

PRACTICAL PORTABLE RADIO OPERATION

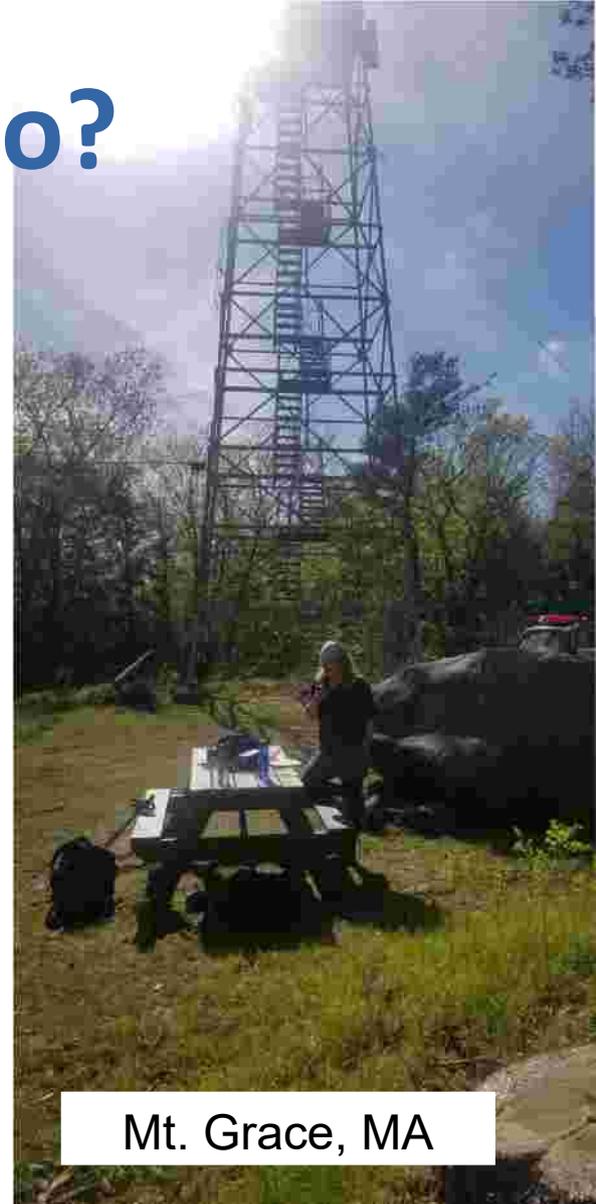
NOT
ALL WHO
WANDER
ARE
LOST!

KM1NDY

Mt. Tom, MA

What is Portable Radio?

- Simply: bring your radio with you
- Radio operation that is not confined to a fixed station or shack
- The purpose of this talk? Inspire you to get out and operate!



Mt. Grace, MA

Is Portable Amateur Radio For You?

YES!
But things to
consider...

Bare Mt., MA

How interested are you ACTUALLY in radio?

(i.e. what type of time/money investments are you committing to the hobby?)

1 2 3 4 5 6 7 8 9 10

Group POTA Grill Master

Learn CW for SOTA

Consider a non-radio hobby

What does
“H.A.M.”
stand for
again?

As soon as I make up
my mind between
Fusion and D-Star, I'll
upgrade my HT and
give the Baofeng
UV-5R to a new ham

Oh, you're running
the Yaecomwood
8873? I designed that
rig. I contest with the
2.0 version remotely
from the Sahara, but
its not publicly
released yet.

What kind of operator are you?

What kind of operator do you wish to be?

- Local (FM, phone, UHF/VHF)
 - repeaters, local nets, real life friends/family
 - technician class licensee
- Distance (HF)
 - general or extra class license
 - phone? cw? data?
 - QRO or QRP?
- Organized Activities
 - contesting
 - SOTA / POTA / WWFF
 - Field Days

What kind of operator are you?

What kind of operator do you wish to be?

- Maker / Homebrewer
- Esoteric / Specialized
 - microwave
 - moonbounce
 - satellite
 - Radio Direction Finding (ARDF)
- Social / Club – prefer to let others operate or operate in group setting
- Emergency communications
 - ARES
 - Prepper
 -
- No Idea
 - new licensee
- Combination

What Is Your Interest in Portable Radio?

(i.e, what gear are you going to acquire – radio & outdoors)

1 2 3 4 5 6 7 8 9 10

Whatever you have is fine

HT & tape measure Yagi

(Keep watching...)

Watching this talks makes me at least feel like I am not drinking alone in my bedroom.

I have been inside for over a year...get me out!

Portable ops is a *lifestyle* choice...

Where Do You Operate?

Where Do You Want To Operate?

- Home
- Mobile (vehicle)
- Portable
- Someone else's station (club)
- No where yet!

What Radio Do You Already Have?

- Handheld UHF/VHF
- HF or UHF/VHF?
 - Permanently constructed home base station (undesirable to move)
 - Temporarily mounted home base station (moveable)
 - Fixed mobile radio in vehicle
 - Temporarily mounted mobile radio in vehicle (moveable)
 - Someone else's
- None

What Are Your Physical Abilities?

(i.e, how far are you going to carry that thing? What type of antenna set-up?)

1 2 3 4 5 6 7 8 9 10

Parking Lot POTA

Kayak Mobile

Presidentials Multi-Peak SOTA

I do a few squats every day--each time I get into bed and each time I get out of bed.

I take my daily five mile walk at least 3 days a week.

I stopped doing the Ironman years ago when it just got too easy for me.

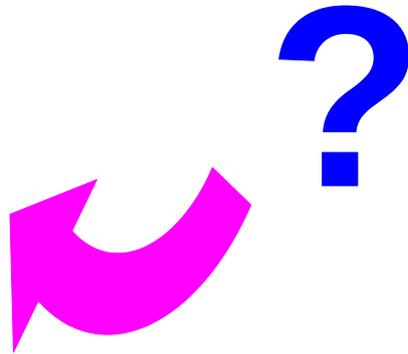
What special needs or accommodations would you need to operate portable?

- Aside from physical fitness, do you have mobility challenges, disabilities, health problems, or other issues that may limit your access to certain types of portable ops? Are these true limitations or are there workarounds?
- I think anyone can find their version of portable ops with creativity.

Know Your Abilities and Limits!



- Mount Wachusett
- Total Elevation 1998'
- Vertical Gain 728'
- 2.3 miles



Why Portable?

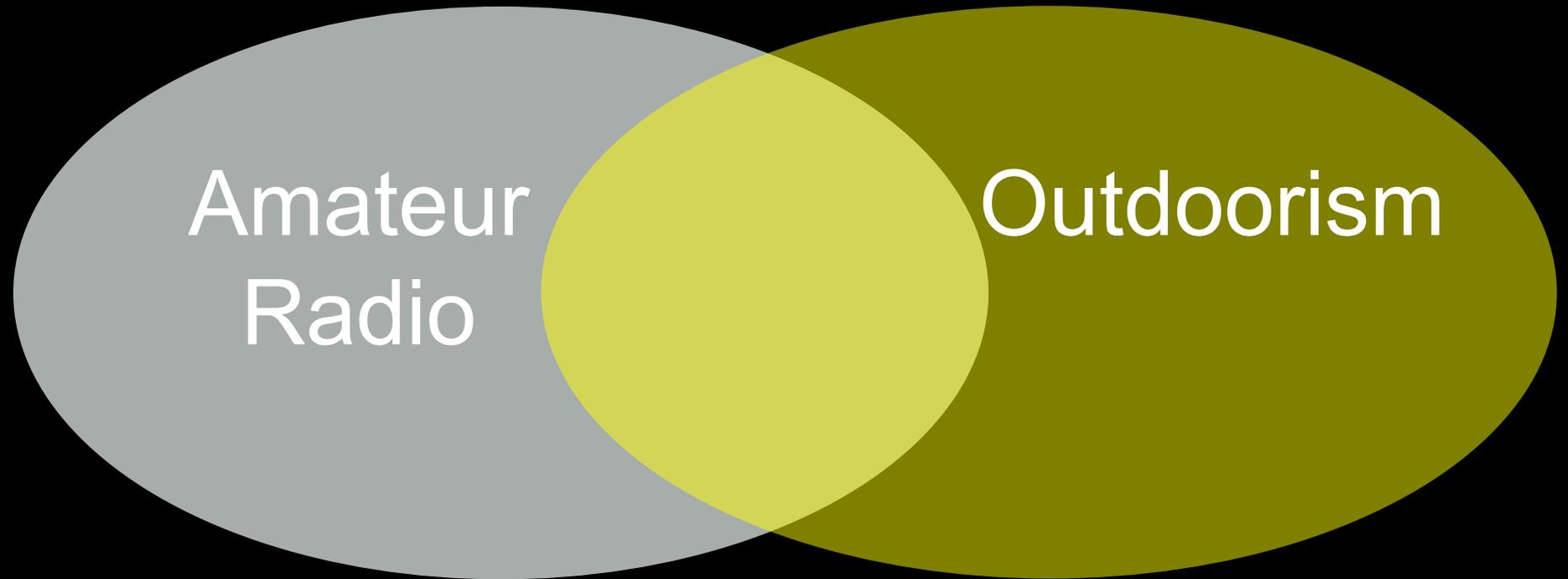


Kayak Portable, Back River, Weymouth MA

Reasons To Operate Portable Radio

- To be outside
- To get away from electrical noise
- To get exercise
- To practice RF technical flexibility and creativity
- To play games
- To be with friends
- To showcase amateur radio
- *Portable Radio as a lifestyle choice????*

Portable Radio As A Lifestyle Choice – Not Really A Joke



Outdoors As A Lifestyle

- Differences in Outdoor Survivalist Hobbies
 - **Bushcrafters / Wilderness Survivalists**
 - Want to survive without any or with extremely limited manmade provisions.
 - **Preppers**
 - Dedicated to preparing for and surviving the worst case scenarios, whatever that is.
 - **Backpackers**
 - Have everything needed for basic wilderness survival in a backpack, and actually use that backpack.
 - **Outdoorists**
 - Above everything else, just want to be outside; umbrella over many different outdoor activities

PREPPER DEBATE POINT (an aside)

- In my opinion, **BACKPACKING**, is the most useful skill in surviving calamity for the average-abled individual.
- Everything needed to survive is in a single man-portable backpack *and* you know how to use it.
- The “bug-out” bag and “bug-in” bag is the same thing. What difference should having a building around you make?





