Differences in sandprawn burrowing activity in response to changes in human recreation and bait harvesting in Langebaan Lagoon - Student Full DMP

1. Project Details

PROJECT NAME - Replicate the title of your project, dissertation or thesis exactly as it appears in your proposal document.

Differences in sandprawn burrowing activity in response to changes in human recreation and bait harvesting in Langebaan Lagoon

PERSONAL DETAILS - Indicate the name(s) and student number(s) of the student(s) who will be involved in this project, dissertation or thesis.

Ella Hosking HSKELL001

SUPERVISOR(S) DETAILS - Indicate who will supervise this project, dissertation or thesis. If you do not yet have a supervisor, leave this section blank.

Associate Professor Deena Pillay
Msc student co-supervisor Mila Truter TRTMIL001

2. Project Summary

RESEARCH SUMMARY
Briefly summarise your study. Include the study's objectives, design, and methods.

Human presence and Bait harvesting appear to be major stresses on sandprawns (*Kraussillichirus kraussi).* The study aims to evaluate the effect of these stressors on the sandprawn's burrowing activity.
This study will take place in Langebaan Lagoon, Western Cape, South Africa. It is a conservation area that is divided into zones of use. I will study Zone A, where human presence and bait harvesting are permitted. There is a gradient of human visitation. Most visitors occur at the start of zone A and almost no visitors are present at the end.
I will quantify the sandprawn respiration rate and burrowing rate. I will compare these variables between sites with maximum human activity and sites with minimal activity. The second component of the study aims to help us understand whether there is local adaptation to recreational activity. This involves a reciprocal translocation experiment whereby individual sandprawns are transferred between the sites and monitored. Sandprawns will be harvested with a cylindrical prawn pump and released after observation.

3. Data Collection/Generation

ORIGINAL DATA
If you are collecting your own data, describe the data you are gathering for your study. Briefly describe the type, scope and amount of the data you are producing.

- I am collecting my own data.

I will measure the change in oxygen level over time in respirometers. This data will be used to calculate respiration rate. I will measure the time for the sandprawn to completely bury itself in the sand. This will be used as an estimate of burrowing rate. I will be comparing respiration rate and burrowing rate between two study sites on opposite ends of the gradient of recreational use in Langebaan Zone A. I will collect additional burrowing rate data from the reciprocal translocation study.
Each site will include five subsites to account for inter-site variability. At each subsite, 10 sandprawns will be observed for respiration rate and 10 sandprawns will be used for burrowing rate. This results in 100 sandprawns being compared between the two sites (n= 200; 2 sites x 5 subsites x 20 sandprawns [10 for respiration; 10 for burrowing rate]).
For the translocation study, 10 sandprawns from each subsite will be used for burrowing rate measurements (n= 100; 2 sites x 5 subsites x 10 sandprawns).
Environmental data:
I will use a CTD to measure water column differences between sites. I will take five measurements per site. I will use a penetrometer to measure sediment porosity differences, with ten measurements per site. Sediment oxygenation will be approximated by sediment coloration with five measurements per site. Visitor numbers will be sampled using the scan- sampling method whereby the number of people per site is counted every thirty minutes at low tide.

DATA REUSE
If you are re-using data from third-party sources in your study, record pertinent details here such as the source of the data, the extent of the data, usage rights or restrictions pertaining to the data, and how it incorporates into your study.

- I am not using existing data in my study (skip question).

4. Data Quality Control and Formats

QUALITY CONTROL
Describe what measures you are taking to ensure the data you collect are of high-quality.

I will use tidyverse packages to clean the data, for example removing any null values. A standard data collection sheet will be used and researchers will be trained before taking measurements. The same equipment will be used for both sites. Repeat measurements will be taken at each sub-site.

FILE FORMATS

Indicate the formats in which your data will be collected and processed.

Clarify whether you will use specialised, proprietary software to produce and access your data and whether you will convert to open, accessible formats for long term access and preservation. In the case of physical objects (such as artworks or models) indicate whether these will be digitised or otherwise preserved for accessibility.

The data will be collected in a CSV formatted and processed in R using Rstudio. I will include a binder page.

5. Data Management and Documentation

STORAGE AND BACKUP

Describe how your data is being stored and backed-up. If you are using a data service provider, provide details on how long they will retain the data.

My data will be stored and backed up on a Github repository. It will also contain my analysis code with version control.

DATA MANAGEMENT

Describe how you organise and manage your data.

Specify folder structures and any file-naming conventions or community data standards you have adopted.

Naming of files will follow the convention DataFileName_1.0 where 1.0 indicates the original document.

DATA DOCUMENTATION

Describe what supporting notes or files (documentation) you will provide. Documentation helps others interpret your dataset, with details such as variable definitions, coding explanations, and README files.

I will provide a README file that will explain how the data was collected. This will include information on when, where and who collected the data. It will have a section on what variables were collected and defining them. I will include both my raw data and my cleaned data in Github. I will share any field notes and data collection sheets. I will have clear annotated Rscripts to explain any lines of codes.

METADATA STANDARDS

Explain what structured information (metadata) you will provide about your data. Metadata helps others understand the context in which the data was collected, including methods, instruments, and provenance.

I will include metadata with the name of the dataset, the people who collected the data, how it was collected, where and when it was collected. It will include any tools or software that was used and detailed steps on how the data was cleaned.

6. Data Security and Confidentiality

SENSITIVE DATA

Indicate to what extent your data are sensitive.

Describe how you will control access to your data. Indicate whether you anticipate a need for encryption or password-controlled access, and if so, how you will enforce that access.

- My data is not sensitive or at-risk

My data is not sensitive or at-risk. It does not contain legally-protected or sensitive information.

ETHICS AND PRIVACY

Describe, as per your Ethics Clearance form or other similar documentation, any ethical or privacy issues that your data are subject to (if any). Summarise the main risks to the confidentiality and security of information related to human participants, the level of risk, and how this risk will be managed. If your project did not require ethical clearance, you may ignore this section.

- I require ethical clearance for my research.

My data has sentient animal participants and therefore requires ethical clearance. However no invasive procedures will be carried out and animals will not be kept in captivity. Experiments are expected to cause little to no discomfort. The sandprawns will be released post observation and will not be euthanized.

7. Data Sharing and Open Access

DATA PUBLICATION

Do you intend to publish your research data?

If you are working with sensitive data or are re-using third-party data, are there any restrictions or conditions attached to your datasets that affect data sharing, reuse, or attribution? If so, please describe them.
If you are not sharing your data, provide the appropriate justification as per the UCT Research Data Management guidelines.

- I do intend to publish my data.

DATA REPOSITORY
Where will the research data be deposited or made available at the end of the project?

I will share my data on ZivaHub at the end of my project.

DATA LICENCE
Indicate under which licence you intend to share your research data.

- CC BY

I will share the data from my study under a CC BY licence.

8. Relevant Institutional or Study Policies

Indicate the relevant departmental, unit, or institutional policies that influence your data management activities.

The following policies apply: the UCT Open Access Policy; the UCT Intellectual Property Policy; and the UCT Research Data Management Policy.