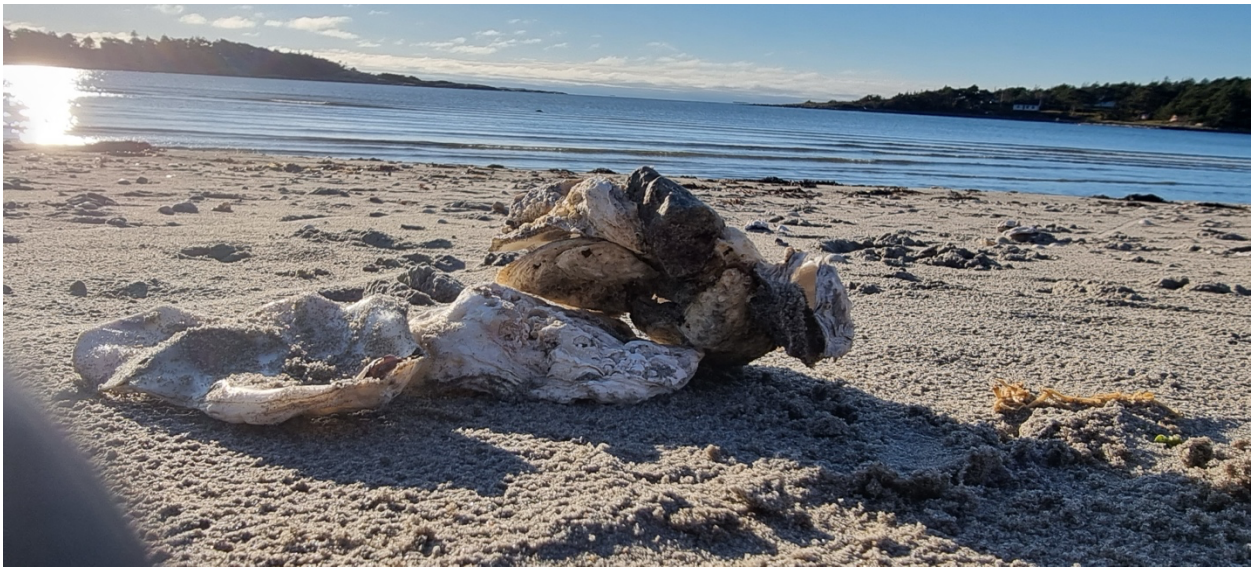
BRAVE - Data Management Plan



BRAVE – Biological Invasions Resolved Through Adaptable, Versatile, and Engaging Nature-Based Solutions

BRAVE addresses the complex ecological and societal challenges associated with invasive alien species, emphasizing their multiple roles in providing benefits and burdens simultaneously. The underlying trade-offs in managing these multiple-role invasive species are complex and require inter- and trans-disciplinary approaches to ensure optimal outcomes for biodiversity, the economy and society. The project assesses Nature-based Solutions for managing biological invasions and restoring affected ecosystems. Highlighting the clash between economic opportunities and conservation, we aim to provide a framework for optimal policy, addressing ecological, economic, and societal concerns. We introduce economic tools to understand user values, assess trade-offs, and design incentive mechanisms. Embracing uncertainty, we examine how recreational harvesting impacts biodiversity and user values, aiming to enhance both without hindering biodiversity management.

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2 Administrative information, framework and scope

2.1 Administrative information

Table 1 - Overview of administrative information

What	**Description**
Project	BRAVE: Biological Invasions Resolved Through Adaptable, Versatile, and Engaging Nature-Based Solutions
Responsible	BRAVE Data Management Committee
Deliverable	Task T 1.0.3
Work package	1
Delivery date	August 4th 2025
Availability	Public

Table 2 - Overview of Data Management Committee Members

Name	**Role**	**Case study**	**Country**
Erlend Dancke Sandorf	Committee leader and lead Norway	Pacific Oyster	Norway
Melina Kourantidou	Committee co-lead and project lead	Pacific Oyster	Denmark
Margrethe Aanesen	Committee member	Pacific pink salmon	Norway
Staffan Waldo	Committee member	Pacific Oyster	Sweden
Maria De Salvo	Committee member	Blue Crab	Italy
Vânia C V Baptista	Vânia C V Baptista	Blue Crab	Portugal

Table 3- Overview of DMP version history

Version	**Date**	**Modification**	**Author(s)**
0.1	2025-06-05	Initial draft	Erlend Dancke Sandorf

2.2 Scope

The scope and purpose of the DMP is to coordinate data collection and ensure that the data is managed, stored, and made available in line with funding rules, legal obligations and good practice.

