

Archipelago Research Institute (ARI) researcher and student handbook



Welcome to the Archipelago Research Institute's (ARI) facilities at Seili. This handbook is designed to provide essential information for all researchers and students utilizing ARI's resources, including boats, field equipment, experimental facilities, laboratories, and more. It aims to facilitate your stay at Seili and complement the concise information available on our website at >>utu.fi/seili.

The purpose of this handbook is not to impose restrictions but to enhance your experience at Seili. We encourage you to reach out to our staff well in advance of your arrival to ensure a smooth transition into your research activities. Each spring, ARI evaluates facility and equipment demands and allocates resources to various projects. It's important to note that all equipment use requires prior permission, and certain items may require specialized training.

This handbook is available exclusively in English to accommodate all researchers and students.

For the latest updates and contact details, please visit our website at >>utu.fi/seili.

Preparing for Your Stay

Advance Planning

1. Contact station's staff: Researchers and students planning to use our facilities or equipment are kindly requested to contact our staff well in advance of their arrival (email: varaukset-seili@utu.fi) or by filling out our [booking inquiry form](#). We assess facility and equipment demands each spring and allocates resources accordingly. Please contact us well in advance so that we can accommodate your requests as effectively as possible.

Equipment usage and training

- 1. The use of the research infrastructure is subject to a fee** and requires prior permission.
- 2.** Please note that certain equipment may require specialized training.

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1. Boats and Vehicles

1.1 Research vessel r/v Aurelia

- Maximum Passengers: 40

r/v Aurelia is available for sampling trips. It's crew includes a captain and a deckhand officer who can assist with sampling activities. More details, including pricing, can be found on our [website](#).

1.2 Boat Rentals

We offer a range of boats and vessels for research and teaching purposes. Below are the specifications of the boats currently available for your use:

1. Small Motorboats with Outboard Engine
 - Engine: 5-6 hp
2. Faster 515
 - Engine: 60 hp
 - Maximum Passengers: 6

1.3 Rowing Boats

Rowing boats are available for free use. However, for safety reasons, we kindly request that you inform our staff every time you intend to use a rowing boat.

1.4. Motor boat usage

Permits and Requirements:

- The usage of any motor boat requires a personal permit.
- A fee is charged for the use of motor boats (see [price list](#)).
- To obtain a permit, you must meet the following requirements:
 - Possess sufficient technical skills and an understanding of your responsibilities as a boat driver/captain.
 - Have knowledge of the local waterways and conditions that may occur at sea.

Booking Information:

- All boat reservations, including rowing boats, can be made through our [permanent staff](#).
- For more information on booking procedures and availability, please refer to the following sections.

1.4 Booking Procedures

1. **Contact our permanent staff:** Reach out to our permanent staff to inquire about boat availability, rental rates, and booking procedures. After receiving your request, our staff will confirm the reservation and provide you with any additional information you may need.
2. **Provide necessary information:**
 - Date and time of your reservation
 - Type of boat or vehicle required
 - Duration of your reservation

1.5 Safety first

Safety is paramount when using boats and vehicles. We require that you always adhere to safety guidelines, wear appropriate safety gear, and follow local regulations.



Research vessel r/v Aurelia

1.6 Boat rental rules and etiquette

1. **Personal permit requirement:** All motor boats require a personal permit from the permanent staff. Contact [Jari Hänninen, Katja Mäkinen, or Petri Kinnunen](#) well in advance (preferably a minimum of 1-2 working days before) during office hours (Monday to Friday, 08:00-16:00).
2. **Minimum rental period:** The minimum rental period is one full day. If the rental period exceeds one week, you must provide insurance to cover potential boat damage.
3. **Overnight storage:** Overnight storage of the boat outside Seili harbor is prohibited without consent from ARI staff.
4. **Documentation:** Carefully fill out the provided rental form and the boat's diary with the required information immediately after the rental period.

