

List of Research Equipment at the Archipelago Research Institute

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**UNIVERSITY
OF TURKU**



EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

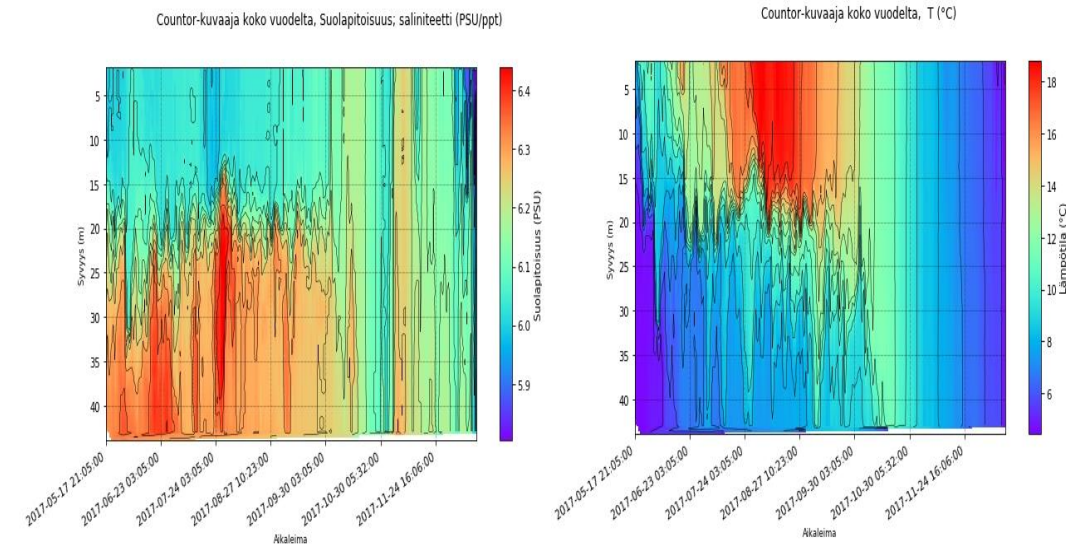


**AnaEE
Eric**
Analysis and Experimentation
on Ecosystems



1. Automated monitoring buoy (ODAS)

- Monitoring station consists of a YSI 6952 buoy base and an updated EXO multiparameter sonde YSI 6000
- Salinity, temperature, dissolved oxygen, turbidity, chlorophyll- α , and blue-green algae content measured daily
- 4 profiles (2-40 m depth) conducted every day, with the winch lowering the measuring device at one-meter intervals
- Operated during open water season, i.e. from spring, as soon as the ice permits, until early winter before the ice forms
- A weather station measures air temperature, pressure, humidity, precipitation, wind speed, and direction (2015-today)
- Data available since 2011
- Data and graphs can be accessed at https://saaristomeri.utu.fi/odas_en/



2. Vessels

r/v Aurelia

- Max. passenger capacity 40 persons (+ 2 crew).
 - The vessel is hired only with crew
- Built in 1991
- Overall length 18.1 m
- Beam 5 m
- Draft 1.5 m
- Maximum speed 15 knots
- Gross tonnage 5,8 t.
- Outdoor working space (16,4 m²)
- Sampling deck (15,5 m², lowered 0,7 meters closer to sea surface)
- Small laboratory/wet lab space (2,9 m²)
- Mess decks (9.2 (16 persons) and 5.1 m²)



