



Alaska Bear Troller



by rabbitcreek

Bears are very common here in Alaska. After installing a Ring camera system on my garage I found out how common they are. Among the porcupines and the lynxes whole families of bears troop all over the property at least once a week and daily early in the season. We seem to get along for 30 some years. When going backpacking or berry picking the standard wisdom is to take bear spray and a bear bell. These are talismans that don't have to be blessed by holy-folk that prevent the extremely rare occurrence. My friends wife sprayed herself in the face with bear spray while a black bear was attacking their Lamas on a overnight trip. (All ended well...) Bear Bells downside are notable for being a constant irritant noise on trails that can trigger Misophonia in your walking partners. A professional study of their efficacy done by Tom Smith, a BYU professor, found that when he rang the bells using a off-trail fishing line **they showed no response to the din.** This was

done in the wonderful Katmai National Park here in Alaska where you can watch plenty of bear antics online. <https://explore.org/livecams/brown-bears/brooks-f...> What they did respond to in his test was twig breaking that instantly got their attention. This seems reasonable as it would be a sound that both predator and prey generally agree is a head turner.

The Alaska Bear Troller is designed to replace the "Dinner Bell" in your armament. Its included sound file of snapping twigs and rechargeable battery with solar recharging for longer trips is much more pleasant as a trail companion. Don't forget your bear spray:
<https://www.researchgate.net/publication/261982557..>
.Prof Smith found that bear spray seemed more effective than guns or at least the combatants seemed happier with the outcome.

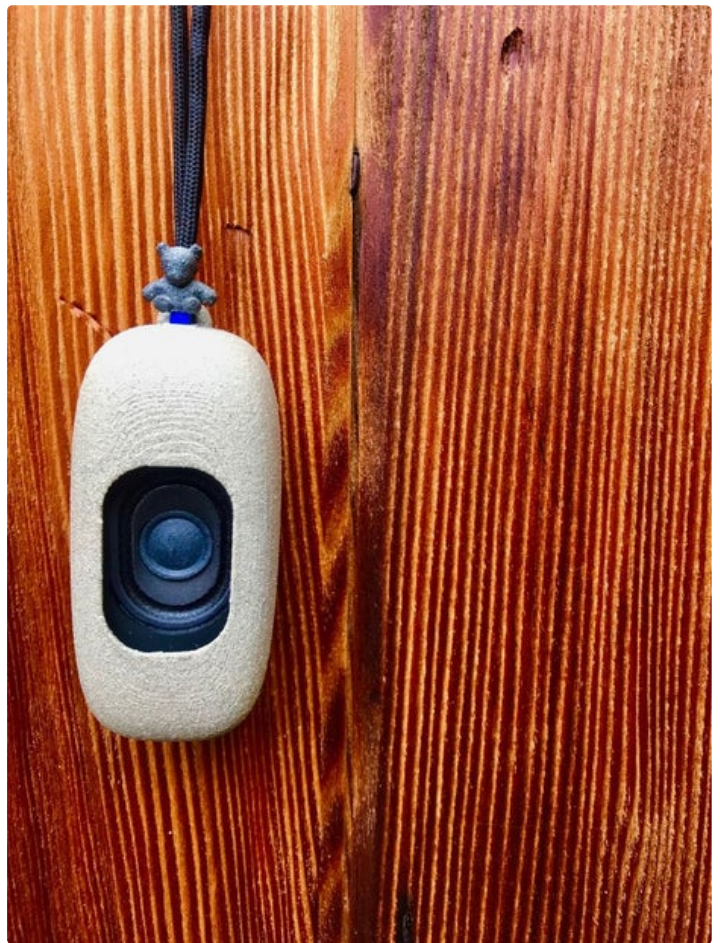
<https://youtu.be/XpJH6z07upo>



Step 1: Gather Your Materials

There isn't very much inside this thing. I did not use the system inside <https://www.instructables.com/id/Toast-Talker/> that would have been slightly smaller because it wasn't loud enough. The DFPlayer is a cool little unit that contains both a SD card slot for recorded MP3 and WAV files, decoder and amp that will run the small speaker with a fair amount of noise. It runs stand alone without a need for a microcontroller. The charging circuit is your commonly available and cheap tp4056 that allows direct charging through its microUSB connector and slow charging with the solar cell.

