

Methow Beaver Project Husbandry Protocol

The Methow Beaver Project has found that beaver establishment success is higher when beavers are released as groups, preferably based around a pair of reproductively-aged beavers. When possible, we keep beaver colonies intact, but individual beavers naturally dispersing at time of capture can be joined into groups before release. We keep beavers at a fish hatchery long enough to gather their entire group or collect compatible mates. During their temporary stay at the hatchery, we wish to ensure that the beavers are safe and well cared for. We also want to minimize risk to caregivers. Following these guidelines will help make this possible.

FISH HATCHERY RACEWAYS

We have been fortunate to work with the National Fish Hatchery in Winthrop, who provides us raceways for our beaver captures. These are the basis on which we build the beaver's temporary home. We build the lodges inside the oval looped raceways which are then filled with water, about one and half feet deep. The raceways can be divided in half by bars which allow water to pass, but not animals. The raceways have a big advantage for our project, providing lots of fresh water which enters the raceway from an irrigation canal and exits to the same canal downstream. This water flowing through the system keeps conditions much cleaner than a stagnant or closed loop water system. The water input can be controlled by a valve in the center of each raceway and is typically kept at about ½ of the full force, allowing there to be a steady stream. The water outflow is also in the center of each raceway, and water height is controlled by a removable open-topped pipe placed in the drain – when the water in the raceway reaches the height of the pipe it flows into the drain and exits the system. Lifting the pipe out drains the raceway. Screens protect the drains from beavers and debris in the raceways, and should be cleaned periodically or lifted when cleaning raceways.

A very important note about the drains and screens: Our raceways are ageing structures which have reached the end of their usable life for fish production. The main reason is that the drains, once used to emit reared fish smolts to the river, are no longer as effective as they used to be. Crumbling concrete walls and debris entering the drains have taken a toll. We need to be **EXTREMELY CAREFUL** not to allow anything into the drain except water, else they could plug up and that would be the end of that raceway for the project.

LODGE CARE

Inside the raceways, we construct a pair of houses, one at each end. When building lodges, remembering aspects of beaver wellbeing and minimizing escape routes is crucial. Because beavers love to chew, our lodges are largely made of cement and other “non-chewable” parts. Cement blocks also have thermal mass which helps keep the beavers cool during the day and

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warmer at night. Metal screening materials for floors can be easily cleaned as necessary, and should be done at minimum between habitations by different beavers. Key features of a lodge include a hiding place, access to food, insulation at night and shade during the day. Wood chips inside the lodge and shade cloths built over the lodge are used to accommodate some of these purposes. Innovation is strongly recommended. Privacy from hatchery visitors and darkness seem to be preferred by our beavers.

KEY POINT: Lodges must be built in the middle of the raceway; far enough from the edges so that beaver cannot reach the side and escape. Visualizing the reach of a beaver while building the lodge can be a helpful tool in assessing the appropriate distance from the walls in which to place the lodge. Avoid having a lip to the top of the lodge, in which a beaver can use for further leverage to the wall.

Beavers have a lot of strength, and often push out their food bowls and may attempt to change the architecture of their lodge by pushing the cement blocks around. For this purpose, check on the lodges' condition daily. Reconstruct the houses as necessary and change their design as you see fit. If a house roof has fallen down partially, always check the beaver for injuries and ensure that it was not harmed. Spend extra time stabilizing the roof when rebuilding. Adding more weight to the top of the lodge may be necessary. Furthermore, wiring down the ramps and securing the food bowl will be needed. Wire ends should not protrude where they can snag on animals.

Some materials that are used to build the lodge may be a little too rough for the tender foot of a beaver. Add cushioning material such as plywood on ramps and additional wood chips inside the lodge to avoid injury to the beaver.



BEAVER PLACEMENT

In order for a successful stay in the hatchery, placing the beavers in appropriate raceways is a crucial step. Beaver are territorial and thus are competitive and must be grouped carefully. To reduce conflicts and possible death in captivity, as well as maximizing the chance of establishing breeding colonies, the following recommendations for beaver placement have been made:

