Columbia Environmental Research Center

Publication Brief

Illustrated Field Guide for Assessing External and Internal Anomalies in Fish

This illustrated field guide describes procedures for assessing the exposure of fish to environmental contaminants and other stressors. Descriptions include how to:

- examine and handle freshly captured fish, and
- collect, store, and ship the tissues necessary for further examination.

Although this guide does not include specific diagnoses, it provides more generic identifications of observable conditions. Diagnosis can only be accomplished through histopathology and other laboratory expertise.

Procedures are described for processing fish for examination of external and internal anomalies and pathologies. Fish are:

- captured (preferably by electrofishing),
- held alive until processing (generally less than 1 hour),
- weighed, measured, and necropsied, and
- scale sample obtained for age determination.

Information is given for the collection and preservation of tissue samples for histopathological analysis.

Photographs of most abnormalities are included along with normal conditions for easier identification of external (oral, head, eye, gill, opercula, and fin) and internal (liver, spleen, gonad, and kidney) anomalies.

The guide also includes recommendations for:

- record keeping,
- sample labeling,
- shipping records, equipment, supplies, and samples.

A list of suggested equipment and supplies for field processing is included, as are instructions for cleaning equipment.

Example of normal (top) versus deformed (lower) head in rainbow trout (*Oncorhynchus mykiss*).

Smith, S.B., Donahue, A.P., Lipkin, R.J., Blazer, V.S., Schmitt, C.J., and Goede, R.W. 2002. Illustrated field guide for assessing external and internal anomalies in fish: U.S. Geological Survey, Information and Technology Report, 2002-0007, 46 p.

This field guide is available on-line in its entirety at: http://www.cerc.usgs.gov/pubs/center/pdfDocs/ITR_2002_0007.pdf

A companion to this guide, "Field Procedures for Assessing the Exposure of Fish to Environmental Contaminants," is also available on-line at: http://www.cerc.usgs.gov/pubs/BEST/field_BEST.htm