



Morphometric Differences of the Sacramento Pikeminnow (*P. grandis*) in Non-native vs. Native Habitat



Jessica Calderon • Department of Wildlife • Cal Poly Humboldt • 1 Harpst St. Arcata, CA 95521

Introduction

- Invasive species disrupt ecosystems and can lead to complex food web issues and increased probability of extinction for native species (White 2001).
- *P. grandis* in the Eel river have contributed to the decline of species that local communities rely on (Brumo 2014).
- Freshwater fish populations are known to expand quickly from a few individuals and may have higher somatic growth rates in invasive ranges (Rypel 2014).
- Is there a difference in size of *P. grandis* within its native range in the Central Valley, California vs. where it is invasive in the Eel River, California?
- Hypothesis: *P. grandis* will be larger and have longer fin lengths in the Eel River where they are invasive.

Methods

- Received frozen samples from the Wiyot used alongside collaborative projects at Cal Poly Humboldt, in the hopes to eradicate *P. grandis* from the Eel River in the future.
- Collected morphometric data from thawed *P. grandis* specimens collected in 2022.
- Compared with samples collected from native range (Fig. 1; Mayden et al. 1991).
- Completed a t-test using means, standard deviation, and n values for both Native and Non-native habitats (Table 1; Fig. 2).

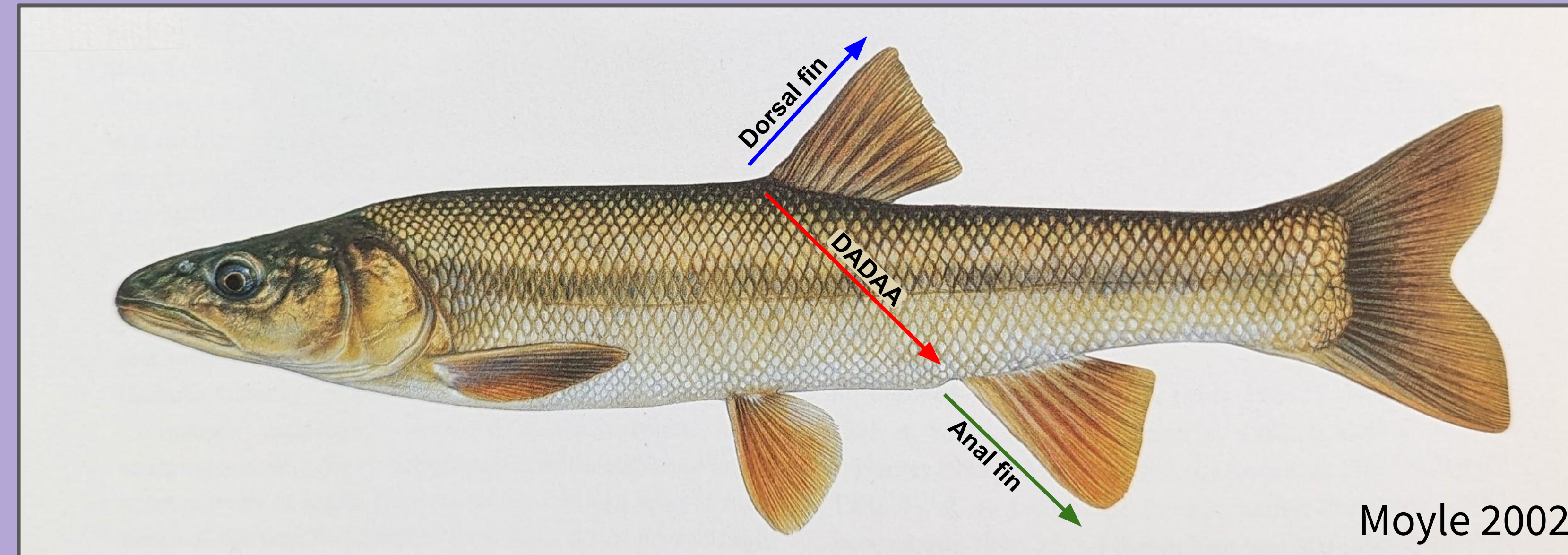


Figure 1. Illustration of *P. grandis* showing distance between anterior dorsal fin and anterior anal fin (red), dorsal fin height (blue), anal fin length (green).

