Summary of the research project **[200 words]**

This project aims to investigate how abiotic/environmental contexts affect key traits of aquatic. invasive species, for example how water flow rate and substrate type affect attachment strength, or how water hardness (kH) affects shell/carapace hardness of invasive crayfish and mussels. Conclusions may be used to advise water companies, such as Yorkshire Water, about how to manage invasive species to protect their equipment. These species are also an ecological threat, so research into these species can provide solutions to reduce damage to the habitat and other species.

Summary of the work to be undertaken by the Scholar **[200 words]**

The research aims can be summarised by the following questions:

How does the shell/carapace hardness change along a kH gradient of invasive mussels?

Does the flow rate of water change the attachment strength of invasive mussels on different species?

I will learn from postgraduates how to conduct lab and field work, such as sampling procedures and experimental design. Techniques, such as the use of a force meter to measure shell strength, will allow me to collect data for analysis. Also, I will learn how to handle and ethically maintain specimens collected from the field. I will use statistical analysis to review the data collected and create a project report on my findings. Finally, I will create a presentation of my findings in a clear and concise manner and a poster to be presented at the British Ecological Society conference in Dec 2023. I will also work with postgraduates in the current lab to broaden my knowledge on invasion science.

Planned Research Impact (and how this will be measured)

The research will provide insights into the mechanisms that allow freshwater mussels to be invasive species. This has an ecological impact on biological communities and an economic cost for water companies who must maintain their pipes and abide by biosecurity protocols. This research will be presented in a small report to Yorkshire Water as key stakeholder partners, as a presentation to the Aquatic Interactions Laboratory group, and as a poster at the British Ecological Society conference in Dec 2023.