Tasty Bait! Does Worm Feedstuffs Affect Fishing Effectiveness?

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Abstract

The purpose of this quantitative method experiment was to find out if the diet of Super Red European Nightcrawlers affects its effectiveness as fishing bait. The Red European Nightcrawlers were divided into two clews (which is the name for a group of worms) and fed different diets: Group A was fed coffee grounds with eggshells and Group B was fed fruits and vegetables. If feed affects a Red European Nightcrawler's effectiveness to bait a fish, then feeding Red European Nightcrawlers eggshells and coffee grounds will catch more fish than feeding Red European Nightcrawler fruits and vegetables. In order to test the hypothesis, the worms were used as bait on two occasions. Data was recorded for each catch based on the diet of the worm. The result of this experiment showed each bait was effective at catching fish; however, the worms on a fruit and vegetable based diet brought in a wider variety of fish than the worms on a coffee grounds and eggshell diet. The clew fed coffee grounds and eggshells did yield a higher number of fish caught compared to Group B. The results showed how the diet of bait impacts the variety of fish caught and could alter the amount of fish caught. The conclusion based on the results showcases how the diet of bait can impact the type and quantity of aquatic organisms caught.

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Introduction

Fishing has been one of the most popular activities for people across the nation. Each fisherman, from hobby to professional, fishes with different equipment and even different bait. There are artificial baits and live baits, but it seems most fishermen choose to go with live bait. There are some who may raise their own live bait and others who elect to purchase it each time from a local shop. Although the average fisherman does not seem to wonder about the diet of the live bait, it might have an impact on the amount of fish caught with the bait. For example, it has been proven fish are attracted to different things such as the color red and the smell of coffee grounds. “One theory for why fish are drawn to coffee is that caffeine stimulates the fish's sense of smell. Despite how unusual it may sound, coffee appears to be an effective way to attract fish and get them to bite the caffeine-laced baits.”(Guidesly, 2022) There have recently been no new findings or changes made to the way people fish, meaning opportunities for new information can provide fishermen the extra edge in catching fish.

The types of diets for worms used as bait could affect how efficient worms are at catching fish in an allotted time, leading the researchers to believe there is potential for this method to be the next big innovation in fishing. For this experiment, Super Red European Nightcrawlers will be placed on different diets and then tested as fishing bait. Observations and data will be collected to determine if the food eaten by the nightcrawlers impacts the catch. This topic is important to the vermiculture and fish community because it will help find better ways to raise worms and use them for fishing. The impacts this will have on agriculture is more focused on the vermiculture and fishing industry since the diet might have an effect on the results of a fishing trip. Vermiculturist will be able to use this to better market to anglers and the anglers will be able to use that for what they are wanting to achieve in their time fishing.The general

approach taken for this experiment was to get two clews of the same worms and feed them different foods. One group would eat fruits and vegetables, and the other would eat eggshells and coffee grounds. Then, after the worms reach between the size of four to five inches, use them as fishing bait and record which one catches more fish. This could change the traditional way of raising fishing bait and create an opportunity for further research to be conducted using a wider variety of feedstuffs.

Literature Review

Fishing has been one of America's favorite past-times throughout the years with approximately 60 million angler in America of which 46 million will fish at least once in a given year. Fishermen all have preferences in the ritual of baiting, casting, and reeling, which truly makes fishing a mix of art and science. Fishermen consider the same principles in regards to bait, either artificial bait or live bait, and even which live bait to use. The image associated with live bait is typically a plump pink worm on a hook. The outcome looks different for every person and it never ends up with the same results because there are many factors affecting the results, including the weather, water temperature, and possibly wind direction and speed. Another factor to consider is color as fish see the color red which stimulates the fish's feeding motivation causing them to be attracted to the bait. "Red European nightcrawlers are red or dark pink and easy to raise because they reproduce very quickly, thereby making them a popular pick for new and experienced worm farmers" (Richard, 2022). In the fishing community, there have been debates on what is the best bait to use while fishing, but it is rarely asked what is the best diet for the bait. This may affect how the worms perform as bait for fish, possibly impacting how many fish are caught during that time.