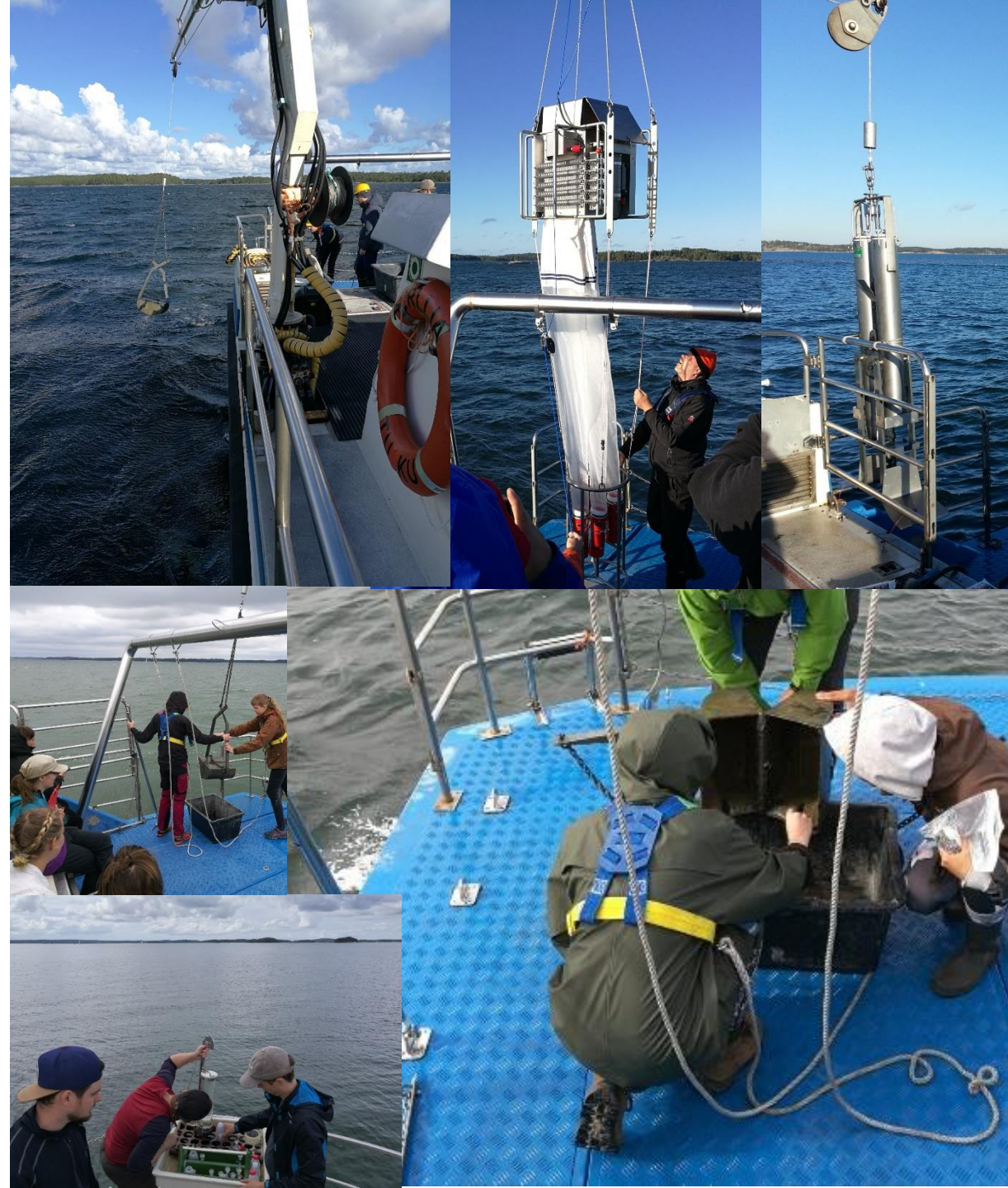
2. Vessels

r/v Aurelia

- A-shaped beam
- Winch (Hiab, 500kg)
- Access to fresh- and seawater
- Equipped with a rowing boat

- The vessel is used mainly for day trips, but can accommodate up to 7 persons
- Equipped with WC, fridge/freezer, drying cabinet, coffee/tea maker, 2 microwave ovens, toaster, gas cooker and utilities

- The station has various field equipment that are available for fieldwork onboard r/v Aurelia



2. Vessels

Motorboats

Minor Range 7600

- Acquired in 2023. The boat is currently only available for boat transportations (e.g. Seili-Nauvo) and sampling trips in the vicinity of the Archipelago Sea, and is operated by a skilled captain
- Max. 8 passengers
- Length 7.5 m
- Power 160 hp
- Equipped with a chart plotter
- Can accommodate 2 persons, if needed



2. Vessels

Motorboats

Faster 515

- Aluminium boat with outboard engine
- Length 5.1 m
- Power 60 hp
- Max. speed 25 knots
- Max. passengers 6
- Equipped with a chart plotter/echo sounder
- Trailer available

Two small motorboats with outboard engine

- Two Small Motorboats (6 hp)/rowing boats



3. Experimental research facilities

Indoor aquaria facilities (acquired 2013-2015)

Allows semi-automated rearing and maintenance of marine organisms for observational and experimental studies, with excellent possibilities to manipulate water quality (e.g. salinity, nutrients), temperature and lightning, and with extensive replication of study units at the levels of both the aquaria and aquarium racks.