Communication is Freedom

Portable Radio is an Expression of Freedom

Portable Radio is Creative

Freedom + Creativity = Bliss

**“BUT I’M ONLY A TECHNICIAN...
HOW CAN I OPERATE PORTABLE
WITHOUT HF???”**

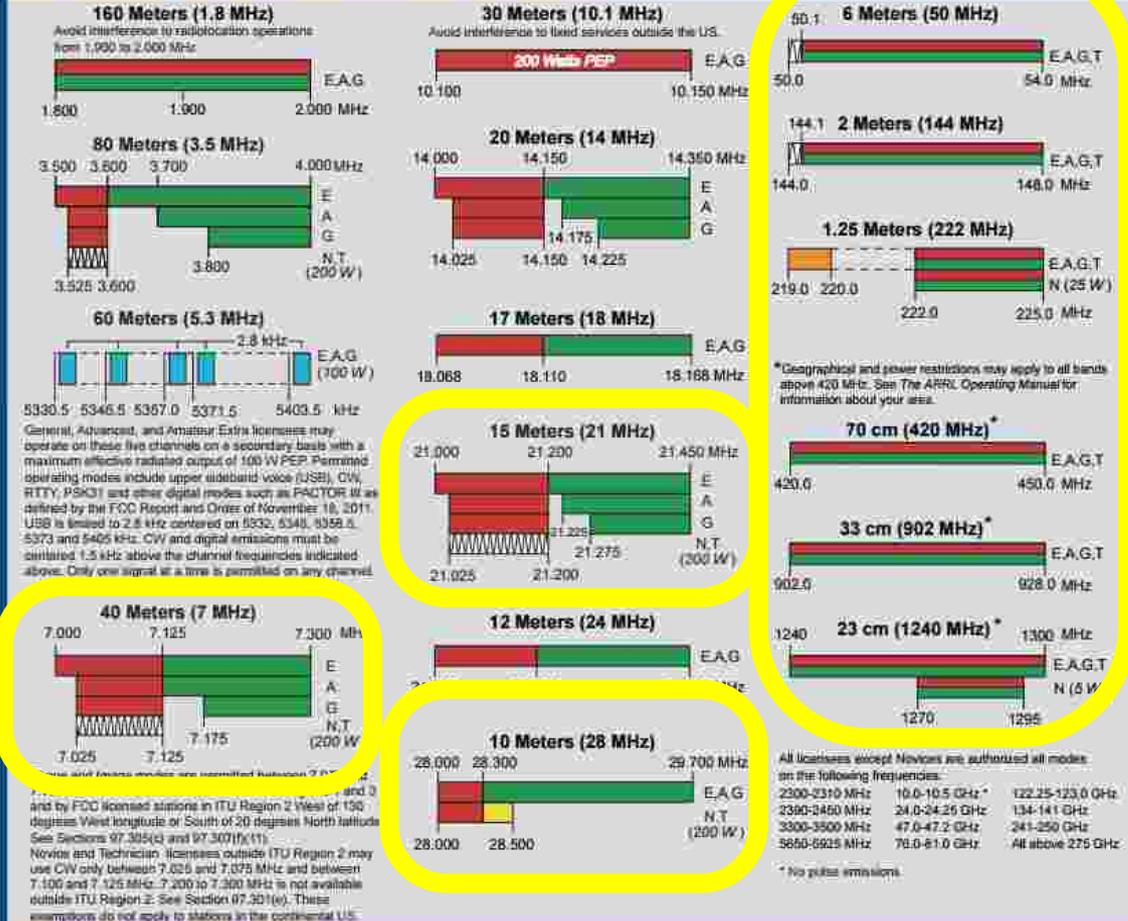
US Amateur Radio Bands

US AMATEUR POWER LIMITS

FCC 97.313. An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

Effective Date
March 5, 2012

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www.arrl.org
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KEY

- RTTY and data
- phone and image
- CW only
- SSB phone
- USB phone, CW, RTTY, and data
- Fixed digital message forwarding systems only

Note:
CW operation is permitted throughout all amateur bands.
MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.
Test transmissions are authorized above 51 MHz, except for 219-220 MHz.

E = Amateur Extra
A = Advanced
G = General
T = Technician
N = Novice

See ARRLWeb at www.arrl.org for detailed band plans.

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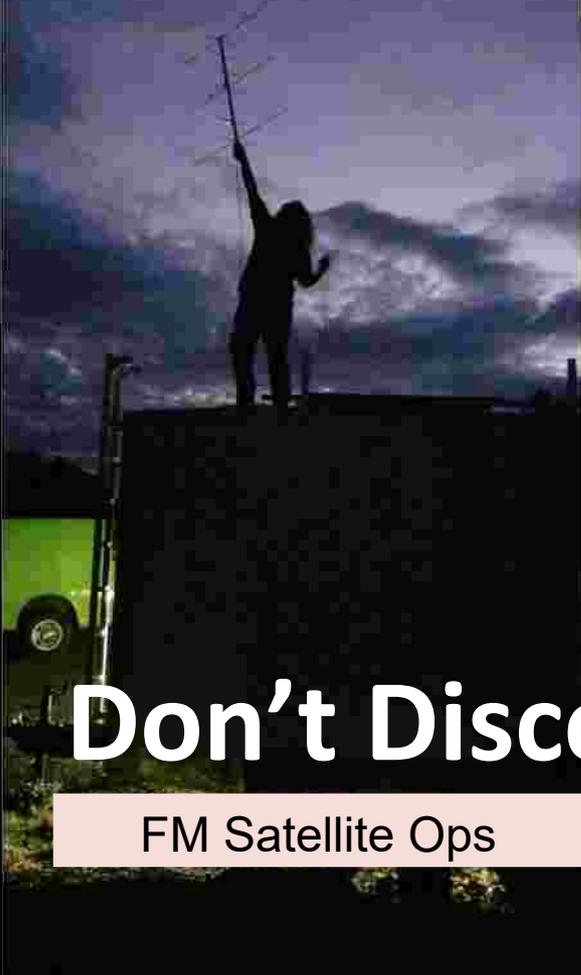
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Exam: 860-594-0300 email: vc@arrl.org

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- Tech privileges are not insignificant!
- Do hams downplay tech privileges too much???

Farm in NY



Parking Lot in Amesbury MA



Beach at Castle Island,
South Boston



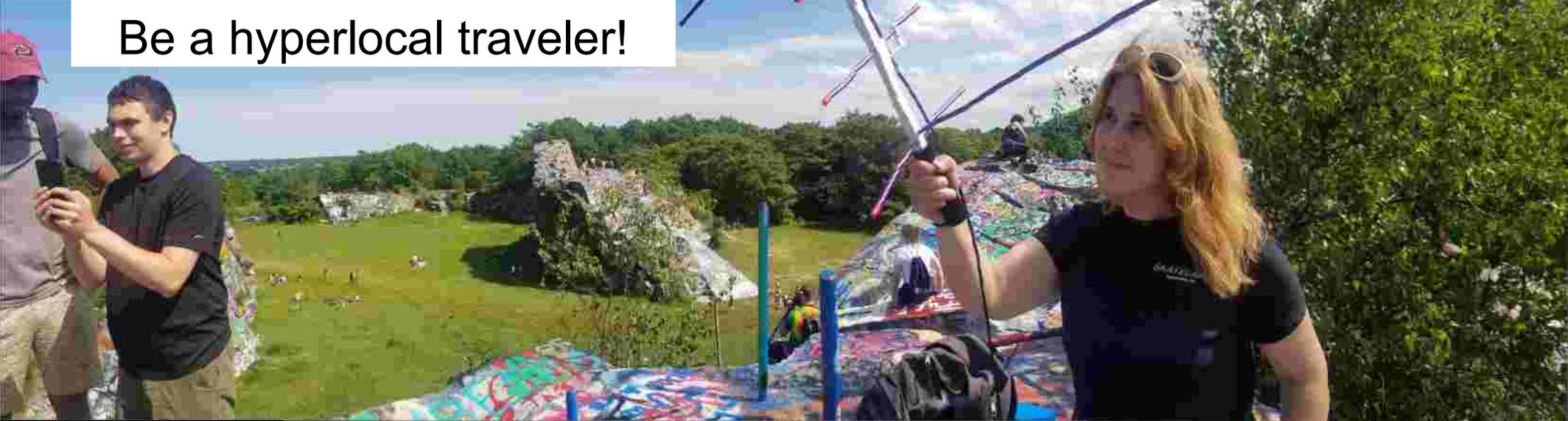
Don't Discount UHF/VHF Portable Ops!