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According to research, Red European Nightcrawlers are one of the best types of nightcrawler to use for fishing, (Best Bait, 2021). They are tougher than the other nightcrawlers, as well as more lively, meaning they grab the fish's attention easier. Red European Nightcrawlers which are not in captivity usually eat dead leaves, grasses, wood, and animal manure. “You can also feed nightcrawlers a mixture of ground corn, cornmeal, and commercially sold worm food,” (Csanyi 22). When raising worms in captivity it is very important to not overfeed the worms, or else the bedding mix will begin to mold which can lead to the worms dying. The worms are fed every four to six weeks to prevent mold and even longer during the cold months because they are less active but not dormant. Red European Nightcrawlers grow to be four to five inches long and take forty to sixty days to fully mature. A can of 30 Red European Nightcrawlers usually costs around four dollars which makes it cost roughly 14 cents a worm. 250 Red European Nightcrawlers cost $34.95, which still costs roughly 14 cents per worm. If the research being done is proven to be correct it would increase the value market of the Red European Nightcrawlers. Since each different test had a variety of results. It is more efficient to buy the large quantity and raise the worms. Benefits of raising Red European Nightcrawlers are potentially saving money and time, as well as providing a better fishing experience. Although every fish is different, they all have similarities. “Kentucky is home to a total of 245 native fish species with an additional 24 that have been introduced either intentionally or accidentally” (Thomas, 2011). However, the types of fish commonly associated with fishing in Kentucky are bass, catfish, bluegill, and crappie. This experiment´s goal is to increase the number of fish caught. There are certain smells which can attract or repel fish. An example of this is fish being attracted to the smell of coffee. Which gives reason to believe the diet of Red European Nightcrawlers might affect how it performs as bait. The type of bait does affect the types of fish

which might be caught, but it seems most fish species will bite on nightcrawlers. It has also been proven fish prefer baits from living things over baits which have been artificially made. This shows using a live bait may increase the catch of fish and the diet of the worm may affect how the fish eats the bait as well.

This topic is important to the fishing community, as it will help find more efficient ways to catch fish. "Within the United States, Kentucky's native freshwater fish diversity is exceeded only by Alabama and Tennessee. This high diversity of native fish corresponds to an abundance of water bodies and a wide variety of aquatic habitats across the state," (Thomas 2011). The large amount of water bodies in Kentucky help contribute to a large population of fisherman in the state. This shows the bait industry to be an extremely lucrative, yet somehow overlooked matter which has immeasurable effect on the fish and wildlife industry, not just locally but across the nation.

Materials and Methods

Research Question

This research will attempt to answer the following questions:

- Does the food fed to worms affect how effective it is bait?

Hypothesis

- If feed affects a Red European Nightcrawler's effectiveness to bait a fish, then feeding Red European Nightcrawlers eggshells and coffee grounds will catch more fish than feeding Red European Nightcrawler fruits and vegetables.

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Materials

- Two hundred fifty Red European nightcrawler from Uncle Jim Worm Farm
- Twelve quart bag of miracle grow all purpose potting soil
- Two six yard packs of cheese cloth
- Two sheets of plastic, sized two by two feet
- Two clip on plant grow lights with four heads of spectrum plant lights
- Folgers Coffee grounds
- Ten Eggshells
- Twenty Apple slices
- Three Carrots
- Six shredded newspapers
- 100 ml of water, added as needed to keep the soil moist
- 500 Milliliter squeeze water bottle
- Two tubs 18x12x14
- Drill bit ⅜ and ⅛ sized
- Dewalt drill
- Ten heavy duty glue sticks
- Hot glue gun
- Scissors
- Two Zebco fishing poles
- Eagle claw fishing hooks
- Pliers

