
   -30       -25       -20       -15       -10        -5         0
       <== 30-Days Ago                            Today ==>
```

These charts are included in a WeatherBot forecast only if the 30-day chart shows a history of snow. So, let's be clear on what is prediction versus history. The first part of a WeatherBot email is a true weather prediction for the 8+/- hours spanning the posted activation time. And as such it may predict snowfall. But the snow depth charts are strictly historical and, as is often noted in investing, past performance is no guarantee of future results. Plan accordingly – be prepared! For registration see the FAQ at https://sotaweatherbot.wordpress.com/ or contact the author at sotawxbot@gmail.com.

Update on Snowshoe Activations

Activating in the winter by snowshoe is both a treat and a challenge – here are some summits to consider:

Oregon	Washington	Idaho	Montana	British Columbia
Peak 4620 W7O/CN-090	Sky Mountain W7W/KG-054	Peak 5779 W7I/SI-217	Granite Butte W7M/CL-085	Mount Harper VE7/TN-018
Peak 4925 W7O/CN-086	Nason Ridge W7W/CH-204	Howard Mtn W7I/SI-215	Crater Mtn W7M/CL-112	Hollyburn VE7/GV-011
Mud Creek Ridge W7O/CN-062	Hex Mountain W7W/CW-105	Chinese Peak W7I/SI-177	Peak 5940 W7M/CL-161	Black Mtn VE7/GV-013
Clear Lake Butte W7O/CN-w	Hurricane Hill W7W/NO-086	Scout Mtn W7I/SI-037	Peak 7215 W7M/CL-105	Mt. Strachan VE7/GV-012
Tumalo Mtn W7O/CM-011	Old Pass Hill W7W/CW-071	Shafer Butte W7I/BC-064	University Mtn W7M/LM-145	Zoa Peak VE7/FV-023
PEAK 6001 W7O/CN-078	Red Mountain W7W/LC-036	Pike Mountain W7I/CI-086	Strawberry Butte W7M/HB-128	Cartmell Peak VE7/FV-149
Barlow Ridge W7O/CN-028	Dog Mountain W7W/LC-119	Kimama Butte W7I/CI-139		Windy Joe VE7/OS-010
Tom Dick Harry Mtn W7O/CN-032	Mt. Spokane W7W/WE-006	Don Benchmark W7I/SR-132		Hill 60 Ridge VE7/CV-022
Lava Butte W7O/CE-188	Bells Mountain W7W/LC-136	Peak 8762 W7I/CI-060		Mt. Klaudt VE7/FV-020
Larch Mountain W7O/WV-062	Larch Mountain W7W/LC-103	Peak 6787 W7I/CI-118		See others below

In BC, Gabor-VE7JH mentioned two additional unnamed peaks for snowshoe potential: VE7/CV-067 and VE7/CV-063. Both have paved roads to the start of the trail so can be done by a sedan and are pretty much guaranteed to require snowshoes in the winter. Also to consider is Mt. Brenton-VE7/CV-010 that has logging road access and is a popular area in winter. It hosts the VE7AQW repeater.

Bruce-VA7SGY also listed nine other potential snowshoe activations starting with Slollicum Peak-VE7/FV-034 and its close unnamed neighbour VE7/FV-514. These will be challenging snowshoes because the trails are steep and will probably not be broken.

In the Coquihalla Summit Recreation area, beyond Zoa Peak, snowshoers can access the unnamed VE7/FV-510 after a relatively easy snowshoe. There is also Iago Peak-VE7/FV-471. The Flatiron-VE7/FV/414 is accessible to the dedicated snowshoer but would be a tough day trip with a steep climb in the snow.

The Kamloops area has a number of four-point peaks, all with winter bonus, all able to be snowshoed – Sugarloaf Hill-VE7/TN-011, the previously mentioned Harper Mountain, Mount Wheeler-VE7/TN-021, Opax Hill-VE7/TN-020 and Mount Lolo-VE7/TN-023. Bruce wrote an excellent piece on safe winter activations in a previous newsletter–find it here.

APRS Spotting with the Mobilinkd 4 TNC by Jeff-WJ7V
SOTA ops all have their favorite method of spotting when they are on summit. Many CW ops prefer RBN, others use SMS, and we have many newer methods like SOTAmāt that leverage FT8 and the RBN network. Some apps like SOTA Goat leverage the cellular data networks for spotting. One thing is clear however: having more than one method is crucial since propagation conditions can vary, SMS availability can be spotty or non-existent, and RBN and data networks might be totally unavailable.

APRS is still a very valid approach in many areas. But if you don't already have a radio capable of APRS, the cost can seem prohibitive. HTs from Kenwood and Yaesu that are capable of APRS can run $450 and up. So…how about using your existing 2m HT with an affordable APRS add-on?