- 10 close-circulation aquarium racks, each with 12 (24 L) replicated aquaria, temperature regulation, filtration and advanced lightning
 - 4 racks situated in the Seawater laboratory-building
 - 6 racks located in the Main building
 - Access to seawater via pipe from outside the island (26 m) in the seawater laboratory
 - Ion-exchanged water and aquarium salt available for artificial seawater



3. Experimental research facilities

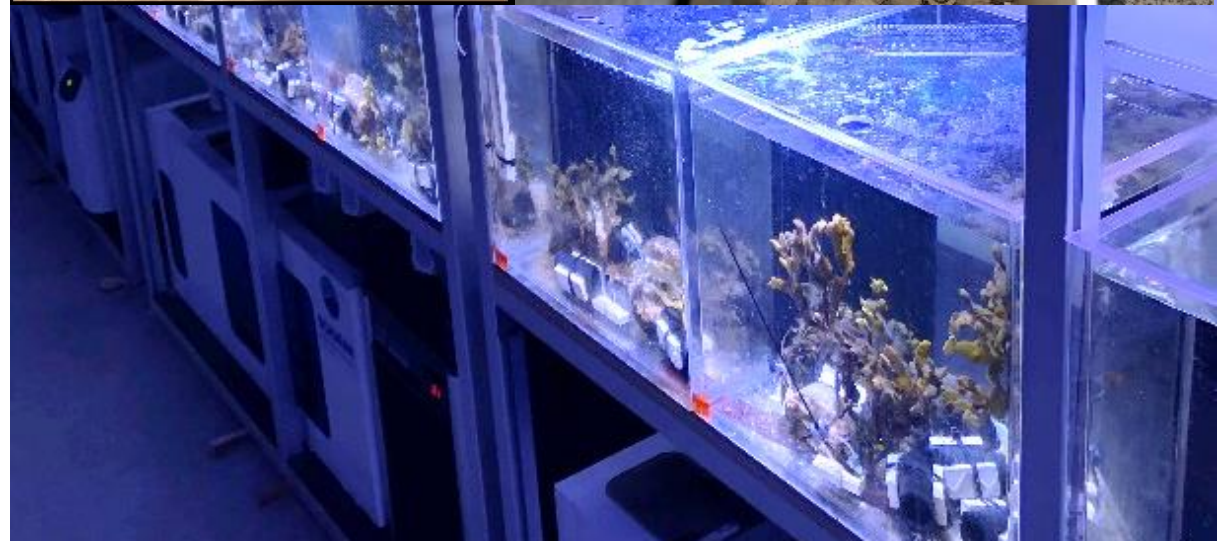
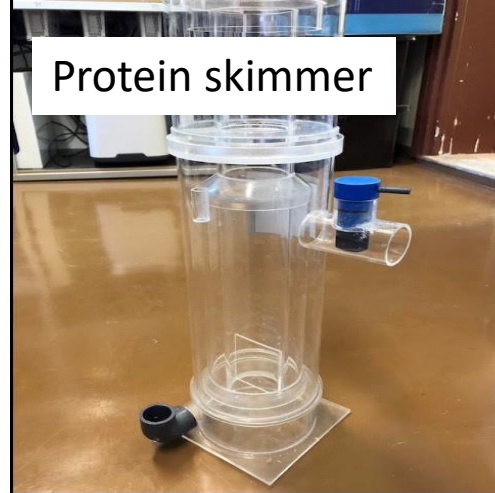
Indoor aquaria facilities

Each aquarium rack has a recirculating water system, in which seawater is pumped from a large head tank (~ 200 L) situated at the base of the rack to the aquaria, from where it returns to the head tank.

There, the water is filtered and cleaned first by an acrylic filtration unit equipped with a both the mechanical and biological filter, then by a protein skimmer, and finally by UV radiation.

Water filtration:

- Mechanical filtration: Filter socks
 - Two in each rack, 20 in total
- Biological filtration: ceramic filtration tubes
 - One container in each rack, 10 in total
 - allows bacteria to grow and filtrate the water biologically
- Sterilizing UV-light
 - one in each rack, 10 in total
- Protein skimmer (SCHURAN Jetskim 120)
 - one in each rack, 10 in total
 - removes proteins from the aquarium water



3. Experimental research facilities

Indoor aquaria facilities

Water cooling/heating

Each head tank is equipped with a chiller/heater (Teco TR15/TK2000H) to regulate the temperature. Air temperature can also be regulated in the aquaria rooms with an air heat pump (min. temperature +18 °C)