FM Satellite Ops

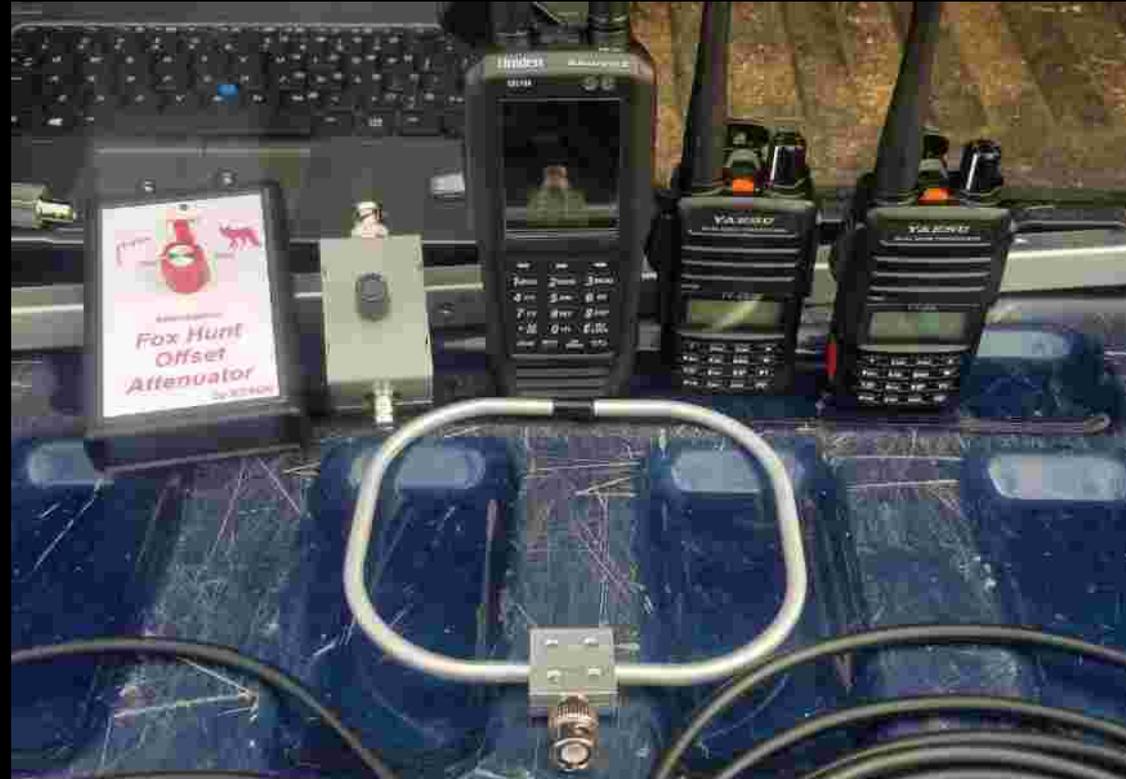


Use your HT as a gateway to unusual places

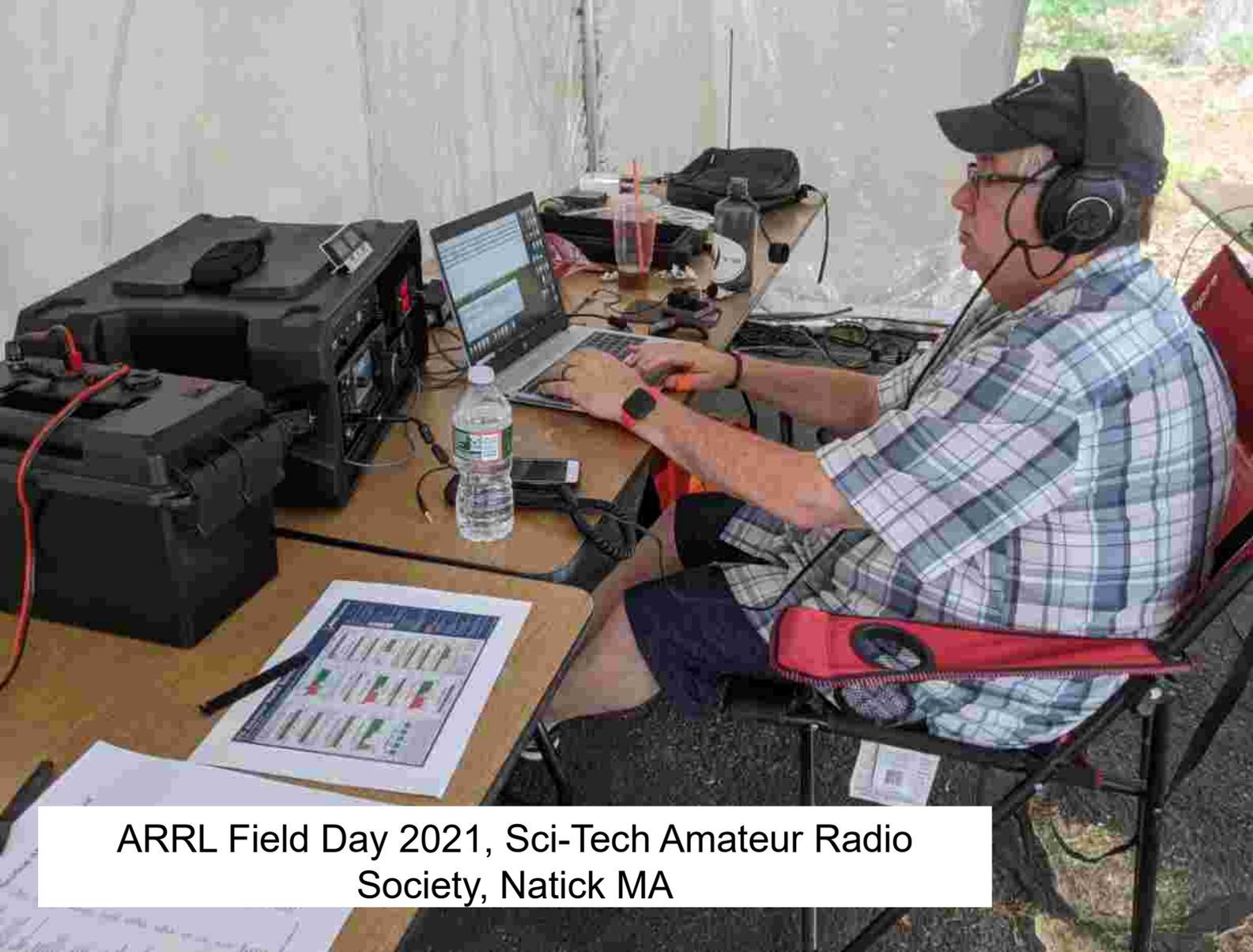
Be a hyperlocal traveler!



Amateur Radio Direction Finding (Foxhunting)



Bristol County Repeater
Association Fox Hunt



CW!

