# Strength of reproductive isolation between *Austrolebias reicherti* and *A. charrua* varies depending on life expectancies

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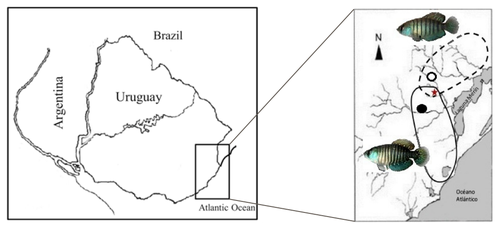
## INTRODUCTION

Sexual selection has been proposed as an important force influencing speciation as it affects the origin and maintenance of reproductive isolation between divergent populations. At present, it is considered that its strength can vary according to the ecological conditions and life history traits, causing variations in the degree of reproductive isolation between closely related species in space and time.

*Austrolebias reicherti* and *A. charrua* are sister species that have recently diverged. They have parapatric distributions with an overlapping area where they share a hybrid zone. Sexual selection strongly modulates their reproductive dynamic through mate choice and competition for mates. However, the temporary ponds they inhabit suffer abrupt changes along the season, and it has been reported that females decrease choosiness by the end of the season, when life expectancies are reduced.

In this preliminary study, we simulated a drying pond to assess if reproductive isolation and hybridization are influenced by the reduction in life expectancies.

Above *Austrolebias reicherti* female (left) and male (right).
Below *A. charrua* female (left) and male (right)

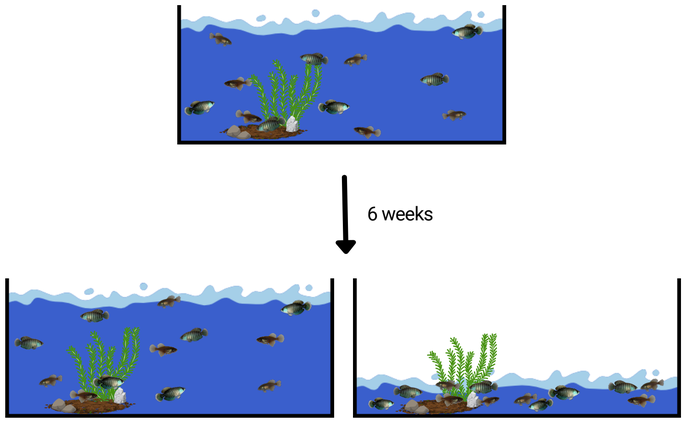



*Austrolebias reicherti* and *A.charrua* distribution.
Star shows the hybrid zone.

This work is part of Noelle Rivas' master degree. This master degree is partially funded by a master degree scholarship of the Agencia Nacional de Investigación e Innovación of Uruguay.

## MATHERIALS AND METHODS

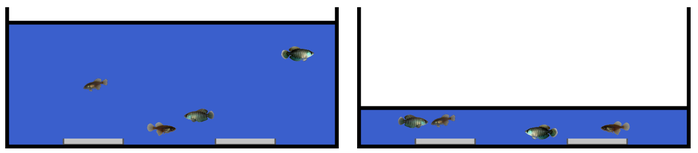
### MAINTENANCE




CONTROL
N=6

TREATMENT
N=6
Progresive water remotion

### FREE INTERACTION TESTS



4 INDIVIDUALS FROM CONTROL TANKS
N=6

4 INDIVIDUALS FROM TREATMENT TANKS
N=6

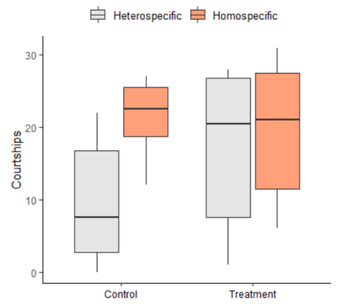
Two males and two females who didn't know each other
+
Oviposition substratum

} Allowed to interact freely during 3 days

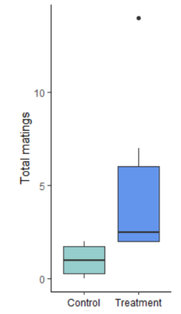
4 observation periods of 20 minutes each day
We registered:

- homoespecific and heteroespecific courtships
- homospecific and heterospecific matings

## RESULTS




Individuals from control tanks performed more homoespecific courtships than heterospecific ones (Wilcoxon paired test p = 0,046), while individuals from treatment tanks did not show difference in the frequency of homospecific and heterospecific courtships (Wilcoxon paired test p=0,344).




Individuals from control tanks performed marginally less matings (both homospecific and heterospecific matings) than individuals from treatment tanks (Mann-Whitney for two samples p = 0,061).

## CONCLUSIONS

- The difference in the frequency of homospecific and heterospecific courtships between treatments shows that, when life expectancies are low, the individuals decrease their choosiness.
- The marginally superior frequency of matings of treatment tanks individuals, suggests an increase in reproductive effort when life expectancies are reduced.

Taken together, these results evidence that, when life expectancies decrease, reproductive effort increases and reproductive isolation decreases, which could influence hybridization frequency, increasing hybridization by the end of the season. Therefore, our results suggest that life expectancies could affect the divergence between these two species by influencing hybridization.

### PERSPECTIVES

- To improve the number of tests.
- To supplement the behavioral analysis with genetic tools, in order to get genetic measures of hybridization in different life expectancies conditions.