The responsibility of this work lies with the Data and Digital Outputs Management Committee (DMC). The DMC will meet regularly, at least twice per year and more often if necessary. It is the responsibility of the DMC to keep the DMP up to date.

The DMP will

- Help foster a shared understanding and clear expectations among BRAVE partners and collaborators regarding the handling of project data.
- Acts as a reference to ensure that data practices within BRAVE align with institutional, national, and EU requirements — including the FAIR principles — and that data are deposited in suitable public repositories when appropriate.
- Outlines an agreed-upon approach for how BRAVE data will be used, shared, and stored throughout the project.

2.3 Acronyms, abbreviations, and definitions

Table 4 - Overview of acronyms and abbreviations, and their descriptions as used in this document

Acronym	Definition
DMP	Data Management Plan
DMC	Data and Digital Outputs Management Committee
FAIR	Findable, Accessible,
PO	Pacific Oyster
PPS	Pacific Pink Salmon
BC	Blue Crab
NBS	Nature Based Solutions

3 Data descriptions

3.1 Data types

All dates must use the ISO 8601 Standard. Naming conventions are chosen to make searching, sorting, and quickly finding files easier.

It is important to separate between data as input and outputs as data. For example, a data set is data as input, it is an input into research. A produced figure, table, or map used in outreach, communication or in a publication is outputs as data. These types of data are also covered by the data management plan.

Table 5 - Overview of main data types collected by the project

Data type /outputs	File extension	Naming skeleton	Example
Dataset	.csv, .rds, .xlsx	<date collected> - <type> - <case study> - <country> - <version>.<ext>	2025-06-05 – Recreation Diary – Pacific Oyster – Norway - v01.rds
Picture	.png, .jpg, .raw	<date taken> - <photographer> - <place> - <description> - <version>.<ext>	2025-06-05 – Sandorf – Ytre Oslofjord National Park – Pacific Oyster on the Beach – v01.png
Literature / reports	.pdf	<author(s)> - <year published> - <short title>.<ext>	Sandorf and Navrud – 2025 – Comparing Apples to Apples.pdf
Forecasts	.csv, .rds, .xlsx	<species> - <country> - <period from> - <period to> - <version>.<ext>	Forecast – Pacific Oyster – Norway – 2025 – 2030 – v01.csv

3.1.1 Data

This type of data refers to collected datasets. The version designation "v00" should be used for the raw data. That is: The data before any data cleaning takes place. Updated versions of the data will be given increasing version numbers. Intermediary datasets produced while working are not required to be stored, archived or versioned, but should be reproducible using code files.

NOTE: Cleaning data in a non-reproducible manner is strongly discouraged. If data cleaning is not done programmatically, for example, using direct edits in Excel, a separate file detailing all edits must be kept. This file should have the same name as the data file, but with README appended, e.g., "2025-06-05 – Recreation Diary – Pacific Oyster – Norway – v01 – README.docx". This to ensure reproducibility and transparency.

3.1.2 Pictures

Pictures are typically taken during field work, conferences, project meetings, visits to study locations and more. These are archived using a systematic naming convention to make it easy and clear what the picture is about.

If pictures contain people, make sure that you obtain permission to use and publish the pictures. In this case, record the names of the people in the picture in the file BRAVE –

Pictures – README.xlsx. It is the responsibility of the photographer to ensure that people in the picture understand that it may be made public and used in connection with BRAVE outreach, e.g., publications, communication, and presentations. It is normally not necessary to obtain permission from every person in the picture if they feature in the background (hard to identify) or they are part of a crowd.

3.1.3 Literature and reports

Relevant literature and reports may be stored in the appropriate folders on SharePoint. Alternatively, project or paper-specific shared libraries using a reference manager (e.g. Zotero) may be used. This relates mostly to meta-analyses and systematic literature reviews when the literature becomes the data source. Normal references in a paper are not covered by this. In systematic literature reviews using e.g. the PRISMA method, the process should be detailed enough to reproduce the results. If the review contains hard-to-obtain grey literature, this literature should be stored in line with this DMP.

3.1.4 Forecasts

The project will produce forecasts of invasive species spread under various climatic and policy conditions.