ARRL Field Day 2021, Sci-Tech Amateur Radio Society, Natick MA

VHF Contests

2021 CQWW VHF Contest,
Fort Phoenix State
Reservation

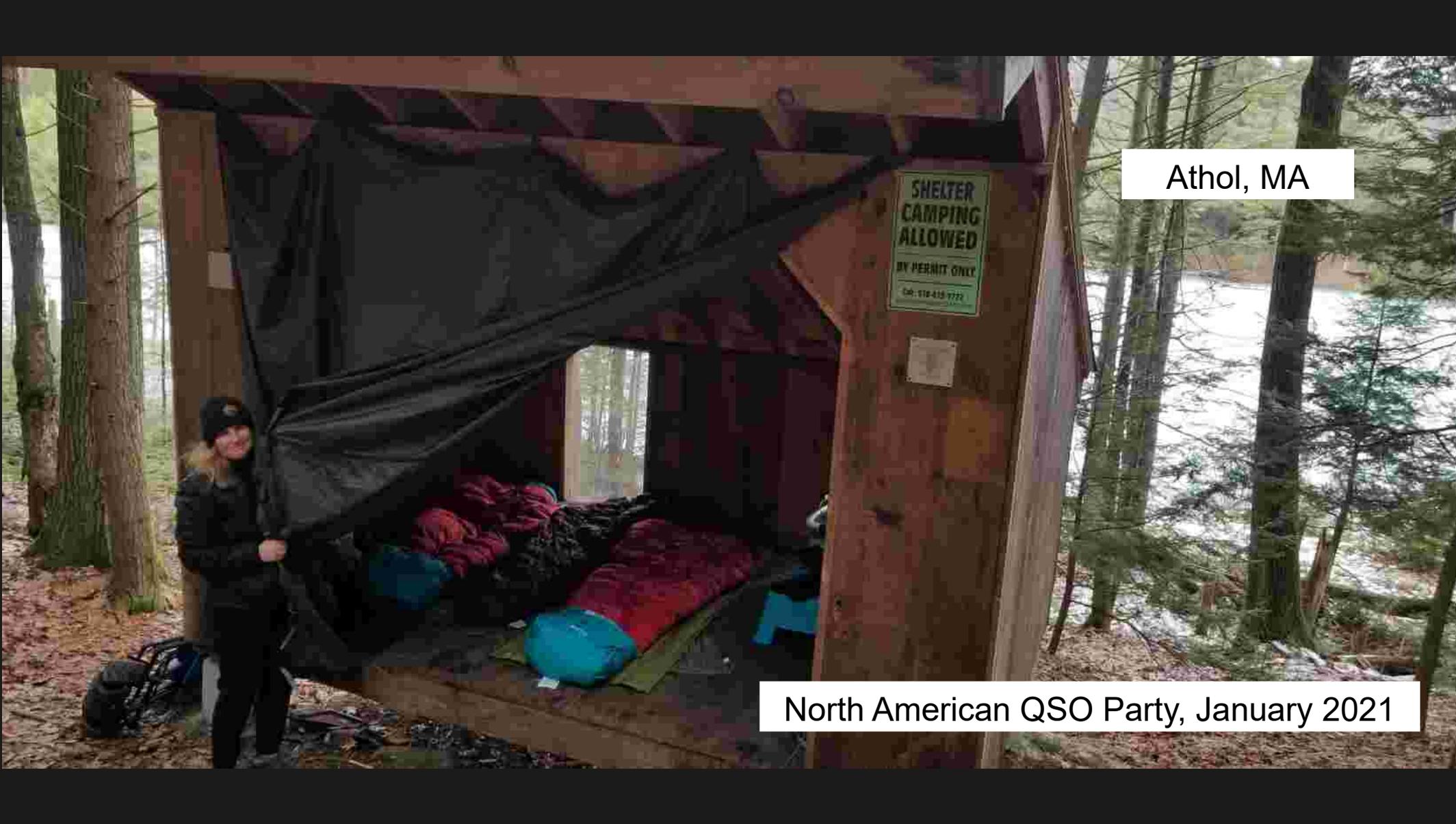


Contesting With Control Operator



Athol, MA

North American QSO Party, January 2021



Athol, MA

North American QSO Party, January 2021

Pope John Paul II Park, Suffolk
County (Boston), MA



New England QSO Party, 2021

Special Event Stations (with control operator)

Castle Island, South Boston, MA

W1E, "Hams All-Holidays
On-Air Celebration"

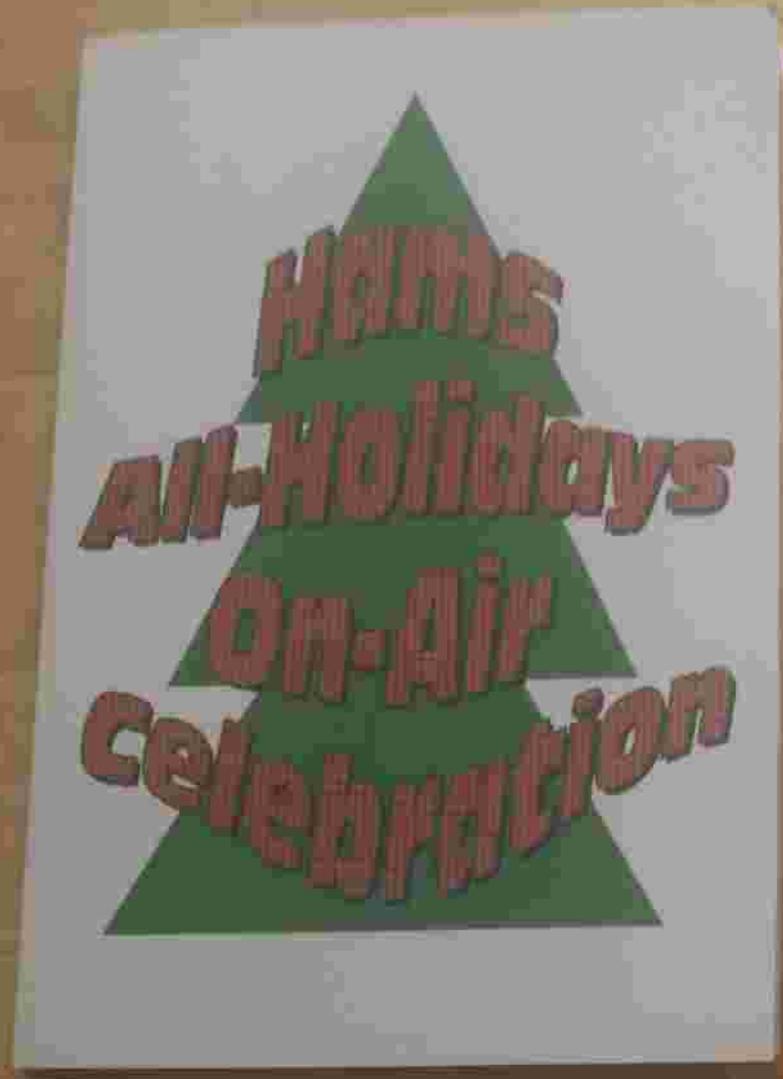


White Hall State Park, MA

K1S, "Happy Hams
Valentine's Day"



Special Event Station
QSL Cards



Notice I haven't even mentioned...

- Parks-On-The-Air (POTA)*
- Summits-On-The-Air (SOTA)**
 - * The most important portable radio program
 - **The most important portable radio program *to me!*

POTA / SOTAs on VHF & 10M



Tully Mt, MA



Mt. Toby, MA

GROUP ACTIVATIONS
(Go Play Portable Radio With
Your Friends!)

How to Host Group Activations

- **Decide if *YOU* want to have a group SOTA/POTA/etc. activation.**
 - Don't wait for someone else to organize it.
- **Arbitrarily choose:**
 - Who, What, Where, When, Why, and How
 - Don't debate these → there is always a next time.
- **Invite all the hams you know – the more the merrier!**
- **Set painless, low stress expectations for guest**
 - “Come if and when you want. Leave if and when you want. Bring what you want.”
 - The goal is to have fun. Make sure those without portable gear can play too.
- **Be willing to actually function as the host.**

