

Johan Paju

Johan Paju, Landscape Architect LAR MSA,
founder of Paju Architecture and Landscape
and co-founder of Urbangreen.

- // designing real-world labs
- // using testbeds to produce urban biotopes
- // supplying site-specific materials for urban vegetation projects

Biotope testbeds for cultivating urban nature



The Roof Top Landscape Sveavägen 44,
Stockholm, Sweden
Photo: Urban Ozole

It all started when I promised a client we could establish nature for a Rooftop Park in central Stockholm. 'No problem', I said! Well, it turned out that no one actually supplied whole biotopes for installation. Until that moment, I'd always worked as a landscape design architect. Suddenly, to deliver on what I promised I was forced to get into product development. That's when I sought out Per Nyström who has long worked with engineering biology to become one of my partners in Urbangreen.

Urbangreen experiments and collects material through excursions into natural landscapes and habitats with different plant materials, vegetation beds and climates. Urbangreen testbed activities are developed on the edge – the extreme where knowledge of landscape processes and nature meets the design and construction process. We seek out whole plant communities that can be combined in new ways. We examine and develop biotopes that are adaptable to the many situations found in the city, from extremely dry and exposed roof surfaces, to dark ravine-like courtyards, to different streetscapes. We start testbeds, tuning exposure for humidity, sun and wind – factors crucial for survival in plant-life-threatening urban locations. We use various materials – testing everything from coconut matting, pumice, lava substrates, different minerals and nutrients to natural litter (microbes and bacteria), plant parts and seeds from Nordic flora. We currently have about 50 on-going experiments in various stages.

If an experiment succeeds in a small test surface, usually about 2 m², the next step involves scaling up to about 200 m², to test water-retention properties and exposure of plant material over extended time frames. Usually, it takes a few growing seasons to see how systems behave over the long term. After this has been done the first-generation product goes full scale – covering between 1000 and 20 000 square meters, depending on the specific project and situation. To optimise for local conditions, each new project develops and tests logistics, substrate/carriers and vegetation.



Testing aquatic plants for floating vegetative Islands.
Photo: Johan Paju



The Biotope Testbed:
Vertical Meadows.
Photo: Johan Paju

BIOTOPE TESTBED

Architect – Johan Paju

Engineers/consultants – Per Nyström

Client – Urbangreen

Location – Vislanda, Sweden

Size -approx. 200 m² wetland vegetation, 50 m² floating vegetation water treatment systems, 100 m² vertical plant systems and 200 m² roof vegetation.

Budget – varies depending on testbeds, in all about € 100 000.

