How to Create a Bear Den in a Stump

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To create a potential bear den in a stump:

1. **Watch this video** of a successful stump conversion: https://www.youtube.com/watch?v=AKGcz7CC-fA&t=27s. Also, to see what you're trying to achieve, see photos of natural bear dens in the Coastal Bear Den Identification Manual available at: http://artemiswildlife.com/bear-dens.

2. **Find an appropriate cedar stump** that is > 120 cm diameter with an internal cavity >70 cm across (Figure 1). Cedars decay slower than other tree species. Do not be concerned if there is not an obvious large entrance to the cavity through a basal opening – openings can be widened (Figure 2) or even created in some instances. The internal cavity size is critical because it is very difficult to enlarge the central cavity. Start with a central opening >70 cm across (>110 cm is best, Figure 2 is an example of one that was not large enough). Stumps or trees that have been burned to hollow out the centre work well. The height from the "floor" of the stump to the roof can be as low as 60 cm. Remember to obtain landowner's permission if the stump is on private land.

Figure 1. A good candidate for conversion to a possible bear den. The cedar stump is large (240 cm dbh) and has an open centre and entrance into the centre cavity.

Figure 2. A cedar stump (150 cm dbh) with potential for conversion into a bear den. The basal opening (red arrow on left photo) was easily enlarged to access the central cavity. However, the central opening in the stump was too small (~40 cm) and necessitated much effort to make it large enough (it was enlarged out to the circle marked around the opening, red arrow on right photo).

3. **<u>Flatten the top</u>** of the stump flat with a chainsaw (Figure 3) so that there is a better "seal" of the plywood on the stump. A good seal also reduces airflow and likelihood of water entering the den cavity. The surface may have a slight slant to allow water to drain off the plywood. Wear appropriate personal protection equipment (i.e., eye protection, chaps, steel-toed boots) when using a chainsaw.

Figure 3. Cutting an entrance into a stump that has had the top flattened before capping with plywood.

4. **<u>Create an opening</u>** that is 30 cm wide by 35 cm high (maximum 40 cm wide by 50 cm high) if the stump does not already have a basal entrance to the cavity. See the example entrances shown in Figure 4 and 6.

Figure 4. A stump with plywood awaiting attachment, entrance (30x48 cm) marked with red arrow.

5. **Cap the stump** with ¾" exterior-grade plywood centering it over the central opening so that it is completely covered. Cut it to the shape (Figure 4) of the stump – a battery powered jig saw or reciprocating saw works better than a chainsaw. Outlining the stump onto the plywood with a Sharpie makes this task easier.

6. **Drill holes** through the plywood into solid wood in the stump using a battery powered drill with a ¼" drill bit. Ensure that holes are drilled into the most solid wood of the stump.

7. **Bolt the plywood down** with four or five ½" by 6" lag bolts (Figure 5) with washers (Figure 6 shows the lag bolts being tightened). A battery-operated driver can make this step easier. Note that the stump in Figure 6 was created before we learned to cut off the top of the stump to make a level top! Figure 7 shows the finished product.

Figure 5. A 1/2" by 6" lag bolt used to secure plywood to the stump.

Figure 6. Plywood being bolted on with lag bolts (the stump should have been levelled first). Notice the small entrance (30x40 cm) marked with a red arrow that was cut to allow access to the central cavity.

Figure 7. Plywood bolted onto stump.

8. **<u>Add bedding material</u>** (Figure 8, 9) before adding the cap if you won't be able to squeeze through the entrance. Plug any gaps around the stump or under the cap with bits of wood or moss.

Make notes on the type of bedding used and take photos of it in place (the easiest way to tell if a den has been used is changes in the bedding composition and placement). Only use one vegetation species for bedding. Good plants to use for bedding include swordfern, step moss, conifer boughs or salal. Shavings can work as well, but green vegetation is preferred so that use by bears can be more easily monitored.

Figure 8. A bed of swordfern made by researchers in a stump.

Figure 9. Bedding in a stump after completion, note the swordfern and a lot of saw shavings from cutting the stump.

9. **<u>Scatter debris on top</u>** of the plywood to camouflage the den.

Information to gather:

- Lots of before, during and after photos!
- Geographic coordinates or pinpoint on a map.
- Dimensions of the stump: diameter of stump, distance between “roof” and floor and length and width of chamber inside, entrance width and height.
- The type of bedding that was added.

Send details to: hdavis@artemiswildlife.com.

Appendix 1: Packing list

- ¾” exterior-grade plywood or cedar slab
- Small pieces of plywood to fill small gaps
- Battery-powered drill and driver (extra batteries)
- Socket wrench (back-up to battery powered driver) and appropriate socket for lag bolt
- Hammer or mallet
- Drill bits (1/8” or ¼”)
- Chainsaw and tool kit
- Personal protection equipment (i.e., eye protection, chaps, steel-toed boots, gloves)
- Reciprocating saw or jig saw (optional)
- 1/2" by 6" lag bolts and washers (5 or more)
- 4” wood screws (for small repairs/additions)
- Silicone sealant (for covering bolt/screw holes; optional)
- Sharpie pen
- Pruning shears or handsaw to clear vegetation
- Wildlife tree sign
- Wildlife trail camera for monitoring (including batteries, SD card, python lock)
- Regular camera or cell phone to take photos of stump and finished “den”