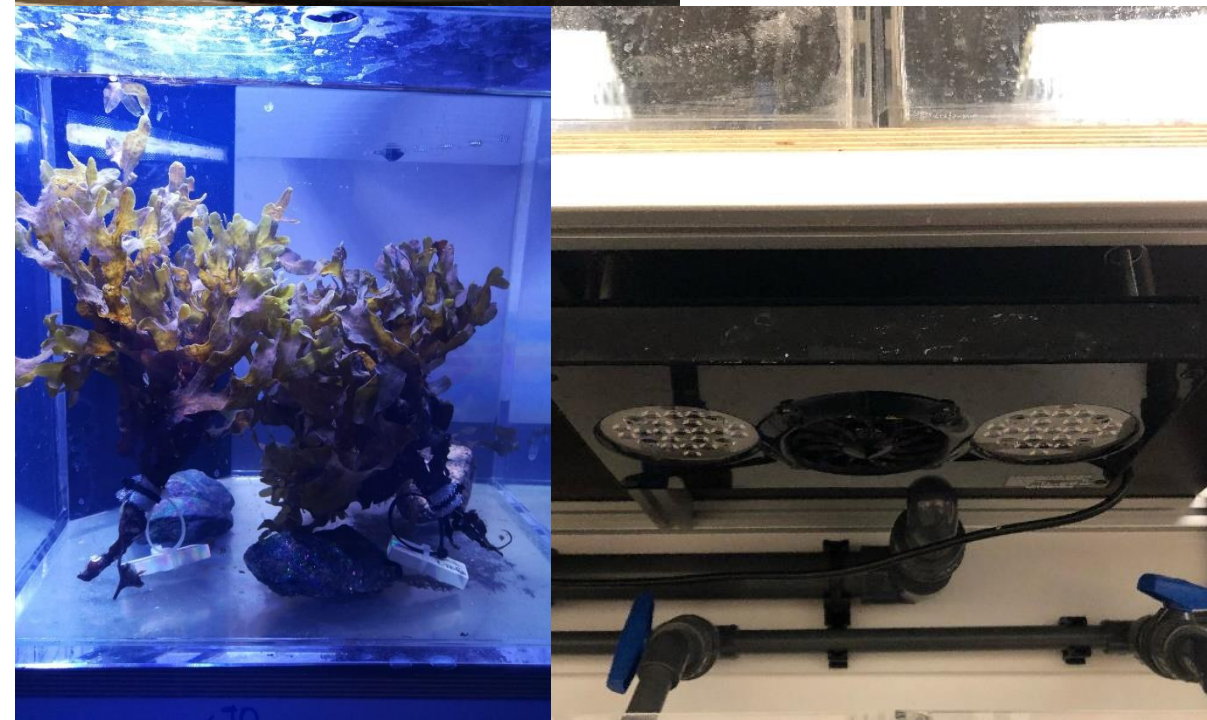
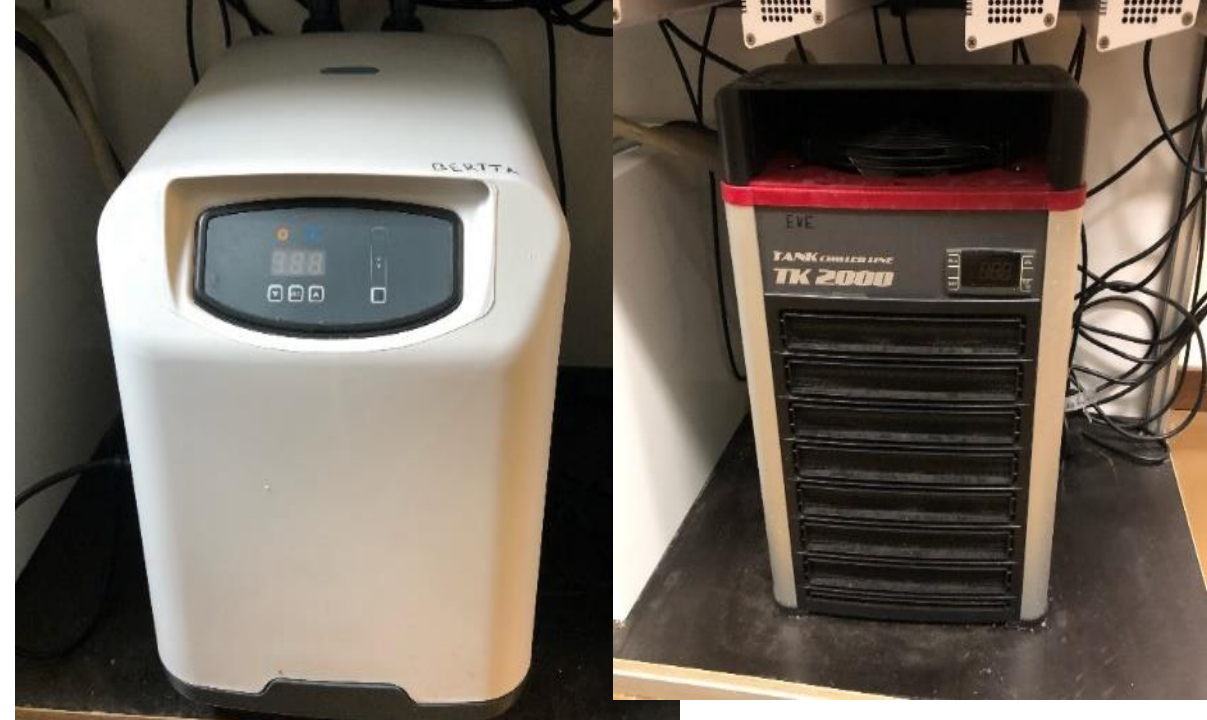
- **Teco SeaChill TR, aquarium chiller**
 - one in 5 racks, 5 in total
 - includes a sterilizing UV-light
- **Teco TK2000H, aquarium chiller**
 - one in 4 racks, 4 in total
- Min. temperature reachable ca.+10 °C

