Info Sheet
Biodiversity Green Roof

Biodiversity, that is the diversity of ecosystems, genetic diversity and species diversity of plants, animals and microorganisms, is a basic prerequisite for a functioning environment. Biological diversity is declining more and more due to human use, including urban development and land sealing. Green roofs can partially compensate for the loss of green spaces.
Under certain conditions, with professional planning, project-specific green roof build-ups and the use of native plant species, the ecosystems lost due to construction measures can often be at least partially replaced on the roof.
But actually, every extensive green roof offers the opportunity to create retreat areas for animal and plant species with relatively simple means, thus ensuring greater biodiversity in our built environment.

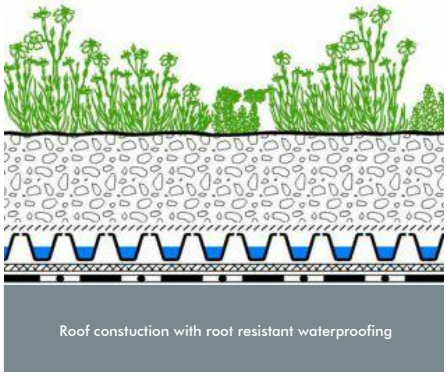
Pure sedum roofs with thin substrate layers can't fully exploit this potential. The information below explains how the biodiversity of extensive green roofs can be promoted by applying basic biodiversity principles during the planning and implementation process of new extensive green roofs as well as existing green roofs.

Build-up of a Biodiversity Green Roof:

The Basis - Extensive Green Roof

The basis for a Biodiversity Green Roof is a reliable ZinCo System Build-up for an extensive green roof, selected according to roof pitch and roof structure, for example the system build-up "Rockery Type Plants with Floradrain® FD 25-E".

A suitable plant community containing already a relatively large range of species is, for example, the seed mixture "Meadow Scent" combined with sedum cuttings.



System Build-up, e.g.„Rockery Type Plants with Floradrain® FD 25-E"

Plant community,
e.g. „Meadow Scent" with Sedum

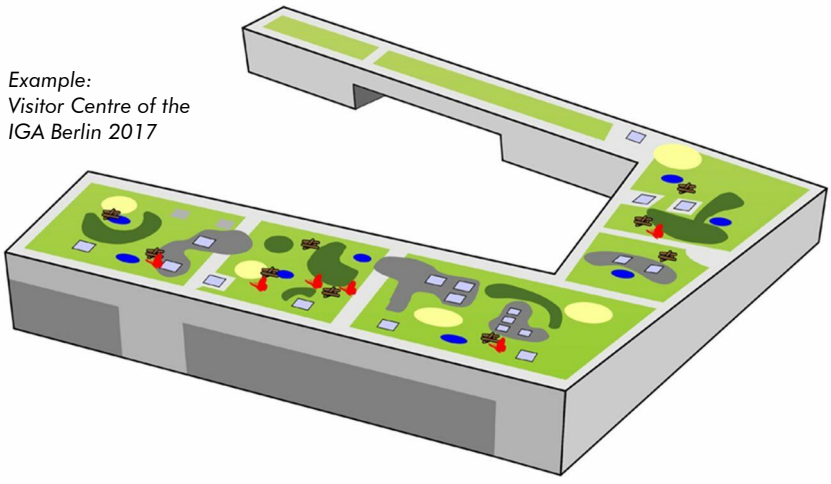
System Substrate „Rockery Type Plants", ≥ 70 mm

Filter Sheet SF
Floradrain® FD 25-E
Protection Mat SSM 45

The Biodiversity Modules

In order to promote species diversity through the basic principles of biodiversity, so-called biodiversity modules are introduced to the area in addition to the standard system build-up. In some areas, the substrate is raised and the plant community expanded. Vegetation-free areas such as sand pockets, areas of gravel or crushed stone and temporary water bodies are provided. Other elements can be dead wood or nesting aids.

Example:
Visitor Centre of the IGA Berlin 2017




Substrate modulation and enhancement of vegetation

Sand


Deadwood


Temporary water body


Coarse gravel or crushed stone


Nesting aids

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Life on Roofs

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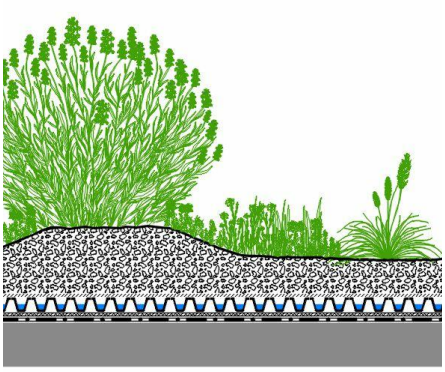
Overview of the Biodiversity Modules:

