Plan Overview

A Data Management Plan created using DMPonline

Title: Assessing the ecophysiological mechanisms underpinning thermal resilience in native and non-native shellfish in the Wadden Sea.

Creator: Emily Peterson

Principal Investigator: Tinka Murk, Myron Peck

Project Administrator: Edwin Foekema

Affiliation: Wageningen University and Research (Netherlands)

Funder: Netherlands Organisation for Scientific Research (NWO)

Template: Data Management Plan NWO (September 2020)

Project abstract:

The community composition and distribution of shellfish at mid to high latitudes may shift due to climate-driven warming as species better adapted to high temperatures have an increasing competitive advantage and new species from lower latitudes become established. In a warming Wadden Sea, changes to the composition and distribution of shellfish species may alter food web structure and the ecosystem services provided by bivalves. Shellfish populations are critical for enhancing biodiversity and are important to the trophodynamic structure and function of the Wadden Sea, and native mussels and cockles are experiencing increased die-off due to thermal stress. My aim is to unveil the ecophysiological mechanisms driving response to thermal stress in native mussel and cockle, and the newly introduced and plausible competitor: the nonnative *Ruditapes philippinarum,* known as the Manila clam.

My hypothesis is that the newly introduced Manila clam in the Wadden Sea may spend less energy when coping with warming summer conditions than indigenous mussel and cockle species. The hypothesis will be tested in experiments using microsensors to quantify organismal-level energy use and physiological responses during simulated heatwaves. The physiological responses will be used to parameterize dynamic energy budget (DEB) models. Patterns detected in the laboratory will then be tested *in situ* through field trials and surveys in the Wadden Sea. Ecological modeling will be used to incorporate mechanistic findings from the laboratory and environmental data to produce species distribution projections based on different scenarios of climate change severity.

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Copyright information:

Assessing the ecophysiological mechanisms underpinning thermal resilience in native and non-native shellfish in the Wadden Sea.

General Information

Name applicant and project number

PhD Candidate: Emily Peterson

Project Lead: Prof. Dr. Tinka Murk (MAE) & Prof. Dr. Myron Peck (NIOZ)
Project number: 4100000610

Name of data management support staff consulted during the preparation of this plan and date of consultation.

Diede Maas (MAE) and Rita Hoving (ASG group) have been consulted during the preparation of this plan including Prof. Dr. Tinka Murk and Prof. Dr. Myron Peck.

1. What data will be collected or produced, and what existing data will be re-used?

1.1 Will you re-use existing data for this research?

If yes: explain which existing data you will re-use and under which terms of use.

- Yes

I will re-use existing spatial data collected by NIOZ, which the PhD candidate is authorized to use for research as a member of the NIOZ Coastal Systems department.

1.2 If new data will be produced: describe the data you expect your research will generate and the format and volumes to be collected or produced.

Data produced by ecophysiological experiments will be in CSV and Excel formats. Spatial data will be generated as a result of ecological modeling in ASC, shapefile, and TIF formats.

1.3. How much data storage will your project require in total?

- 100 – 1000 GB

2. What metadata and documentation will accompany the data?

2.1 Indicate what documentation will accompany the data.

The PhD candidate will create a metadata documentation text file to detail the format and nature of data storage for each file created.

2.2 Indicate which metadata will be provided to help others identify and discover the data.

Metadata will be provided to help others identify the directories and the parameters of each experiment that each data file corresponds to.

3. How will data and metadata be stored and backed up during the research?

3.1 Describe where the data and metadata will be stored and backed up during the project.

- Institution networked research storage

Data and metadata will be stored in the WUR W drive according to MAE data policy.

3.2 How will data security and protection of sensitive data be taken care of during the research?

- Default security measures of the institution networked research storage

4. How will you handle issues regarding the processing of personal information and intellectual property rights and ownership?

4.1 Will you process and/or store personal data during your project?

If yes, how will compliance with legislation and (institutional) regulation on personal data be ensured?

- No

This project will not process or involve personal information.

4.2 How will ownership of the data and intellectual property rights to the data be managed?

Owner of the data will be of the PhD candidate, and will be shared with the relevant partners and research institutions (WUR, NIOZ) for the completion of the research. Following the completion of the research project, data ownership will transfer to NIOZ and WUR.

5. How and when will data be shared and preserved for the long term?

5.1 How will data be selected for long-term preservation?

- All data resulting from the project will be preserved for at least 10 years

Data will be preserved through careful metadata curation to allow for future researchers to understand the context of each data file produced by ecophysiological experimentation and ecological modeling.

5.2 Are there any (legal, IP, privacy related, security related) reasons to restrict access to the data once made publicly available, to limit which data will be made publicly available, or to not make part of the data publicly available?

If yes, please explain.

- No

N/A

5.3 What data will be made available for re-use?

- All data resulting from the project will be made available

N/A

5.4 When will the data be available for re-use, and for how long will the data be available?

- Data available as soon as article is published

The data will be available for re-use as soon as articles are published, and data will be available indefinitely using both WUR and NIOZ interface for data storage.

5.5 In which repository will the data be archived and made available for re-use, and under which license?

WUR W drives and NIOZ drives.

5.6 Describe your strategy for publishing the analysis software that will be generated in this project.

Analysis software to be used in this project is all open-source or licensed packages (QGIS, R studio, ESRI ArcGIS) and will be adequately mentioned and cited during publishing.

6. Data management costs

6.1 What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

The time it takes to create metadata to ensure FAIR data will be accounted for by the PhD candidate and adequately included in time-planning.