

Crawfish News



March 2009 Volume 2 Number 2

Fine-tune Your Trapping Activities

Trapping should be coming into full swing in March for a majority of crawfish producers. Trapping is a major expense, but it is also an aspect of your business over which you have total control. You determine how many traps to fish, how often you trap and what bait and how much to use. To insure that you get the highest possible catch at the lowest possible cost, let's review our research-based trapping recommendations.

Trap Density Recommendations

We provided trap density recommendations in the November 2008 newsletter, but it bears repeating. The recommendations are based on use of pyramid traps with $\frac{3}{4}$ -inch square mesh and trapping, on average, 3 to 4 days per week.

Use 10 to 15 traps per acre for low-density ponds. Low-density crawfish ponds are often new ponds or those in which crawfish are not grown in the same field year after year, such as is practiced in rice-crawfish field rotations. These ponds typically yield 400-600 pounds per acre.

Use 18 to 22 traps per acre for high-density crawfish ponds. High-density crawfish ponds are usually those in which the pond is managed solely for crawfish, and crawfish are produced in the same pond or field year after year. These ponds often yield 700 to 1,200 pounds per acre or higher.

Baits and Baiting Recommendations

As a producer, you have total control over all aspects of bait management – how much you add per trap, how frequently you run your traps and how many traps are in your pond. On a 100-acre operation with 15 traps per acre, if traps are run 70 days in a season you will have baited traps about 100,000 times that season. If you could save, on average, 3 cents per trap lift with no reduction in catch for a total savings of about \$3,000, would you be interested?

Fish or Formulated? Using fish bait (pogy, shad, carp, buffalo, herring, slicker or similar fishes) when water temperature is less than 65 to 70 degrees F will usually take you into March and maybe early April. Even though fish baits are about 12 to 14 cents per pound more expensive than manufactured (artificial or formulated) baits, the additional crawfish catch in cooler water more than compensates for the added expense. In fact, you usually only need to catch about 2 to 4 more crawfish per trap to cover the additional expense of fish bait. Should you find that less expensive manufactured bait is catching as good as fish in cooler water, then by all

means use it, but generally this is not going to be the case, particularly in ponds that still have abundant forage.

When water temperature exceeds 70 to 75 degrees F and forage begins to deplete (usually late March to early April in south Louisiana), manufactured baits become more cost-

effective because they catch better and are cheaper. As water temperatures begin to warm, set some test traps or row of traps with manufactured bait to see if it is time to make the switch from fish to manufactured bait.

At water temperatures of 65 to 75 degrees F, a combination of fish and formulated bait added



to traps in about equal portions can increase catch as much as one-third over fish alone or manufactured bait alone; however, the logistical inconvenience of handling two baits at the same time in harvesting boats must be considered when employing this strategy, but it is effective.

How Much Bait? Use about $\frac{1}{4}$ pound of bait per trap when water temperature is cool and the density of harvestable size crawfish is low – as you read this newsletter we have pretty much passed this phase. When waters warm and the crop of harvestable crawfish nears maximum levels (crawfish start “running”), increase the amount of bait to $\frac{1}{3}$ pound per trap. Using more bait per trap may increase your catch in a pond with a high density of crawfish, but usually not enough to compensate for the added bait cost. How do you keep track of bait use? Simple. A 50-pound bag of manufactured bait is sufficient to bait 150 traps (50 lbs bait \div 0.33 lb/trap = 150 traps). If you are only baiting a 100 traps, you're using too much. A 60-pound box of fish should be sufficient to bait 180 traps (60 lbs fish bait \div 0.33 lb/trap = 180 traps).

Pay attention to the amount of bait remaining in the trap when you empty it. If significant bait residue remains in the

(Continued on page 2)

Crawfish Biology

Identifying Sexually Mature Crawfish and Stunted Crawfish

Only by understanding the animal being cultured and having an appreciation for the habitat in which it lives, can one excel as a manager in crawfish aquaculture. Producers should understand the growth process of crawfish and know how to identify crawfish that have reached maturity and will no longer grow. Crawfish grow by periodic shedding of the old exoskeleton (shell) with an increase in size at each molt. Following the final or “terminal” molt, both males and females become sexually mature and growth ceases – at least for some period of time. Energy accumulation after the maturity molt is directed to reproduction – not growth. Crawfish will remain in a nongrowing state until after reproduction. For crawfish to resume growth after becoming mature, there usually has to be a dramatic improvement in habitat, such as ample food and space and fresh water of the right temperature. For all practical purposes those conditions will not occur until next season.

Scientists refer to sexually mature crawfish as being in the “Form I” (one) state. In male red swamp or white river

trap, the amount can be reduced. If all the bait is rapidly consumed within several hours, you can consider increasing the amount of bait in the trap to help retain crawfish in the trap and minimize their escape. But again remember, you have to catch more crawfish to pay for that additional bait.

We usually recommend discarding fish bait residue. Fish bait residue quickly becomes rancid in warm water, and it actually acts more as a repellent than an attractant. Also, do not dispose bait residue in the pond that you are trapping because it might reduce crawfish movement to freshly baited traps.

