

Supplementary information

Production and husbandry of experimental fish

Twenty-one wild-caught females from Belize, Central America were mated in the laboratory to wild-caught males from the same population. The fry from these matings were removed from each female's breeding tank and reared in a separate rearing tank (one per brood) until 2 months of age, at which point they were assigned to treatment groups.

Fish were fed twice a day (on days when fed) with commercial micro-pelleted food with a protein content of 44% and a lipid content of 4.8% (Hikari tropical micro-pellets; Kyorin, Japan). Food was dispensed from a modified syringe with a wide gauge needle, such that GG fish received at least 4.5% of body mass daily (i.e. 0.036g/d until they were at least 0.8g in mass, then 0.072g/d until they were 1.6g in mass and 0.108g/d if they were over 1.6g). PG fish were initially fed 0.036g/d three days out of seven, so on average received the equivalent of 0.0154g/d until 6 months, when they were put on the same feeding regime as similarly sized GG fish.

Throughout the experiment, partial water changes of the experimental tanks were conducted on a weekly basis to maintain water quality. On each occasion that fish were to be measured they were anaesthetised in an aerated water bath using benzocaine in 95% alcohol at a concentration of 8ml/litre of water. After measurement they were immediately placed in a bath of pure aerated water and allowed to recover before being returned to their rearing tank.

Measurements of swimming performance

Swimming endurance was measured using a modified Blázquez respirometry chamber. The chamber, made of clear acrylic, was used in conjunction with an O/Runner 6500 pump with impellor attached to one end, with both submersed in a large glass tank (90 x 30 x 35cm). The apparatus consisted of an inner chamber 53cm in total length and 5.8cm internal diameter, which was inserted into a larger chamber of 9.5cm internal diameter. The inner flow chamber consisted of three sections. The section furthest away from the pump had a 4cm long collimator of plastic straws and a grid (with 5mm mesh) placed 10cm along the tube to enhance laminar flow and reduce turbulence. Two grids (2cm apart) were placed at the other end, nearest the pump; the one 5cm from the pump inflow pipe was made of 1 mm mesh while the second one was of coarser (5mm) mesh. The middle section was used to house the fish during the experimental trials and was 330mm long. An inline tap attached to the outflow of the pump was used to regulate the flow speed through a 19mm diameter pipe, which sucked the water through the flow chamber.