

## Introduction

- Gynodioecy is an evolutionarily unstable population dynamic in plants that is characterized by both hermaphroditic and female plants, with mutations that render the male parts sterile.
- Conradina glabra* is a federally endangered mint endemic to Liberty County, FL that was previously thought to be fully hermaphroditic
- To investigate maternal investment as a potential benefit of gynodioecy in *C. glabra*, we observed seeds from both morphs of the plant.

## Questions

- Do females produce bigger seeds?
- Is there evidence of different maternal investment between sexes?
- Are there significant patterns in seed characteristics (regardless of sex)?

## Methods

### Collection

Fruits (calyces) were sealed with glue and allowed to finish developing. Calyces were collected from flowers during March–May 2025 and opened in lab.

### Documentation

Plant data was entered in Excel, and seeds were photographed one calyx at a time using a camera mounted on dissecting scope.

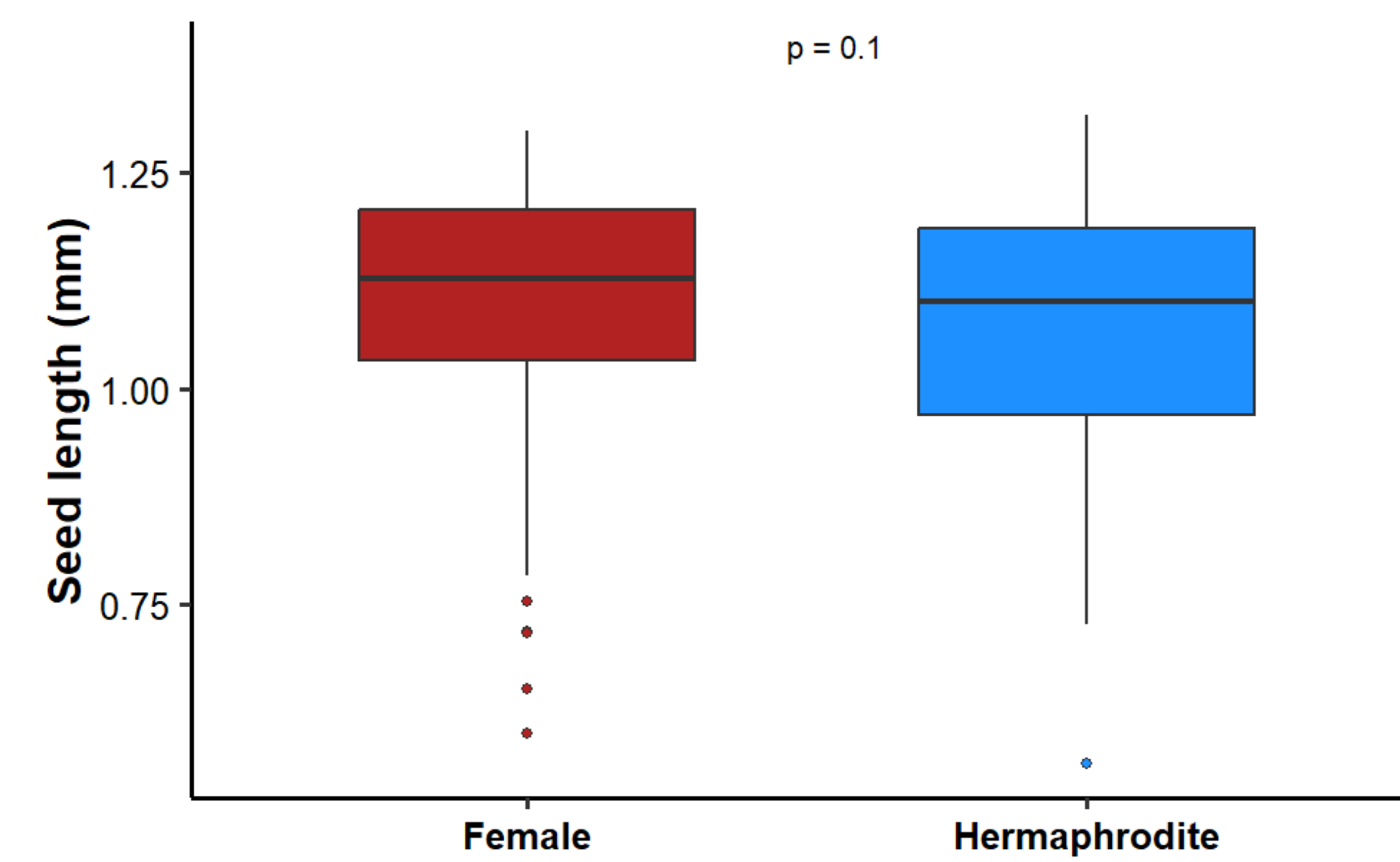
### Measurement

Seed pictures were uploaded to ImageJ and scaled to measure length and area. This data was tracked by calyx and sex of the plant.