1-Day or 2-Day Trap Sets? Normally, traps are emptied after a 1-day or 2-day set (every other day). Both are effective and can be used in your trapping program. Every-other-day trapping can be particularly effective in cooler water when using manufactured bait. Every-other-day trapping also has the advantage of catching larger crawfish because smaller crawfish more easily escape from the trap the longer it remains in the water. Hopefully, you will catch a portion of these smaller crawfish that escape at a later time and at a larger size. In fact, a 2-day set partially functions as an in-pond grading system. Some larger operations run half their acreage with 2-day sets on Monday, Wednesday and Friday, and then run the other half of the acreage on Tuesday, Thursday and Saturday. If your pond is overpopulated with crawfish, you may want to trap daily if your buyer wants or needs the crawfish.

Visit our Web site:

www.lsuagcenter.com/en/crops_livestock/aquaculture/crawfish

What to Do If You Suspect White Spot Virus Mortality

Two years ago, March 2007, white spot syndrome virus (WSSV) disease in crawfish was first discovered at a commercial crawfish farm in St. Landry parish, and it was responsible for causing significant mortality. Subsequent sampling of more than 180 crawfish ponds through May 2007 revealed that crawfish in nearly two-thirds of the ponds sampled harbored the virus, but presence of the virus did not necessarily cause mortality or even reduce yield in many of those ponds. Last season, we received only a few reported incidences of deaths that were attributed to WSSV. It appears death occurs only if crawfish are severely stressed and their immune system cannot cope with the disease. Low oxygen is one stressing factor, and abrupt changes in temperature may be another stressor. Symptoms or signs to look for include:

- Weakness and lethargy of crawfish in the traps, especially in larger crawfish. They have trouble raising their claws.

- Dead crawfish floating in the traps or along the bank.

Except in rare circumstances, you **will not** find white spots on the shells of the crawfish. Smaller nonharvestable crawfish sampled with a dip net usually appear to be fine. If you have dying crawfish, you can have them

checked for the presence of WSSV by the LSU School of Veterinary Medicine at a cost of \$100 per pond. You will need to arrange delivery of the samples to Baton Rouge. A sample must consist of 60 **live** crawfish collected from traps in the suspected pond. **Do not** include dead crawfish in the sample. Place the live crawfish in a zipper storage bag labeled with your name, phone number, e-mail address (if you have one) and parish. The crawfish can be brought to Baton Rouge either alive or frozen. Before delivery, contact the Aquatic Diagnostic Laboratory at the LSU Vet School (225-578-9672). If no one answers, leave a message on the answering machine with your name, phone number (including area code) and that you have crawfish you want tested for white spot virus. Someone will return your call and give you specifics on where to drop off the crawfish.

The bad news is there is no treatment for WSSV. Minimize its impact by taking steps to minimize stress to your crawfish while in the pond. Maintain satisfactory oxygen levels and attempt to minimize overcrowding by using recommended trapping practices.

First and foremost, remember that no human health issues what-so-ever are associated with this virus. Crawfish caught in ponds where WSSV has been identified remain edible.



Figure 1. Hooks or spurs on third and fourth pair of legs on a mature male (circled).

crawfishes, mature Form I males are easily identified by the presence of “hooks or spurs” on the inside portion of the center two pairs of walking legs nearest the body (Figure 1). Mature females **do not** have spurs, so we look for other visual characteristics to gauge their state of maturity. Mature females (and also males) will be darker in color (reddish vs greenish-brown), and the claws will be disproportionately large compared to nonmature crawfish. The groove of the seminal receptacle or “button” (Figure 2) of mature females will usually be convoluted and curvy, and sometimes will appear with an orange or yellow coloration around the edge. You may need a magnifying glass to see this clearly. The best way to identify mature nongrowing crawfish is by the presence of the hooks on males and by the large head and claws and dark coloration of females. Certainly, when a large percentage of the males are mature, a similar percentage of females are also mature.

How do I identify stunted crawfish based on maturity? A stunted population is one in which crawfish are small and a large percentage of the males have prominent hooks on the third and fourth pair of walking legs (the claws are the first pair of legs). There will be no hooks on the first, second



Figure 2. Seminal receptacle on mature female (circled) located between the last pair of walking legs. Note the distinct groove. Females do not have spurs.

and fifth pair of legs. These crawfish are not going to get any larger that season. You should evaluate the suitability of crawfish as broodstock (stockers) by checking to see if a large percentage of females are mature and have adequate energy reserves. The “fat” (hepatopancreas) in the head of the female should be large and bright yellow. Look for eggs in the head that are yellow, tan or brown. The eggs are nestled on top of the lobes of hepatopancreas.

Frequently Asked Questions

Question: Do I really need to check oxygen levels in my pond? How do crawfish cope with low oxygen?