5. **Fuel and key return:** The boat is rented with a full tank of fuel. If not agreed otherwise, the staff will deliver the keys to the boat. After the rental period, return both keys and the rental form to the designated green mailbox located at the door of the “old workshop” building (“Vanha puuverstas”, please see the map at the end of the handbook).
 6. **Navigation experience:** The boat driver is expected to have navigation experience in the archipelago. The driver is legally responsible for the boat and the safety of all passengers, who must follow the driver's instructions.
 7. **Passenger limit:** For safety reasons, the number of people on a boat shall not exceed the limit. Maximum number of persons allowed on each boat (including the driver):
 - Faster 515: 6 persons (*Note:* Cargo, including dive gear, will reduce the maximum number of persons in the ratio of 70 kg = one person.)
 8. **Life jackets:** All people on a boat with an outboard engine must wear a life jacket at all times.
 9. **Alcohol prohibition:** It is strictly prohibited to operate a boat under the influence of alcohol or to consume alcohol onboard.
 10. **Trip information:** For safety reasons, inform someone at the station about your trip's destination and estimated time of return before each journey.
 11. **Boat cleanliness:** The boat driver is responsible for cleaning the boat and removing all sampling gear after each trip. If the boat is returned significantly untidy, a cleaning fee of 25 euros per hour plus 25.5% VAT will be charged to the renter.
 12. **Equipment use:** Do not borrow or remove any equipment belonging to the boat (e.g., anchor, bailer, or tools).
 13. **Reporting issues:** Report any motor malfunctions, groundings, or incidents immediately to ARI's service personnel, Petri Kinnunen (Phone: +358 (0) 40 0619 967). DIY repairs are strictly forbidden. For assistance in English, contact Katja Mäkinen at +358 (0)50 3536509.
 14. **Liability:** The renter is obligated to cover all costs associated with damage caused by gross negligence or serious fault.
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1.7. Other vehicles:

All-Terrain Vehicles (ATVs)

- ARI's ATVs are primarily intended for staff use and will be rented to researchers and course organizers only under special circumstances.

Vehicle usage and charges

- Scientists and course organizers who require the use of these vehicles must negotiate their usage and associated charges in advance with the ARI staff. This ensures that the vehicles are allocated appropriately and that any costs are understood and agreed upon.

2. Nature reserve and research permits

2.1 Research in Seili conservation area

The island of Seili is part of several larger conservation areas. Consequently, the collection of plants and animal samples is permitted solely for teaching and research purposes. Such activities require a permit from Metsähallitus. ARI has obtained a permit for moderate sampling during teaching and research activities. Therefore, courses and research groups that are NOT actively associated with ARI need to apply for a separate permit from Metsähallitus if they intend to collect samples. Additionally, for intensive sampling or animal capture, contact Metsähallitus separately.

Please note that Kirkkonieni is not part of any nature reserve areas. Consequently, any field sampling, including archaeological excavations, requires a separate permit from Metsähallitus. Researchers are advised to apply for permits from Metsähallitus 2-4 months before arriving on the island. For sampling permits and more information, please contact the station's director, Jari Hänninen.

3. Sustainable development and environmentally-conscious culture

3.1 Commitment to sustainability

The University of Turku is committed to becoming carbon neutral. One of the most significant contributors to the University's carbon dioxide emissions is its properties, including those at Seili. To reduce our carbon footprint, the University is actively working to decrease energy consumption and promote sustainable practices.

3.2 Renewable energy

Since 2019, a significant portion of the electricity used at Seili is generated from solar energy panels. This initiative is part of our commitment to sustainability.

3.3 Reducing carbon footprint in laboratories

The University also aims to reduce the carbon footprint of laboratories. At Seili, ARI encourages researchers to incorporate environmental considerations into their work:

- Minimize waste generation during research activities. Sort and dispose of waste according to current safety regulations. Do not leave trash or research materials in natural areas.
- Reuse and repurpose research materials whenever possible.
- Choose eco-friendlier chemicals over toxic ones whenever possible. Ensure proper disposal of chemical and hazardous waste.