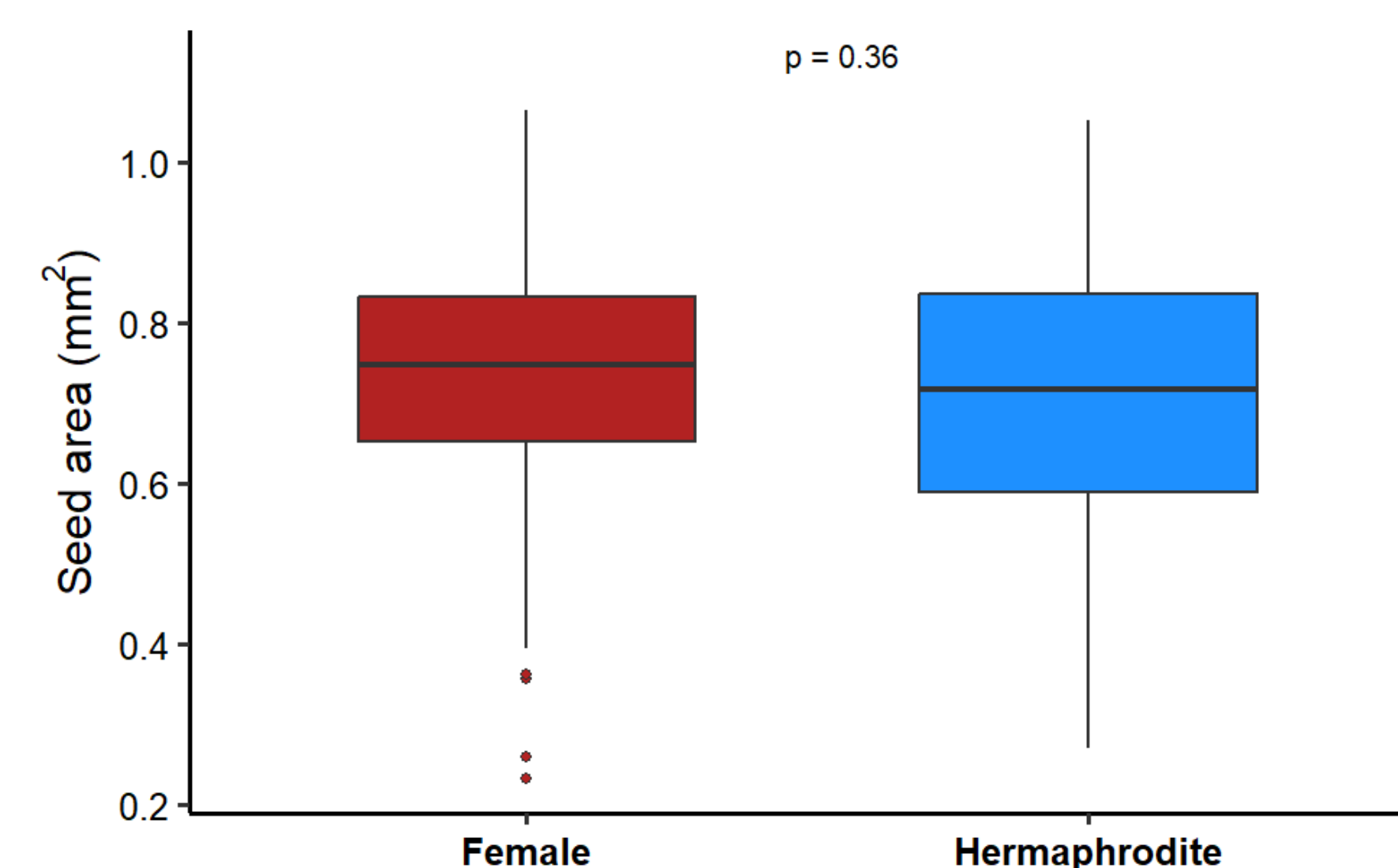
### Analysis

Since our data were not normally distributed, we used a Mann-Whitney U test to determine whether seed size differed significantly between females and hermaphrodites.