GROUP ACTIVATIONS



SOTA, Mt. Wachusett, MA

POTA - Lake Dennison
Recreation Area, MA



POTA - Blue Hills Reservation
(Houghton Pond), MA

KM1CRO

RO0HWE

K1MKD

KC1NRJ

KC1LBI

KC1MIT

Julie

KC1LBH

WG1YNA

K2MZ

KM1NDY

KC1MWF

Diane

KA1PGI



W3JTT

WA1VVH

KC1KGS

WB4EJR

KC1OPK

WA3ITR

AF1R

AA1F

WA1UMU

N1OIL

K1FVK

W1DAN

POTA - Hopkinton State Park, MA



POTA - Callahan State Park, MA



Radio Gear Choices

POTA – Wells State Park, MA



Transceiver

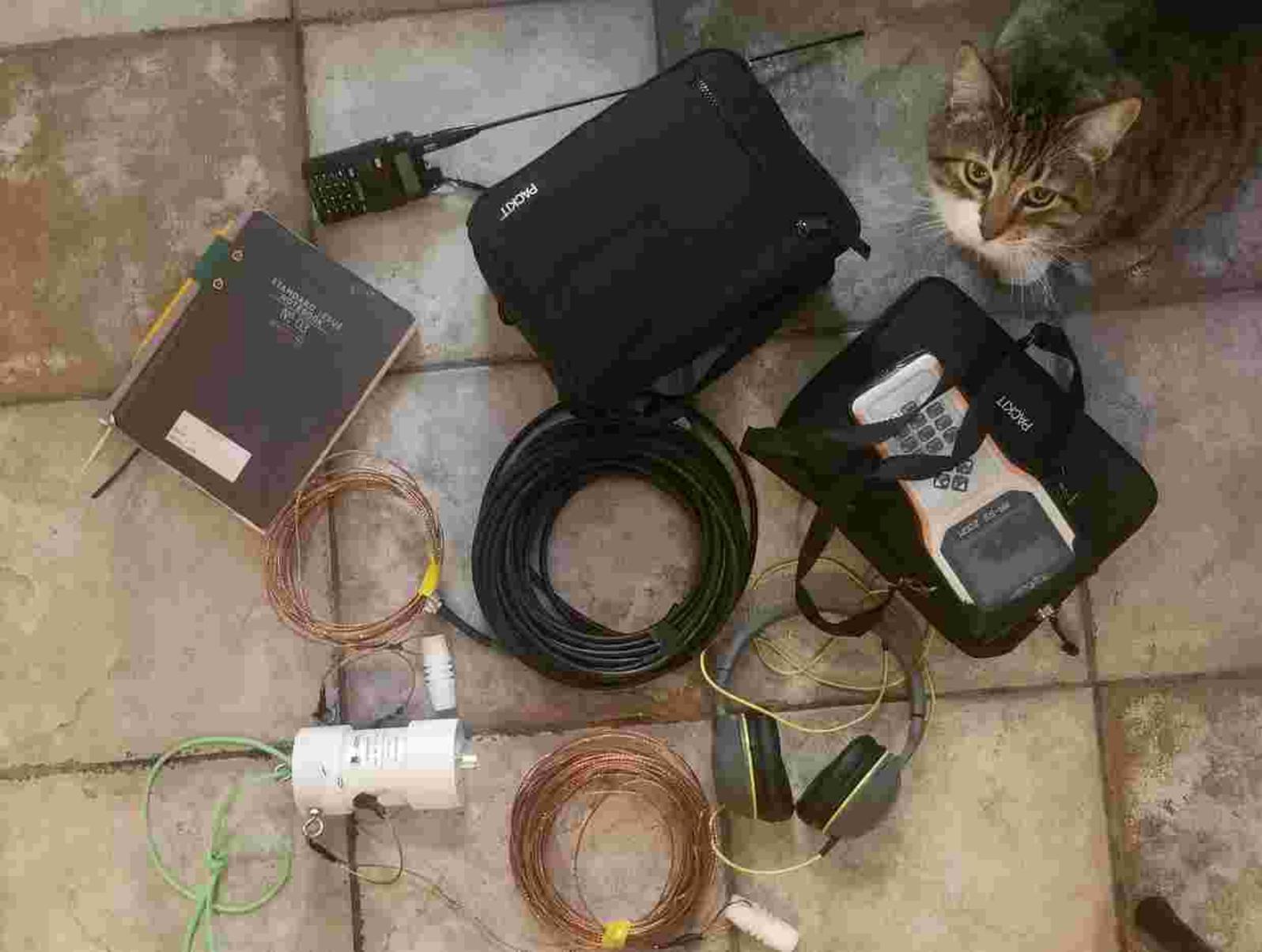
- QRO (100+ watts) or QRP (<20 watts)?
 - For beginners, its fun to make contacts (QRO)
 - For experienced, its fun to make difficult contacts (QRP)
- CW only?
- If QRP & CW only, many options to buy or build (will not discuss further)
- If weight is not a consideration, use whatever you want
- If uhf/vhf only, use whatever you want
- Only currently manufactured, sub 6 pound, hf-capable radios to be discussed

Transceiver Choices, HF capable, multimode, <6lbs

- QRO (>100W)
 - Yaesu FT891, 100W, HF+6M, 4.2 lbs
- QRP
 - Yaesu 818ND, 6W, HF/UHF/VHF, 1.9 lbs
 - Icom IC-705, 10W, HF/UHF/VHF, 2.4lbs
 - Elecraft KX2, 12W, 80-10M, +optional autotuner, 13 ounces
 - Elecraft KX3, 10W, HF+6M, +optional autotuner, 1.1lbs
 - Xiegu G90, 20W, HF, +autotuner, 5.8 lbs
 - Xiegu X5105, 5W, HF+6M, +autotuner, 3.3 lbs
 - [...]

Do you need an impedance matching unit? (i.e., a “tuner”)

- QRO?
 - Yes, many antenna options are then possible. May not need to worry about losing some power with an ATU.
- QRP?
 - Depends. Resonant antenna is best, but having options is nice. Significant potential to lose power with an ATU.



- My early kit:
- Transceiver in one Packit bag
- 15ah Bioenno, LDG Z-100 plus atu, microphone, power cord, and y-acc cable in other Packit bag
- 50' of RG8X coax with pl259 connectors
- Frequency Devices 40M OCF
- Headphones
- Rigexpert Zoom 55 antenna analyzer
- Logbook
- Baofeng UV-5R

Camping – Otter River State Park, MA





Dunestar

300-4

Phone: 1-888-987-8418 RF Filters www.dunestar.com

Dunestar

300-14

Phone: 1-888-987-8418 RF Filters www.dunestar.com

Dunestar

300-7

Phone: 1-888-987-8418 RF Filters www.dunestar.com

Z-100Plus
AutoTuner

Tune SWR Tuning

Tune SWR Tuning

LDC

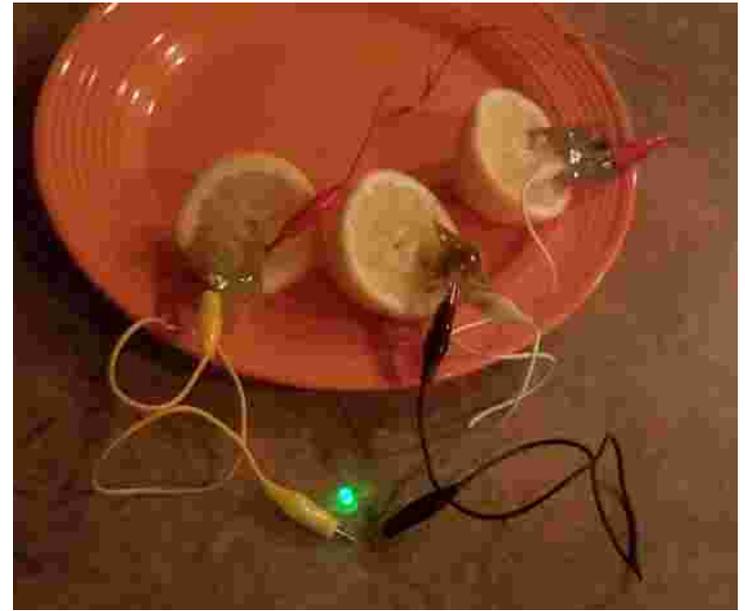
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12V 75W
1000 Peak Amp
RMS 300/1000W
PAC Pack
100% Components
Guaranteed
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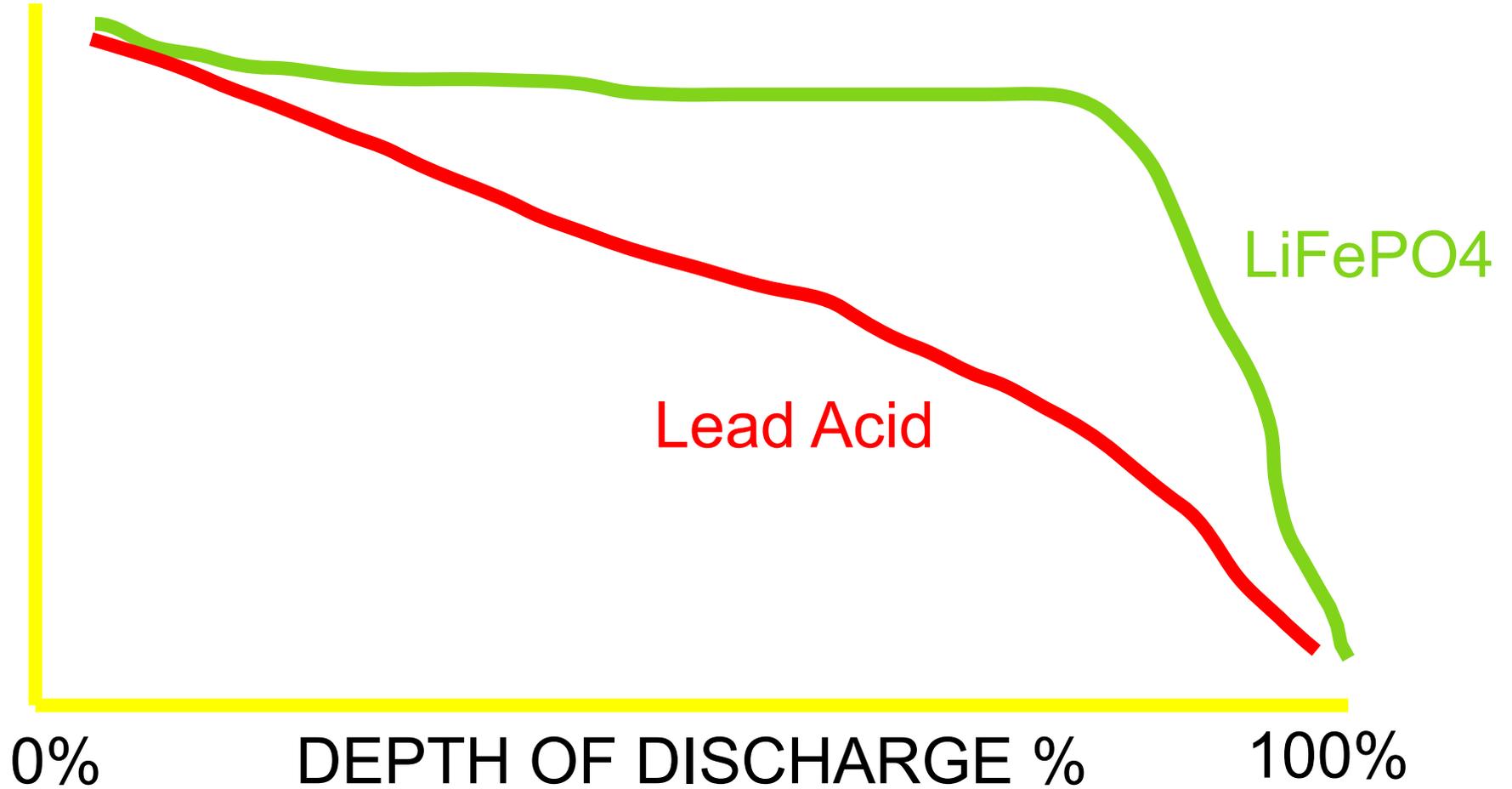
Battery

