INTRODUCTION

SIAMESE FIGHTING FISH

*Betta Splendens* (family Anabantidae), otherwise known as Siamese fighting fish or bettas, are native to fresh water areas of Malaysia and Thailand.  Cultured for many years, male bettas are often used for sport where two are placed in the same tank to fight.  Wild bettas are naturally a barrage of yellows and browns, and their fins are often shorter than the European bred bettas.  European breeding which began in the late 1890's developed the yellowish-brown, faintly banded males, into a variety of long-finned brightly colored individuals.  Male bettas are extremely territorial and aggressive towards each other.  When males are placed together their colors deepen, and they spread their fins and gill covers.  This behavior can be considered innate, since it is inherited, as well as agnostic, being a aggressive behavior.  Besides changing appearance, they will also approach each other either in a frontal approach, a broadside display, undulating movements, and/or increased swimming speed.

     Many bettas, particularly males, are commercially sold as pets, and are often found in a array of colors of red, blue, turquoise, and even white.  Female bettas are easily identified since their fins are significantly smaller than the males, and their coloration is often less extravagant, if not completely discolored.  As shown in the above picture, bettas have many larger fins. On either side there are pectoral fins, below are a long thin pair of pelvic fin.  Behind the pelvic fins is a large anal fin, and above on its back is a slightly smaller dorsal fin.  Last, its tail is labelled as a caudal fin due to the fact that it can extend and spread apart.  Bettas are most distinguishable by their accessory breathing organ called a labyrinth.  These are folded tissues in two chambers of the gill cavity; these labyrinths are supplied with numerous vessels and can absorb oxygen from air.  Basically, bettas need to surface in order to replenish their air supplies, if they are denied access to surface air, they will drown.

     The courtship of bettas are complex, the male begins by building a nest of bubbles near the surface.  Each bubble is coated by mucus from his mouth, preventing them from bursting.  He then courts a female, displaying bright colors and extending his fins as if to attack.  He gathers the eggs in his mouth and places them in the nest, and guards and cares for the eggs and the newly hatched fry.  They grow to about 6 cm long.

BACKGROUND

     The purpose of this research study is conduct experiments on the social behavior of male bettas.  It is a known fact that when two or more male bettas come into direct contact, they will attack each other.  In attempting to discover if there will be a distinct change in social behavior, two males will be put in constant visual contact with each other, but will be restricted from physical contact.  Simply put, they will be able to see one another, but they will not be able attack each other.  It is believed that both males will become "desensitized" to each other (meaning that they will not continue to fight) after a long period of constant exposure to another male betta, or even a mirror image.  Two different experiments will be held in order to determine social behavior of male bettas can be changed.  The first will involve two different male bettas that are divided by a clear plastic sheet.  The other experiment will involve a single male betta and its own reflection given by a mirror.

     If in fact the initial experiments are successful, and the male bettas have lost the hostile nature toward each other, another experiment will be conducted to find out whether or not the "desensitized" male bettas will relapse back into their hostile innate behaviors, when constant contact with another male (or their own image) is taken away.

     The ultimate purpose of this experiment is to determine whether or not the social behavior of the male betta can be changed either permanently, or temporarily with the constant exposure to another male betta.

SUBJECTS

     The experiments will involve seven different male bettas.  One will be used as a control, which will have no exposure to its own image or another male.  This betta should retain all of  its original behavior.  Four other bettas will be paired up and each placed into a single tank divided by a clear plastic sheet.  The remaining two bettas will each be exposed to a mirror (image) inside their own tanks.  The third experiment will be conducted if at least two of the experimental subjects have their hostile behavior altered or eliminated.  This will involve taking the now "densensitized" bettas and placing them into their own individual tanks for a period of time, and then returning them back to the experiment to keep constant exposure between them.

     All subjects will be kept at the same room temperatures (ranging from 68 degrees F to 80 degrees F) to eliminate any possible deviations.  All subjects will be fed on a diet consisting of a combination of manufactured "betta pellets" and live blood worms.  To insure that no subjects are harmed no betta will be put into the same tank as the other if their is no dividing barrier in between.  Lastly the water will be kept at a ph revolving around 7 (neutral).

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