

10.2 PROTOCOL FOR IN-SITU CAGED FISH BIOASSAYS

Overview

Under certain conditions, it is possible to use caged fish to determine if deleterious effects are happening in receiving waters. The deployment of caged fish into fresh and marine waters will usually only provide the investigator with a measure of mortality. The species of fish exposed must be relevant to the site's environment, they can be from indigenous or cultured stocks. Various species of salmonids are available, the age and size of the salmonids is often seasonal and species dependent. There are also private trout farms that will provide stocks.

Sources

British Columbia MWLAP (2003)

At a glance

*avoid direct
sunlight*

*do not
overcrowd
fish*

1 Transport fish in clean and disinfected containers (i.e., Wescodyn or Rocol) that can be sealed. Provide a portable compressed air system or bottled oxygen when traveling any great distance. Temperature will also play an important factor in the summer months during transit.

2 Cool using de-chlorinated ice blocks. The fish supplier should provide you with a statement regarding the stocks' origin and any disease treatments they have undergone.

3 Ensure the cage is capable of sustaining fish for the duration of the exposure. The cage should allow adequate flow but ensure the fish can not escape.

4 Position and secure cages prior to adding the fish. The control location should resemble the sampling location with regard to flow rate, geography, depth, etc. In swift flowing water, position cages in back eddies or side pools, so fish are not under constant current swimming stress. Try to position cages out of direct sunlight. Cage floats must be brightly colored to avoid navigation hazards for boaters.

5 Transport fish to the cage site in a sealed bucket to prevent loss. Do not overcrowd the fish in the bucket. The number of fish added to each cage is dependent on size and mass. Count and gently add fish to the cage. If there is a temperature gradient difference greater than three degrees from the field location to transportation water, slowly add upstream water to acclimate the stocks over a 1-hour period.

6 Sacrifice a representative number of test fish from the general test stock to measure length and weight. The potential for histological comparison is also a possibility, particularly using gill structures.

7 Record field parameters such as DO, pH, conductivity, salinity, and temperature and estimate flow if possible.

8 Establish a feeding schedule if testing will exceed four days. Use yearling fish for long term exposure studies.