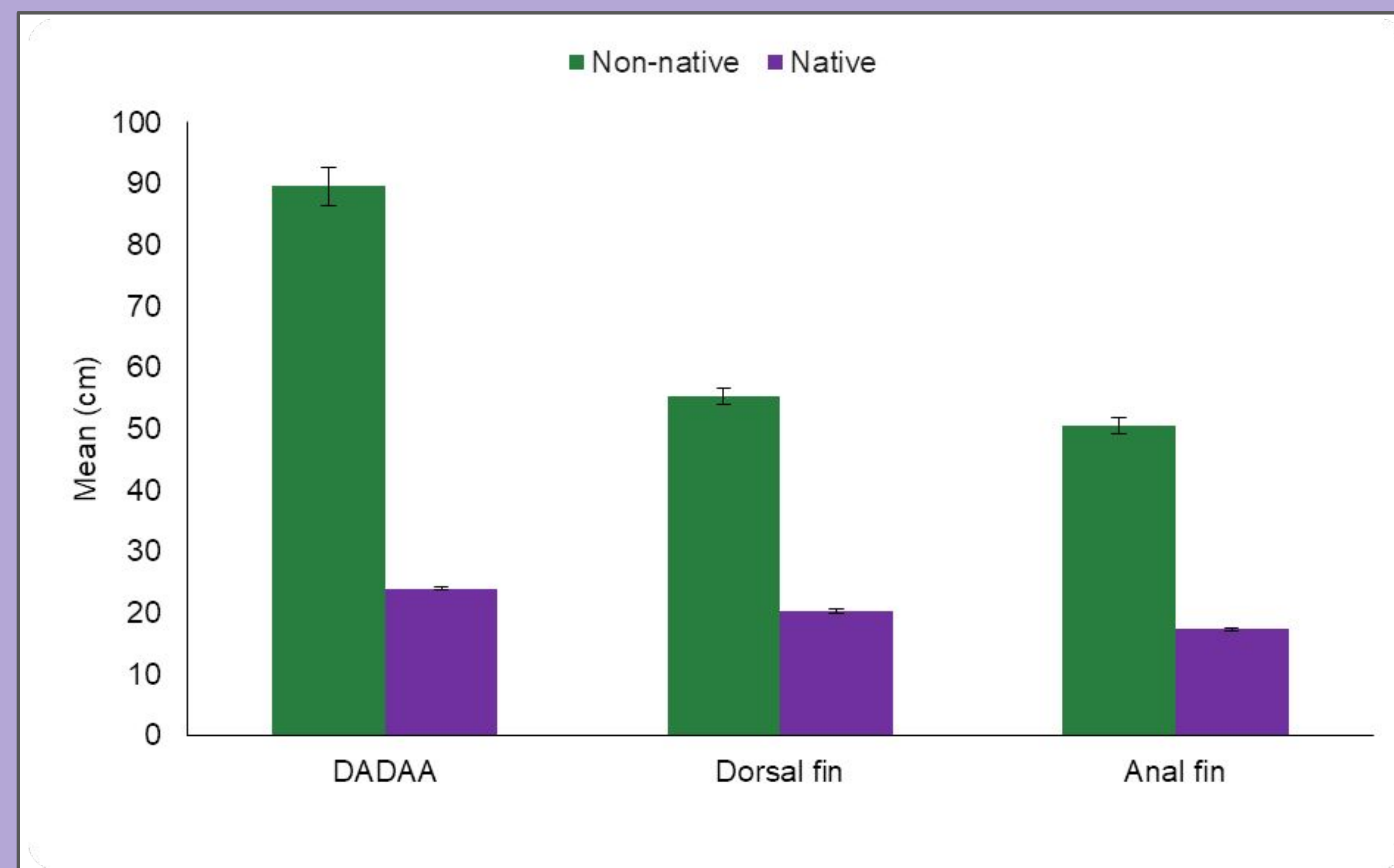


Figure 2. Mean distance between anterior dorsal fin and anterior anal fin (DADAA), dorsal fin height, and anal fin length for *P. grandis* in the Eel River (Non-native) and Central Valley (Native), California. Error bars represent the standard errors of those means.

Measurement	Non-native	Native
DADAA	89.52	23.89
Dorsal fin	55.31	20.2
Anal fin	50.45	17.32

Table 1. Mean measurement values for each metric on Sacramento pikeminnow (Native n = 42; Non-native n = 17).

Results

- There was a significant difference in means for DADAA, dorsal fin height, and anal fin length (Fig. 2; $p < 0.001$).
- The data suggests that *P. grandis* is larger in the non-native habitat of the Eel river than within their native range in the Central Valley, California.

Discussion

- We reject the null hypothesis, however there were several biases.
- Smaller fish were not equally represented in our samples.
- Not all measurements taken in original study were measured for our study.
- Fish may not have been collected during the same time of year.
- Future comprehensive studies with better planning and control are needed to explore these implications.

Acknowledgements

Thank you to the Wiyot, Dr. David Sinn, Robert Blenk, Dr. Rafael Cuevas-Urbe, Raven McAdams, Alexander Juan, Danial Nayeri, Logan Hysen, my friends, and family—especially my mother.

References