- QRO choices:
 - Deep-cycle sealed lead acid (very heavy, discharge = 50%, voltage drop)
 - Lithium batteries in particular LiFePO4 (relatively light, discharge = 80-90%)
 - Choose battery that can deliver the amperage needed for the power you plan to run (check specs!)
 - Yaesu FT891 →100W →23A tx
 - Bioenno Lifepo12V Max continuous discharge current
15AH = 30A 9AH = 12A



Battery Comparison

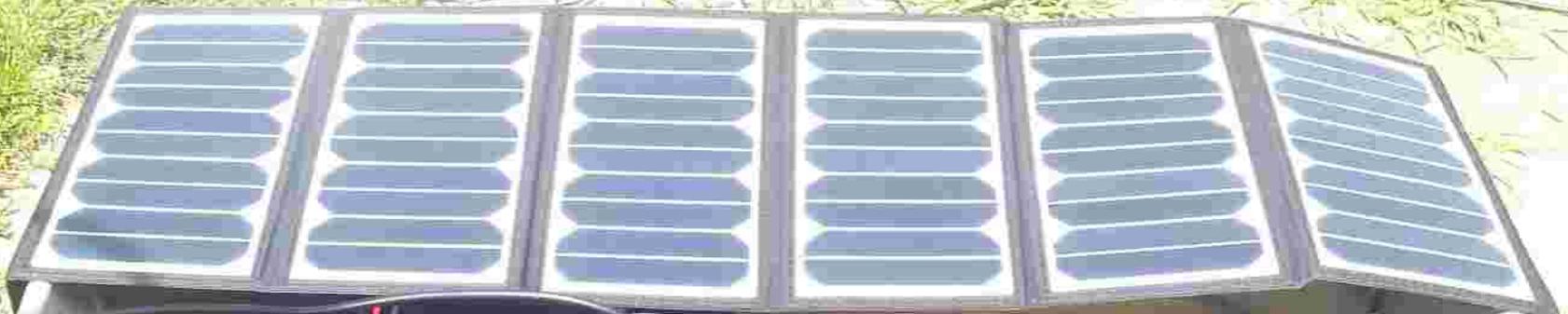
VOLTAGE



SOLAR CHARGING SYSTEMS

- My system
 - 60W folding solar panel
 - 15ah Lifepo battery
 - Lifepo charge controller
 - The correct cables







RENOGY



Hold for 3 sec.
for settings



VOYAGER
SOLAR CHARGE CONTROLLER

12 VOLT
20 AMP

Antenna Choices

- I like wire antennas...

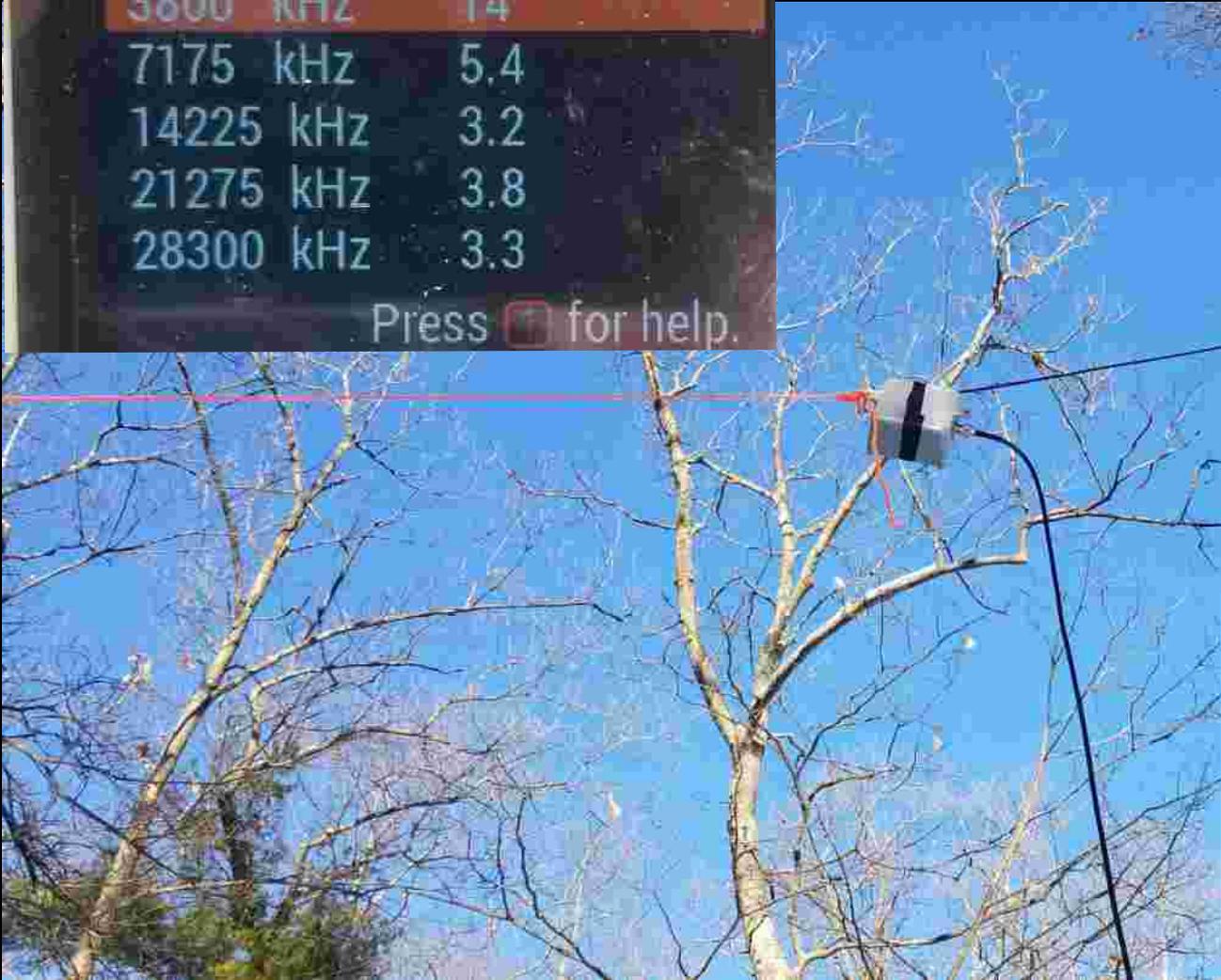
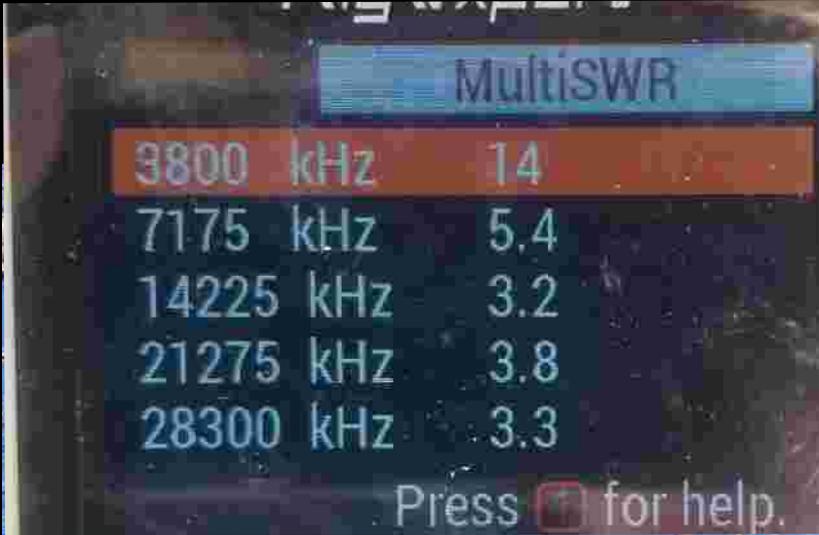