- Tear down all experimental setups from natural areas after work is completed.

4. Research and laboratory facilities

ARI's research and laboratory facilities are primarily housed in the main building and in other adjacent buildings. Below is an overview of the facilities available:

Main Building Facilities



- **Lecture Room:** A versatile space suitable for seminars, conferences, or accommodating large course groups.
- **Workrooms:** Three workrooms are available, each offering a productive environment for research activities.
- **Working Room:** A designated working room designed to accommodate approximately 8 persons, providing a collaborative workspace.
- **Staff Offices:** Offices for staff members, who are available to assist you during your stay.
- **Laboratory Spaces:** Two fully equipped laboratory spaces where you can conduct various experiments and analyses.
- **Storage Rooms:** Storage rooms for equipment, supplies, and research materials.
- **Aquaria Rooms:** Two rooms dedicated to aquaria, facilitating aquatic research projects.
- **Freezers:** Freezer facilities are available, offering storage at temperatures ranging from -20°C to -80°C, ensuring the preservation of valuable samples.
- **Cold Rooms:** Cold rooms with temperatures ranging from -5°C to +15°C, suitable for research requiring controlled temperature conditions.

Sea-water laboratory

In addition to the main building facilities, ARI has a separate sea-water laboratory facility located in close proximity to the main building. This facility offers the following range of amenities for research and education:

- **Laboratory Room:** Equipped with essential tools and equipment for conducting marine research experiments.
- **Seminar Room:** Suitable for seminars and workshops, with a maximum capacity of 15 persons. It includes a small library with marine biology-related literature.
- **Audiovisual Equipment:** The seminar room features a 75" TV screen with Genelec speakers, a Logitech meetup web-camera, a microphone, and various connectivity options including HDMI, VGA, and USB. An overhead projector is also available.
- **Aquaria Room:** This room houses two aquaria racks and is connected to a seawater plumbing system, providing access to seawater for your research needs.
- **Restroom with Shower:** A restroom facility with a shower for your convenience.
- **Wireless Connection:** Access to the University's wireless networks (Eduroam) is available throughout the facility.

This laboratory facility is designed to support a wide range of marine research activities and provides the infrastructure both for research projects and field courses/school groups.



Marine experimental ecology infrastructure

Our marine experimental ecology infrastructure supports a wide range of research projects. It comprises the following features:

- **Close-Circulation Aquarium Racks:** We have 10 close-circulation aquarium racks, each equipped with 12 replicated aquaria, each with a capacity of 24 liters. These aquaria provide a controlled environment for your research needs.
- **Temperature Regulation:** Each aquarium rack includes temperature regulation to create precise conditions for your experiments.



- **Filtration:** Our system boasts advanced filtration capabilities to maintain water quality. Seawater is pumped from a large head tank (approximately 200 liters) situated at the base of each rack to the individual aquaria, where it is then returned to the head tank. The water undergoes multiple filtration stages, including an acrylic filtration unit (SCHURAN Jetskim 120) equipped with both mechanical and biological filters, a protein skimmer, and UV radiation treatment.
- **Chiller/Heater:** Each head tank is equipped with a chiller/heater (Teco TR15) to maintain precise temperature control for your experiments.
- **Advanced Lighting:** The system features advanced lighting with six LED lamps (Radion™ XR30w Pro lamps). These lamps offer dynamic light-dark rhythms and spectral adjustments, providing a maximum intensity of up to 1200 $\mu\text{mol m}^{-2} \text{s}^{-1}$ at the water surface. This level of lighting control allows for a wide range of research possibilities.
- **Manipulation of Water Quality:** Researchers have the capability to manipulate water quality parameters such as salinity and nutrients, ensuring the flexibility needed for a variety of experimental studies.
- **Extensive Replication:** The system supports extensive replication of study units at both the aquaria and aquarium rack levels, enabling robust and statistically significant research outcomes.

Indoor/Outdoor Mesocosm



The outdoor mesocosm facility is well-suited for the study of brackish water environments, including littoral and pelagic ecosystems. However, it is also adaptable for research in brackish/freshwater and even terrestrial settings.