Aquarium lights

Lighting in each rack is provided by six LED lamps with advanced light:dark-rhythm and spectral adjustments and a maximum intensity of up to 1200 $\mu\text{mol m}^{-2} \text{s}^{-1}$ at the water surface (Ecosmart live with Reeflink).

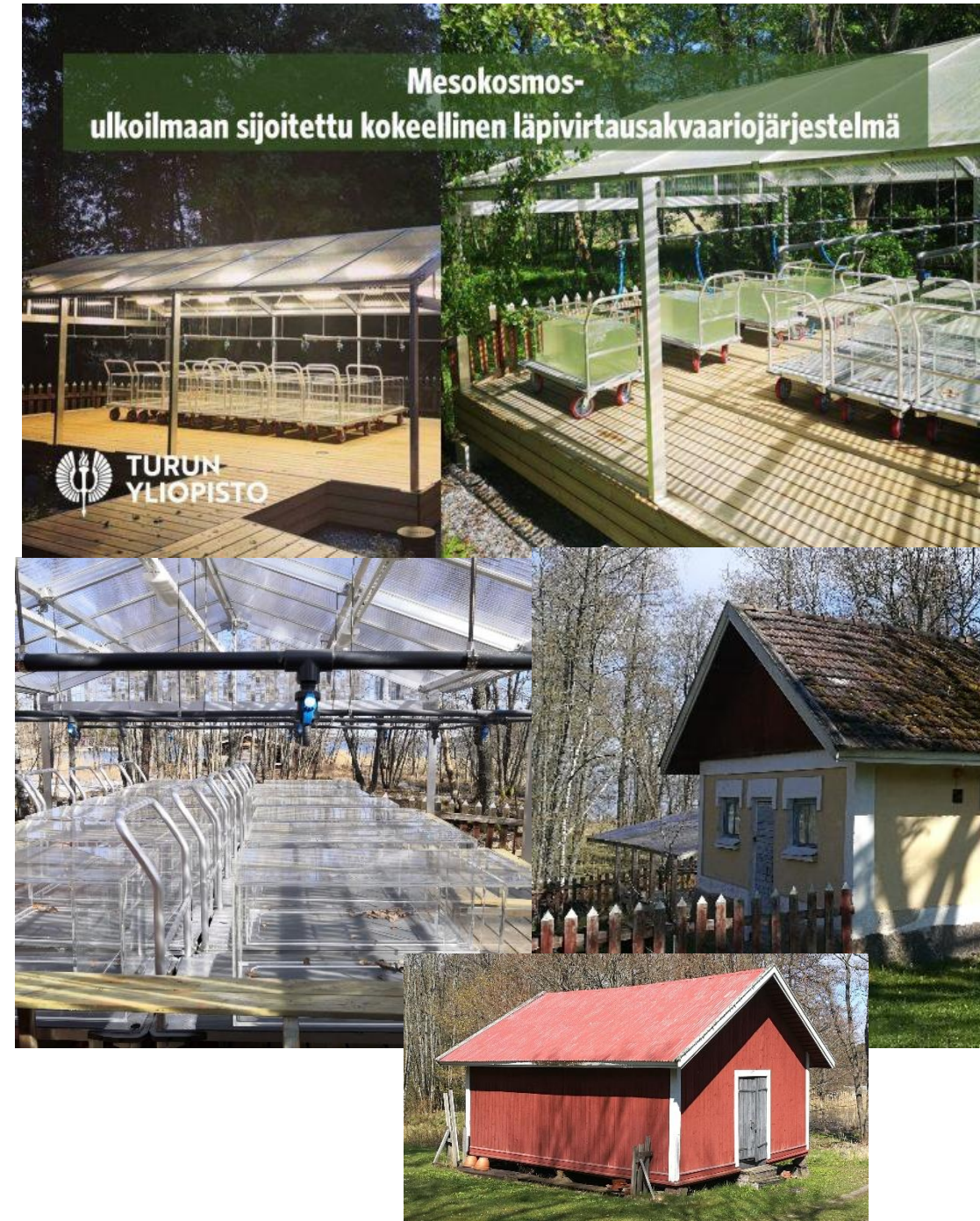
EcotechMarine's Radion™ XR30w Pro lamp

- One light per two aquariums, 60 in total
- Programmable and possible to mimic a wide range of scenarios and wave lengths
- For more specifications see e.g. https://reeflabs.net/Ecotech_XR30PRO