DIY 20M Dipole,
no balun



40M OCF





DIY 20M Endfed
Halfwave with
49:1 unun

DIY 10M Dipole with coax and toroid choke



Radiowavz 20M Endfed Halfwave



- Diamond X-30A
2M/70cm fiberglass
antenna on a tripod



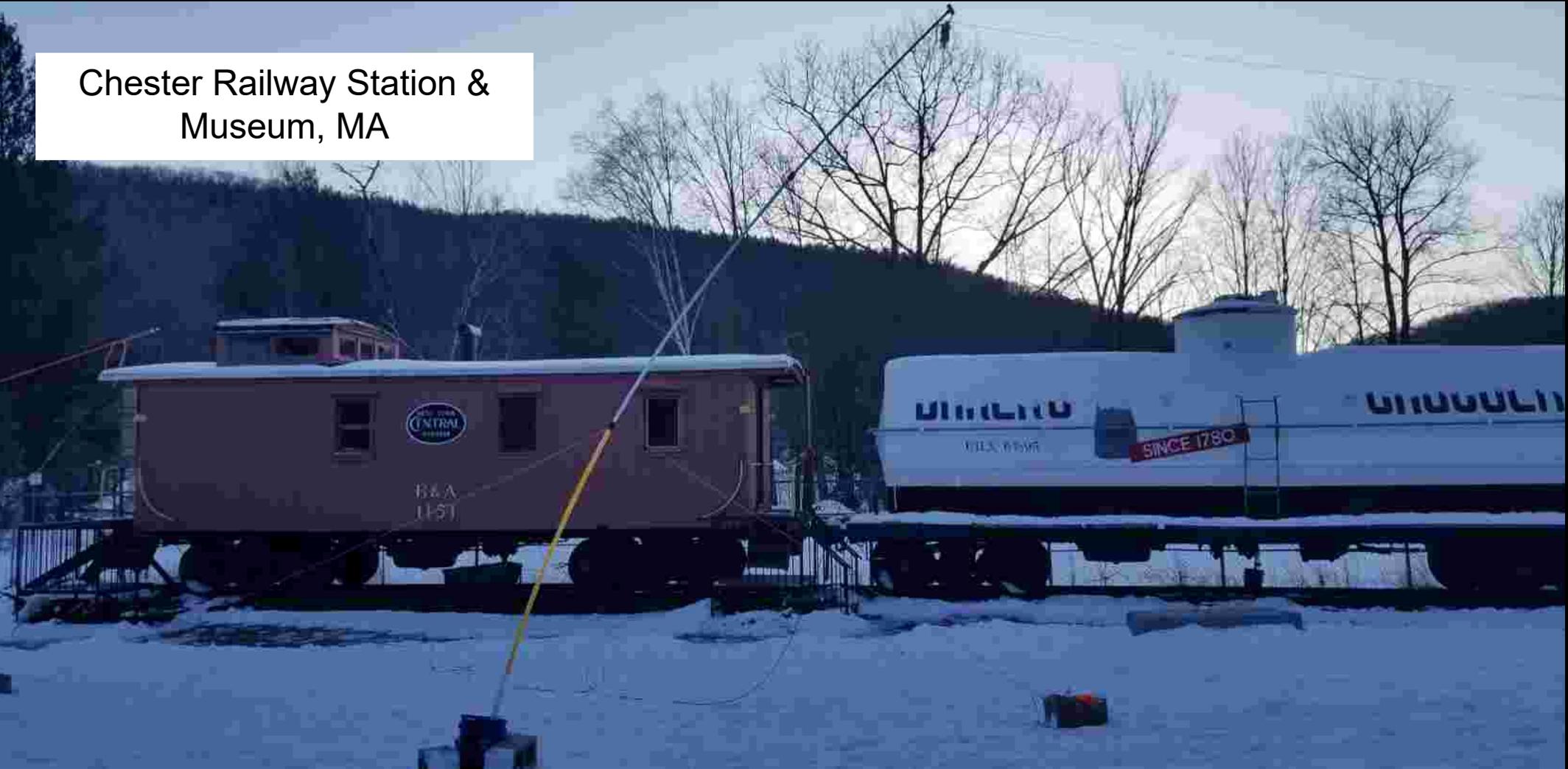
MASTS

- Many choices...
 - Mine are:
 - Military Mast
 - Mr. Long Arms Painter Pole
 - Push up fiberglass mast and tow hook
 - Collapsible bamboo fishing pole
 - Trees
 - Found Structures





Chester Railway Station &
Museum, MA





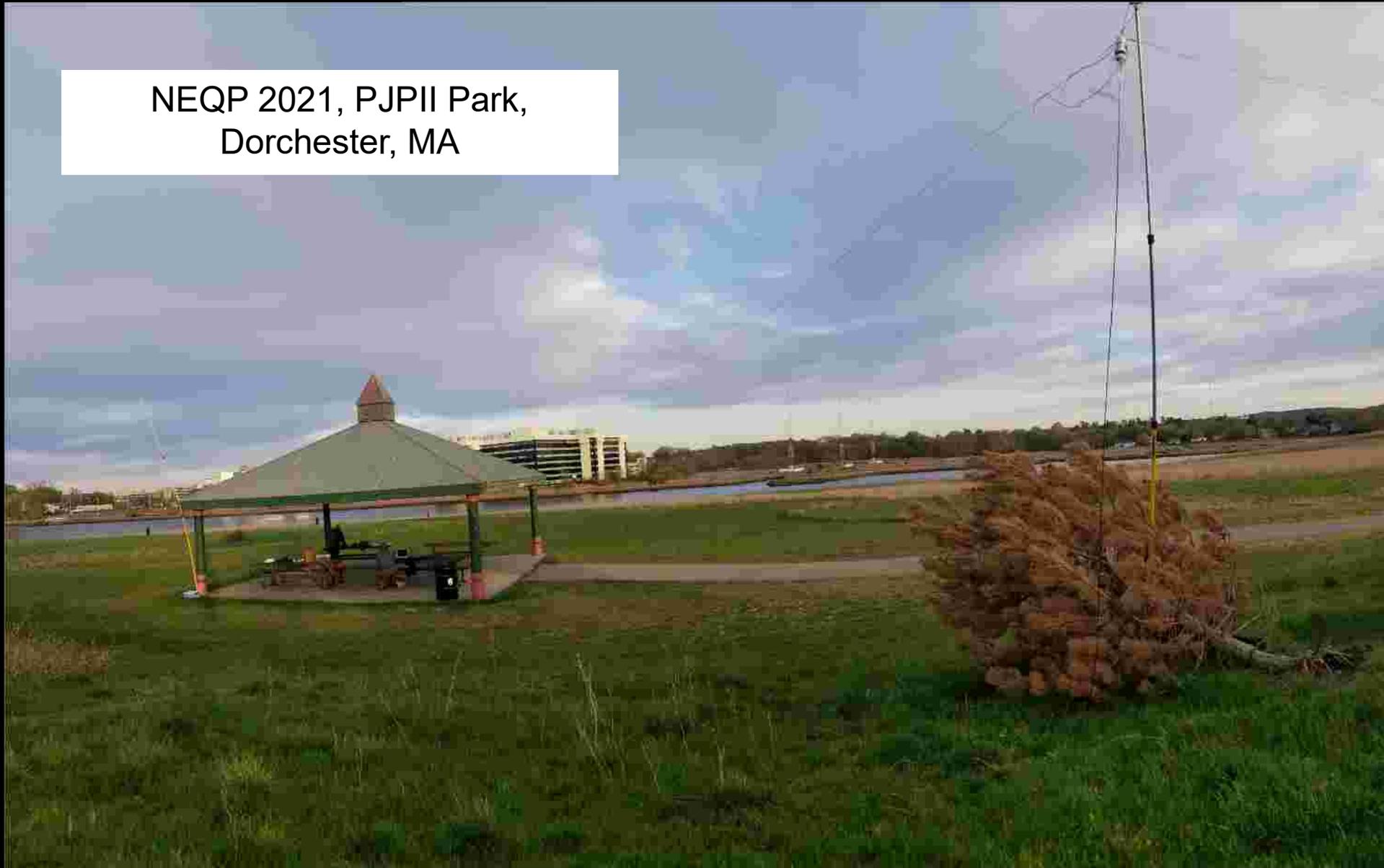
Fairy Stone State Park, VA



SOTA – Utsayantha Mt, Catskills NY



NEQP 2021, PJPII Park,
Dorchester, MA





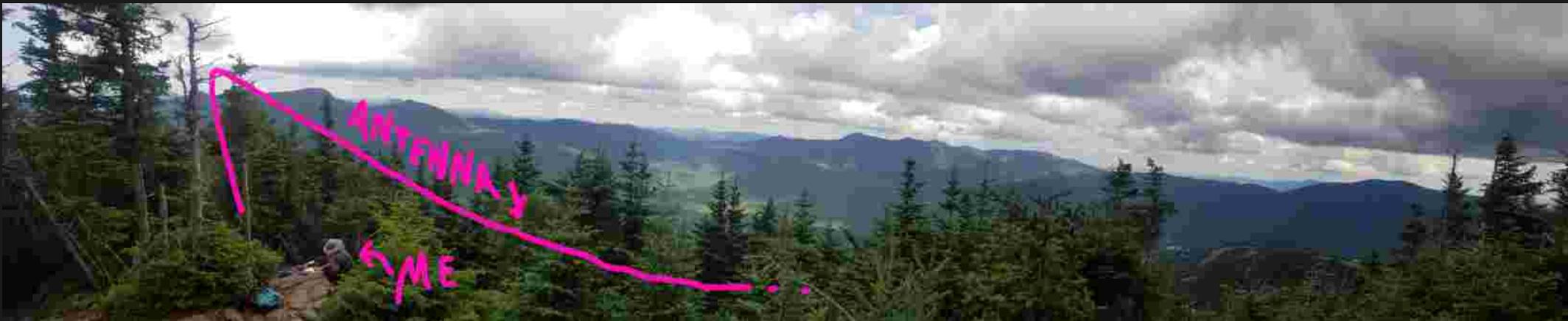
June VHF Contest, PJPII Park,
Dorchester, MA