- **Outdoor Space with Terrace:** The outdoor area features a terrace with UV-protected PVC roofing, offering a comfortable and shaded space for research activities.
- **Flow-Through Brackish Water Supply:** The facility benefits from a continuous flow of brackish water, ensuring a consistent and natural environment for your research.
- **Flow-Through Aquaria Tanks:** These tanks are designed to facilitate experiments and observations, enhancing your ability to conduct studies on brackish water littoral and pelagic environments.
- **Indoor Space in a Historic Setting:** Located within the historic former piggery designed by the famous Finnish architect Carl Ludvig Engel, the indoor space includes:
 - A standard workroom/laboratory room.
 - An aquaria/terrarium room with light and temperature regulation, allowing you to create controlled environments for your research.
 - A maintenance room for the brackish water plumbing system, ensuring the smooth operation of the facility.
- **Climate Chambers:** Adjacent to the mesocosm facility, you have access to two large climate chambers. These chambers enable you to create and study specific environmental conditions for your experiments.
- **-20°C Storage Space:** Located in the nearby red building "Makasiini," this storage space is available for preserving samples and materials at sub-zero temperatures.

Brackish water supply

The facility receives brackish water (approximately 6 PSU) via pipes with openings at a depth of approximately 26 meters, located several hundred meters outside the island. Notably:

- The water supplied to the main building and seawater laboratory is currently unfiltered.
- In contrast, the water in the mesocosm building undergoes filtration through a sediment filter before being supplied to the outdoor mesocosm facility through a large tank.

5. Field equipment

Reservation and availability

- Field equipment should be reserved by contacting the staff in advance to confirm its availability for your research needs.
- Most research equipment and sampling devices can be found in a wooden storehouse called "Vilja-aitta" in Finnish. This includes field equipment such as plankton nets, water samplers, and sediment samplers. "Vilja-aitta" is located next to the workshop buildings. Please contact the staff for access.
- Sensitive instruments like the CTD sonde are located in the main building. Every user is required to become familiar with the equipment before using it. If you need assistance or have questions, consult the staff. Manuals for instruments and meters are also available in the main building.

Equipment handling and return

- **Cleaning and Drying:** After use, it is essential that all field equipment is thoroughly cleaned and dried before returning it. Maintaining equipment in good condition ensures its longevity and availability for other researchers.
- **Removal of Material:** All materials used in the field, including research materials and equipment, must be removed after your research activities are completed.
- **Plankton Nets:** Plankton nets should be hosed down with fresh water and left to dry while hanging from the ceiling. Proper care of these items is essential.
- **Reporting Damages:** If any equipment is damaged during use, promptly inform the staff so that necessary repairs or replacements can be arranged.

Personal Equipment

- If you plan to store your own equipment at the station, make arrangements with the staff in advance. Unmarked items may be disposed of annually.

Manufacturing and Ownership

- **Manufacturing and Ownership:** Any plans for manufacturing research equipment, its associated costs, and ownership details must be agreed upon in advance with the station's director.

For more information and specific inquiries about field equipment, please contact the ARI's research technician. Proper care and responsible use of field equipment benefit both your research and the research community as a whole.

6. Laboratory Equipment

- **Equipment familiarization:** Before using any laboratory equipment, it is your responsibility to become familiar with its operation and safety procedures.
- **Operation manuals:** Operation manuals for laboratory equipment can be found in the research technician's office. These manuals provide essential guidance on equipment use and safety precautions.

Operation Logbook

- **Record Keeping:** Users are expected to maintain an operation logbook for equipment usage if the logbook is in use. Log sheets for individual instruments can be found in the logbook.
- **Importance of Logging:** Operation log booking is essential for estimating service needs, tracking potential issues, and ensuring the responsible use of equipment.
- **Liability for Damage:** Users may be held liable for repair costs if equipment damage occurs due to failure to follow operation instructions.
- **Reporting Problems:** Any problems or notes on equipment function should be promptly recorded in the instrument log sheet and reported to the staff.