4. Mesocosm/Outdoor aquaria facility

- 8×5 m LxW wooden terrace with UV-protected PVC roofing (built in 2022)
- 16 Movable flow-through aquaria tanks (4x4)
- Continuous flow of brackish water via pipe from outside the island (Kirkkoniemi) at 26 m depth
- Automated surveillance system (live camera + sensors)
- Adjacent is a standard aquaria/terrarium room with regular light and temperature regulation + a maintenance room for the brackish water plumbing system
- Adjacent to the mesocosm facility are two large climate chambers (temp. range +5 - +15 °C).
- Standard glass aquaria tanks and round glass fibre tanks also available (various shapes and volumes, e.g. 150L)



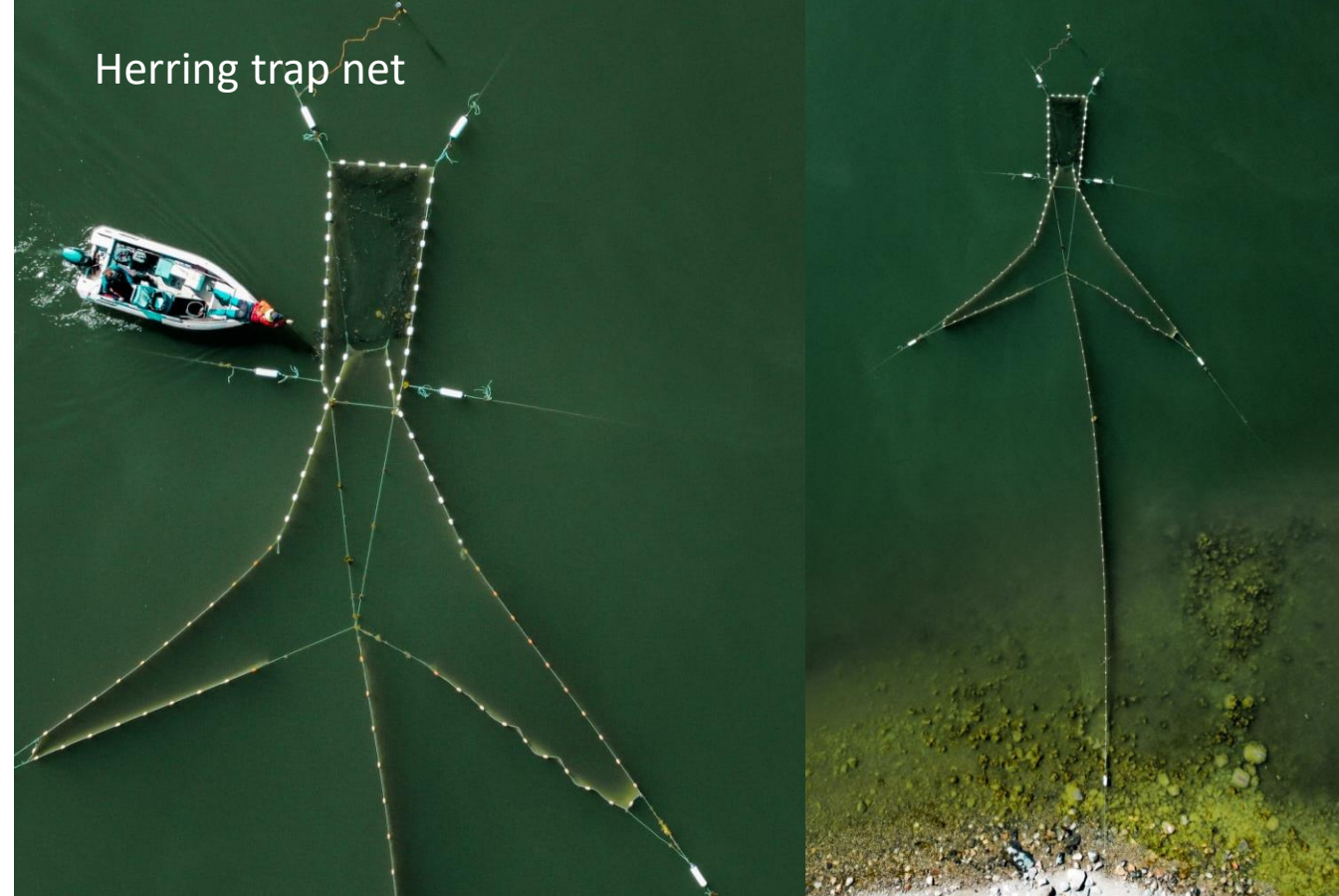
5. Field equipment

- Several standard zooplankton and phytoplankton nets (20, 50, 100, and 150 μm)
- 1 x Hensen plankton net (\varnothing 90 cm, 200 μm)
- 2 x closing plankton nets (\varnothing 30 cm, 150 μm)
- HYDRO-BIOS Multi Plankton Sampler MultiNet (100 μm)
 - <https://www.hydrobios.de/images/datasheets/438%20120>
- Manta trawl (100 μm /300 μm)
- All nets equipped with polypropylene ropes, ca. 10-100 m reels



5. Field equipment

- 2 x custom made herring research trap nets
- 2 x beach seine nets
- Gill nets
 - Various lengths and mesh sizes suitable for all fish found regularly in the Archipelago Sea
 - Several Nordic and Coastal survey nets
- Littoral nets
- Gulf-V sampler with a flow-meter for sampling larval fish





Littoral nets
Gill nets of variable sizes



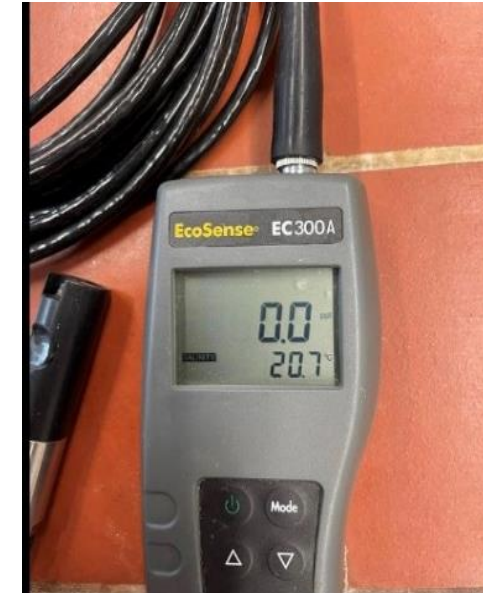
Beach seine nets



Gulf V sampler

5. Field equipment

- RBRconcerto³ CTD++ (2019)