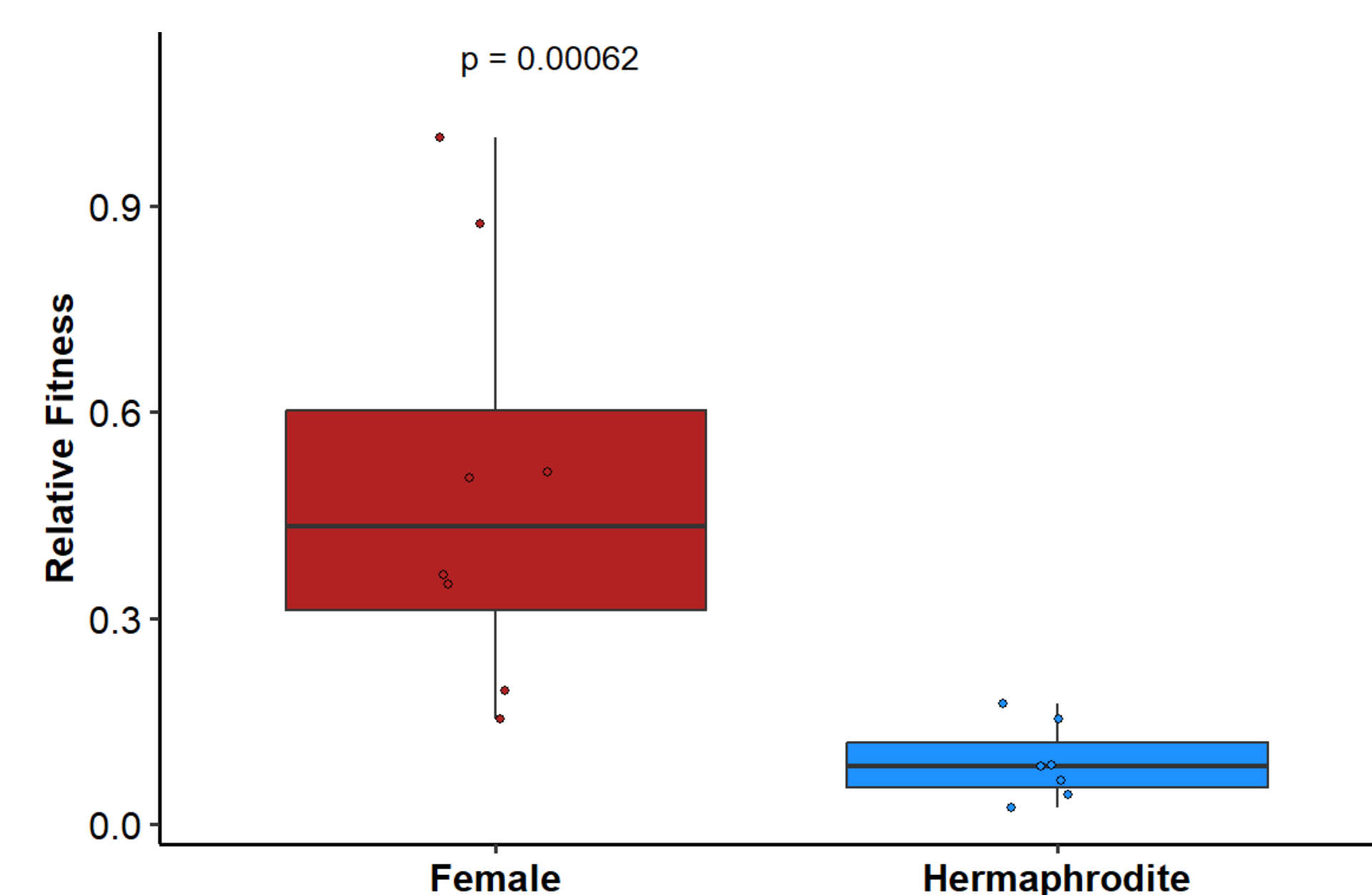
## Preliminary Results



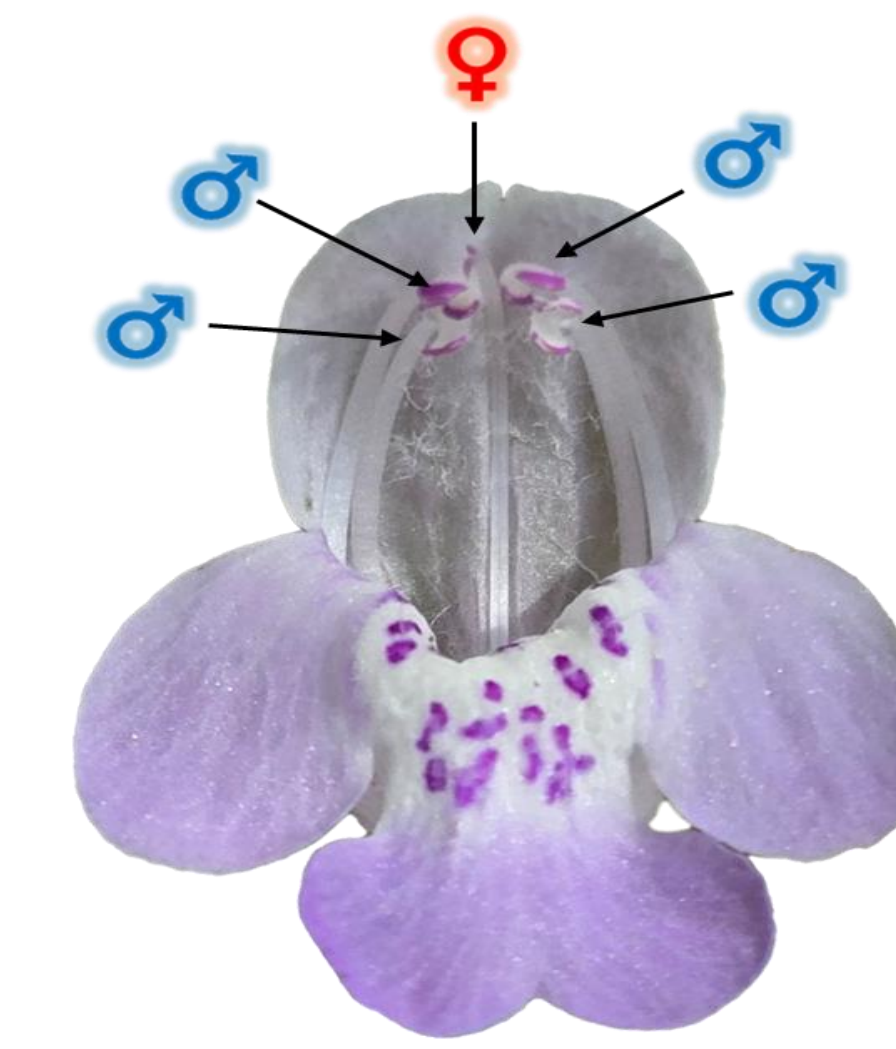
**Figure A:** Seed length did not differ significantly between females and hermaphrodites (Mann-Whitney U test,  $p = 0.1$ )



**Figure B:** Seed area did not differ significantly between females and hermaphrodites (Mann-Whitney U test,  $p = 0.36$ )



**Figure C:** Fitness was calculated as mean seed viability  $\times$  flowers per  $\text{cm}^3$ , normalized to the maximum observed value. Boxes show median and interquartile range; points are individual plants. Significance assessed by Mann-Whitney U test.