Specific equipment guidelines

- **Autoclave:** There is one autoclave in the main building. Usage of the autoclave requires prior permission and instructions from the staff, particularly for waste that needs autoclaving.
- **Ice Machine:** An ice machine for research purposes is available in the main building. Ensure that its use is strictly for research purposes to maintain health and safety standards.
- **Fume Hoods:** All laboratories are equipped with fume hoods. These are not meant for storage. After work, clear the fume hood, clean it, and prepare it for the next user. Ensure the power is switched off, and the front panel is lowered.
- **Climate Chambers:** Two large climate chambers with adjustable temperature (0-15°C) and lighting are located in the red storeroom "Makasiini" near the seawater laboratory facility. Three smaller chambers are found in the main building.
- **Freezers:** Freezers are available in the main building (maximum -20°C and -80°C) and in the red storage storeroom (-20°C). Specific guidelines for freezer usage include:
 - Proper packing and labeling of stored items with your full name and date.
 - Clear labeling of chemicals and reagents in fridges.
 - Logging of items placed in refrigeration devices on the log sheet near the device.
 - Notification of your contact information for samples in the ultrafreezer for emergencies, such as power failures.
 - Yearly checks by staff to remove all unmarked items from fridges and freezers.
 - Note that most fridges and freezers are connected to an alarm system, but users store samples at their own risk.
 - Prohibition of storing flammable and vaporizing chemicals in domestic devices due to the risk of explosion and ignition.

7. Laboratory supplies and chemicals

a. Glassware and Plastic Items

- We provide a wide collection of basic laboratory glassware and plastic items for your use while working at the Institute. For a detailed list of available items, please contact the staff.
- Researchers are asked to bring their own disposable items. After use, please ensure that no excess items are left in the workrooms, as these facilities are shared by multiple projects.

b. Use and storage of chemicals (IMPORTANT)

- **Chemical storage:** All the chemicals are stored in the chemical storage rooms 1 and 2 located in the west wing of the main building or in the old and new workshop buildings. Researchers with access to the facility can use these rooms. Note that all cabinets are locked for safety reasons; contact the staff if access is required.
- **Safety first:** It is crucial to read the chemical folder located in the chemical storage room before handling any chemicals. Additionally, review the chemical safety data

sheet(s) (SDS) available at the end of the folder. Pay special attention to sections such as hazard identification, first aid measures, handling and storage, and exposure controls and personal protection.

- **Storage protocols:** Chemicals are stored according to handling and storage protocols outlined in the SDS. This means that only chemicals with similar GHS-US labeling can be stored together. With a few exceptions, inflammable chemicals, acids, and toxins must always be stored separately. Chemicals in active use should not be stored on same shelves with chemical waste. Notice that some chemicals are above the eye level.
- **Labeling and documentation:** All chemicals should be clearly labeled with hazard pictograms and chemical lists, providing information about the quality and quantity of the chemicals. It is a legal requirement in Finland that SDS is always easily available. These sheets are updated annually, and the chemical folder should also be updated when new chemicals or waste are introduced.
- **Safety gear:** Before use, check chemical specific protective equipments.
- **Proper disposal:** After use, all chemicals must be returned to their designated locations in the chemical storage. Fume hoods should only be used for short-term temporary storage and use. Never open new chemical bottles if an older container is present and open.
- **Chemical storage locations are mentioned in the red location folder for emergency services. Folders are located in the main building and old workshop.**

8. Handling of waste

- **Users are responsible for cleaning up the facilities after completing their work, disassembling setups, and leaving the space ready for the next user.**
- **All waste generated at ARI must be sorted.** Waste containers for glass and metal, along with sorting instructions, can be found in the chemical storage room. For specific details on waste sorting, consult the staff.
- Station cleaners handle emptying litter bins once a week.
- Dispose of sharp objects like needles and scalpels in a separate container with a lid, located in the chemical storage room. This helps prevent hazards to others.
- Larger quantities of waste, such as flattened cardboard boxes, styrofoam packages, etc., should be taken to the energy waste dumpster.
- Good quality cardboard boxes can be given to the staff for potential reuse.
- Used sand should either be removed or stored in a container for potential reuse if arrangements have been made beforehand.
- If your research generates types of waste not mentioned above, such as significant amounts of fish waste or other organic waste, please contact the staff for guidance on proper disposal. Small amounts of pure organic waste can be deposited in the compost located near the main building.

