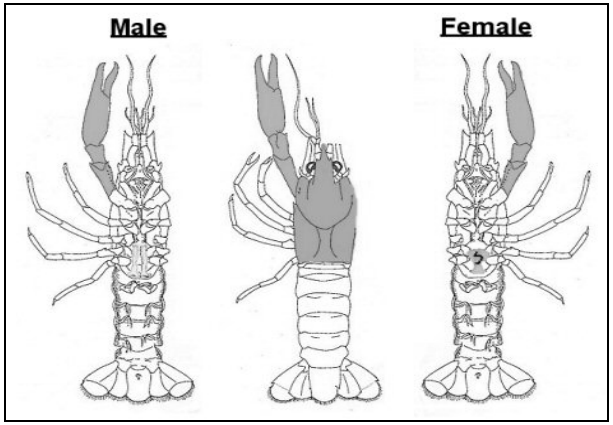
# Protocol for

# Wisconsin Crayfish Sampling

# 2007

# WAV Version






## Contents

## Introduction

Crayfish are important members of aquatic ecosystems in Wisconsin. They perform many functions, including processing detritus and serving as food for game fish (Hobbs and Jass, 1988).

In recent years, there have been changes in the distribution of crayfish species throughout Wisconsin. To gain a better understanding of these trends, the Wisconsin DNR has provided funding to the University of Wisconsin – Madison to conduct research, including a state-wide crayfish survey. This protocol outlines the methods for this survey.

If you have any questions or concerns regarding this protocol, please contact the people listed on the back page.

Thank you for assisting us with this sampling effort.

Hobbs, H.H. and J. P. Jass. 1988. The crayfishes and shrimp of Wisconsin. Milwaukee Public Museum: Milwaukee, Wisconsin.



## Legal information about crayfish harvesting

**2007-8 Crayfish Fishing Regulations**
*(from Guide to Wisconsin Hook and Line Fishing Regulations)*

- A fishing or small game license is required to take crayfish.
- No person may possess live crayfish and angling equipment simultaneously on any inland water except the Mississippi River
- No person may place, deposit, throw or otherwise introduce live crayfish or crabs into any water of the state unless a stocking permit authorizing introduction has been issued.
- Crayfish traps placed in trout streams shall conform to the dimensions of minnow traps.*

There are no bag or size limits on crayfish and no closed season except on the Wisconsin/Minnesota boundary waters where the open season is from May 1 to the following March 1, both dates inclusive.

Crayfish scoops may be used in the Wisconsin/Minnesota boundary waters provided the scoops do not exceed 4 feet in length, 3 feet in width and 18 inches in depth attached to a handle not to exceed 4 feet in length.

Crayfish may be taken in all waters by the following means only: By hand, by use of minnow seines and minnow dip nets, where the same are permitted for the taking of minnows, and by crayfish traps (other than in trout streams) with the entrance of the trap not to exceed 2-1/2 inches at the greatest diagonal measurement. Traps must bear the name and address of the owner and must be raised and emptied at least once each day following the day set.

## Legal information (cont.)

*[Removed bait regulations Summer 2007. See Emergency VHS Rules which amend bait regulations on next page.]*

Floats or markers used to locate traps may not exceed 5 inches in size and may not extend more than 4 inches above the water surface and be of a color other than orange or fluorescent coloration.

***Minnow Regulations** *(*Guide to Wisconsin Hook and Line Fishing Regulations) (*relevant excerpt)*

… No minnow species may be netted or trapped in Lake Superior and its tributaries. No minnow species may be trapped or netted in Lake Michigan or Green Bay, except suckers may be taken with dip nets only. No minnow species, except suckers, may be trapped or netted from the tributaries to Lake Michigan and Green Bay. Only licensed bait dealers with a permit from the DNR may use minnow seines or minnow dip nets of any type or description in inland trout streams or tributary spring ponds. During the open trout season, people who do not possess a bait dealer's license can't use more than three minnow traps to remove minnows from trout streams.

Bait minnows may be taken, where allowed, by the following methods only: *(relevant excerpt*)

- With dip nets no more than eight feet in diameter or square.
- With traps no more than 24 inches long and 16 inches in diameter or square with a throat measuring one and a half inches or less. All traps must bear their owner's name and address and be emptied at least once every 48 hours (once every 24 hours on trout streams). On Minnesota and Iowa boundary waters, minnows much be removed from traps at least once a day from one hour before sunrise to one hour after sunset.



