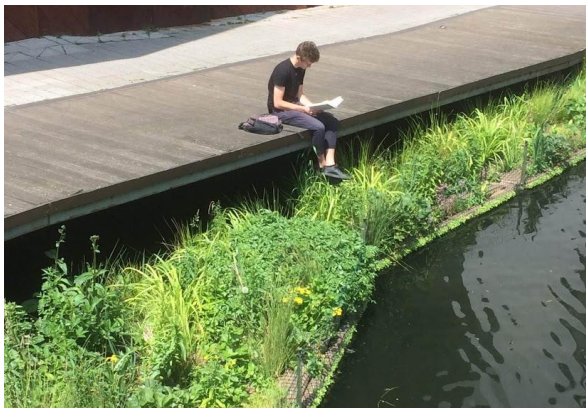


FLOATING ECOSYSTEM PROJECT MONITORING, MAINTENANCE & ENGAGEMENT



Overview

Floating Ecosystems provide a low maintenance approach to revitalise and bring opportunities for wildlife to waterbodies. Other key benefits include amenity value, aesthetic value, ecological value and the use of the ecosystems as an educational resource. The monitoring operations and maintenance of the floating ecosystems is typically minimal and can be compared to a typical natural landscape installation and pontoon system.

Our floating Islands mimic naturally occurring riparian wetland biomes. One of the main benefits of these units is that they require no watering and nature tends to be very effective at managing itself once we provide the floating structures. Systems can be left wild and natural or can involve additional plant care for a more managed visual aesthetic.

Monitoring can provide an opportunity to get the most out of your Floating Ecosystems installation. Periodic reporting on Biodiversity, Water Quality, and Habitat Establishment can be coupled with community engagement, educational and teambuilding activities. Reporting can incorporate written updates and data as well as photography, including waterscape, macro, and underwater images; and video formatted for sharing with project stakeholder groups.

The frequency of monitoring varies from site to site and a schedule can be put into place to match the site conditions and project objectives. Monitoring can be provided by Biomatrix Water or Biomatrix can provide Monitoring Training so that this may be carried out by local stakeholders and volunteers.

Project monitoring can involve activities related to environmental monitoring, plant care, anchoring, bird fencing, ecosystem structure, and litter collection.

Monitoring plans typically decrease over time, often with a set period, and followed by review and less frequent monitoring or monitoring on an as needed basis. Once plants are established the ecology will typically continue to thrive with minimal intervention.

MAINTENANCE & MONITORING ACTIVITIES

Maintenance visits shall include the following activities:

Plant Care

- Typically, selective spot trimming of annual plants in autumn, or spring once per year, using hand tools or trimmer, removing some plant material and re-incorporating some of the trimmed plant material in to the planting lanes for 3D islands or laying down between plants on 2D islands, to maintain planting media structure. Generally removing as little plant material as possible.
- Removal of undesirable plants, as needed. Occasional spot planting of target desirable species.

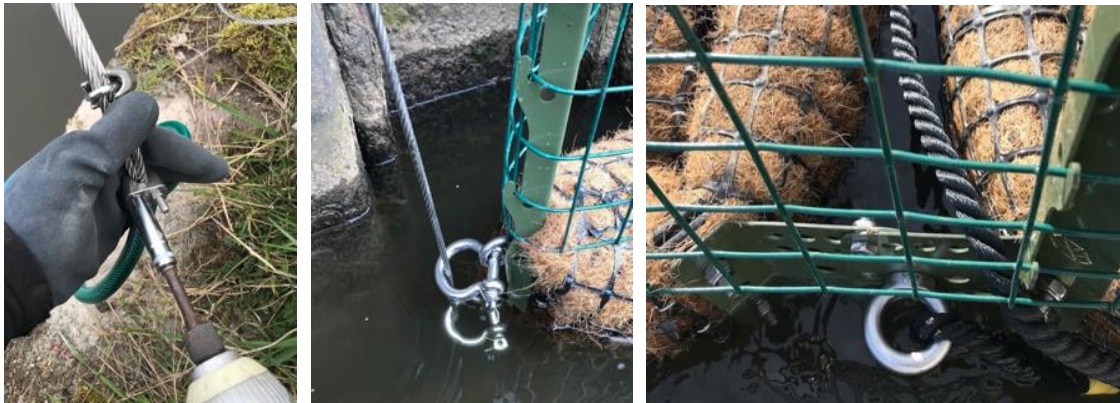


Floating Ecosystem Structure

The floating Ecosystems structure is robust and constructed from durable materials, to limit maintenance requirements. As general good practice, it is useful from time to time to visually inspect the system for any wear and tear. It is good practice to have your installation inspected and monitored every 1-4 years, according to site conditions.

Anchoring

Anchor inspection typically involves the inspection of hardware where it connects to the islands, and anchor cable/anchor ropes / cables / guides and a general check of the overall anchoring system as would be carried out with a typical pontoon mooring system.



Ecosystem Structure

Connection flanges and bolts can be observed as well as anchoring hardware and floats. Maintenance is only required on these elements in the event of specific wear and tear or when damage from external factors is observed.

Litter removal

In areas where windblown or washed down litter is present litter removal is suggested as needed to maintain a clean and natural ecosystem.

ENVIRONMENTAL MONITORING:

Environmental monitoring provides a great opportunity to observe your ecosystems development and to document and share its progress with others.

Environmental Monitoring can include the following as desired:

- Macrophyte diversity reporting
- Invertebrate diversity and indicator species reporting
- Water Chemistry, P, N, TSS, Secchi depth
- Written and photographic reporting for media
- Waterscape photography
- Macro species photography
- Underwater photography and video



ENGAGEMENT & EDUCATION

The opportunity for wider stakeholders to benefit from the maintenance and monitoring program is significant. Local schools, NHS service users, staff from local businesses, local residents etc. can all get involved with programs parallel to the ongoing management of the floating ecosystems.