- Males of the same age should be separated to avoid potentially fatal fights.
 - Females should be placed with males from the same capture area or a nearby capture area if possible (Families will be placed together if attainable).
 - If a family unit is caught, still observe behavior to make certain that they are friendly towards one another, especially if they have been separated for more than a few days.
 - Subadults can be paired with an adult or breeding pair as a family unit, however careful monitoring of the beavers' interactions is required to ensure no hostility. Caution must especially be used when grouping unrelated males together. If fighting occurs, separate the offender(s).
 - Have a plan to physically separate the beavers safely, which may require staff to jump in between the beavers.
 - If kits are caught, pair with the mother. If a new male has been placed with the mother before kits were caught, separate the mother and kits from the new male until careful monitoring can take place to see if the male accepts the kits. Kits generally do not need special care beyond what they receive from other beavers in their social group.
 - Kits should be protected from aggression, even from parents if necessary.
 - After pairing new beavers together, it is best to have multiple houses available, in case they do not get along and one gets rejected from the lodge. This will avoid a beaver from having to swim constantly and prevent possible death from exhaustion or cold temperatures.
 - It can be helpful to introduce beavers to each other on opposite sides of the dividers, and remove the dividers after several days. This allows them to get used to each other slowly.
- ❖ Keep track of beaver behavior and interactions in the "Condition Notes" binder that stays in the tote at the hatchery. (Notes, such as a newly paired beaver group sleeping in the same lodge, are important to know).

FEEDING

Feeding can be a fun part of taking care of beavers in the hatchery. Beavers are in a new environment, and will be stressed, especially when people are in the raceways. Keeping your

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voice down and moving slowly will help beavers feel more comfortable. Talking sweetly to the beavers when approaching them in the lodge may also calm them down, so that they know you are there and are not startled. When feeding, make sure you check on each beaver's eating habits and behavior. Record any noticeable changes in the condition notes.

We feed a highly nutritious rodent food by a leading manufacturer of exotic animal foods. It is designed to meet all rodent food needs without supplementation and has been recommended to us by zoos and wildlife rehabilitation centers. However, it may take a few days for a newly caught beaver to realize the pellets are food. Supplementing with aspen and apples encourages eating until they accept the pellets. Sometimes, providing less aspen and apples will be required to ensure the beavers start eating the pellets so that they can maintain their health. Other beaver captivity programs have had success with other leafy vegetables and root crops, but our wild beavers generally reject such foods during their short time in captivity. Feeding in the late afternoon is probably best to reduce daytime disturbances if possible. When feeding, our goal is to have the beaver eat all of its food before the next feeding. This makes monitoring intake easier and reduces contamination and wastage of food. If the beaver(s) are eating more, feed more. If the beavers are eating less, don't just pile new food on top day after day until the bowl is over full. If there is mushy food in the bottom of the bowl, remove the bowl and clean it with fresh water before feeding. Use gloves to protect your hands from excessive beaver saliva.



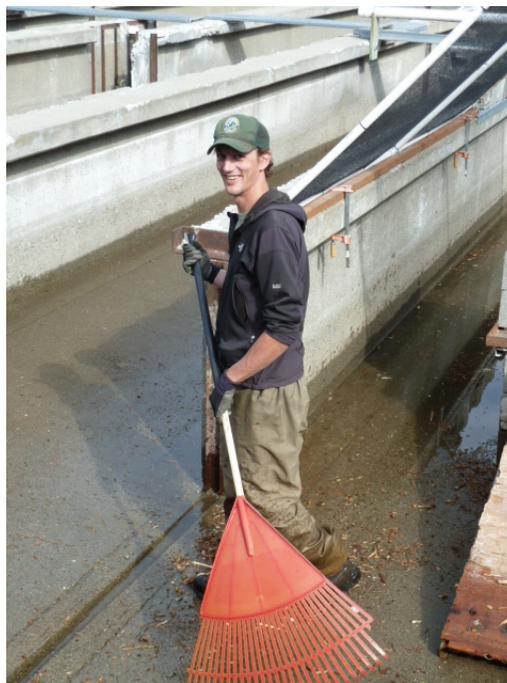
Apples are like candy to beavers. And just like candy is for humans, too much can be a bad thing and result in sickness. Therefore, do not feed too many apples to each beaver. Keep it as a treat.

Providing woody vegetation is required for rodents to gnaw on and aspen is a favorite among the beavers. Beavers can be quite picky when it comes to the freshness of their food, and will not peel and eat an old tree. Therefore, make sure the fallen aspen is as fresh as possible (no older than a week). Rejected aspen only creates more work during cleaning, and excess vegetation in the raceways accelerates algal growth. Be careful when throwing in large and long pieces of the tree. Beavers can use the pieces to build an escape from the raceways. Also, we use aspen whitewood during releases to familiarize beavers to a site, so save it.

*For our project, we encourage landowners with unwanted trees to let us come and take some aspen from their property if desired. We also have gained help through the Red Apple grocers in Winthrop, who provides us with their unwanted apples, which the beavers graciously accept.

CLEANING THE RACEWAYS

Keeping raceways sanitary is a critical part of our beaver husbandry program. Depending on the heat outside and the number of beavers in the raceway, you may have to clean the raceways more frequently. Scrub the raceway floors and walls with a stiff brush on a pole daily to keep the growth of algae down, especially when the temperatures rise later in the season. We keep a raceway broom in our area dedicated to the project, so please do not use fish raceway brooms.