Enter the Mobilinkd TNC
Mobilinkd is a line of dongle sized devices that provide this APRS and packet capability in a much smaller form factor than traditional APRS approaches. In addition, most of us hams have several 2m HTs lying around, just looking for a second life. The beauty of the Mobilinkd TNC is that it leverages the native computer capabilities in your mobile phone with Bluetooth to provide a much more usable frontend for doing APRS (or other packet applications like Winlink) than traditional HTs offer.

The device is essentially an APRS modem with a KISS TNC built in and Bluetooth connectivity. The device charges via USB-C. Mobilinkd provides a configuration app for your mobile device that allows you to set internal packet parameters. Typically, this needs to be done once for your target radio and then never again. Mobilinkd also sells adapter cables to go from the TRRS jack on the device to your radio's external mic and speaker jacks. Nearly all of the common HT manufacturers are supported.

With your radio, open the squelch, connect the cable and power up the Mobilinkd. You can then use your phone via Bluetooth to connect to the Mobilinkd and you are nearly there!

Several APRS apps are available for mobile devices and these provide several useful services. APRS.fi is a good one, providing APRS messaging, APRS mapping, beaconing and even acting as an APRS iGATE when internet is available.

Now that you have APRS, what can you do?

Well, the most obvious thing is to spot that you are on summit and QRV. One of the services available on APRS is the APRS2SOTA service, available by sending a message to that address. An APRS iGate in your local area can receive these messages and forward them to the service to spot your activation. You can enter a call sign, frequency, mode, summit, and a comment. Below is an example from a recent outing:

W7o/nc-087 28.332 SSB wj7v

2024-10-01 16:02:37 PDT – Delivered (1/6)

Spotted: WJ7V on W7O/NC-087 28.332 SSB

TA 2024-10-01 16:02:46 PDT – RX via TNC: 1 – RX via Net: 1

As one can see, the character case doesn't matter. The gateway is pretty flexible at parsing the supplied data. You will usually get a confirmation back that you were spotted, which is reassuring. Now just kick back and let the chasers roll in! To use APRS2SOTA, check out the website below: https://www.sotaspots.co.uk/Aprs2Sota_Info.php

NOTE: The APRS2SOTA service requires the operator to sign up for the service before using it, so be sure to read the short docs before using.

Another frequently used option is the ability to get a local weather forecast for your area using your GPS coordinates or location name. WXBOT provides this service: https://sites.google.com/site/ki6wjp/wxbot

The unit runs around $150 and can also be used for Winlink, general packet work and M17. Check it out at https://store.mobilinkd.com/products/mobilinkd-tnc4

2024 Central Oregon Summit-to-Summit Party
by Chris-W7MTB
On October 12th of this year, Randi-N7OLE and I hosted the 3rd Annual Central Oregon S2S party. This year we chose to base our excursion from the Skull Hollow 💀 Campground in the Crooked River National Grassland. The Grassland is located just to the north of Smith Rock State Park, northeast of Terrebonne, southwest of Madras, and northwest of Prineville. There are seven SOTA summits within its boundaries and a plethora of others within reach on 2M FM, which made it an ideal locale for our party.

I arrived at the campground on the afternoon of October 11th and found a large double site with some shade and a couple of tables around a nice fire ring which would serve

as a nice gathering spot after the party on Saturday. Not long after, Jeff-WJ7V arrived, followed by Guy-N7UN, Amy-KC7JNU and her partner, William-KV2B and later…Katherine-KK7IUD and KC-K1ZMA. We set up our propane fire pit and got to know William as we had our dinner before retiring for the night.
 The next morning after coffee and a light breakfast we all dispersed for our chosen summits. Randi and I had chosen to hit up Haystack Butte, the only summit in the Grasslands I hadn't done. Fortunately, I had scouted the area the day prior and figured out that my planned route to get to the base of the butte was closed to motorized vehicles so we had to start at a different spot. I located the highest spot that we could get to in the Bronco which

was fortunately also a large open area where we could park. Much to my surprise, there was an old double track that turned into a very well-maintained single-track trail all the way to the top, making this an unexpectedly pleasant hike. See my blog post for more details on that summit.

Once we found a reasonably flat and shaded spot for the dogs to rest in the activation zone, I set up the Buddipole J-Pole configuration and hooked it up to the 50W Mobile rig I use for portable Net Control. We had over 20 operators on 12 different summits from as far away as Southern Washington all the way to Mt. Bachelor. Using the directed net we were able to knock out the 2m FM S2S QSO's in short order and turn folks over to working HF if they desired. I didn't get a total QSO count but everyone had a bountiful haul except the guys up on Grizzly Mountain-W7O/CE-135, where the RFI prevented them hearing anyone. A few outside of "Central Oregon" joined in – Bill-WJ7WJ, Dave-N7LKL, Kathleen-K7KER, Roland-K7FOP and Tyler-ND7Y. Another surprise activator on Tom, Dick and Harry-W7O/CN-032 was Mark-WA7MPC, who was unaware of the party but joined in the fun.

