

# What do male guppies (*Poecilia reticulata*) exposed to fisheries-induced evolution do to attract females?

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## 1. What is fisheries-induced evolution?

Fisheries-induced evolution (FIE) is the evolution driven by fishing practices as fishing imposes a selective pressure that results in FIE on life-history traits (earlier maturation). Studies have shown as fishing select for bigger sized fish, it will lead to populations with smaller fish.

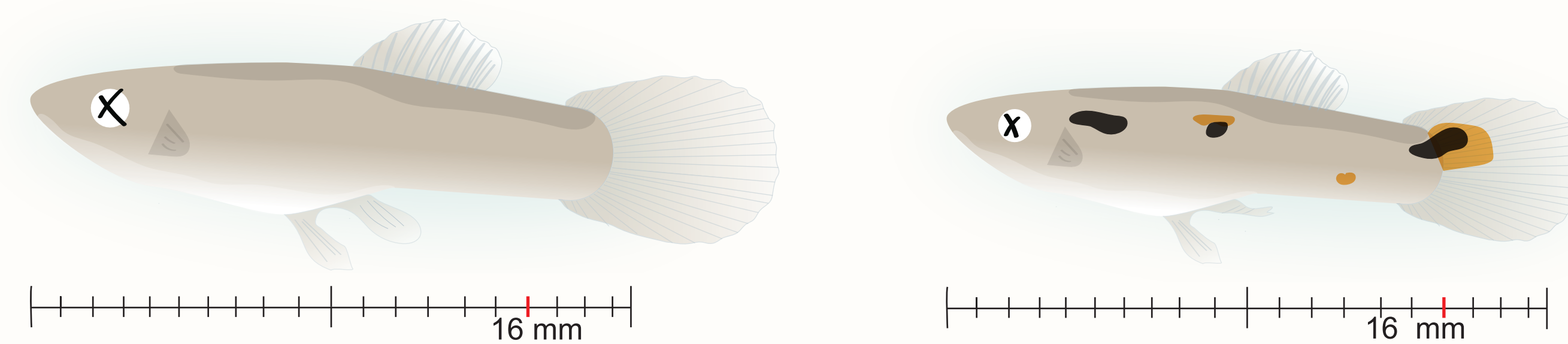
## Aim

Females, in general, do not like small males, so do the males need to change other traits to compensate for a smaller body size in order to reproduce? This research tested this on guppies (*Poecilia reticulata*) to see if there was a change in morphology and behaviour.