- Sinkers

Procedures

The steps to complete and set up this experiment are listed as follows; First, get two of the same sized plastic bins and drill three eighths holes in the bottom spaced four inches apart to serve as drainage holes. Next, drill one eighth holes in the sides spaced at four inches apart to serve as ventilation holes. Then drill some holes in the lid of the tub four inches apart. After the holes are drilled, lay out the bottom of the bin with cheesecloth and glue it down. Next, glue down plastic strips around the outline of the cheesecloth to prevent the worms from escaping. After the cheese cloth and plastic is glued down, add the soil or dirt into the tubs. Then, order 250 Red European Nightcrawlers from Uncle Jim worm farm. Then, divide the worms up evenly between the two tubs. Next, tear up six newspapers and put the pieces of shredded newspaper in the tubs as well. After getting all the required materials in the tub, wet the newspapers but do not over wet them or the worms will drown. The next action is to place the food the worms will eat in the tubs and cover it with the newspaper. Then make sure to put the lid on the top of the tub. Finally, put a light over the tub to deter the worms from trying to escape in the night. It is important to check the growth of the worms every week to ensure they are fed and watered every two days or as needed. When harvesting the worms, remove the lid from the bin and take out the newspaper and set the newspaper on the lid to make searching easier. Then, search the bin for worms on the surface and if none are on the surface of the dirt, dig around through the dirt until worms are found. Keep doing this until there have been at least t worms found to ensure there is enough. Then go to the designated fishing spot that has been selected and choose a spot. Make sure to go fish on two different days for three hours fish within close proximity of the other

fisher each using a different bait. One using group A and the other using group B. Make sure the two poles selected to be used are the same. Make sure to go fishing on two different days. To further that make sure the hooks are the same size and type. As well as the fishing lines having the same amount and type of sinkers. Put a medium sized hook on the fishing line with three sinkers four inches above the hook. To collect data take a picture every time a fish is successfully caught and keep track of the bait which was used to catch it. After catching the fish be sure to identify the species of the fish which was caught. Once the three hour time period is over, compile the data by putting it into a graph. Then compare the amount of fish caught and species of the fish caught from group A and group B.

Results

The results from the first trial of this experiment are as follows. Group A (worms fed eggshells and coffee grounds) caught a lot of the same fish which was bluegill with the exception of one bass. It seemed group A was hit more often when fishing in close proximity to each other's bait and line. Group B (worms fed fruits and vegetables) caught a wider variety of fish with six bluegill, two bass and two mussels. This is one fish less than group A, since mussels aren't fish but were still caught. In the end group B had a little more diversity in what is caught, while group B caught more.

During the second trial of this experiment group A had been able to catch more fish than group B. Though this time group A had caught nine fish total with four of those being bluegill and five bass. While group B caught five fish total three of those being bass, one being a bluegill, and the last one a crappie. So group A had managed to catch more fish than group B but group B had a wider range of fish species than what was caught in group A. Which this time better proves the hypothesis

The data from this experiment compiled together further proves the hypothesis correct. If fed affects a Red European Nightcrawler's effectiveness to bait a fish, then feeding Red European Nightcrawlers eggshells and coffee grounds will catch more fish than feeding Red European Nightcrawler fruits and vegetables. During the first trial group A barely caught more while catching eight bluegill and one bass. Group B caught six bluegill and two bass barely being beaten by group A. However the second trial proved much different. With group A clearly beating group B. Group A caught five bass and four bluegill, being a total of nine. Group B caught one crappie, one bluegill, and five bass. Thus, furthering the hypothesis group A would out perform Group B. Overall group A had a larger amount of fish while group B had a more diversity of what was caught. Group A had a combined total catch of eighteen fish which were twelve bluegill and six bass. However group B had a combined total catch of thirteen fish and the exception of two mussels with the fish being seven bluegill, five bass, and crappie. Supporting the hypothesis that group A would catch more fish than group B.

