



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Andrew Sloniger; Cyrus Snyder</b>	<b>Project Number</b> <b>J2215</b>
<b>Project Title</b> <b>Nature vs. Tech</b>	
<b>Objectives/Goals</b> My project is about fish called African Cichlids that protect their young and raise their eggs, by incubating them with their mouths. I want to know if Artificial Incubation is has a better survival rate than their natural technique. The reason I want to know this is so that scientists can breed these the fastest way, in order for them to reintroduce some of the endangered species of cichlids into the wild.	
<b>Abstract</b> <b>Methods/Materials</b> Egg tumbler Fish tank over 30 gallons Filters that suit for how many gallons/fish you have Water with qualities of PH of 7.4-8.4, Nitrate levels under 10, and Ammonia levels under 1.0 from your filters Male and Female cichlids of the same species &#8195;	
<b>Results</b> Artificial Incubation was much more successful than natural. We provided 4 trials of tests for the mouth-brooding mother cichlid to hold the egg, and 4 trials of tests for the Artificial Incubator. Over a period of 15 days for each trial, our results showed that the mother cichlids spat the eggs the first 3 times. The last time one of the cichlids did not spit the eggs, but held them. That gave the natural holding process bad results. The Artificial Incubation was always around 80 percent survival rate.	
<b>Conclusions/Discussion</b> Our hypothesis was correct The mother was not as able to hold and protect the eggs as well as the incubator The research said that the mother spat three times because of all the stress she undertook The stress was from the other fish and hunger The incubator had no problem with the eggs and most of them were healthy We think that the mother might have been under too much stress before the breeding started Mothers are all still healthy and well Captive cichlids may have more stress because the environment and other fish We should have made the mother be alone so that the stress would not be a factor We should have put the mother alone Future research that we would do is that we would have many more females that we could test so the three	
<b>Summary Statement</b> My project is about fish called African Cichlids that protect and incubate their young with their mouths: I want to know if that technique is better than man made incubation process; than scientists could reintroduce them fast for the wild	
<b>Help Received</b> Dr Felix Lapuz, Elizabeth Conrad	