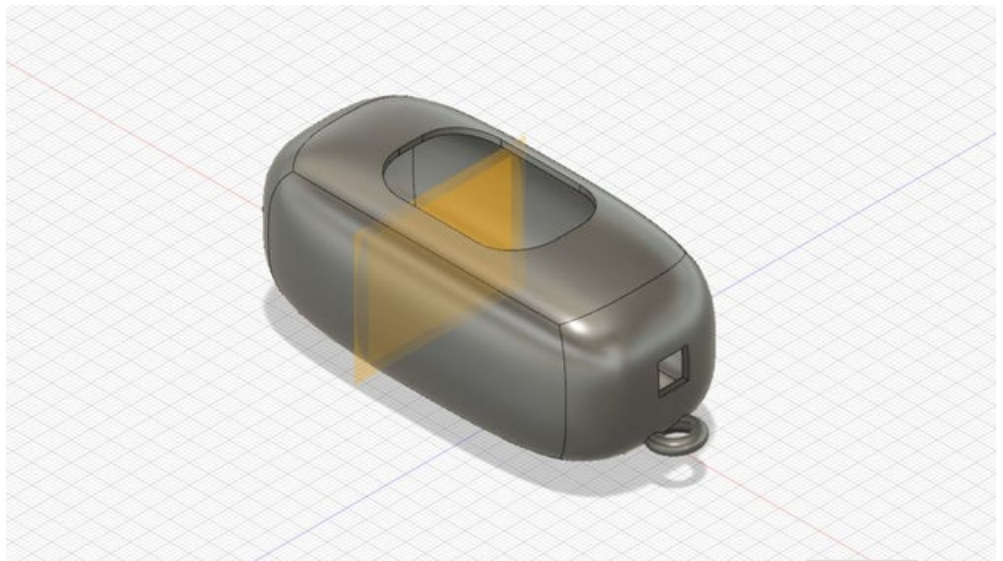
1. <https://www.dfrobot.com/product-1121.html> \$9
- 2 LiPo Battery 600 mah \$4
3. Solar Panel 6 v 25 ma on a good day 37 mm x 68 mm \$2
4. TP4056 -- trusty charging PCB \$1
5. Switch -- \$0
6. CQRobot Speaker 3 Watt 8 Ohm for Arduino \$3



Step 2: Print the Housing

The design of the housing is simple to print. It includes the cutouts for the charging port on the TP4056 and the switch hole on the front. It also includes the hanging ring for a lanyard cord. It takes about 2 hours to print and it looks ok in PLA with some high residue paint that covers the lines in 3D

printing. The teddy bear I borrowed from **suzuoji** on **Thingiverse**. It's a good idea to print it with supports. The design was done on FUSION360 and all the files are included.



