APPENDIX F

Wyoming Game and Fish Department
Fish Division
Risk Assessment Matrix For Aquatic Importation And Transplant

Introduction

The movement of fish by Department employees is critical to address many of the aspects, thus the intent, of our mission. However, the act of moving or importing fish presents risk, risk with the potential to jeopardize our mission. To address this conflict a method to determine the relative level of risk associated with any proposed fish importation and/or transplant was needed. The goal was to develop an objective procedure to identify the potential risk associated with the importation and/or transplanting of fish.

Procedure

Aspects from the Hazard Analysis and Critical Control Point (HACCP) procedure (Gunderson and Kinnunen 2001) have been adopted to develop a Risk Assessment Matrix. An understanding of the HACCP procedure is necessary to understand the Matrix. Attending the Aquatic Nuisance Species Hazard Analysis and Critical Control Point Training is recommended to help understand the concepts and terminology used in the matrix.

Recognizing a no risk condition does not exist, 10 levels of risk were identified based the source of the fish and destination water. This matrix is to be used only to evaluate importation and/or transplanting of fish from state and federal hatcheries or by Department biologists. The matrix also does not attempt to address any management objectives, genetic considerations nor implications associated with introduction, restoration or maintenance stocking. These issues must be address separately and prior to considering the risk associated with the act of moving fish.

Each level of risk is defined by criteria associated with that level of risk. The criteria are offered as a yes/no condition. To establish the potential risk, proceed through the various levels until you can answer yes to all criteria at a particular level. To assist you in the process the criterion that changed and increased the level of risk is underlined within the category.

Level 3 Low Risk is the highest level of risk acceptable to obtain approval to move fish. There are two approaches to reach an acceptable level of risk. First, criteria associated with the movement of fish are at or below risk Level 3. Second, by conducting a HACCP procedure, adequate control points and techniques are identified to reduce the risk to an acceptable level.

Definitions

ANS (Aquatic Nuisance Species). An aquatic species that if introduced is reasonably likely to establish reproducing population that could negatively impact existing species, recreation or other existing use of water resources in the absence of control. Additional information can be obtained at these web sites: http://nas.er.usgs.gov, http://www.sgnis.org, http://wwwnbii.gov/invasive/spp.html and http://www.answest.fws.gov.

Barrier. An object or water quality, either natural or man-made, preventing movement of an aquatic organism.

Closed Water Supply Facility. A hatchery with a water supply from a spring or well that is enclosed preventing access by aquatic species or other possible vectors for disease and parasites.

Drainage. A specific stream or river including all streams and standing waters, which drain into that river or stream within a river basin (e.g., Goose Creek in the Tongue River Basin).

HACCP (Hazard Analysis and Critical Control Point). A preventive system of hazard control to reduce the risk of spread of unwanted species into new water bodies.

HACCP Upper Limit. The acceptable limit of risk for importation or transplant **before or after** HACCP procedures are employed.

Like Habitats. We expect similar species assemblages with similar habitat attributes (e.g., elevation, geomorphology). When knowledge of specific species assemblages is lacking, if habitat attributes are similar, we will assume similar species assemblages.

NTS (Non-Target Species). Any species (plant or animal) not requested or desired.

Open Water Supply Facility. A hatchery with a water supply that is not protected from access by aquatic species or other possible vectors for disease and parasites.

ORVI (Optical Recognition is Virtually Impossible) Organism. Life stage or pathogen that is not visible to the naked eye (i.e., no-see'um).

River Basin. The large river systems of the state: Bear River Basin, Belle Fourche River Basin, Cheyenne River Basin, Great Divide Basin, Green River Basin, Little Missouri River Basin, Little Snake River Basin, Madison River Basin, Niobrara River Basin, North Platte River Basin, Powder River Basin, Snake River Basin, South Platte River Basin, Tongue River Basin, Wind-Bighorn River Basin and Yellowstone River Basin.

Source. Location of fish; however, more than one definition is possible. The location of the fish can be the initial location of the fish (hatchery or water), the distribution tank (or equivalent) after loading or fish load to be stocked after the HACCP process.

References

Gunderson, J.L., and R.E. Kinnunen. editors. 2001. Sea Grant Aquatic Nuisance Species Hazard Analysis and Critical Control Point Training Curriculum Minnesota Sea Grant Publication Number: MNSG-F11, Minnesota Sea Grant, 2305 E 5th Street, Duluth, Minnesota.

Risk Assessment Matrix For Aquatic Importation And Transplant

Risk Level	Department Cool/Warmwater Aquaculture Importation	Department Aquatic Transplant
Level 0 No Risk	**Does Not Exist**	**Does Not Exist**
Level 1 Low Risk	• **Closed Water Supply Facility** • Multiple Species Reared, All Found In Destination Drainage • No NTS, ANS, ORVI In Source	• **Transplant In Immediate Drainage W/O Barriers (Continuous, Tributaries Within Drainage)** • Like Habitat, No Differences In Known Species Assemblages • No NTS, ANS, ORVI In Source
Level 2 Low Risk	• **Open Water Supply Facility** • Multiple Species Reared, All Found In Destination Drainage • No NTS, ANS, ORVI In Source	• **Transplant In Immediate Drainage W/ Barriers (Barriers Between Tributaries Within Drainage)** • Like Habitat, No Differences In Known Species Assemblages • No NTS, ANS, ORVI In Source
Level 3 Low Risk	• **Multiple Species Reared, Not All Present In Destination Drainage** • No NTS, ANS, ORVI Present In Source	• **Transplant In Common Drainage W/ Barriers Or Isolation (Non-Continuous)** • Like Habitat, No Differences In Known Species Assemblages • No NTS, ANS, ORVI In Source
Hazard Analysis Critical Control Point Upper Limit		
Level 4 Low Risk	• Multiple Species Reared, Not All Present In Wyoming • **Potential NTS In Source** • No ANS, ORVI In Source	• Transplant In Common Drainage W/ Barriers Or Isolation (Non-Continuous) • **Known Difference In Habitat And/Or In Species Assemblages From Source To Destination** • Potential Of NTS In Source, But Not A Concern • No ANS, ORVI In Source
Level 5 Low Risk	• **NTS Present In Source** • No ANS, ORVI In Source	• Transplant Within River Basin • **Potential Of NTS In Source And A Concern** • No ANS, ORVI In Source
Level 6 Moderate Risk	• **ANS In Drainage, But Not In Source** • No ORVI In Source	• **Transplant Out Of River Basin** • No ORVI, ANS In Source
Level 7 Moderate Risk	• **ANS May Be Present, But Controllable In Source** • No ORVI In Source	• **ANS Present In Drainage, But Not Identified In Source** • No ORVI In Source
Level 8 Moderate Risk	• **ANS Present In Source, But Controllable** • No ORVI In Source	• **ANS Present In Source, But Controllable** • No ORVI In Source
Level 9 Moderate Risk	• **ORVI Present In Drainage, But Controllable In Source**	• **ORVI Present, But Controllable In Source**
Level 10 High Risk	• **ANS, Or ORVI W/ Fish** • **HACCP Not Effective In Removal Or Control**	• **ANS, or ORVI In Water Body** • **HACCP Not Effective In Removal Or Control**