Cleaning of the raceways will preferably be done when the beavers have been released. However, sometimes the beavers spend a few weeks in the hatchery, and thus will still be occupying the space as you clean. Because of this, special precaution is needed. To prevent injury of the beavers jumping out of their lodges onto the concrete during the emptying water, make sure the beavers are kept out of their houses by letting them leave the house before you empty the raceways and then raise the house ramps to prevent beavers from climbing back into their house until after cleaning is finished. If possible, move the beavers to an empty clean raceway, so that stress is minimized and the raceway being cleaned can have time to bake in the sun afterwards.

We generally remove large pieces of debris, then unplug the raceway water outlet, and let it drain. We screen the emptying water completely to catch any further debris we may have missed. Special attention is needed near the emptying water to make sure the beavers don't escape. Try and work on one side of the raceway so that the beavers can hide on the opposite end, reduce noise, and calm movements to minimize stress to the animal. Try and scrub the floors and walls while the water is emptying. The water will then run and continually drain as scrubbing continues. A power hose washer can be used to help get algae off of the surfaces.

If the raceways are being cleaned after beavers have been released, turn the water off after cleaning, and allow the raceway to bake in the sun for several days. This is a very effective way to sanitize large surfaces in the raceways. Houses and food bowls should be cleaned of old debris and sprayed with a 2% Vircon solution, as well as any areas that are difficult to completely dry and bake in the sun.

EXTERNAL DANGERS

Providing a safe living environment for the beavers at the hatchery does not stop at the raceways. To prevent most animals and visitors from the dangers of falling into the raceway or posing a threat to the beavers, a fence was built surrounding the raceways. This will also help stop beavers who escape from their raceway from further escaping out into the wild.

If you see a wild animal or domestic pet that seems to be interested in the beavers, be sure to monitor its behavior and call the owner if appropriate and beaver project crew leads, as well as contact the hatchery staff of its presence. Barking dogs, even on a leash, stress the beavers and cannot be tolerated. Keeping other animals away from the beavers is essential. Bees and other animals that may hang around the raceways will be removed if it is seen as a problem.

BEAVER WELLBEING

Whenever you are working with the beavers at the hatchery, check their health conditions. Their health can potentially change rapidly. As usual, note any unusual behavior and tell the appropriate staff. A change in diet is a good first indicator that something may be wrong.



After processing the beaver after capture, check for any injuries and keep an eye on their ears and tail where they have been processed for the first couple days. Although infection is rare, it is still a possibility. Add additional antibiotic cream if necessary.

Beavers, like all animals, have illness in their populations. Our beavers are a small subset of a larger population, and thus illness is rare but can occur. Bacterial or viral infections are often identified by sluggish or other peculiar behavior. These signs may warrant a type of quarantine from new beaver introductions. If you have reason to believe a beaver may be sick it is very important to take notes on the beaver and its behavior, as well as notify a project biologist.

CARETAKER WELLBEING

Beavers are generally good natured and working with this project is a rewarding and fun experience. We want to insure that this project provides you with positive memories and some basic precautions are essential to that goal. Here are a few guidelines to follow: Remember our beavers are wild animals. Do not corner them, scare them, or attempt to hold them.

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- When working in the raceways, wear waders. When handling items that expose you to beaver bodily fluids, wear a barrier glove. Use the hand sanitizer provided.
- Disinfect your waders after exiting the raceway. A tub of Vircon and scrub brushes are provided, so please use them.
- Our raceways have narrow walkways, older concrete and wet surfaces. Slip, trip, and fall hazards are present. Stay alert and use caution. Do not jump into the raceways.
- Use proper lifting techniques with concrete blocks and the like.
- Wash your hands using soap and water completely before eating, drinking, or smoking.
- If you have open cuts or sores they should be covered completely or you should excuse yourself from the project until healed.
- Do not allow untrained guests to enter the raceways.
- If you exhibit flu-like symptoms after working with beavers, let your doctor know you have been working with beavers. Infections, because they are so unusual, are possibly missed by physicians yet are easily treatable.

RELEASE FROM THE HATCHERY

When it is time to release the beavers, weigh the beaver and then check floy tags and the PIT tag for identification to make certain the correct beaver is being relocated. Ensure that the PIT tag is working properly. If the PIT tag is no longer working or has been lost, insert another PIT tag before release. If the floy tags have been lost while their stay in the hatchery, no new tags are needed since they are only for temporary identification while in the hatchery. Finally, double check that the right beaver is in the correct truck for release if multiple releases are occurring that day.