Chemical waste and other hazardous waste

- **Chemical waste should be stored according to handling and storage protocols outlined in the SDS.** In all cases, waste is stored in the chemical storage cabinets. Ensure that your waste complies with storage guidelines, which means inflammable waste should not be mixed with oxidative substances, and acids should not be mixed with bases.
- Before commencing your work, assess the properties of the substances you plan to use. This allows for risk mitigation and the organization of waste handling in an appropriate manner.
- Disposing of chemical waste on an island is both expensive and time-consuming. Therefore, please take precautions to **minimize excess waste** production and inform the staff well in advance of any special disposal needs.
- It is important that every batch of hazardous and chemical waste contains detailed **information on its content, quantity, and the producer of the waste**. Failing to provide this information poses both health and safety risks. If you are unsure about how to handle your hazardous waste, always consult the station's staff for guidance.
- **Prohibited substances:** The use of radioactive or explosive chemicals is strictly prohibited unless you have received a special permit from the station's manager.

9. Reservations and Payments

Reservations

- To reserve laboratories, equipment, boats, and other resources at ARI, please fill out our [booking inquiry form](#) well in advance. You may also contact the staff via email (varaukset-seili@utu.fi). For the latest contact details, refer to the ARI website.

Payments

- All expenses are charged either through invoicing (for projects) or by bank transfer (for individual researchers). We cannot accept cash payments.
- It's important to note that invoices totaling less than 100 euros (considered tax-free) will be subject to an invoice fee of 15 euros (+VAT).
- If you are an individual researcher not using project funds, you can also make payments via a bank transfer to the University's account.

10. Shipments and Orders

- Each researcher working at ARI is responsible for managing their own shipments and orders.
- When placing orders through the University of Turku, be sure to use the correct reference, including the profit center, WBS code, or purchaser's name.
- **For shipments, please use the following mailing address:** Archipelago Research Institute, Seili FI-21660, Nauvo FINLAND

11. Accommodation, Restaurant, and Guest harbours (Travel services)

- All travel services, i.e. accommodation, restaurant services, and guest harbour services are provided by the travel company [VisitSeili](#).
- For the most up-to-date information on services, opening hours, and booking, please refer to their website at [visitseili.fi](#).
- We kindly request that researchers, students, and groups book the mentioned services (including accommodation, catering, seminar rooms, sauna, and guided tours) from VisitSeili before arriving on the island. Once you receive confirmation of your bookings, please feel free to contact us regarding our services, laboratories, and other research facilities.

12. Field accommodation at Lammassaari and Katavaluoto islands

- ARI manages two wilderness huts located on the neighboring islands Katavaluoto and Lammassaari, which are owned by Metsähallitus.
 - These huts are available for individual researchers and research groups and can be rented during the summer for short-term or long-term periods.
 - Please note that these huts are simple and do not have running water or electricity. Fresh water can be obtained from a hydrant located at the post jetty of Seili. Both cottages include a sauna. Basic cutlery and mattresses are provided, but it's advisable to bring your own kitchen items, sleeping bags, travel pillows, and other personal essentials.
 - Access to rowing boats is included in the rent.
 - Current rental prices can be found in ARI's price list.
 - **Note:** Renters are kindly asked to leave no waste, food, or other items (e.g., candles, shampoo bottles, etc.) on the islands. Waste containers for energy waste, glass, and metal can be found at the post jetty. Please ensure that you leave the premises in the same condition as when you arrived.
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Appendixes. Map of Seili

