

**U.S. Fish & Wildlife Service
LOWER COLUMBIA RIVER FISH HEALTH CENTER
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April 29, 1999

Considerations for planting salmonid carcasses in the Warm Springs River

RISKS IN PLANTING FISH CARCASSES

Precautions should be taken in planting carcasses to avoid introducing disease agents. Most diseases can be transmitted from the carcasses of infected fish to live fish, either by cannibalism or by the release of disease agents into the water. Many disease agents survive in the water, the sediment, invertebrates (such as leeches or small worms) and/or animals and can later infect fish. Carcasses of fish, especially those from outside the watershed, should be evaluated by fish health specialists before planting— a river and its inhabitants cannot be cleaned or disinfected!

SPECIFIC CONCERNS FOR THE WARM SPRINGS RIVER AND ITS FISH

Whirling Disease has not been found in the fish stocks produced in the Deschutes and Warm Springs watershed. However, it has been detected in the steelhead adults who strayed from their home river where the parasite is endemic. Planting carcasses of salmonids originating from other watersheds would eventually result in establishment of the parasite. Once the parasite is established, it is impossible to remove; its spores survive in mud for up to 30 years, it is not killed by freezing or even by some forms of cooking. Rainbow trout and chinook salmon are very susceptible to this parasite -- it can decimate populations of wild fish.

IHN (Infectious Hematopoietic Necrosis Virus) is found in some hatchery adult fish that return to Warm Springs. The disease has never been detected in the hatchery juvenile spring chinook, largely due to natural resistance and the precautionary disinfection procedures used at Warm Springs NFH. However, outside the hatchery, infected carcasses could release virus into the environment. The virus can survive in the sediment or even inside leeches. Fry emerging from redds or young fish face the risk of dying from the virus which can cause up to 80% mortality. There is no treatment for infected fish and survivors can carry the virus and infect other fish. Steelhead and trout are particularly susceptible to this disease.

Bacterial Kidney Disease (BKD) is common in spring chinook salmon. The disease is extremely difficult to control because the causative bacterium hides inside the fish, protected from antibiotics, and is passed directly from the mother to her offspring. The bacteria survive about 10-20 days in water and are also transmitted by cannibalism. Recent reports indicate that the northern pikeminnow may be a carrier of this pathogen. While this pathogen is already present in the spring chinook of the Deschutes and Warm Springs Rivers, the planting of carcasses with overt BKD is not advised, especially if other species of fish can be infected.

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PRECAUTIONS FOR PLANTING CARCASSES OF ADULT SALMONIDS

Do not plant:

1. Broodstock that die prior to spawning (may have died of infectious disease)
2. Broodstock that have been injected with erythromycin less than 21 days prior (want most of the drug metabolized and out of the tissues).
3. Fish from outside the watershed (don't want a new disease in the Warm Springs River).
4. A stock of fish that has not been evaluated by fish health personnel.
5. Carcasses near the hatchery intake.

If carcasses are planted, it is recommended that spring chinook carcasses from the Warm Springs NFH be used. These fish are checked by fish health personnel at spawning. Grossly diseased fish should be discarded then. **Before planting, the carcasses should be frozen after removing the heads/internal organs (including the kidneys).** This is done because many of the disease-causing organisms reside in these organs. Freezing reduces virus levels. Dispose all diseased carcasses, heads and "guts" away from other animals. These precautions reduce the risk of transmitting disease agents. Steelhead carcasses should not be planted in the Deschutes or Warm Springs Rivers because they may carry whirling disease.