<https://www.instructabl...>

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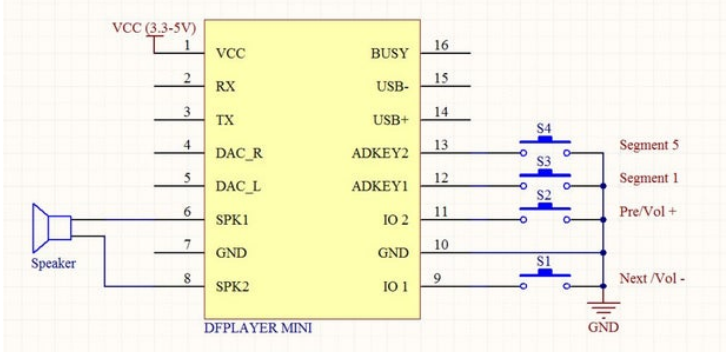
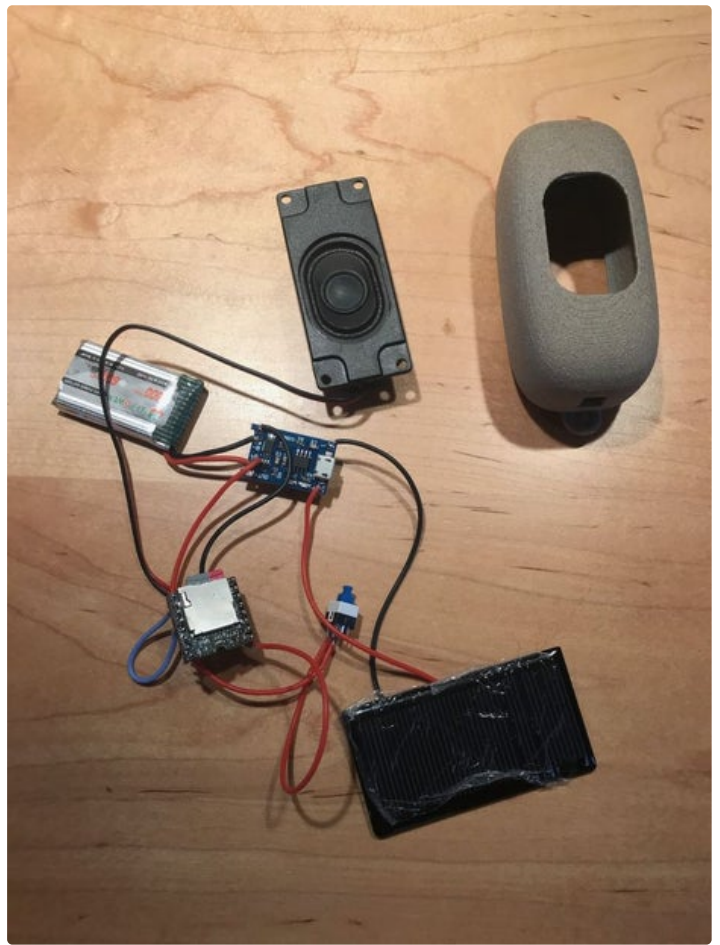
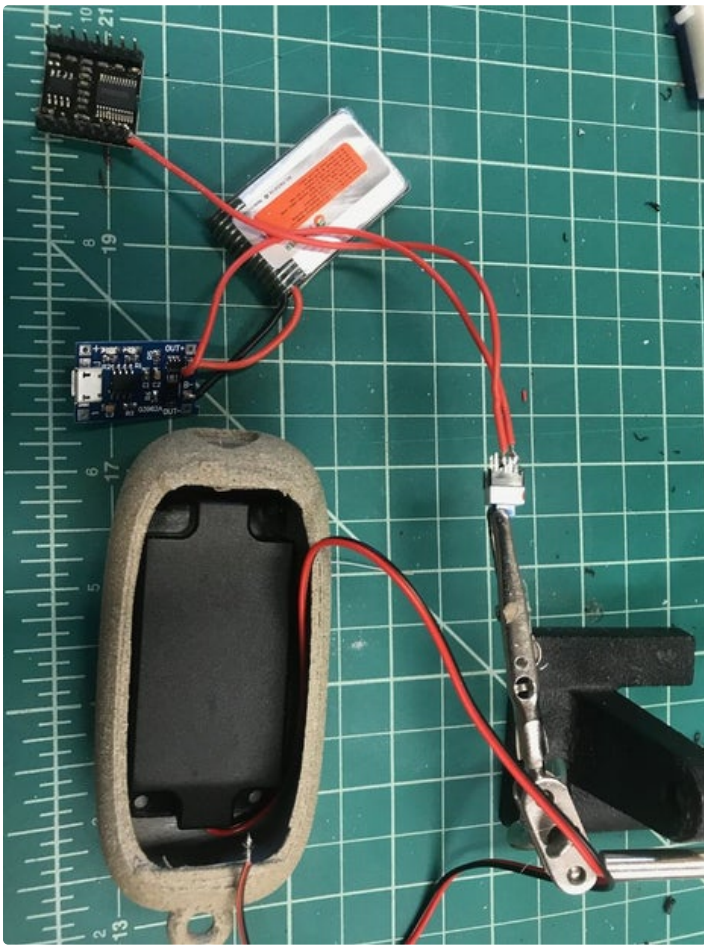
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Step 3: Wire It

I did not do a Fritzing wiring diagram for this project because it was so simple. The wiring diagram for the dfPlayer is included above. Attach the speaker wires as noted. The pins 12 to 10 are shorted with a jumper to cause it to play whenever it is powered on. Power is supplied to VCC directly from the battery through the main switch. The battery is connected to the TP4056 as well as the solar panel. I usually connect the battery directly to the switch and avoid the power out on the TP4056 this seems to work better.

The mp3 file of all the twig sapping you'll ever want to hear is include on the file marked 0001.mp3. Just put it onto a standard microSD card and plug it in. It has to be called this to make it work. Any MP3 or WAV file should work. Make sure you try out the unit prior to cementing the solar panel on to make sure it works. If you fancy the Meta sound of recorded Bear Bells be my guest -- you know where to find the download.



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Step 4: Build It

Remove the supports and lightly sand before painting with the textured paint. Center the speaker enclosure over the output hole and hot glue it into position. Position the switch after wiring through the inside of the enclosure and Super Glue it to the opening. Position the TP4056 into the central opening for the microUSB charger opening and hot glue the PCB

base to the speaker enclosure. The battery and dfPlayer are then positioned in the remaining space and the Solar panel is glued to the enclosure with E6000 glue. The tiny Teddy Bear is given a central hole to accommodate the top of the switch and glued into position with superglue.





Step 5: Using It

Use the paracord hole to attach it to your backpack or quick release option and push the little bear and you're off! Fully charged the battery lasts about 5 hours of intermittent pencil snapping but you will probably tire of it long before that. To charge it just plug it into a microUSB cord overnight or let the sun power you up over a couple of hours. When charged to completion the LED turns from RED to BLUE.



Step 6: Giant Pumpkin NOT Giant Bear

So you thought I would include a final scare like a still from the movie **The Revenant**. Fear is a big promoter and it's used shamelessly in the tourist business up here in Alaska. This is the winner of the giant pumpkin weigh off at the Alaska State Fair--a little over a ton!