We welcome one-off events as well as ongoing interaction with the islands. In the past we have collaborated with musicians and artists for concerts and symphonies composed and dedicated to the plants and performed on the water.

Our staff are well versed in both economic and ecological botany, and are always interested in sharing their knowledge. We always like to discuss with the stakeholder groups involved to ensure our engagements are as context specific as possible but some of our best are:

- Species Identification Classes

- Habitat Design Workshops
- Edible Plants and their Historic Uses
- Water quality and monitoring



TABLES OF ACTIVITIES / VISITS

Monitoring and engagement plans can be set out according to the number of visits per year. Each activity may take place over a series of years. For example (2) in the activity row for trimming plants in column Y-1 (year one) indicates that the plants shall be trimmed twice in the first year from project installation.

PLANT CARE:

Suggested plant care activities, to achieve different aesthetics as suggested are as follows.

<u>Wild / Native Aesthetic:</u>	Y-1	Y-2	Y-3	Y-4	Y-5
1. Generally, allow the planting to grow and evolve as they would in a wild context, observation but minimal to no intervention.	NA				

<u>Semi-Wild Aesthetic:</u>	Y-1	Y-2	Y-3	Y-4	Y-5
1. Typically, selective spot trimming of annual plants in autumn or spring once per year, using hand tools or a strimmer, removing some plant material and re-incorporating some of the trimmed plant material in to the planting lanes for 3D islands or laying down between plants on 2D islands, to maintain planting media structure. Generally removing as little plant material as possible.	2	2	1	1	1
2. Spot hand weeding as needed. Occasional spot planting of target desirable species.	2	2	1	1	1
3. General trimming as desired.	2	2	1	1	1

<u>Ornamental Aesthetic:</u>	Y-1	Y-2	Y-3	Y-4	Y-5
1. Typically, selective spot trimming of annual plants in autumn, or spring once per year, using hand tools or strimmer, removing some plant material and re-incorporating some of the trimmed plant material in to the planting lanes for 3D islands or laying down between plants on 2D islands, to maintain planting media structure. Generally removing as little plant material as possible.	NA				
2. Check for trees taking root, once every 1-2 years, and remove, except where planted in High Buoyancy Planters.	NA				
3. Spot hand weeding as needed.	NA				
4. Occasional, spot planting of target species, seasonal ornamental, etc. as you would with a land based ornamental garden.	NA				
5. General trimming as desired.	NA				
6. Wood chips are a common mulching and planting media in landscaping projects. They can be used with good effect on Floating Ecosystem within the planting lanes on 3D and 4D systems and with the planting bed on 2D systems. From time to time, wood chips can be added as desired.			1		1

FLOATING ECOSYSTEM STRUCTURE:

The floating Ecosystems structure is robust and constructed from durable materials, to limit maintenance requirements. As general good practice, it is useful from time to time to visually inspect the system for any potential wear and tear. It is good practice to have your installation inspected and monitored by an experienced installer every 1-4 years, according to site conditions.

<u>Anchoring</u>	Y-1	Y-2	Y-3	Y-4	Y-5
Anchor inspection typically involves the inspection of hardware where it connects to the islands, and anchor cable_anchor ropes / cables / Guides and a general check of the overall anchoring system as would be carried out with a typical pontoon or mooring system.	1	1	1	1	1
<u>Litter Removal</u>	Y-1	Y-2	Y-3	Y-4	Y-5
In areas where windblown or washed down litter is present litter removal is suggested as needed to maintain a clean and natural ecosystem. Biomatrix can provide a maintenance service or training following installation as well as periodic inspections as needed if required.	1	1	1	1	1
<u>Ecosystem Structure</u>	Y-1	Y-2	Y-3	Y-4	Y-5
Connection flanges and bolts can be observed as well as anchoring hardware and floats. Maintenance is only required on these elements in the event of specific wear and tear, or when damage from external factors is observed.	1	1	1	1	1

Engagements

Stakeholders engaging in activities are coordinated by the client. We find the projects with greater involvement from local communities at the start have more public buy-in and the wider health and wellbeing benefits are increased.

<u>Volunteer Assisted installation</u>	Y-1	Y-2	Y-3	Y-4	Y-5
Stakeholders help with planting, assembling and launching the ecosystem modules. Volunteers will have a great time learning the names of the different species planted and what kinds of habitat they offer.	1				
<u>Creative Workshops</u>	Y-1	Y-2	Y-3	Y-4	Y-5
Anything from plant illustration to help with identification to wildlife photography. We have a large creative collaborator network and we love discussing how best local stakeholders can engage with their local ecosystems.					
<u>Local Stakeholder Collaboration</u>	Y-1	Y-2	Y-3	Y-4	Y-5
We have numerous projects in which we have a strong relationship with local canoeing companies and have entered into discussions with chefs that want to use produce grown on our islands. Do you know of any business' that may find our islands to be an interesting resource?	1				

ENVIRONMENTAL MONITORING:

Environmental monitoring provides a great opportunity to observe your ecosystems development and to document and share its progress with others.

<u>Environmental Monitoring can include the following as desired.</u>					
	Y-1	Y-2	Y-3	Y-4	Y-5
1. Macrophyte diversity reporting					
2. Invertebrate diversity and indicator species reporting					
3. Water chemistry, P, N, TSS, Secchi depth					
4. Written and photographic report, for media					
5. Waterscape Photography					
6. Macro species photography					
7. Underwater photography and video					

CONTACT:

Should you have any questions about the care and maintenance of your new floating ecosystem, don't hesitate to get in touch with the team at Biomatrix, we are here to help, and like to keep in touch with projects as they grow and mature.



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