**Wisconsin's Emergency VHS rules, June 2007**

In April 2007 Viral Hemorrhagic Septicemia (VHS), a virus that kills game fish, but which is not harmful to people, was found in the Lake Winnebago System. It was previously known to exist in the Great Lakes, but not in inland waters of Wisconsin. Because the disease is capable of killing many types of game fish, emergency rules were put into effect to attempt to halt the spread of the disease into other inlands waters of the state. Bait regulations for crayfishing were affected by these rules. They now state:

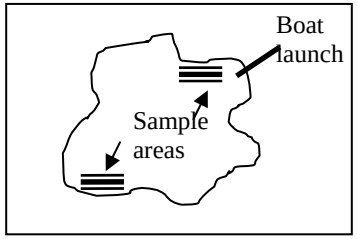
"Crayfish may not be taken with use of bait consisting of fish, including parts of fish lawfully taken, fish by-products including fish meal or prepared parts of such fish except in the same body of water from which the fish was obtained, or with written approval of the department."

## Site Selection

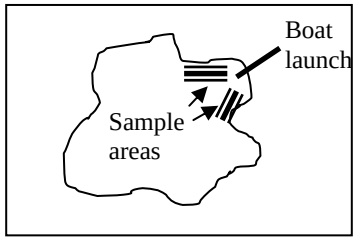
- **Please sample a variety of ecosystem types**, including lakes, streams, rivers, and wetlands.

  Streams: Road crossings are convenient sampling sites.

  Lakes: The preferred method of sampling in lakes is to collect crayfish along two transects on opposite sides of the lake:




  For large lakes, this may be unrealistic, so collect crayfish along the shoreline in each direction from the boat launch:




- **Crayfish reside in a variety of habitats.** Try to distribute your collection efforts over a variety of substrates, including rocks, vegetation, and sand.

- **Crayfish are less active (and less trappable) when water temperatures are below 12 °C (54 °F).** Make sure that the water temperature is >12 °C (54 °F) before you sample. In Wisconsin, crayfish are most active from late June through mid-August.



## Equipment

Methods
Data sheets
Pencil
Whirl-Pak bags
Whirl Pak labels
Preservation alcohol
Conductivity meter
Thermometer
Minnow dip net
Minnow traps
Buoys
Rope
Bait
Sharpie marker
Hach D.O. kit
pH paper

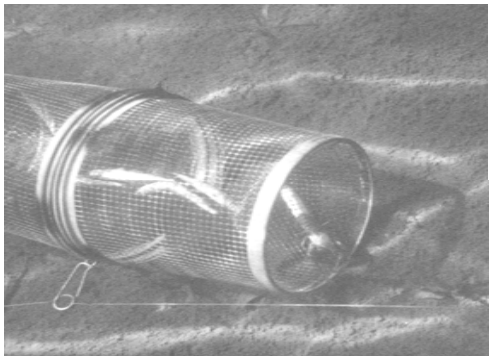
## Collection

A combination of trapping AND hand/net collection provides the best information on crayfish distributions. Minnow traps are an effective way to collect crayfish, but trapping requires a visit to the sampling site on two consecutive days. Hand or net sampling can be done in one visit to the site. If sampling over a two day period is not possible, please collect the crayfish using only the net and/or hand collection described below.

### Minnow Traps:

Traps must not be longer than 24 inches in a designated trout stream (you may need to remove trap extensions). Only three traps at a time can be used in trout streams. Traps must not be wider than 16 inches in any stream.

******Please use the hand/net collection technique in addition to the traps when it is legal to do so.***



**1. Expand the trap opening to 4-5 cm. (1.5 – 2 inches) in diameter.** This can be done by pushing an oar handle into the opening. Please note that traps may not have an opening larger than 1.5 inches in a designated trout stream.

**2. Put bait (about 1/4 pound) into a standard wire-caged minnow trap**. Please note that the use of fish bait is prohibited due to emergency VHS rules (see legal section of methods).

**3. Label and tag the trap.** Floats and markers used to locate the traps must be less than 5 inches in diameter and cannot be orange or fluorescent. Traps must be tagged or marked with a contact name, street address, city, and contact phone number.