 - Measures conductivity, temperature, pressure (depth), dissolved oxygen and pH
 - Equipped with a field laptop and Matlab code to download and process the data
- YSI ProQuatro handheld multiparameter sensor (2022)
 - Measures a variety of combinations of conductivity, specific conductance, salinity, resistivity, total dissolved solids (TDS), temperature
- EcoSense ODO200 dissolved oxygen meter
 - 2 m cable
- EcoSense EC300A conductivity, salinity meter
 - 10 m cable



5. Field equipment

- Limnos water samplers (volumes 7.2 L, 3.6 L, 1.8 L)
- Ruttner water samplers
- Hydroscoopes
- Secchi disks (round and rectangle-ones, various sizes)
- ONSET HOBO Pendant data loggers (2024)
 - Conductivity, salinity, DO, temperature
- Portable chlorophyll fluorometer (Waltz PAM 2500 (2018))
 - High-performance Field and Laboratory Chlorophyll
 - Product details:
https://www.walz.com/products/chl_p700/pam-2500/introduction.html



5. Field equipment

- GEMAX soft sediment corer with 2x Ø9cm tubes
- Sediment Limnos sampler
- Small Niemistö sampler with a sediment slicer
- Standard van Veen grabs, Small and Tall Ekman grabs
- Benthic dredges and harrows suitable for collecting mussel and plant samples
- Ca. 10-15 x Sediment trap stations, each equipped with stainless steel frame and fin, and 2 acrylic tubes
 - Used in e.g. PCB-, phytoplankton and microplastic studies
- Soft sediment samplers (e.g. Kautsky sampler)



5. Field equipment

- Accessories:
 - Sieve sets (0.5 mm, 1 mm, 1.5 mm)
 - Sieve table
 - Waders,
 - tubs, shovels
 - polypropylene ropes (ca. 10-100 m reels),
 - URSUIT dry suits etc.