After a successful afternoon of hiking and radio fun, many of the operators gathered back at camp for a night of telling stories around a campfire while sharing several flavors of Scotch and Bourbon. All in all, this was our most successful S2S party yet and we will be back next year for the 4th Annual Central Oregon Summit to Summit party, location TBD. Feel free to email me to be added to the email list for next year. Cheers and 73's - Chris - W7MTB

Check out these videos from the 2024 W7O Campout…
By Tim-N7KOM
By James-WA7JNJ

Spot Practice – Try It Before You Need It
 Most of the summits we activate are covered adequately by several bars of 5G service making spotting a breeze. And if not full Internet access, perhaps those with an alert and CW skills can rely on RBN to get out a spot. However, are we prepared to spot without these? For example, SMS can work when cell signals are unreliable – but do you know the exact protocol for SOTA SMS messages? Have you registered in advance? Have you recently PRACTICED on a summit how to format and send an APRS2SOTA message? When was the last time you tried to spot on a chilly, damp, and uncomfortable summit? Even with good coverage, your phone touch screen may not cooperate with your fingers.

I'd encourage you to not only practice with test messages from the comfort of your living room, but from a summit. When you don't need it. I've recently acquired a new "large print" HT with APRS – even after practicing at home, even with detailed notes on the exact key sequences to send a spot, I was a few key strokes short (I did figure it out).

This sort of preparedness might extend to RBN – I've found that sending four CQs and three callsigns seems to more reliably spot. In the winter, avoiding several minutes of frustration getting spotted is probably worth quite a bit. Try it before you need it – try it from a summit. It's not much different than having extra warm clothing.

Hiking Pole Yagi by Jeff-WJ7V

I was recently inspired to acquire a three-element 2m Yagi-Uda for summit use. The extra 5-7dB of gain can really make a difference on those long distance S2S contacts. The well-built options from Arrow, Cushcraft, Elk and others are all readily available for around $120. But this is ham radio! I can build one!

I took inspiration from Adam-K6ARK arrow shaft Yagi design (detailed here: https://www.youtube.com/watch?v=a4XIgYD-d1k), especially around the construction of the elements themselves. He leverages aluminum arrow shaft stock and related parts for the elements themselves. They seemed light, readily available and relatively inexpensive. The solution he presents is quite good but I don't own a drill press and wanted to leverage 3D printing and existing equipment for my solution.

I realized: "Hey, I already take a collapsible hiking pole with me on most activations. Can I leverage this to be the backbone of my antenna?" The answer is yes, of course, and one just needs some method of easily connecting the elements to the pole. After some searching, I found Stuart Thomas' (KB1HQS) site detailing an easy 3D printed option for mounting the elements to a hiking pole. His solution is quite clever but he uses the existing elements from an already built Arrow Yagi antenna, disassembling it to scavenge the parts. I realized that I could just use his hiking pole mounts, which are available as 3D models and combine it with Adam's element design.

Printing a few pole mounts in the proper dimension and a quick trip to the hardware store allowed for an easy construction. Stuart details his plans here: https://kb1hqs.com/2019/12/26/ultralight-hiking-pole-yagi-antenna and his 3D files are located here: https://www.thingiverse.com/thing:4589495

So, I followed Adam's method for constructing each of the arrow elements and used Stuart's method for attaching them to the pole. Here are the results:

For the arrow shafts, sand the interior of one end and crimp in a standard threaded insert. You need to clean off the anodizing as it will affect the electrical conductivity. Then cut to length.