3.1.5 Personal data

Names, and professional titles, phone numbers and email addresses of Stakeholders relevant to BRAVE. These data are collected for the sole purpose of Stakeholder mapping engagement and communication as defined in the project plan. Some of this contact information is openly available – however this is not always the case. Stakeholders may have the right to have their information erased, corrected or limited. [DETAILS ON THIS IS FORTHCOMING]

This list will not be shared or made public without the consent of the Stakeholders. This information will be stored in a secure non-cloud-based server with restricted access and will be accessible to project partners only

Personal data for BRAVE partners and team members may be collected, including name, institutional affiliation, country, professional email address, curriculum vitae (e.g., for partners as part of hiring), and, on a voluntary basis, photographs and social media handles. This information is used internally to support project coordination, communication, and official reporting requirements.

Any additional use of personal data — such as for public-facing materials — will only occur with the individual's explicit consent. This may include acknowledgment of participation in

the BRAVE project on the website, on social media platforms, or in acknowledgment slides used in presentations and dissemination materials.

4 Data collection

4.1 Purpose of data collection

The data collection and research are in accordance with BRAVE's Project Plan. The data and results are useful to policy makers who are tasked with making decisions where economic opportunities may have to be traded off against ecosystem health.

4.2 Primary data

4.2.1 Consumer acceptance and preferences towards Pacific Oysters in Sweden

Description: An online survey will assess attitudes and preferences for Pacific oysters—an invasive species present on Sweden's west coast. Participants will receive varied information treatments about the species.

Sample and sampling strategy: Swedish adults who regularly consume seafood.

Data collection period: Data will be collected in summer 2026. Pre-analysis and testing will be conducted in spring 2026.

Category of personal information: Participation will be voluntary and no personal information will be collected. Respondents will be informed about the purpose of the study, that participation is voluntary and that they can withdraw at any time during the survey and during a period after responding to the survey.

Method of data collection:

Data quality: Prior to data collection, the following steps will be undertaken: focus group interviews with relevant stakeholders. Pre-testing of survey and pilot testing to adjust and refine the questionnaire and experimental design.

In the main data collection, the online survey will include a number of steps to ensure highest possible quality: screening of participants to ensure sample relevance. Quality check measures included in the survey such as attention check questions. We will test for very fast responses and other patterns in responses that indicate possible quality concerns.

4.2.2 Survey and data gathering for the Wadden Sea Case study on the Pacific Oyster in Denmark

4.2.2.1 Component 1: Survey – choice experiment (primary survey data)

Description: The survey is designed to elicit people's preferences toward managing an established invasive species with a particular focus on coexistence and adaptation strategies. In the case of the Pacific oyster in the Danish Wadden Sea, eradication is no longer feasible given the species' widespread distribution. Instead, the focus lies on understanding public support for different long-term approaches, including harvesting, ecosystem integration, and adaptive policy responses.

We will combine a set of stated and revealed preference questions with contingent behavior.

All respondents will complete a discrete choice experiment exploring preferences related to different uses and management options for the species, including consumption. While this includes the idea of "if you can't beat them, eat them," in this context it is framed not as a control measure but as one potential form of adaptive use or impact mitigation.

Based on a follow-up question on visitation of the Wadden Sea National Park, respondents will be directed to the revealed preference part of the survey. The survey will also include questions on policy preferences, levels of acceptance for various strategies, perceptions of responsibility, and opinions on who should ultimately bear the costs.

This will be followed by general attitudinal questions and real-stakes questions related to behavior and trade-offs. As far as possible, these will be harmonized across countries and species to enable meaningful comparison.

An outline of the survey is provided below.

1. Introductory Questions: Introduce the survey and gather basic info about respondent awareness and experience.

2. Information about Pacific Oyster & the DCE: *Example of preamble provided below* "The Pacific oyster (*Crassostrea gigas*) is a non-native species that has become widespread in the Danish Wadden Sea. While originally introduced via aquaculture, it now forms dense reefs and has become part of the coastal seascape. The species is no longer manageable through eradication, so current approaches focus on adaptation, mitigation, and coexistence strategies."

