MDC Resource Science

New Gear Evaluation for Sampling Fish and Herptofauna in Emergent Vegetation

Science Notes

Missouri Department of Conservation (MDC) 2009 VOLUME 4 NO. 28

New Gear Evaluation for Sampling Fish and Herpetofauna in Emergent Vegetation

By: Kathryn N.S. McCain and Joshua DeLay

SUMMARY

Sampling fish and herpetofauna in emergent vegetation is problematic, which leads to the question of "Is there a better way?" To answer this question, the Open Rivers and Wetlands Field Station staff constructed two new passive gears and tested them against standard gears of minnow traps and mini-fyke nets. The first gear constructed was a "DISC-sampler" (Fig. 1). Small fish could swim in and herpetofauna could crawl up the netted ramp and fall into the sampler. The second gear was a modified crab trap. A standard crab trap was covered with 1/8" netting and multiple throated ports of entry were constructed along the sides (Fig. 2).

Figure 1. DISC-sampler. Photo by K. McCain

Objectives:

1. Create a gear that will more effectively sample fish and herpetofauna species in emergent vegetation.
2. Compare experimental gears to standard gears used in the field today.

Testing of the new gears against the standard gears took place during the summer of 2009 in borrow pits containing emergent vegetation on Duck Creek CA as part of a MDC internship. One hundred twenty-three 40 m^2 sites were randomly generated to deploy these four gears. Each day three random sites from the 123 sites were chosen. Each site was then divided into 10 m^2 plots where the four different gears were randomly allocated. Gears were deployed for 24 hours and species and number of animals collected were determined for each trap. Over a four-week period, a total of thirty sites were sampled.

Figure 2. Modified crab traps. Photo by J. DeLay.

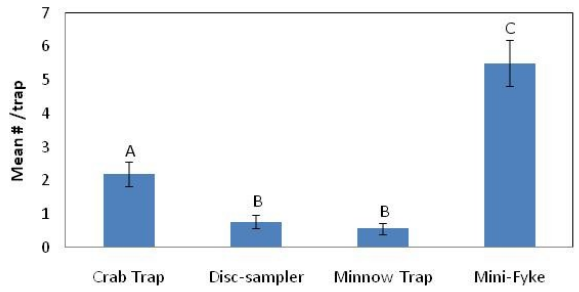

Figure 3. Mean (± SE) number of species captured using 4 different gear types. Different letters refer to significant differences at alpha <0.05.

Results:

There were significant differences (p<0.0001) in number of species captured between gear types (Fig. 3), with the greatest mean number of species collected in the mini-fyke nets (5.5 species/trap). The minnow trap and DISC-sampler had the lowest mean number of species captured (<1 species/trap). A similar pattern emerged with total abundance (p<0.0001; Fig.4) with mini-fyke nets having the greatest mean number of animals collected (13.3/trap). Overall, the mini-fyke captured the most fish and herpetofauna; however, the DISC-sampler was the only gear to capture a central newt.

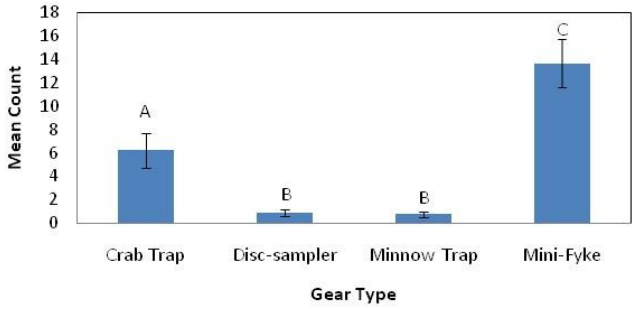

Figure 4. Mean (± SE) count using 4 different gear types. Different letters refer to significant differences at alpha <0.05.

Management Implications:

- Based on preliminary data, contrary to our original prediction, the new gears were not as effective at sampling fish and herpetofauna as compared to mini-fyke nets. It appears, at least from these data, that mini-fyke nets are adequate for sampling in emergent vegetation.
- The DISC-sampler and crab trap will be modified and tested further.

Acknowledgements

We would like to thank Frank Nelson and Levi Horrell for their assistance in the field, net construction, and/or experimental design development. The original idea for the DISC-sampler was conceived by Bob Hrabik.

For more information, contact:

Missouri Department of Conservation
Open Rivers and Wetland Field Station
3815 E. Jackson Blvd.
Jackson, MO 63755
573/243-2659 ext. 26
Kathryn.McCain@mdc.mo.gov

Keywords: **fish, herpetofauna, DISC-sampler, crab trap, Duck Creek CA**