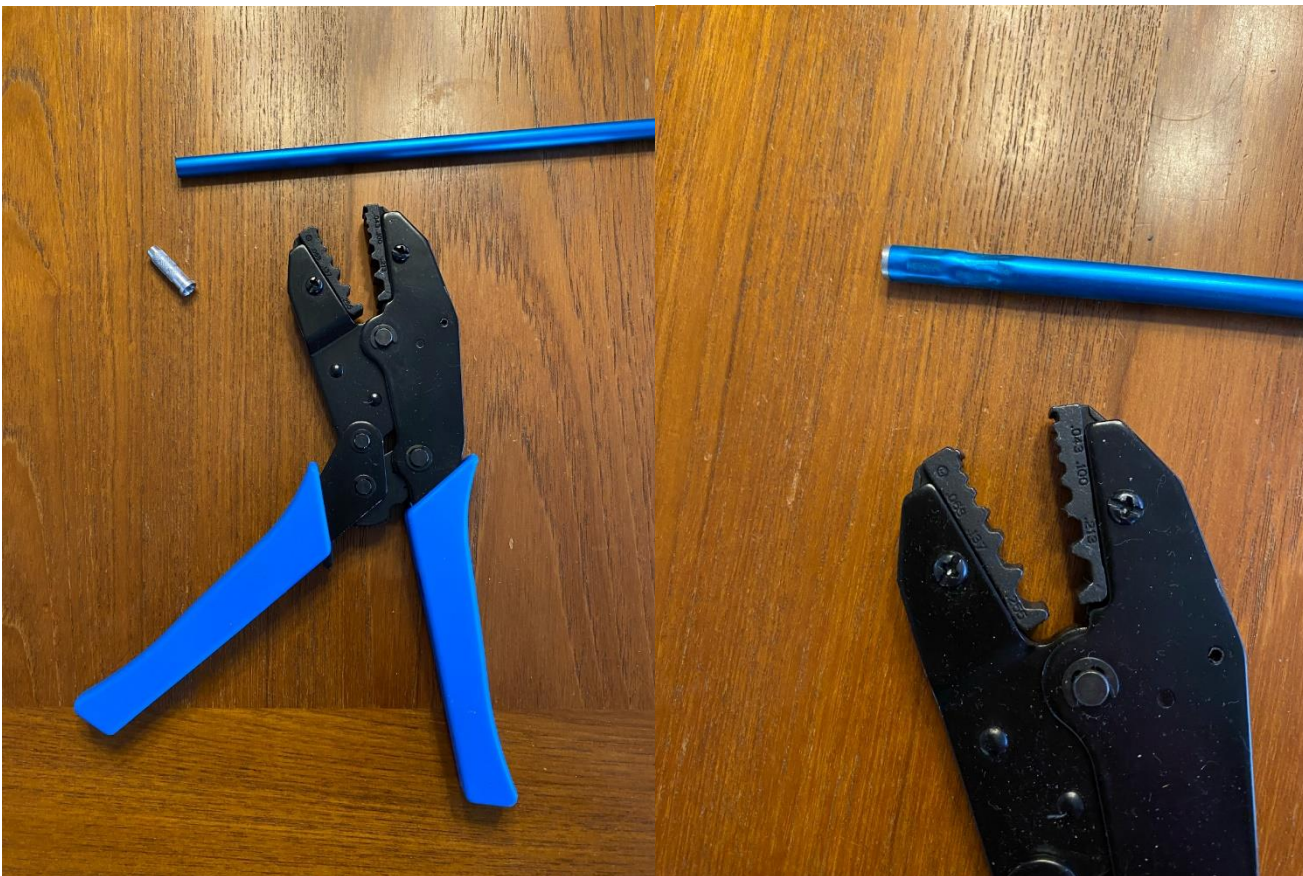
The 3d printed mounts from Stuart come in three sizes. I ended up using the 16mm version and had three printed via CraftCloud3d (I don't own a printer), one each for reflector, driven element and director. Threaded steel and nylon rods are used to both tighten the mount to the hiking pole and screw the shaft elements onto the mounts. Nylon threaded rod was for the driven element. All other reflectors and directors can be conductive straight through (and bonded to the center support, or not. Mine are not). The hardware is #8-32. Threaded rod lengths are 2.5"

Here is my feed line and quick and dirty hairpin match. I tuned the hairpin using a NanoVNA but this step may be optional. The SWR shouldn't be worse than 2:1 without it.

The end result built up and on the air:

It packs small and light for nearly any activation and makes for a great winter project. My farthest contact to date was from Red Mountain (W7W/LC-036) to Bandera Mountain (W7W/KG-073), a distance of 103 miles and over several ridges above 7000'.

We have seen a few of these signs in Oregon's Tillamook Forest…and wondered…what littering isn't offensive??

You might prefer not to know.
I apologize for those looking up ORS 164.805.

Roger-ND7PA (SK)

Roger contributed a great deal during his 11 years with Summits on the Air. He made over 100 activations for 601 points. Roger wrote up nearly 50 trip reports to help other activators follow. Three of his excellent reports are linked below. More details about Roger here plus three of his best trip reports below:

An epic activation of Maxwell Butte
A cross-country jaunt to the highest summit in the WV-region
A sweet note on his birthday activation

SOTA ARTS PAGE

Your ideas for this newsletter are welcome. Share the newsletter with others and subscribe or unsubscribe using the checkbox at PNWSOTA.org – "My Account", "Edit", "SOTA". This newsletter is brought to you by the W7O Association Manager, Etienne-K7ATN. Find back issues here: www.pnwsota.org/content/pacific-northwest-sota-newsletters.