



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Marisa L. Thompson	Project Number S1428
Project Title Photo Identification of Chinook Salmon	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose is to use spot pattern recognition procedures and image processing to identify individual Chinook salmon using a program called Stripespotter. We must first test the accuracy of the program by comparing photos of different Chinook salmon by categorizing them in a specific ranking order.</p> <p>Methods/Materials Two buckets, anesthesia, camera, Styrofoam board, Photo Elements, Stripespotter I removed three salmon from 15 tanks and placed them in a bucket, shortly before adding a few drops of anesthesia. I placed a label next to each fish that indicated which fish it was and the tank number it was in. After completing the 15 tanks, I repeated the process, while labeling each tank number with a letter B. With the 90 different photos of Chinook salmon, I extracted a portion of the spots from each fish using Photo Elements, and then entered the revised pictures into Stripespotter, which ranked these photos according to the "likeness" of the main photo that I selected.</p> <p>Results Ninety of the 90 photos listed as rank 1, while 22 of the 90 photos, or 24.4%, listed as rank 2, indicating a "complete accuracy." After examining further results, there was a steady decrease in the number of identifiable pictures as the rank number continued to increase until it reached rank 10. According to my data, 50 of the 90 photos, or 55.6%, were ranked within the first ten rankings, indicating a "partial accuracy."</p> <p>Conclusions/Discussion To some degree, Stripespotter is an accurate program; however, workers at hatcheries shouldn't solely rely on a program that doesn't rank every original photo as rank 1 and every secondary photo as rank 2; again, it depends on that perception of "accuracy." Possible errors may have occurred in this experiment such as fish movement or light quality, so before characterizing Stripespotter as an inaccurate program, we must first improve image processing.</p>	
Summary Statement The purpose is the test the accuracy of a coding program called Stripespotter to determine if identifying Chinook salmon through photo recognition is a more effective way of tracking fish.	
Help Received Used equipment from the Merced River Fish Facility under supervisor Mr. Adelizi, received physical help e.g. lifting buckets, photographer took pictures	