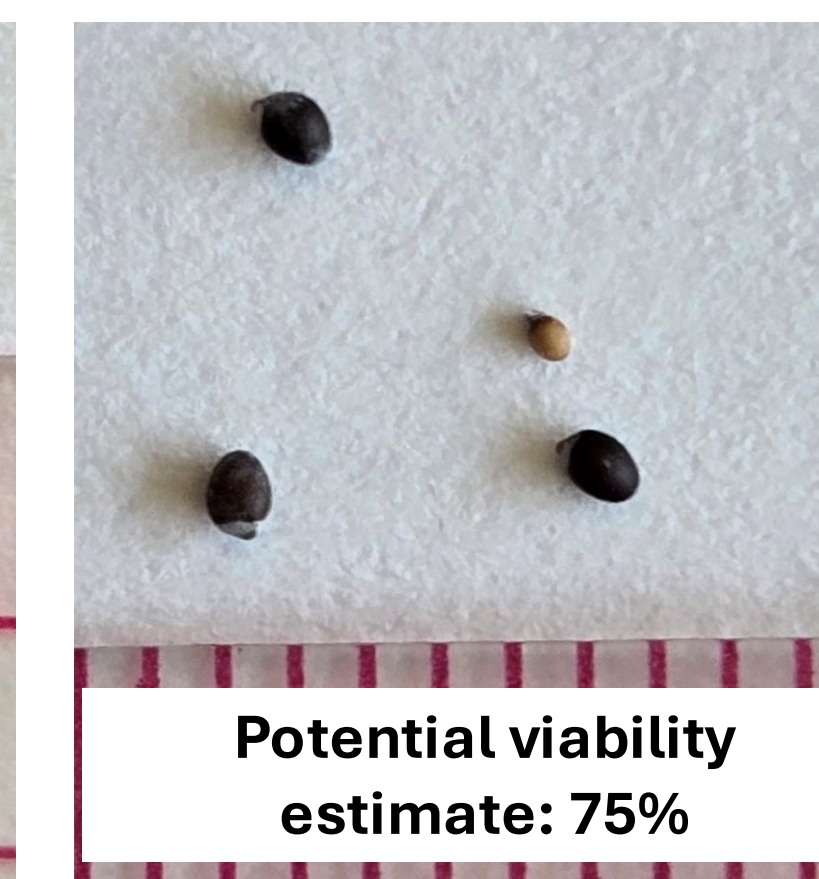
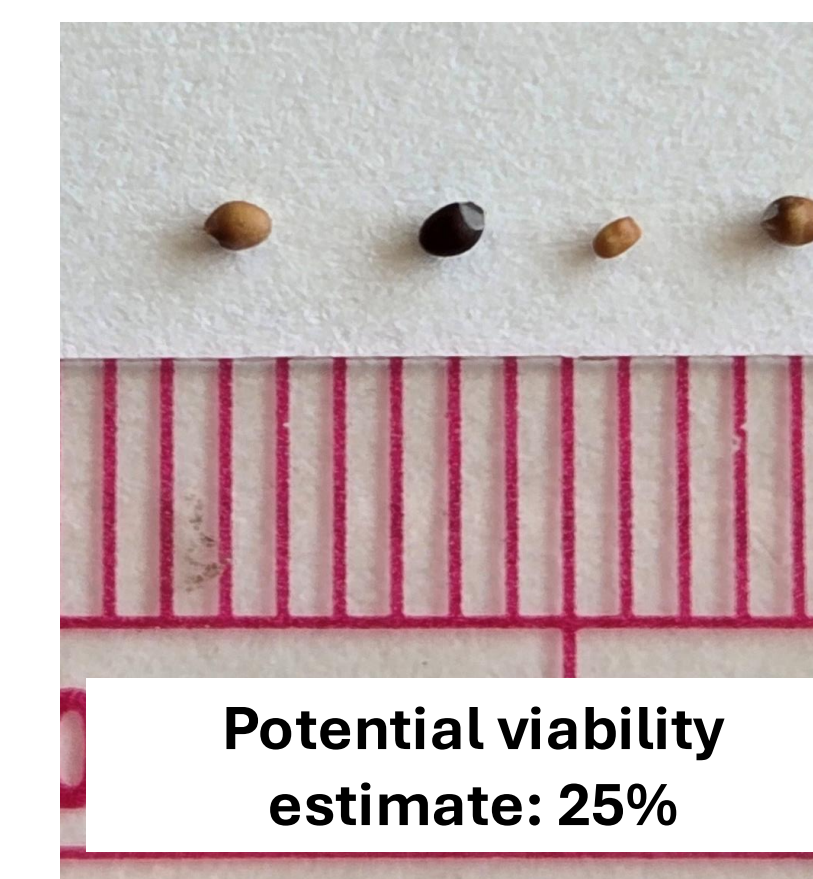
1. Hermaphrodite flower with both male (anther) and female (style) parts



2. Female flower with petaloid morph



3. Female flower with abortive anther morph



## Conclusion

Upon analyzing the data, our results suggest that females and hermaphrodites do not differ significantly in maternal investment, based on seed length and area. Seed size may not explain the female advantage, but the magnitude of that advantage (Fig C) suggests other mechanisms are at play. Future research could explore other seed characteristics, such as seed color, to better understand these differences.

## Future Implications

Further research into the significance of seed color

Research of other sources of female advantage such as release from inbreeding depression

Investigation of pollinators' impact on plant fitness

## References

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- Weller, S. G., Sakai, A. K., Thai, D. A., Tom, J., & Rankin, A. E. (2005). Inbreeding depression and heterosis in populations of *Schiedea viscosa*, a highly selfing species. *Journal of Evolutionary Biology*, 18(6), 1434–1444. <https://doi.org/10.1111/j.1420-9101.2005.00965.x>

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