## 2. How the fishing treatments were set up

**Positive treatment- Big fish**  
Kill fish above 16 mm

**Negative treatment - Small fish**  
Kill fish under 16 mm



**Random treatment - Kill both small and big fish**

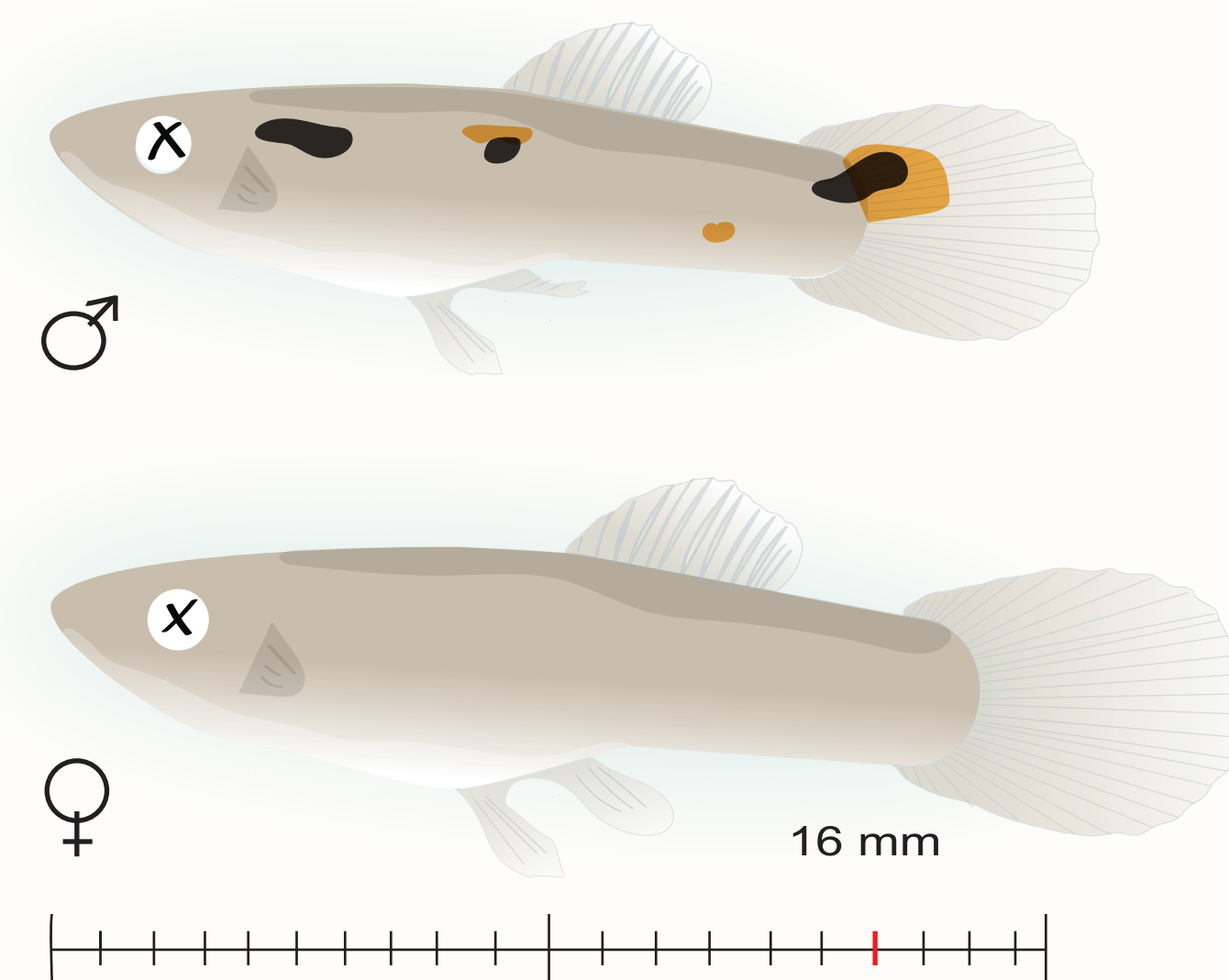
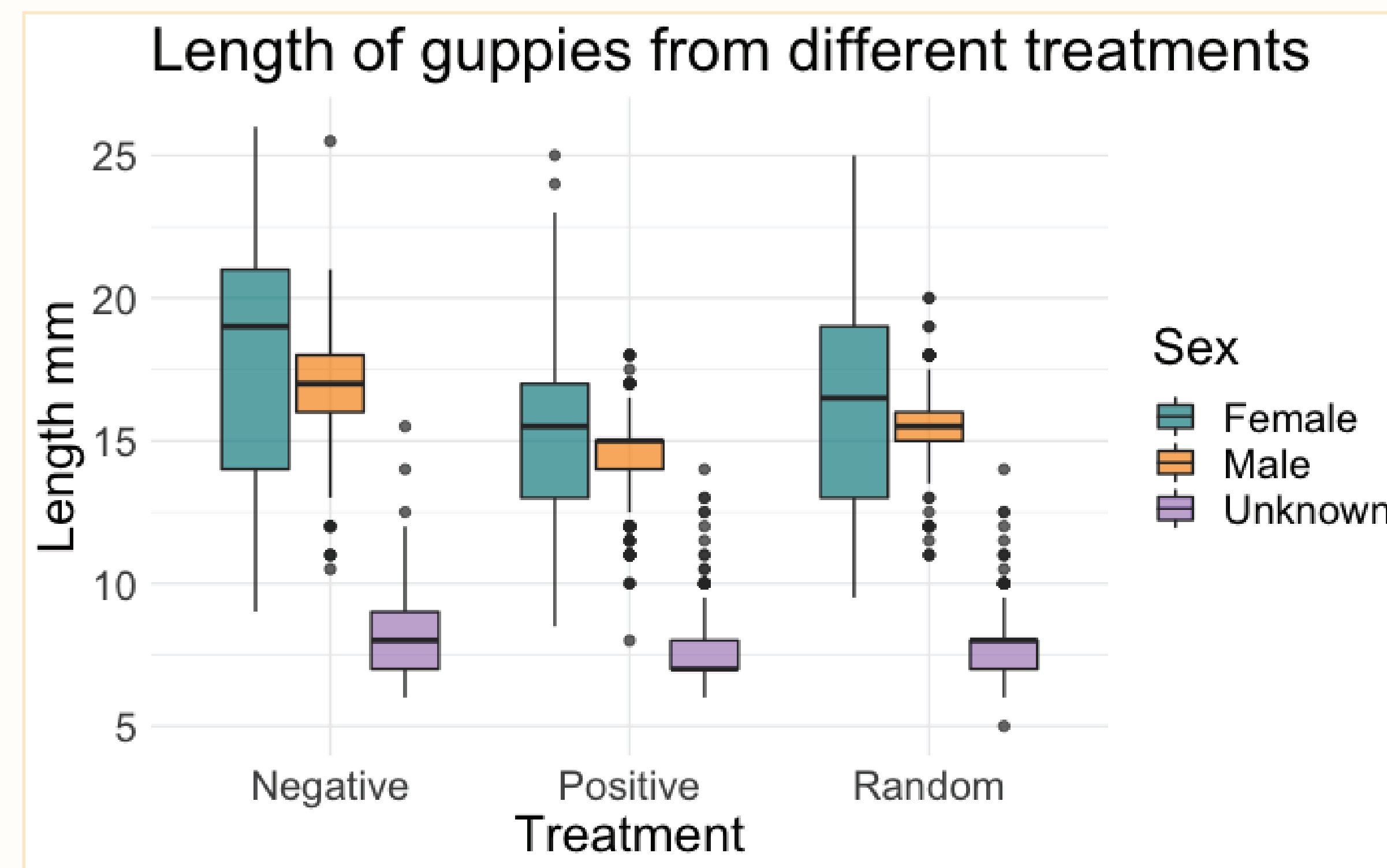