3. Discrete Choice Experiment on Consumer Preferences: *Example of preamble provided below*

“Some stakeholders suggest harvesting or consuming the species as part of an adaptation strategy. This section explores your preferences related to possible uses and products based on Pacific oysters”

4. Filter Question: Beach Visitation – Have you spent time at the beach over the last year/season (filter will be applied automatically if the respondent lives near the Wadden Sea National Park

5. Policy Questions *Example of draft text provided below*

Section Introduction: In this section, we ask for your views on potential policies to address the presence and impacts of the Pacific oyster (*Crassostrea gigas*) in the Wadden Sea. Since this species is already widespread and cannot be eradicated, policies focus on adapting to its presence, mitigating undesirable impacts, and exploring opportunities for coexistence.

Example Questions:

- To what extent would you support the following measures in your area? (Likert scale: Strongly oppose → Strongly support)
  - Supporting public education about Pacific oysters and how to interact safely with them.
  - Regulating or encouraging oyster harvesting by citizens.
  - Protecting areas of high biodiversity from oyster reef expansion.
  - Funding research or monitoring programs on the ecological impacts of Pacific oysters.
  - Leaving the species unmanaged and allowing it to evolve naturally.

Follow-up Questions:

- Who should be responsible for addressing the impacts of Pacific oysters? (Multiple choice: Government, local communities, scientists, no one, other…)
- Who should finance these management actions? (Public funds, user fees, environmental NGOs, no funding needed, etc.)

6. Attitude Questions *Example of draft text provided below*

Now we would like to know more about your attitudes toward invasive species in general, and toward the Pacific oyster in particular.

Example Questions:

- In your view, what should be done when a non-native species becomes permanently established?
  (Multiple choice – select all that apply)
  - Accept and adapt to its presence
  - Monitor and limit its spread
  - Try to use or harvest it when possible
  - Restore habitats to favor native species
  - Leave it alone
- How do you feel about the idea of eating invasive species as a way to adapt to their presence? (Likert scale: Very negative → Very positive)
- The Pacific oyster has changed some parts of the Wadden Sea coastline. How do you feel about these changes? (Likert scale: Very negative → Very positive)

8. Real-Stakes Questions (Adapted from Dechezleprêtre et al.) *Example of draft text provided below*

In this section, we ask about your willingness to take part in actions related to the management or monitoring of Pacific oysters and the Wadden Sea environment.

Example Questions:

- Would you be willing to **sign a petition** supporting new local initiatives to manage the impacts of Pacific oysters (e.g., regulated harvesting, monitoring, habitat restoration)? (Yes / No)
- Would you be willing to **donate €X** to a fund supporting oyster impact monitoring or biodiversity protection in the Wadden Sea? (Yes / No)
- Would you be willing to **participate in an oyster monitoring day** if organized by a trusted association or park authority? (Yes / No)

9. Sociodemographic Questions

- Age
- Gender

- Education level
- Income bracket
- Municipality or ZIP code (to estimate proximity to the Wadden Sea)
- Occupation (with an option like “work related to nature, tourism, or marine environment”)
- How often do you visit the Wadden Sea coast? (Never / Occasionally / Often / Live nearby)

Sample and sampling strategy: Respondents will be recruited from a pre-recruited internet panel. The sample is restricted to areas around the Danish part of the Wadden Sea National Park where the Pacific Oyster is present. Within the geographic area, we use a stratified random sampling approach to ensure representativeness with respect to gender, age, education, and income using standard census categories.

We aim to recruit 3,000 respondents, with at least 500 respondents who have visited the Danish Wadden Sea National Park within the past year. These visitors will be included in a subset of the survey exploring revealed preferences and contingent behavior, particularly in relation to oyster encounters and beach visitation.

Data collection period: Engagement with national park stakeholders/actors: 2026-02-01 to 2026-03-04. Pilot survey and first wave: 2026-05-01 to 2026-08-31. Second wave: 2027-05-01 to 2027-08-31.

Category of personal information: No personal information is collected. A survey company will handle recruitment from their panel, and we only receive anonymized data. Socio-demographic variables will be in aggregate form to avoid indirect identification through variable combination.

Method of data collection: The data from discussions with the local stakeholders and any one-to-one interviews comprises hand-written notes used to improve the survey instrument prior to piloting.

The pilot and main survey will be sent out to a random sample of members in the selected internet panel. The panel provider will send over anonymized data with only a panel member identifier. The panel provider is the data controller for the personal data.

Data quality: The survey instrument and recreation diary protocol will adhere to best practice and current guidelines. The protocol will further be pre-tested in focus groups and one-to-one think-aloud interviews in line with current best practices.