Answer: We recommend you routinely spot check oxygen level in your pond(s), particularly during critical periods in fall, after flood-up and in the spring, usually starting in late February early March when temperatures transition from cold to warm. The importance of spot-checking oxygen is to help you make critical management decisions, such as not only when to flush your pond with aerated water, but just as importantly when not to flush, which will save hundreds of dollars in pumping costs when the water quality is fine and flushing is not needed. Record your readings and include the pond, location and time of day. If you have a poor crop, we can usually tell if water quality was responsible by reviewing a series of oxygen measurements. Without oxygen readings to review, it becomes a guessing game as to whether it was water quality or some other factor responsible for the poor crop. County agents and fisheries/aquaculture agents can interpret a great deal from reviewing your measurements of oxygen levels just a medical doctor can tell you a great deal on managing your health and diet from looking at your cholesterol levels from a blood test. In time and with experience, you can as well.

Red swamp and white river crawfishes have a strong ability to cope with relatively low oxygen for days and maybe a few weeks before it begins to negatively impact their growth, health and survival. If you’ve been farming crawfish for a while, you’ve seen dead crawfish in traps caused by suffocation from a lack of oxygen. Crawfish will attempt to cope with low oxygen by reducing their rate of oxygen consumption – but they can do this only for a limited period before it impairs their health. They will climb on vegetation or in traps to gain access to the water surface where they attempt to extract oxygen at the air-water interface. When you observe this behavior, oxygen is at critical state. Research has shown that crawfish growth is significantly reduced and mortality increased at oxygen levels below 0.5 part per million (ppm) for several consecutive weeks, but if oxygen is increased to an acceptable level (2 ppm or higher), living crawfish will exhibit compensatory growth and potentially recover much of the “lost growth.”

Contributors to this Newsletter

Richard Johnson, SW Regional Aquaculture Assistant Agent
Rice Research Station, e-mail: rdjohnson@agcenter.lsu.edu
office 337-788-7547

Dr. Greg Lutz, Professor
Aquaculture Research Station, e-mail: glutz@agcenter.lsu.edu
office 225-765-2848

Dr. Ray McClain, Professor
Rice Research Station, e-mail: rmccain@agcenter.lsu.edu
office 337-788-7531

Dr. Robert Romaine, Professor
Aquaculture Research Station, e-mail: rromaine@agcenter.lsu.edu
office 225-765-2848

Mark Shirley, SW Area Specialist (Aquaculture & Coastal Resources)
Vermilion Parish Extension Office, e-mail: mshirley@agcenter.lsu.edu
office 337-898-4335

Additional information on crawfish aquaculture is available on the LSU AgCenter Web site at

www.lsuagcenter.com/en/crops_livestock/aquaculture/crawfish

To receive the online full-color version of "Crawfish News" send an e-mail to rdjohnson@agcenter.lsu.edu with "SUBSCRIBE CRAWFISH NEWS" in the subject line. There is no need to re-subscribe to the online version if you already receive it. To be removed from the electronic mailing list, write "UNSUBSCRIBE CRAWFISH NEWS" in the subject line.

Aquaculture Research Station
LSU AgCenter
2410 Ben Hur Road
Baton Rouge
LA 70820

LSU AgCenter Crawfish News



Dr. Kurt Guidry, AgCenter AgEconomics Extension Specialist, has developed a Crawfish Production and Marketing Record Keeping System designed to track crawfish production and sales information throughout the growing season. The software uses Microsoft Office Excel. It consists of three components: (1) Field and Buyer Information, (2) Monthly Records and (3) Season Summary. In the Field-Buyer section you can list up to 10 production ponds/fields and each of your buyers, up to five. You can track production and sales information by pond/field and by buyer if you choose. The Monthly Records section is for recording your harvest, sales and costs for each month during the crawfish harvest season. With the Season Summary section, you will be able to print summary reports of harvest and sales by month, as well as a summary of your costs by month. The software program is free, and you can obtain a copy by contacting Dr. Guidry at kmguidry@agcenter.lsu.edu or 225-578-4567. All he asks in return is some feedback from you as to suggestions you may have that would improve the usefulness of the program for future editions.

Industry News



In the recently passed federal stimulus legislation (the American Recovery and Reinvestment Act of 2009), \$50 million was made available in form of Aquaculture Block Grants to states with aquaculture production. These funds are to assist aquaculture producers adversely affected by high feed costs. The funds are to be divided among states based on the amount of aquaculture feed used in each state during the 2007 calendar year. While crawfish producers do not purchase "feed" as is typically defined with other aquaculture industries, they do incur costs for inputs that provide nutritional value for growing crawfish, such as bait (both fish bait and manufactured bait) and planting rice or sorghum-sudangrass as forage. The USDA has been provided estimates of bait use and forage planting in Louisiana's crawfish aquaculture industry with justification on their importance as a nutritional resource (feed). We hope these numbers will be included in the overall estimates of aquaculture feed purchases for Louisiana. If approved, this will significantly increase the amount of aquaculture disaster aid that Louisiana receives. Further details on the disaster aid program will be provided to you as it becomes available.