Figure 1. Figure displaying the method of fishing treatments. The positive treatment killed all big fish (above 16 mm), while the negative treatment killed all small fish (under 16mm), the random treatment killed both small and big fish randomly.

## 3. What can we expect from FIE?

We expect fish from the positive treatment to become smaller in size than fish in the other treatments.



## 4. What will change to make a smaller male more attractive?

The **hypothesis** is that males from the positive treatment will develop **larger gonopodium**, **more colouration** and a change in behaviour to either more **bold or active** to compensate for the smaller size.

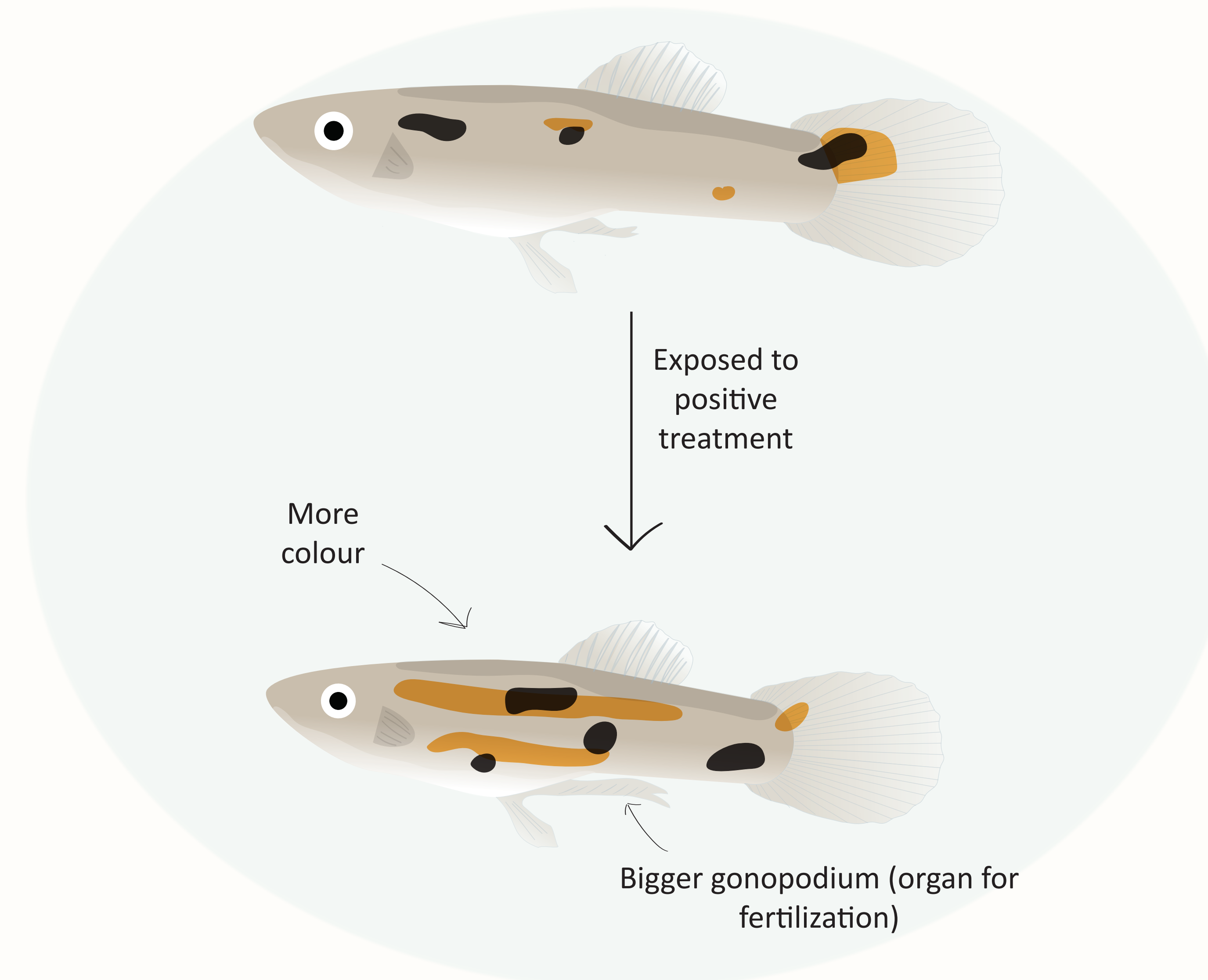