Additional comments: <Any other relevant information about the data or data gathering process not covered by the other fields.>

4.2.2.2 Component 2: Secondary qualitative and textual data

The qualitative and textual data will take 2 forms:

a. Scientific publications on the Pacific oyster in Denmark and globally, collected via bibliographic databases (e.g., Web of Science, Scopus, and institutional repositories),

b. Media articles and press coverage referring to Pacific oysters in the Danish part of Wadden Sea, collected through systematic searches using keywords in Danish and English across national and regional news outlets, social media archives, and online news databases.

This corpus of textual data will be used to analyze how the Pacific oyster is framed in scientific and public discourse - e.g., as a threat, a resource/opportunity, a nuisance, or a naturalized part of the seascape — to better understand social perceptions and underlying narratives.

Textual data will be accompanied by metadata such as publication source, date, headline, and thematic coding notes.

While structured metadata and coded outputs will be published to enable reuse, full-text press articles (where that occurs) may not be shared due to copyright restrictions

4.2.3 Revealed preference travel cost and contingent behavior survey on Pacific Oyster in Norway

Description: The survey is designed to elicit people's preferences for consuming an invasive species and preferences for managing the species. We will combine a set of stated and revealed preference questions with contingent behavior.

All respondents recruited to participate in the survey will answer the discrete choice experiment eliciting consumer preferences for eating an invasive species in line with the statement "if you can't beat them, eat them".

Based on a follow-up question on beach visitation, people will be directed to the revealed preference part of the survey. The survey will also contain a set of questions on people's preferences and attitudes towards different policy measures, their acceptance, who is responsible and who should ultimately pay.

This is followed by general attitudinal questions and a couple of real-stakes questions related to choices and behavior. All policy, attitudinal and real-stakes questions will, as far as possible, be identical across surveys, countries and species to allow for a full comparison across countries.

An outline of the survey is below.

A set of introductory questions

Information about Pacific Oyster and the discrete choice experiment

Discrete Choice Experiment on consumer preferences

Filter question: Have you spent time at the beach in the last year/season? NB! The filter is automatically applied if you live near Ytre Oslofjord National Park

No

Yes

Travel cost, incl. purpose of visit

Contingent behavior related to both beach visitation and Oyster picking

Policy questions: What policies should be pursued to manage invasive species? Including questions on policy acceptance. NB! These should be identical across all surveys and countries

Attitude questions: What are your attitudes to invasive species? Eat them? Manage them? Eradicate them? NB! These should be identical across all surveys and countries

Real stakes questions from Dechezleprétre et al. (2025) on willingness-to-donate to invasive species management, willingness-to-sign a petition, willingness to participate in beach cleaning days.

Standard sociodemographic questions

Sample and sampling strategy: Respondents will be recruited from a pre-recruited internet panel. The sample is restricted to areas around the Oslo fjord where the Pacific Oyster is present. Within the geographic area, we use a stratified random sampling approach to ensure representativeness with respect to gender, age, education, and income using standard census categories.

We aim to recruit 3000 respondents with a minimum of 500 respondents having visited Ytre Oslofjord National Park.

Data collection period: Focus groups: 2026-02-01 to 2026-03-04. Pilot survey and first wave: 2026-05-01 to 2026-08-31. Second wave: 2027-05-01 to 2027-08-31.

Category of personal information: No personal information is collected. A survey company will handle recruitment from their panel, and we only receive anonymized data. Socio-demographic variables will be in aggregate form to avoid indirect identification through variable combination.

Method of data collection: The data from focus groups and one-to-one interviews comprises hand-written notes used to improve the survey instrument prior to piloting.

The pilot and main survey will be sent out to a random sample of members in the selected internet panel. The panel provider will send over anonymized data with only a panel member identifier. The panel provider is the data controller for the personal data.

Data quality: The survey instrument and recreation diary protocol will adhere to best practice and current guidelines. The protocol will further be pre-tested in focus groups and one-to-one think-aloud interviews in line with current best practices. <Describe the steps taken to ensure data quality, e.g., pre-testing, screening, etc.>

Additional comments: <Any other relevant information about the data or data gathering process not covered by the other fields.>

4.2.4 Estimation of use and non-use values of Pacific Pink Salmon in eastern Finnmark

Description: A series of valuation workshops providing stated preferences (SP) data will be implemented in Eastern Finnmark, and they will be combined with revealed preferences (RP) travel cost and restoration cost data collected in the same area.

