

RELOCATING AMPHIBIAN EGG MASSES

We do not recommend relocating native species! However, if a wetland is planned to be filled or drained, rescue may be acceptable. If a restoration project includes construction of a wetland where natural immigration may take several years, assisting colonization may be acceptable, as long as there are natural habitat connections to existing populations. Relocating adult amphibians or even recent metamorphs usually fails to establish a new population where hoped, while relocating egg masses is often successful. If it is necessary to relocate egg masses of any protected frog or salamander species, the following steps will facilitate introduction to a new site.

1. A **Scientific Taking Permit** from the Oregon Department of Fish and Wildlife (ODFW) or the Washington Department of Fish and Wildlife (WDFW) is required before handling any protected species!! In addition, **specific permission must be obtained from ODFW or WDFW** before egg masses, larvae, or adults are either removed from a site or released at a site.

2. Preparation for a successful egg mass relocation begins with stockpiling branches from other parts of the site, unless there are already plenty of them in the pond. Preferably these would be Douglas fir or other conifer limbs with multiple side branches. The site to receive egg masses should have been designed or previously determined to be suitable for this species, including duration of the pond through metamorphosis and including habitats needed for all development stages and seasons of the year.

3. Timing of egg mass relocation can be crucial to the project's success. Egg masses should be at early development stages, generally stages 1 to 12, before embryos have begun to elongate (Gosner 1960), or the equivalent for salamander eggs. At early development stages egg masses will maintain their integrity during transfer, whereas at later stages the jelly will have begun to disintegrate so that the masses will break apart when handled. Periods of warm rains during winter and early spring signal the initiation of breeding pulses for many amphibians, and can be used as a clue to appropriate times for egg mass collection from a given population.

4. Disinfection of boots, buckets, tools, and all equipment to be used for egg mass relocation is essential before the project begins. Various pathogens are known to attack developing embryos as well as larvae and adults. They have devastated many amphibian populations and now threaten entire species. Chytrid fungus and several viral and bacterial diseases are easily carried on waders and other equipment. Weed seeds are also readily transferred on boots, nets, and buckets. Use chlorine bleach for disinfection. **Be aware that relocating egg masses has the risk of transferring diseases and weeds to the new site!**

5. Collecting frog egg masses should be accomplished with the least possible disturbance and handling. Large basins or 5-gallon paint buckets can be used to hold egg masses during transfer. Each egg mass should be examined first to determine its attachment, if any. Sedge blades or the portion of the branch or other structure to which it is attached should be cut with pruning shears or loppers. The container should be held in the water while each egg mass is released and gently pushed into it. Egg masses should remain submerged during the entire transfer process.

6. Egg masses should be placed in specific locations as similar as possible to where they were laid. Repositioning each egg mass should be accomplished by building a support structure out of the branches previously stockpiled. If possible, the piece of the original attachment should be wired or tied to the new support. Otherwise, a basket or cradle should be formed from the branches. Egg masses placed loosely on the pond substrate are subject to displacement to unsuitable positions, where oxygen deprivation from burial or heavy siltation could cause mortality, or where they are slowed in development by reduced light and warmth from the sun. For Red-legged Frogs (*Rana aurora*), ideally the egg masses should be fully suspended above the substrate, 15 to 30 cm below the water surface, in water 30 cm to 1.5 m deep, where water velocity is 0 to 2 cm/second (Richter 1997, Corkran pers. obs.). Placement should take into account anticipated water depth fluctuations to avoid stranding the egg masses or submerging them to depths greater than 50 cm for more than a few days at a time.

Literature Cited

- Gosner, K. L. 1960. A simplified table for staging anuran embryos and larvae with notes on identification. *Herpetologica* 16:183-190.
- Richter, K. O. 1997. Criteria for the restoration and creation of wetland habitats of lentic-breeding amphibians of the Pacific Northwest. In K. B. Macdonald and F. Weinmann (eds.). Wetland and riparian restoration: Taking a broader view. Society for Ecological Restoration International Conference, Sept. 14-16, 1995, Seattle, WA. US EPA Publication 910-R-97-007.

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