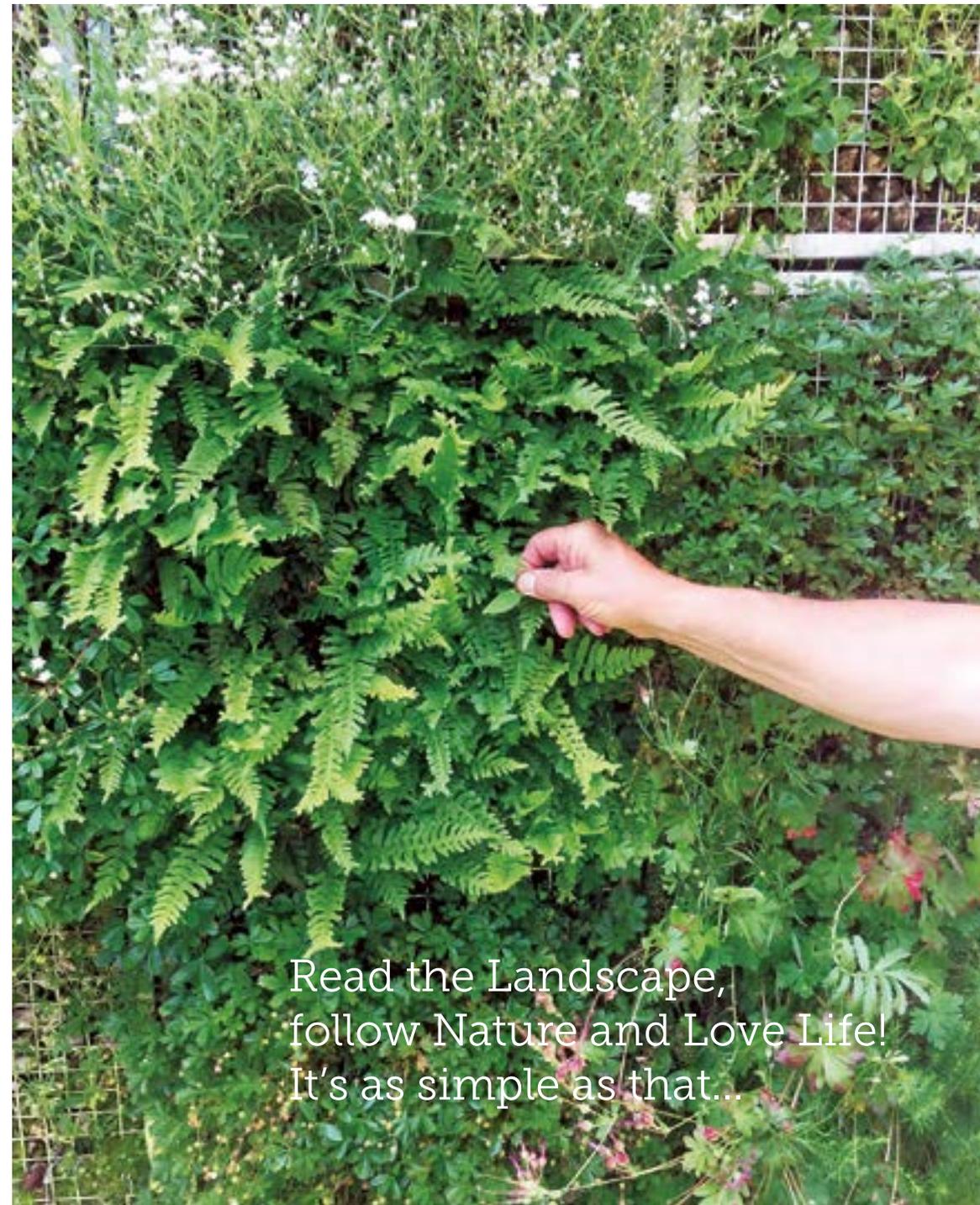
From our development work, we have learned that simply establishing vegetation capable of surviving in dense urban conditions is not enough to guarantee success. One must consider construction logistics and maintenance early on in the development process. Are the testbed construction components resistant? Do they meet regulatory requirements? It is important to include these steps in the design process, before even starting on the testbed.

At the same time, it is impossible to “Productify” the landscape. Landscape is a composite system based on its situation and location. We must read the site carefully and understand the dynamics of the processes of nature and the city. How will they interact and evolve over time and what issues and problems need to be solved? Each project you draw must be connected to basic Landscape Ecological principles, regardless of size, so we can create the potential for an interconnected changing structure.

Urbangreen initiates processes and develops potentials. We believe it is important to let natural systems root themselves on the site, so that slow processes get a start and generations of inhabitants can benefit from the environments that evolve. Those environments should not be complete or static, but dynamic and adaptive, biologically and socially. We lay the foundations for urban life and the pattern of the landscape to evolve through openness in the systems. This also requires materials, biotopes and elements that develop in the same direction, to maintain the open potential of the site.

What began as a promise to one client led to developing biotopes for a market that eventually could include parks and gardens, landscapes and urban social natures. The hope is that tests and surveys at Urbangreen will lead to a complex, rich, composite product line that can contribute to an urban environment connected to deep landscape structures.

Read the Landscape, follow Nature and Love Life! It's as simple as that...



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Vertical Meadows.
Photo: Johan Paju