5. Field equipment

- Side scan sonar (Sonartech S-150Ai, 2018)
 - Size 1,026 × Ø89 (mm)
 - Weight: 16 kg
 - Single Frequency 900, 1,250 kHz
 - Dual Frequency 400 / 900, 400 / 1,250kHz
 - Maximum Depth 300 m
 - Beam Tilt 10, 20, 30 degree down adjustable
 - Altimeter Sensor 200 kHz, 20 deg

5. Field equipment

Underwater filming

- Underwater ROV camera (Deep Trekker Pivot, 2024)
 - Equipped with a 150 m cable
 - Transported in two Pelican cases



Product information and
tutorials:

<https://www.youtube.com/watch?v=P3lMrjghQVc&list=PLCTnpG7aXT28-FU6it1E0SbU2KRLVbih9>



2nd ROV coming in July-August
2024

5. Field equipment

The available field equipment at Seili is catered to the needs of aquatic research, but the station also has some field equipment also for terrestrial research and teaching needs, e.g.:

- Burkard cyclone sampler
- Malaise trap net
- Jalas moth traps
- Tick nets
- Quadrats
- Trail cameras

Note! Please acquire well in advance for availability as most are currently being used in routine monitoring programs



6. Laboratory equipment

Microscopy

- Olympus CKX53 fluorescence microscope (2024) + camera SC-50 with c-mount adapter (2022)
- Olympus IX53 Inverted compound microscope (2019) + camera SC-50 with c-mount adapter (2022)
- Leica DM2000 compound microscope + screen and camera (2021)
- Olympus Field IMT-2 Inverted compound microscope
- Wild Heerbrugg M40/M40A Inverted microscopes (3 pch)
- Zeiss Stemi 508 stereo microscopes (10 pch) (2016)
- Zeiss Stemi 305 stereo microscope + camera (2016)
- + various older stereo- and compound microscopes (Olympus, Zeiss, Wild, Ilmonen etc.) available and microscope lights (e.g. cold lights)



6. Laboratory equipment

- 4 x freezers (-20 °C) and 2 fridges (ca. +4-+6 C)
- 2 x Ultra-low freezers (-65-80 °C)
- 2 cold rooms +5-+15 °C temperature range (makasiini-building, available only during summer)
- 2 cold rooms, +5-+15 °C temperature range (main building, year round use)
- Freezers and cold rooms are connected to a surveillance system
- Fume hoods (1x seawater laboratory, 4 x main building)
- Chemical storage cabinets
- 2 x drying cabinets



6. Laboratory equipment

- Ion exchangers (Silex 1C PE, Main building and Seawater laboratory)
- Mettler AT250 Analytical balance (will be replaced with a new one in 2024)
- Precision balance and several toploading balances
- Christ Alpha 1050 Freeze dryer
- Amsco Autoclave
- Microcentrifuge (VWR microstar 12, 2021)
- Hot plates and magnetic stirrers
- Ice maker (Porkka)
- 2 x shaking waterbaths (Julabo VLSB12 (2020) and SW-20C)
- Vortex mixer
- Soxhlet extraction apparatus used in lipid analyses
- Sartorius pipettes 10 μ l and 100 μ l
- Drying ovens and an incubator



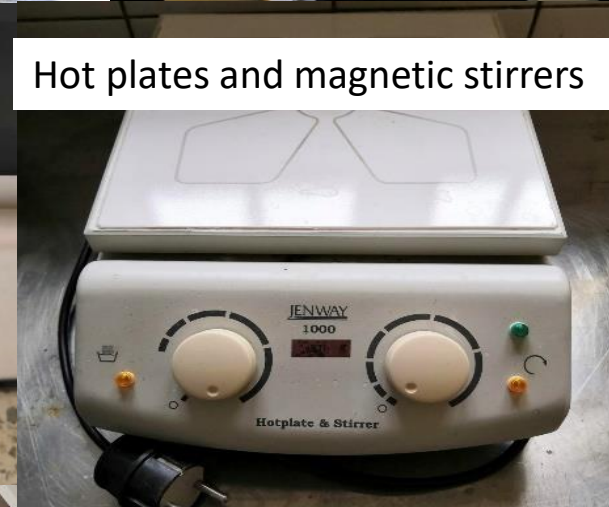
Autoclave



Freeze dryer



Precision scale (Mettler Toledo)



Hot plates and magnetic stirrers



Drying ovens



Microcentrifuge

6. Laboratory equipment

- 2 x Millipore vacuum filtration systems with accessories
- Titration equipment
- Large and variable supply of standard laboratory glass- and plasticware
- Laboratory lights and light tables

7. Diving equipment

Please note that the station does not actively maintain diving equipment, but the following are available by request:

- Compressor (300 bar) (serviced yearly by a diving expert)
- 200 bar diving tanks (3x 10 L, 2x 7 L)
- A few diving masks, fins, gloves, wet suit etc.