SOTA - Whiteface Mt,
Adirondacks, NY

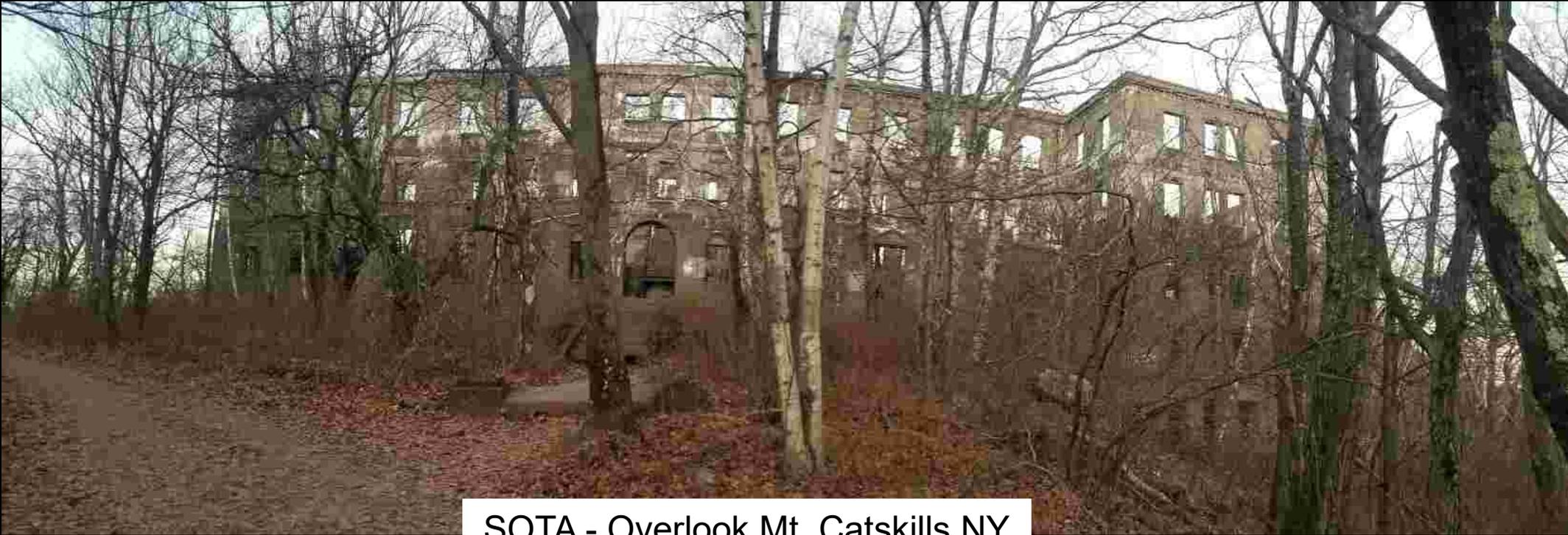


Explore Your RF Creativity



SOTA – Mt Tecumseh, NH

Found Structures (Fun, Interesting, Practical)



SOTA - Overlook Mt, Catskills NY



POTA, Upstate NY



?????

SOTA, Oak Hill, NH





Vehicle Operations





Temporary Structures



Southie



Sci-Tech Amateur Radio Society
Winter Field Day 2020

Sci-Tech Amateur Radio Society
ARRL Field Day 2020



Tarp – Always Useful

- REI
Quarterdome
- Polyurethane-coated nylon
- 1lb 2oz





SOTA, Tully Mt, MA

SOTA, Prospect Hill, MA



SOTA, Tully Mt, MA





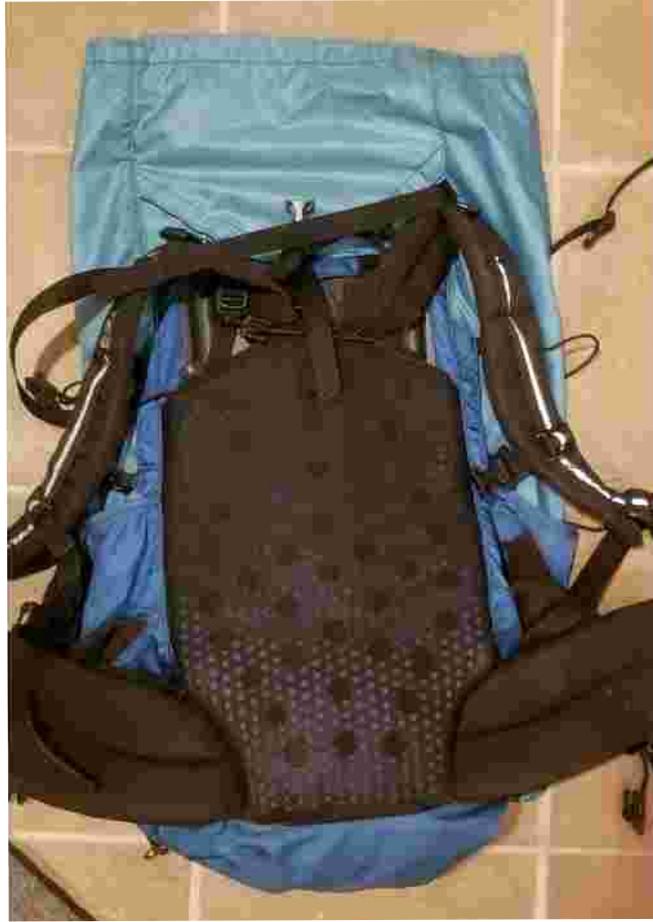


Backpack

- How much weight are you carrying?
 - Aim for <25 lbs total
 - (My ham gear weighs >15 lbs!!!)
- How bulky is your gear?
- A backpack with a frame need to fit you well! Try it on with weight.
- Tip: Keep the contents in pack dry...don't try to keep pack dry.
- Frame types:
 - None (I can carry 20 lbs comfortably in my jansport)
 - **Internal (My overnight choice)**
 - **External**



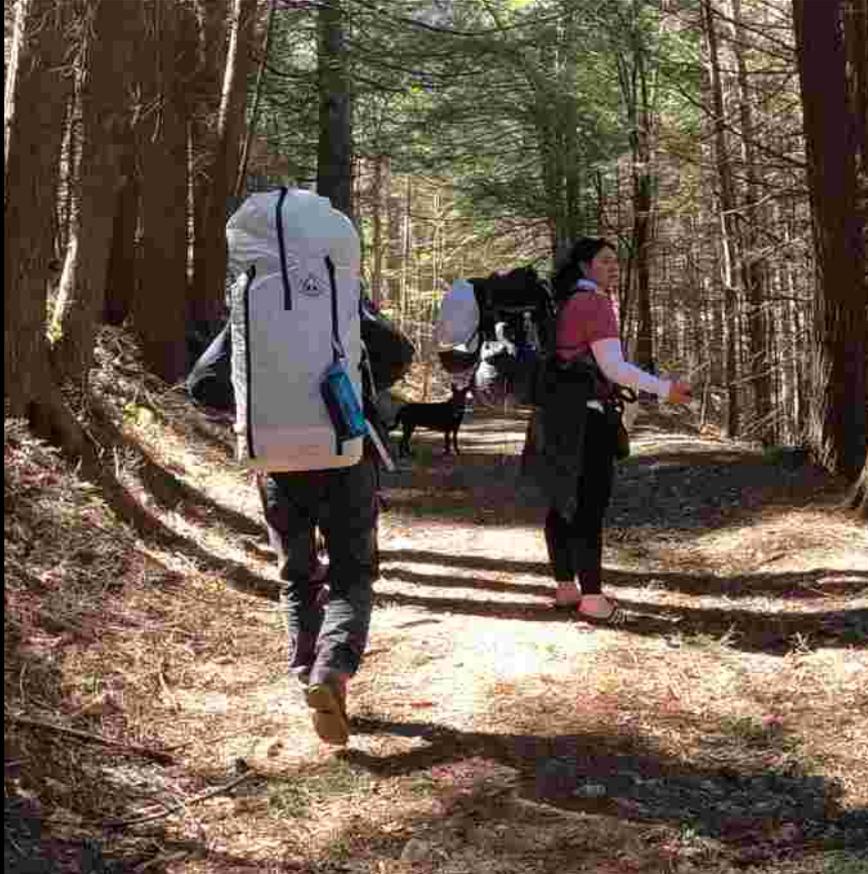
Internal Frame vs. External Frame Packs





- My Current Pack
- GIANT - 85L

My Pack is 40 lbs (18 lbs of radio gear)



What's Next?

Random Wire and a Kite!



HAPPY TRAILS

Km1ndy.km1ndy@gmail.com

MOUNT WATATIC

Elevation 1832' ±

Protected as public open space
by the people of Ashby and Ashburnham
and the Commonwealth of Massachusetts
July 2007

Other stones in other places
may commemorate the histories
of people and things now dead
and gone. This stone marks the site
of a mountain that lived, a mountain
that lives on because of people who cared,
people who started with nothing but a dream
and the will to work for it, until the dream
became as real as solid as this stone,
as sure as the ground beneath your feet,
as true as this mountain on which you stand,
as certain as looking you up to meet the sky

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