

## SPAWNING *CARASSIUS AURATUS*, THE GOLDFISH

by Andrew Boyd

For as long as I have known my wife (some four years now), she has possessed a number (about 16) of comets and fantails in a 3' tank. This was very hard to keep clean, but my former cichlid tank (4' x2' x2' ), with its powerhead-driven under-gravel filter, provided the answer.

As soon as the Goldfish had got over the shock of being able to see more than three inches in front of their noses, they began to show signs of spawning.

Male and female Goldfish can be reliably told apart only by the presence of small white tubercles (bumps) on the male's gill-covers, during the spawning season. Only one of our females, an orange veiltail comet, was being chased.

Chief amongst her admirers was a young orange-and-white fantail. Normally, it is not a good idea to mix Goldfish types without some special reason, for most of the fry will generally be of the wild bronze "Oscar-food" variety. However, we just

wanted to breed anything at that stage, so long as it had fins. So into a 24"x18"x14" tank went our would-be parents, together with a clump of Java moss.

The next morning I found them busily eating their eggs from among the Java moss. Despite my shock and Julie's disbelief, we eventually moved this Java moss to the neighbouring tank (another 24"x18"x14"), away from the attentions of the parent fish. Not trusting to fate or mother nature, we repeated the experiment the following morning.

In the evening, and being bored with our easy success, we removed the male fantail and replaced him with Julie's favourite, a calico comet. After the pair had spawned and the Java moss was removed to the hatchery tank, we embarked on our first serious spawning. A veiltail comet, quite possibly the brother of our one spawning female, was placed with her.

The fry started to hatch ten days later but, as no special care had been taken, apart from good water movement over the eggs, quite a few had developed fungus. So from the thousand or so eggs a female is capable of producing only four or five hundred fry resulted.

Infusoria, Sera Micron, egg-yolk, livebearer fry food and a brine shrimp or two got them through the first couple of weeks. Since then, they were given a diet of powdered flake, floating pellets and *Cyclops*, but many of the weedier fry also became part of the menu.

At three weeks things were becoming a little crowded, so the fry were divided between two unequal tanks. Those in the larger tank grew faster, so the smaller ones were sent off to my parents' pond, to progress better. Sizes at the end of the first month varied from a one-inch monster right down to a few half-inch runts. At the end of the second month, the pond-raised fish were all bigger than their tank-raised siblings.

And what did we end up with? Well, about ten percent of the fry have the fantail twin-fins, but this had no bearing on their growth rate. A popular theory has it that as the split-tailed fry cannot swim as fast as their single-tailed siblings, they cannot eat as much and grow slower. Our own fantail fry cover a wide range of sizes.

Colour is, as might have been expected, something of a disappointment. Of those that have survived (Axolotls, Oscars and sibling predation having accounted for many), one is bright red, about ten are calico and there are two black ones. The rest are of varying drab shades of washy orange and bronze. One interesting variation is a black-tailed gold comet, which we hope to breed as a new variety.

Just to illustrate the amazing genetic variation in *Carassius auratus*, we also notice two fry without dorsal fins. From such mutations as these, the lionheads and bubble-eyes were developed.

I can heartily recommend the keeping of Jewel Cichlids and Oscars for the disposal of excess fry (when one's wife isn't looking). but it is physically impossible to raise large numbers of good Goldfish without access to sizeable outdoor pools. However, we have been able to bring up 30 or so really nice fish, with about 10 of them being improvements over their parents. If they survive the next push to fatten up our female Oscar, we should, hopefully, be able to start some kind of planned breeding programme.

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