**4. Set 5-10 traps at each sample site (except in trout streams where only 3 can be used).** Traps should be at least 10 meters (30 ft.) apart from each other at water depths of 0.5 to 3.0 meters (2-10 feet). Adding large rocks to the traps will prevent them from being pushed to the surface in areas with swift current. Remember to place the traps in both rocky areas (preferred) and other habitats (as available). In streams, *position the trap openings perpendicular to the*



## Collection (cont.)

*current* to reduce the likelihood of minnows entering the traps instead of crayfish.

The number of traps will depend on habitat and trap availability. 10 traps are recommended for lakes (5 per transect) and streams, but fewer can be used. WAV volunteers will generally use 6 traps per site except in trout streams where only 3 traps per site can be used.

**5. Leave the trap overnight and remove it <u>the next day</u>.** If overnight sets are not possible, please use the hand/net collection techniques described below.

## Collection (cont.)

**Dip Nets, Hand Collection, Seine Net:**

This technique should be used *in combination* with trapping. When it is not possible to return the following day to pick up crayfish traps, use hand/dip net/seine net alone.

1. **Use a collection technique that suits the conditions**. In swifter currents or conditions of reduced water clarity, a seine net works best. Crayfish can also be collected by hand (mask and snorkel) or with a dip net. This method works well in streams with low current and/or good visibility and lakes.

2. **Distribute your collection efforts over a variety of habitats, including rocks, vegetation, and sand.** Try not to concentrate your sampling effort in one small area.

3. **Collect until you have retrieved 30 crayfish or when 40 minutes of "total search time"** (see p.12) **has elapsed, whichever comes first.**

**Water characteristics:**

Measure the dissolved oxygen (DO), conductivity, pH, and temperature of the water approximately one foot from the bottom and record the results on the data sheet. Estimate the substrate/habitat characteristics of the area you sampled and record them as percent cover.



## Preservation

All crayfish are to be preserved on site and later identified by employees of the UW-Madison Center for Limnology. Please follow these guidelines when preserving crayfish:

1. **Place the collected crayfish into Whirl-Paks.** Preserve up to 30 total crayfish for the site; using approximately 1-3 Whirl-Paks. Include a variety of sizes and crayfish from both nets *and* minnow traps. If less than 30 crayfish were collected, preserve all of them.

   ***Do not overfill the pack with crayfish*** – to prevent decay, each Whirl-Pak should only be ¼ full of crayfish.

   Use new Whirl-Paks at each site and be sure they are **well labeled**. Do not mix crayfish from different sites.

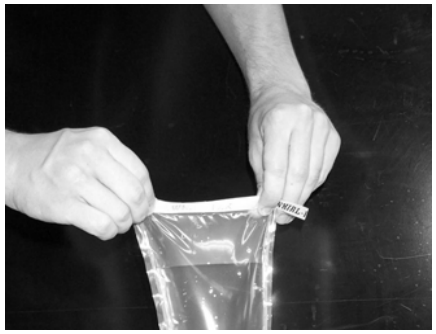
2. **Fill the pack with minimum 70% alcohol (190 proof ethyl, provided by the Materials Distribution Service).** There should be approximately three parts alcohol to one part crayfish. You may use denatured ethanol. Do not mix alcohols.

3. **Place a label *inside* the Whirl-Pak with**:
   a. Date
   b. Site # (*Use the same number as the data sheet)*
   c. Water body
   d. County
   e. Whirl-Pak # of total.

Liquid-proof labels have been provided for your use. **Be sure to USE A PENCIL to fill out the labels**, and place them *inside* the Whirl-Paks. DO NOT label the outside of Whirl-Paks with a permanent marker; alcohol leakage makes the ink disappear!!! ***SAMPLES WITH UNCLEAR LABELS CANNOT BE USED IN THIS STUDY!!!***

## Preservation (con't)

4. **Seal the Whirl-Pak.**



Step 1: Fold the top of the Whirl-Pak 4-5 times.

Step 2: Fold the wire tabs in front and twist together 4-5 times to seal the pack.

5. **Store the preserved samples in a cool, dry place.** Freezing is not required, but if you have access to a freezer, please freeze the sample.



## Recording the Results

**A data sheet must be completed for each sampling site**.

A sampling site is defined as one lake or one stream crossing. In lakes, crayfish data from BOTH transects should be included on ONE datasheet, water characteristics can be measured at only one transect.

**Please do not leave any fields blank.**

***Site #*** – Record a site # that can be matched to the preserved samples. A **WBIC**, if available, is an acceptable Site #.

***Date*** – The date that the traps are pulled out and/or collection by dip net, hand, or seine net is conducted. Record the format as **DD/MM/YYYY**.