Sample and sampling strategy: The sample will include inhabitants in municipalities/communities in Eastern Finnmark and active recreational salmon fishers

from Norway. The fishers will be accessed using the registry over fishers having asked for and received permission to fish for salmon in Norwegian rivers (Norwegian Environmental Agency), and the local inhabitants will be recruited using local networks (local fishermen's organisation, community organisations, etc.) and the snowballing procedure (accessed persons are asked to name other relevant persons, and so on. Altogether, we each year aim for 100 respondents to the SP survey and 50-80 persons by the RP survey.

Data collection period: June-August 2026 and 2027

Category of personal information: Voice recordings will be used in the valuation workshops. Voice will be transcribed using a relevant AI tool (TranScriptor, TurboScribe). Anonymized transcripts will be stored in SharePoint. Questionnaires will be used both in the valuation workshops and for the travel cost survey. As long as the data is used for analyses, reports and publication, they will be stored as excel/csv files including personal information (age, gender, education, geographic location, fishing activity), and stored in the project SharePoint, secured by double authentication. As soon as reporting based on the data has come to an end, the data will be anonymised and uploaded to a national data repository in Norway (SIKT, https://sikt.no/en/tjenester/arkivere-data/what-kind-data-can-be-archived-sikt). Data for restoration costs will be collected from the local organizations organizing the preventive activities towards the pink salmon. They will be anonymous and stored in SharePoint during the analyses, reporting and publication period, and uploaded to open data database when reporting based on the data has come to an end.

Method of data collection: Valuation workshops, travel cost method, restoration cost method

Data quality: The survey questionnaires will be based on information collected in focus groups and through interviews with relevant stakeholders and decision makers in the pink salmon management. It will also be tested on a few test-respondents, increasing the validity of the surveys.

Additional comments: Details on metadata standards below.

4.2.5 Stated preference survey on the consumption of Blue Crab in Italy

Description: an online survey will be conducted to assess Italian consumers' preferences and attitudes towards the consumption of BC. The resulting dataset will support the design of effective communication strategies and policies promoting sustainable and responsible BC consumption in Italy. The survey aims to collect data on several key aspects, including:

- perceptions, barriers, and motivations related to BC consumption;

- consumption preferences, including product formats (e.g., fresh, blanched, frozen) and preparation methods;
- preferred sales channels, such as direct sales, e-commerce, automated retail, and traditional outlets;
- sensitivity to product labels and claims, especially those concerning environmental sustainability, food safety, and animal welfare standards;
- WTP for BC products marketed with ethical and environmental claims.

Sample and sampling strategy: the survey will be administered by a professional research company, which will ensure the statistical representativeness of the sample in terms of age, gender, and geographic area. The target population is composed of Italian consumers of fresh and processed seafood products. A minimum of 1,000 responses will be collected. Respondents will receive reward, bonus, or compensation as determined by the selected research provider.

Data collection period: September–October 2026 (Months 20–21).

Category of personal information: the survey will gather data on consumer tastes, preferences, consumption habits, and socioeconomic profiles. All information will be collected, stored and processed in full compliance with GDPR and national privacy laws, ensuring confidentiality and ethical standards. The study will be carried out with the approval and guidance of the Ethics Committee of the University of Messina.

Method of data collection: data will be collected through a structured online survey, administered via a professional research company using a secure web-based platform. Participants will complete the questionnaire individually using computers or mobile devices. No voice or video recordings will be collected. All data will be anonymized before analysis. Personal identifiers will not be shared with the research team. The survey company will replace any potentially identifying information with anonymized codes and will retain the original data solely for sample management and compensation purposes, in accordance with GDPR. Only aggregated and non-identifiable data will be used in the research outputs.

Data quality: to guarantee data quality, reliability and robustness, several actions will be implemented. A pilot survey will be conducted to validate the clarity, structure, and logic of the questionnaire. Screening and attention-check questions will be included to verify respondent eligibility and attention; inconsistent or inattentive responses will be excluded. Response time will be monitored, and very short completion times will be flagged as

potentially invalid. After data collection, a thorough cleaning process will remove incomplete, inconsistent, or low-quality responses.

Additional comments: none.

