Hot/Cold Shelf

This shelf uses a slate surface to allow the transfer of heat or cold from underneath. These directions are for a single-tile shelf but can easily be modified to fit more tiles to accommodate larger animals.

This enrichment device has been successfully implemented with: Fishing cats, margays, langurs, and tamarins

Items needed:

- 305mm x 305mm x 10mm slate tile
- 355mm x 355mm x 10mm plywood*
- 50mm x 75mm lumber
- 25mm x 50mm lumber
- 10mm x 125mm lumber
- 10mm x 25mm lumber
- 40 mm wood screws
- 2 double threaded screws (hanger bolts)
- 2 wingnuts
- Styrofoam insulation
- Hot water bottle and/or ice packs
- Handsaw
- Drill with drill bits
- Pliers
- Sandpaper
- Pencil

*To make suspended shelves, use a larger plywood base for rope attachment (see video below).

Safety concerns:

- Ensure hot/cold pack integrity prior to placing inside shelf.
- Ensure animals cannot gain access the space containing cold packs. Some species may be able to remove the wingnuts that are holding the access door to the device. In these cases, a hinged door and safety latch are recommended.
- Thoroughly sand all wooden parts of the device to avoid jagged edges.
- **This device should be implemented as part of a goal-focused enrichment program. Individual animal characteristics should be fully considered before trialing.**

Directions:

1. Cut the lumber to create the frame for the slate. You will need:
    a. x2 330mm pieces of 50x75, 25x50, and 10x25
    b. x1 305mm piece of 10x25
    c. x1 255mm piece of 10x25
    d. x2 355mm pieces of 10x125

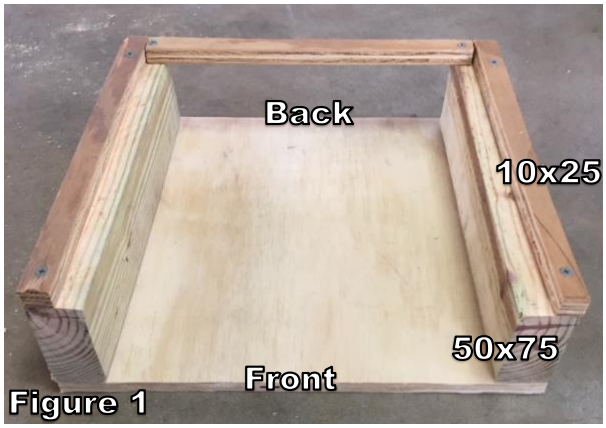

Figure 1

2. To make the frame, attach pieces on either side of the plywood as seen in Figure 1. Make sure there is enough room between the 10x25mm boards to fit the slate, plus a little extra room to allow the slate to slide in and out. There should be at least 10mm of plywood extending past the frame on the back of the shelf.
3. Attach one of the 10x125 boards to the back of the frame on top of the plywood extension (see Figure 2).
4. Attach the 255mm piece of 10x25 to the front of the frame (see Figure 2). This piece is to ensure the Styrofoam remains in place.
5. Attach the 25x50mm boards on top of the frame to make a gap in which the slate piece can slide into securely (see Figure 2).
6. Measure and cut the Styrofoam to fit in the base of the frame. This will be used to prevent temperature loss through the bottom of the shelf.
7. To make the removable front board, first line up the second 10x125 board to the front of the frame. Using a drill bit that is slightly smaller than the hanger bolt, drill one pilot hole through the 10x125 board and into the frame where the hanger bolt will be placed.

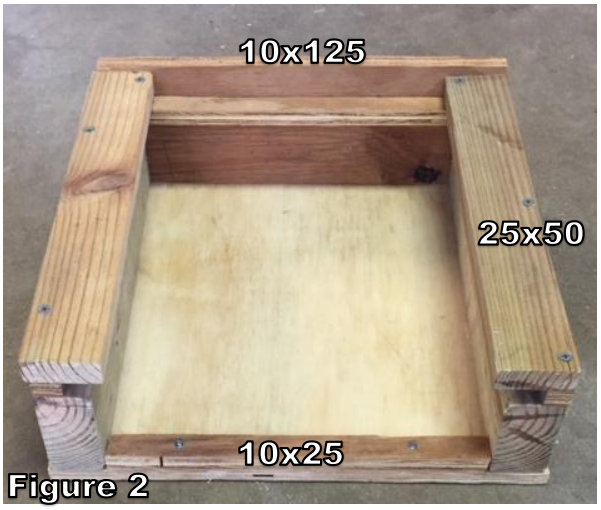

Figure 2

8. Install the first hanger bolt into the pilot hole by threading the two wingnuts onto the bolt and tightening them against each other (see Figure 3). You can then use these as a handle to screw in the bolt using pliers.
9. Make the hole in the unattached 10x125 board larger by using a drill bit that is slightly larger than the hanger bolt.
10. Line up the 10x125 board on the frame and repeat the steps to install the second hanger bolt on the opposite side.
11. Slide the slate into place and add freezer packs or hot water bottles in the space beneath. Secure the board in place with the wingnuts.


Figure 3

Video links of the device in action:

http://bit.ly/MargaySlateShelf (Note: This video showcases the original design of the Hot/Cold Shelf. It is recommended that you follow the instructions on this build guide)

We'd love to see your animals in action! Send pictures or videos of your animals using this device to Mark@teambuildingwithbite.co.uk