For example: 20/06/2004 (June 20, 2004)

***Time*** – Time of day that the traps are pulled out and/or collection by dip net, hand, or seine net begins.

***Water Body*** – Official name of the lake, river, or stream.

***Type*** – Circle the most appropriate choice.

***Location*** – Include a precise description of the sample site location. Use township, range, and section descriptions (a Gazetteer may be useful) and attach a map if possible. For example:
"County Hwy E Bridge crossing at Indian Creek, T37N R14W Section 10".*
"Left of boat launch on east side of Clam Lake"

## Recording the Results (cont.)

* To determine township, range, and section descriptions follow these steps:
1. Obtain a Wisconsin Atlas and Gazetteer or a topographical map of the area in which you will be monitoring.
2. Locate the monitoring site on the map.
3. Look along a straight line from the site to the right or left side of the map to read the township (will be written in the form T#N). Record the township.
4. Look along a straight line from the site to the top or bottom of the map to read the range (in the form R#E or R#W). Record the range.
5. Note which section the site is located in (sections are outlined on gazetteers by light grey lines). On gazetteers, only sections 1, 6, 31, and 36 are numbered, so if your site is not in one of these four sections, you will have to count up/down from one of these known sections to determine which section your site is in. Record the section.
6. Next write a description of where the site is located, including stream name, county, and road crossings.

***County*** – The name of the county.

***GPS Coordinates*** – Record the latitude and longitude of the sample site as it appears on the GPS receiver. Please circle DD if the units are decimal degrees or DMS if the units are in degrees, minutes, seconds.

**Decimal degrees** look like this:
**46.043056° N**
**89.670556° W**

**Degrees, minutes, seconds** looks like this:
**46° 02’ 35” N**
**80° 40’ 14” W**



## Recording the Results (cont.)

***Field staff*** – List the names of each person at the sampling site.

***Organization*** – WAV has been pre-filled in on your data sheets. Leave this section as it is.

***Water temperature*** – Record water temperature in **°Celsius**.

***Dissolved oxygen (DO)*** – Record DO in **mg/L**.

***Conductivity*** – Record conductivity in **µS/cm**.

***pH*** – Record the pH of the water at the sample site.

***Substrate*** – Give a general description of the habitat in the sampled area. For example, “3 traps in 80% cobble and 20% sand, 2 traps in 100% muck with some weeds” or “40 minutes of search time on cobble.” Please include details and any special characteristics in the comment section at the bottom of the data sheet.

## Recording the Results (cont.)

***Number of traps*** – The total number of traps for this site.

***Duration of trap set*** – Record the total number of hours that the traps were in place.

***Average water depth*** – Record the average water depth of the traps at this sample site.

***Total search time*** – Record the number of person-minutes spent collecting (should not be more than 40 person-minutes).

For example:
2 people searching for 20 minutes each = 40 person-minutes

***Equipment*** – Place a check by each type of equipment used.

***Number of crayfish collected at this site*** – Count and record the total number crayfish caught at this site (regardless of method).

***Number of Whirl-Paks used for preservation*** – Record the number of packs associated with this site.

***Other comments*** – Record any additional notes that may be relevant for this site.



## Transportation

At the end of the summer sampling season, all of the preserved crayfish will be cataloged by the UW-Madison Center for Limnology (CFL). To facilitate the transfer of the samples to the CFL, **please take your samples to one of the following regional DNR offices** at your convenience:

Northeast Region:
DNR – Green Bay
Contact Dick Sachs, (920) 662-5187

Northern Region:
DNR – Rhinelander
Contact Laura Herman, (715) 365-8984

South Central Region:
UW-Madison Center for Limnology, Madison
Contact Jeff Maxted, (608) 262-3088

Southeast Region
DNR - Waukesha
Contact Heidi Bunk, (262) 574-2130

West Central Region:
DNR - Eau Claire
Contact Mark Endris, (715) 839-1631

At the end of the sampling season, the CFL staff will visit each of the regional offices to collect the remaining samples and transport them to Madison.

## Contact Information

If you have questions or concerns during your sampling efforts, please contact one of the following people at the UW-Madison Center for Limnology:

Jeff Maxted (jtmaxted@wisc.edu)
Research Specialist
(608) 262-3088

Dr. Jake Vander Zanden (mjvanderzand@wisc.edu)
Assistant Professor

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