4.2.6 Stated preference survey on awareness and willingness to engage in Blue Crab Harvesting in Italy

Description: a cross-country online survey will be conducted to assess the awareness and willingness of Italian and Portuguese coastal communities to explore their willingness to engage in actions aimed at protecting coastal ecosystems from the invasion of BC. The survey will contribute to the evaluation of recreational harvesting as a NBS for mitigating the species' spread and impact. The collected data will inform bioeconomic models and policy recommendations aimed at integrating recreational fishing into broader BC management strategies across the Mediterranean. Specifically, the survey will gather information on:

- Market and non-market values associated with recreational BC harvesting;
- WTP and perceived benefits under different stock levels and harvesting methods;
- Motivations and barriers to participation in BC harvesting activities;
- Community awareness of the ecological and socio-economic impacts of BC.

Sample and sampling strategy: the survey will be administered by a professional research company, which will ensure the statistical representativeness of the sample. The target population consists of Italian and Portuguese coastal communities. The survey will be distributed online using a stratified sampling approach based on BC distribution trends. A minimum of 1,000 responses will be collected. Respondents will receive reward, bonus, or compensation as determined by the selected research provider.

Data collection period: September–October 2026 (Months 20–21).

Category of personal information: the survey will gather data on the attitudes, recreational habits, environmental awareness, and socioeconomic profiles of residents in Italian and Portuguese coastal areas. All information will be collected, stored, and processed in full compliance with the General Data Protection Regulation (GDPR) and the applicable national privacy laws in both countries, ensuring confidentiality, data security, and ethical standards. The study will be carried out with the approval and guidance of the Ethics Committee of the University of Algarve.

Method of data collection: data will be collected through a structured online DCE survey, administered via a professional research company using a secure web-based platform.

Participants will complete the questionnaire individually using computers or mobile devices. No voice or video recordings will be collected. All data will be anonymized before analysis. Personal identifiers will not be shared with the research team. The survey company will replace any potentially identifying information with anonymized codes and will retain the original data solely for sample management and compensation purposes, in accordance with GDPR. Only aggregated and non-identifiable data will be used in the research outputs.

Data quality: to guarantee data quality, reliability and robustness, several actions will be implemented. A pilot survey will be conducted to validate the clarity, structure, and logic of the questionnaire. Screening and attention-check questions will be included to verify respondent eligibility and attention; inconsistent or inattentive responses will be excluded. Response time will be monitored, and very short completion times will be flagged as potentially invalid. After data collection, a thorough cleaning process will remove incomplete, inconsistent, or low-quality responses.

Additional comments: none.

4.2.7 Stated preference survey on awareness and willingness to engage in Blue Crab Harvesting in Portugal

Description: a **cross-country online survey** will be conducted to assess the awareness and willingness of Italian and Portuguese coastal communities to explore their willingness to engage in actions aimed at protecting coastal ecosystems from the invasion of BC. The survey will contribute to the evaluation of recreational harvesting as a NBS for mitigating the species' spread and impact. The collected data will inform bioeconomic models and policy recommendations aimed at integrating recreational fishing into broader BC management strategies across the Mediterranean and Atlantic. Specifically, the survey will gather information on:

- **Market and non-market values associated with recreational BC harvesting**;
- WTP and perceived benefits under different stock levels and harvesting methods;
- Motivations and barriers to participation in BC harvesting activities;
- Community awareness of the ecological and socio-economic impacts of BC.

Sample and sampling strategy: the survey will be administered by a professional research company, which will ensure the statistical representativeness of the sample. **The target population consists of Italian and Portuguese coastal communities**. The survey will be distributed online using a stratified sampling approach based on BC distribution trends. **A**

minimum of 1,000 responses will be collected. Respondents will receive reward, bonus, or compensation as determined by the selected research provider.

Data collection period: September–October 2026 (Months 20–21).

Category of personal information: the survey will gather data on the attitudes, recreational habits, environmental awareness, and socioeconomic profiles of residents in Italian and Portuguese coastal areas. All information will be collected, stored, and processed in full compliance with the General Data Protection Regulation (GDPR) and the applicable national privacy laws in both countries, ensuring confidentiality, data security, and ethical standards. **The study will be carried out with the approval and guidance of the Ethics Committee of the University of Algarve.**

Method of data collection: data will be collected through a structured online DCE survey, administered via a professional research company using a secure web-based platform. Participants will complete the questionnaire individually using computers or mobile devices. No voice or video recordings will be collected. All data will be anonymized before analysis. Personal identifiers will not be shared with the research team. The survey company will replace any potentially identifying information with anonymized codes and will retain the original data solely for sample management and compensation purposes, in accordance with GDPR. Only aggregated and non-identifiable data will be used in the research outputs.

