

Student Research at Home: The Cichlid Fry Project Ron Coleman and the Evolutionary Ecology of Fishes Laboratory, Department of Biological Sciences, California State University, Sacramento

The Cichlid Fry Project

The Cichlid Fry Project is an attempt to determine the extent to which egg size determines fry size in the freshwater family of fishes known as cichlids (family Cichlidae). This family is large (almost 2000 species), adapts well to aquarium husbandry and lays eggs (either as substrate spawners or as mouthbrooders) that can be collected and measured. Equally importantly, the free-swimming fry from the same batch of eggs can be collected and measured. This combination of characteristics is extremely rare in fishes.

For the past five years, students (over 50) have participated in this project in my lab (the Evolutionary Ecology of Fishes Laboratory) in Humboldt Hall where we maintain about 170 aquaria. Students take responsibility for one or several aquaria, breed the fish, and measure the eggs and fry. Typically, 10-15 undergraduates are involved each semester; many contribute for 2 or more semesters.



Because students were not allowed in the lab, I needed to come up with

experience. The solution was to take the Cichlid Fry Project on the

accessories needed to set it up and maintain it. I have distributed these

recruits. Basically, I arrange to meet the student at some location, such

as a Home Depot parking lot, and I transfer the equipment from my car

So far, I have distributed 9 kits to as far away as San Luis Obispo and

kits to students who previously worked in the lab, as well as to new

COVID-19 changed how we operate.

a different way for them to continue to get invaluable research

I created "kits" consisting of a 20gallon aquarium and all the



McKenzie Bell

Breann Benitez





road.











to theirs.





Merced. The next one is going to Oroville.













Results

So far, we have successfully obtained both eggs and fry from 57

species of cichlids over a large range of egg sizes. The results are compelling: egg size strongly determines fry size

Figure 1: Mean fry Total Length (TL) as a function of mean effective diameter for 51 species of cichlids. Each number represents one species.





























Evolutionary Ecology of Fishes Laboratory



Challenges

In order to take part, a student has to be able to have an aquarium at home. This is not trivial. A 20gallon tank weighs about 200lbs so they need some room, a sturdy surface, and most importantly permission to have the tank, whether that be from family, roommates or landlords (many apartments will not allow an aquarium).

It can be challenging to supervise research at a distance, but I do this by having them report weekly on what is going on, by sending me photos, and by having zoom sessions so they can show me what is happening.

Rewards

Having the students do the research at home is not ideal, and it is slower than if they were doing it in the lab, but the fact that they are able to continue with actual research is invaluable.

Keep moving forward!



Funders

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