Figure One

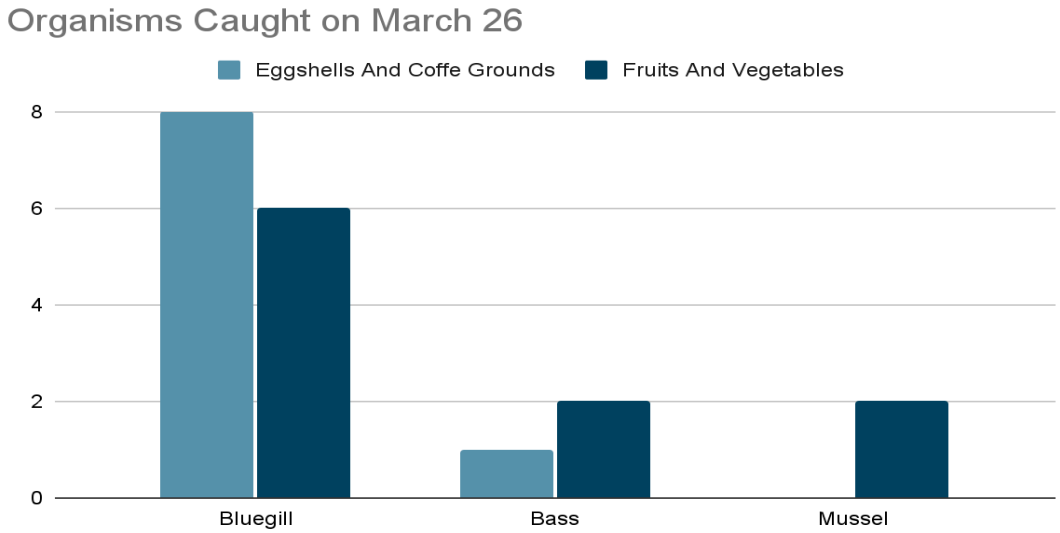


Figure 2

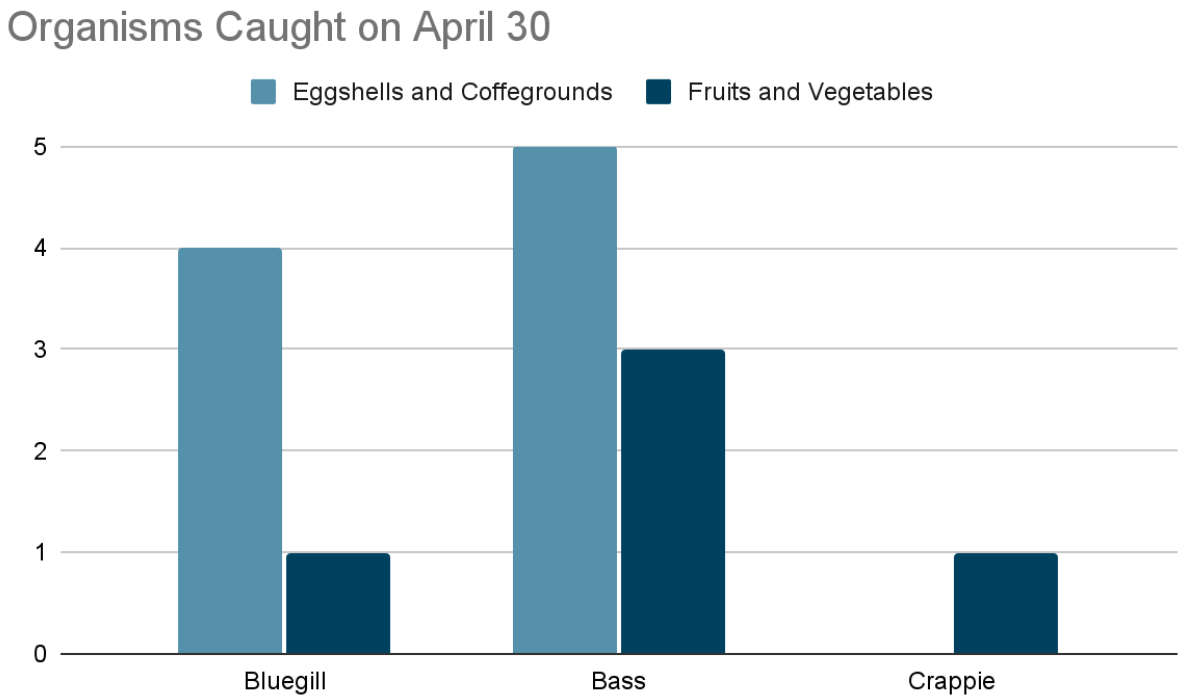
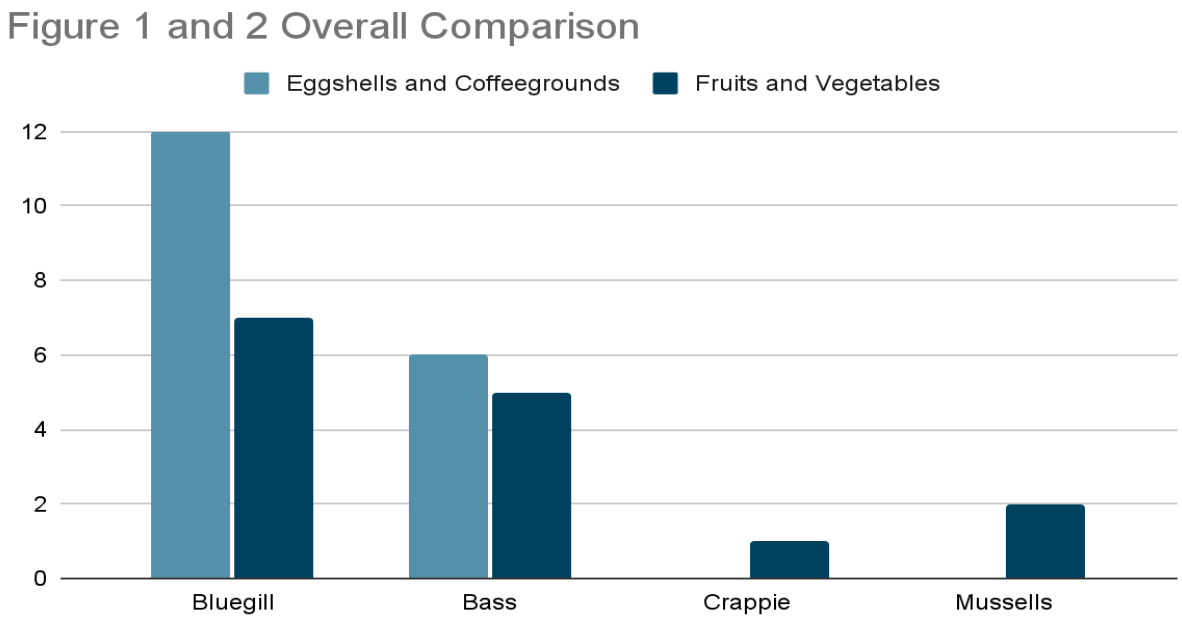