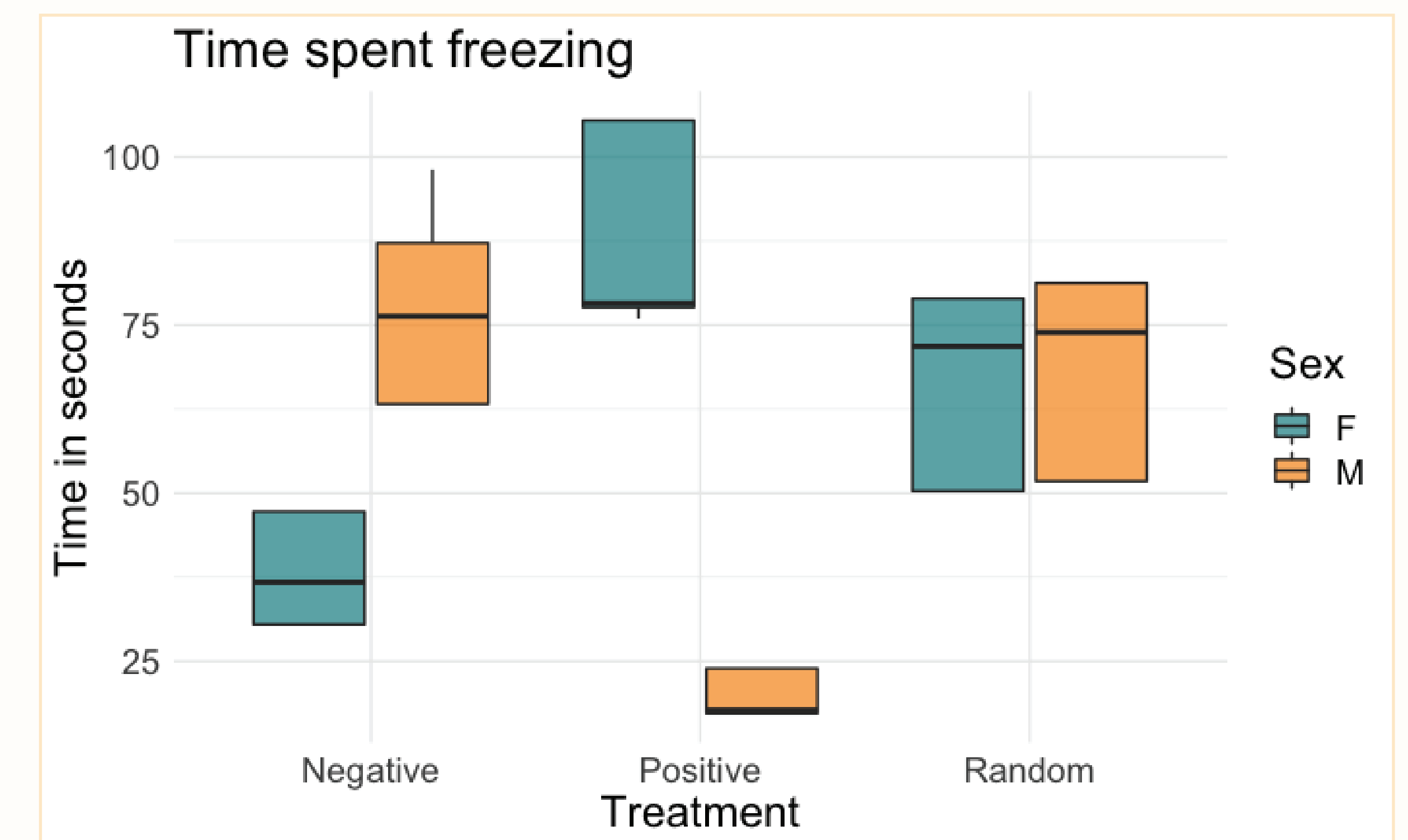
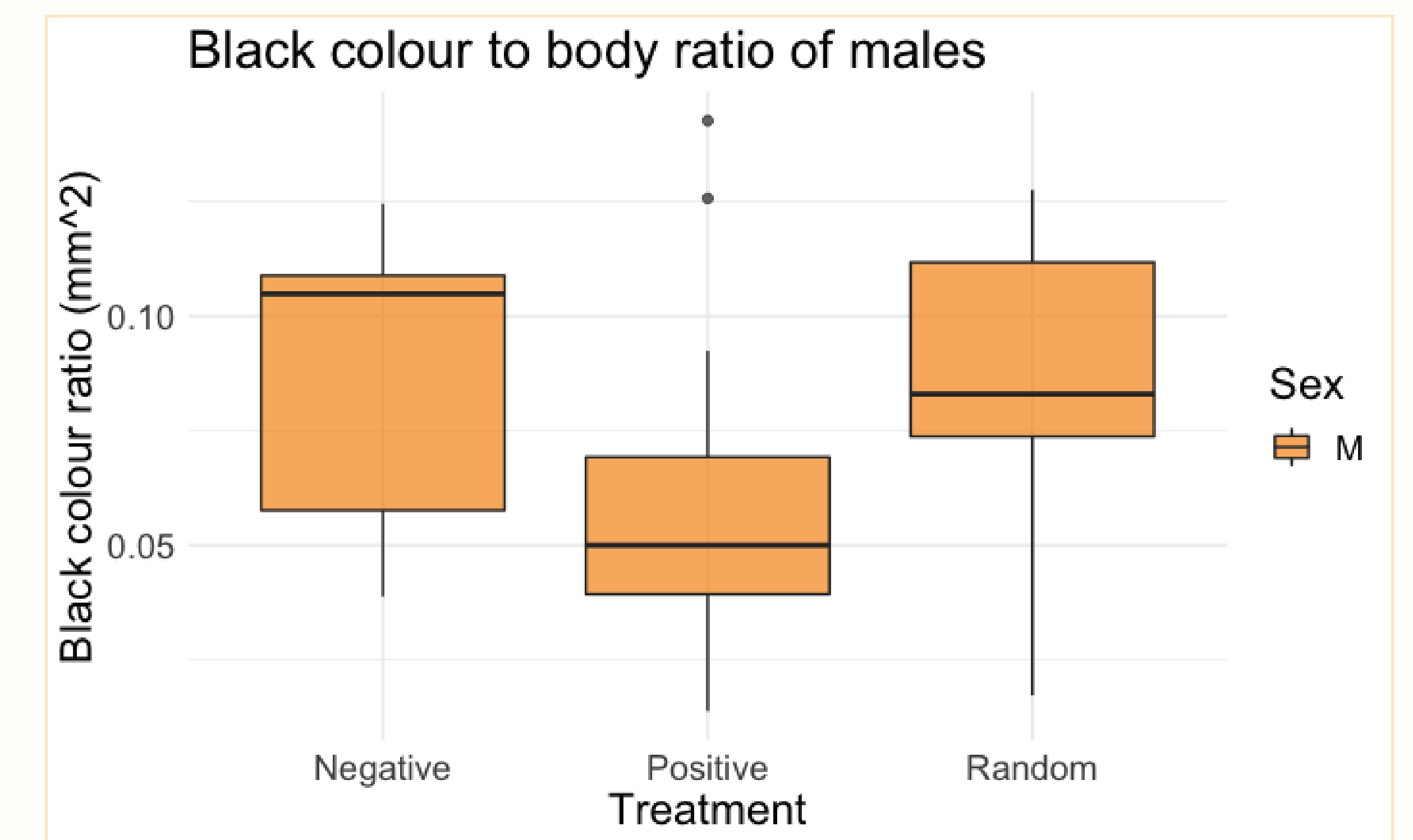


Figure 2. Illustration of the hypothesis that males will develop more colour and a bigger gonopodium when exposed to the positive treatment.

## 5. Findings on morphology and behaviour

Results showed that males from positive treatment had less black colour than in the other treatments, they also spent the least amount of time freezing, compared to the others.



## 6. Conclusion

The results of colour do not fit with the expectations, this might be that making colour is too costly. The change in behaviour fit the expectation, that males from the positive treatment have a faster pace of life and so they have to be more active.