Data quality: to guarantee data quality, reliability and robustness, several actions will be implemented. A pilot survey will be conducted to validate the clarity, structure, and logic of the questionnaire. Screening and attention-check questions will be included to verify respondent eligibility and attention; inconsistent or inattentive responses will be excluded. Response time will be monitored, and very short completion times will be flagged as potentially invalid. After data collection, a thorough cleaning process will remove incomplete, inconsistent, or low-quality responses.

Additional comments: none.

4.3 Secondary data

Secondary data will be used to answer questions related to ecosystem mapping and invasive species spread. Table 6 shows the overview of secondary data sources used.

Table 6 - Overview of secondary data sources used in the project

Data	Data source (DOI)	Description

4.4 Ethics

All primary data gathering involving human participants will require written consent. All collected data will adhere to national legislation and subject to local ethics review boards at the responsible institution.

All primary data gathering involving animals will be subject to ethical consideration by relevant national ethics review boards.

4.5 Use of AI in data collection and generation

Data may be analyzed using different machine learning algorithms including structural topic modeling, random forests, artificial neural networks, gradient boosting and K-means nearest neighbor. These approaches are mixes of supervised and unsupervised learning algorithms to detect patterns and analyze structured and unstructured data. The methods are well suited to make predictions of species spread (see e.g., Forecasts). None of the methods require data to be uploaded to a third-party service.

5 Data security, storage, transfer, and costs

5.1 Data storage during the project period

During the project period, data will be stored in SharePoint managed by the University of Southern Denmark. The SharePoint server is restricted to project members.

Partners, with the support of the DMC and DMP, are required to ensure the responsible backup of local datasets

5.2 Data storage in the long term

5.2.1 Data

BRAVE is committed to Open Science and will make data available in line with the FAIR principles (see Data Use and Sharing). The data will be made available under appropriate licensing, e.g., Creative Commons Attribution Share Alike 4.0 International (CC BY-SA 4.0), in a recognized data repository.

BRAVE partners and their national funding agencies may have different requirements for what is considered an appropriate data repository. Therefore, it is the responsibility of each partner to ensure that data is made available in accordance with this document and national rules and requirements.

5.2.2 Research codes and replication packages

BRAVE seeks to move beyond just OA to data and research articles but also make research codes and replication packages available. These can be hosted on, e.g., GitHub or Bitbucket. Both services provide version control using Git ensuring transparency and reproducibility of results and outputs. If data is stored alongside codes on either service, the responsible partner must ensure that this does not violate relevant rules and regulations for the storing of the data.

5.3 Data transfer

If data needs to be transferred to project members or affiliated researchers without access to the SharePoint area, care must be taken so that how the data is transferred is not in breach of data sharing agreements between research partners and national legislation, e.g., GDPR. The nature of the data, e.g., personal, anonymized, or in the public domain, determines which transfer methods are appropriate. For personal data an encrypted file sharing service can be used. For other types of data, sharing a direct download link pointing to SharePoint may be used. All recipients of data are bound by this DMP and existing data sharing agreements.

All personal data will be subject to appropriate data sharing agreements between partner institutions before sharing of any such data can take place.

5.4 Costs

Costs associated with long term data storage must be borne by the individual research partners.

5.5 Data organization

6 Data Use and Sharing

6.1 General principles

All data produced by BRAVE should be made Open Access. This includes primary data and research codes. Data should be as open as possible but as closed as necessary. BRAVE aims to make all data available no later than the end-of-project. Personal and specific data may be subject to other rules.

BRAVE aims to make the data FAIR:

Findable: Appropriate search words and tags are used, and the repository is indexed.

Accessible: The data is freely available.

Interoperable: Metadata for variables will follow the Dublin Core standard.

Reusable: Deposited in an OA repository in a common file format.

Data/metadata will be stored in a registered searchable online accessible repository and each deliverable will be assigned with a DOI and a suitable, preferable open license (e.g. CC-BY or CCY-BY-ND), aligning the project with the present Data policy and the FAIR principles. In the case of scientific publications, the research team will aim for high-impact journals that grant open access. The research team will make sure to describe (meta)data and other digital outcomes in an accessible, shared, and broadly applicable language. Finally, the coordinator´s institutional repository (Pure - Denmark), will make the datasets discoverable, citable, and verifiable, increasing its long-term value and accessibility. The Norwegian partners will use the public repositories for research data managed by SIKT.