Figure 3



Discussion and Conclusions

This experiment has proven the food fed to bait does affect what the bait catches. Within

the experiment, the food fed to the worms had the potential to positively or negatively impact how the worms worked as bait. There were two worm clews (a group of worms) in total kept separate and each fed a different food. One was fed fruit and vegetables while the other clew was fed coffee grounds and eggshells. The data collected from the experiment proved the hypothesis correct! According to the table shown in figure one, Feeding Red European Nightcrawlers eggshells and coffee grounds does in fact increase the number of fish caught. Group B caught eight fish, six bluegill and two bass, however group A caught nine fish, eight bluegill and one bass. This shows the clew which was fed coffee grounds and eggshells was more efficient as bait than the clew fed fruits and vegetables. To further support the hypothesis figure two also supports the claim. Figure two shows group A caught nine fish while group B caught five. The table also had group A caught five bass and four bluegill. While group B caught one crappie, two bluegill, and three bass. This data shows group A caught more fish in an allotted time then group B. However the data in figure two does show group B caught a wider variety of fish. The hypothesis is further proved when looking at figure three which is a combined total of fish caught by each group during the first and second trials of the experiment. Figure three shows group A had caught twelve bluegill and six bass which comes to a total catch of eighteen fish. However group B on the other hand had caught seven bluegill, five bass, and one crappie. It also caught two muscles which is not important in this experiment but should still be recorded. Thus the data overall supports the hypothesis of, if fed affects a Red European Nightcrawler's effectiveness to bait a fish, then feeding Red European Nightcrawlers eggshells and coffee grounds will catch more fish than feeding Red European Nightcrawler fruits and vegetables.

This could be very useful to the vermiculture community as they could use it if they primarily market their worms to anglers. This research could possibly increase the money made

by bait businesses as they could use this information as a marketing strategy. Anglers could also use this to save them money, by having to spend less time fishing to catch more bait and catching more fish with less bait. If this experiment was replicated by someone else it would best be done by seeing how other feeds affect what the bait will catch. To replicate this experiment in the future, the best suggestions would be to make sure there is plenty of time in the experiment window for the worms to grow as well as fishing in the same spot to make sure the factors when fishing are exactly the same. If this experiment is repeated it should also consider the weather because it can have a big impact on the results. Another factor which could be considered is the skill of the fisherman. An experiment which could be done to test how much weather impacts fishing could possibly be comparing the result of a fishing trip on a day with no weather conditions to days which have one or more weather conditions such as wind, rain or temperature.

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