

Crayfish Survey Guidelines for Wadable Streams in Illinois

The Illinois Department of Natural Resources has developed survey guidelines for inventorying species composition and relative abundance of crayfishes in wadeable streams. These guidelines were developed using best available science and with commonly employed survey objectives in mind. Consultation with the Department is recommended before conducting surveys. General guidelines include:

- Survey extent shall be 10 times the stream wetted width up to 100 meters, unless project characteristics require a larger reach.
- Sampling shall occur at summer flow conditions.
- Survey method and effort expenditure shall be selected based on presence of flowing riffles or runs and stream wetted width (see table below):

Sampling Method	Flowing Riffles and Runs		No Flowing Riffles or Runs	
	Width <5 m	Width ≥5 m	Width <5 m	Width ≥5 m
Quantitative	12 quadrats (or ≥5%)	15 quadrats (or ≥5%)	none	none
Qualitative	15 minutes	30 minutes	30 minutes	1 hour

Specific Procedures

Quantitative sampling:

- Occurs before qualitative sampling if the survey reach contains flowing riffles or runs.
- 1 m² weighted PVC-frame quadrats are deployed to define area of a sample.
- Substrate is disturbed inside the frame by kicking downstream into a 10' seine with 1/8' mesh placed immediately downstream of PVC quadrat.
- Samples located within flowing riffles and runs using a staggered placement approach: Starting at one bank sampling proceeds in a zig-zag fashion moving to the opposite bank and upstream and then to the first bank, and so on.
- Samples should be at least 1 m apart.
- A minimum of 12 quadrats shall be sampled in streams less than 5 m wide and a minimum of 15 in streams at least 5 m wide. No less than 5% of flowing riffles and runs shall be sampled.

Qualitative sampling:

- Qualitative sampling occurs after quantitative sampling has concluded, if applicable.
- Kick seine sampling will be employed using a 10' minnow seine set immediately downstream of sample areas. All structure in a sample area will be disturbed, allowing crayfish to be dislodged and carried into the seine.
- If flowing riffles or runs are present in the survey reach 15 minutes of qualitative sampling will be expended for streams with a wetted width of less than 5 m while 30 minutes shall be expended for those at least 5 m wide.

- If no flowing riffles or runs are present in a survey reach 30 minutes of qualitative sampling will be expended for streams with a wetted width of less than 5 m while 1 hour shall be expended for those at least 5 m wide.
- Effort is divided into 5-minute samples until the minimum effort requirement is met.
- All available habitat types shall be sampled. Areas sampled during quantitative efforts shall be avoided during qualitative sampling.

Minimum Data Standards and Reporting

All crayfish collected shall be identified to species and enumerated. State-threatened or endangered species (or other focal species) shall be sexed and carapace length measured. All crayfish shall be returned unharmed to the survey reach. Each quantitative sample (i.e., quadrat) and each qualitative sample (i.e., 5-minute interval) shall be recorded independently. Qualitative descriptions of habitat within the reach and within each sample shall be reported. Density shall be reported for each species recorded during quantitative sampling and catch-per-unit-effort reported for each species recorded during qualitative sampling. A map of sampled locales shall be provided. Representative photos of each species recorded shall accompany a report.