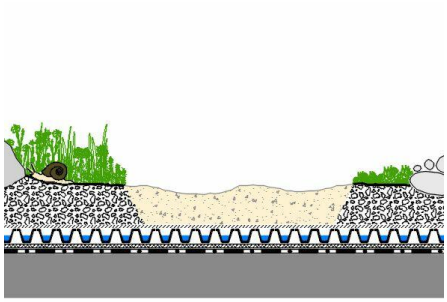
Substrate Modulation and Enhancement of Vegetation



By modelling the substrate surface, the range of plant species can be extended considerably. While sedum plants and low herbs thrive in the low areas, slightly larger grasses and herbs that require more root space and more moisture can also be planted on mounds of up to approx. 200 mm. The maximum substrate depth depends on the load-bearing capacity of the roof. If some additional organic material, e.g. Zincohum or the system substrate "Heather with Lavender" is added to the substrate mounds, more demanding perennials and small shrubs can also be planted.

Visitor centre of the BUGA 2017: Sedum cuttings were sown in the low areas, as well as a seed mixture. Organic material was introduced into the substrate mounds and more demanding perennials were planted.

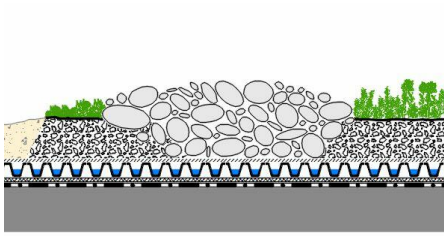
Vegetation-free Areas e.g. Sand Pockets



Areas free of vegetation, such as sand, gravel, crushed stone or clay surfaces are also valuable additional habitats on which many insects and invertebrates depend. For this purpose, the substrate is omitted in partial areas above the filter sheet and alternative material is introduced. Ground-breeding insects such as the digger wasp or sand bees use sand pockets as breeding grounds or sunbathing areas.

Visitor centre of the BUGA 2017: Implementation of a sand surface.

e.g. Gravel or Crushed Stone



Other species find hiding places and shade between the crushed stones or gravel. Various beetle and spider species use them as hunting grounds.
The vegetation-free areas also help creating various microclimates on the green roof.

Visitor centre of the BUGA 2017: Creating a gravel area.

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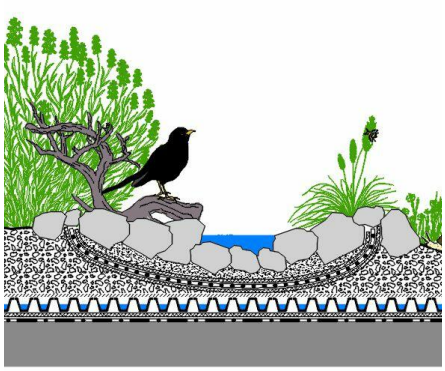
Overview of the Biodiversity Modules:

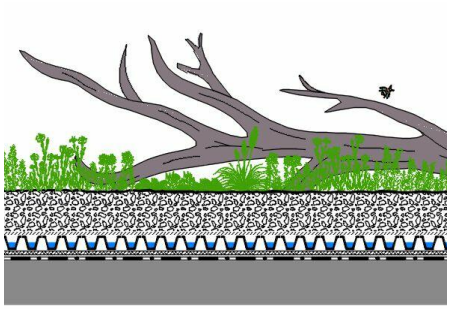
Temporary Water Bodies



By means of a simple edging and an additional foil covered with sand, e.g. the Root Barrier WSF 40, areas can be created that temporarily store rainwater. In this way, water can be offered to insects and birds as a bathing place or drinking trough. Additionally, such water features create a cooler and wetter microclimate.

Visitor centre of the BUGA 2017: Here a drainage hose was installed as the edging of the temporary water area.

Deadwood



Dead wood is a particularly valuable structural element. On the otherwise very sunny roof, a shady and moist microclimate can be found under and between dead branches and tree trunks, so that mosses, lichens and fungi can also settle. Many small creatures such as beetles, wild bees, ants and flies find a habitat here.

Visitor centre of the BUGA 2017: Dead tree branches

Nesting Aids

The use of nesting aids can support the permanent settlement of insects. Nest boxes and nesting aids are available for wild bees, bumblebees, hornets, lacewings, earwigs and other free-living species.
Practically all nest box manufacturers offer insect aids, and some nesting aids can also be easily made with limited manual skills.

Visitor centre of the BUGA 2017: Nesting aids.

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Plant Species and Application:

Drought-resistant succulents, herbs, dry grassland species and perennials are particularly suitable. Of special importance on a biodiversity green roof are forage plants for pollinators. The flowering periods of the different species should be well distributed throughout the growing season, so that bees, butterflies, bumblebees and other pollinators can always find sufficient nectar. In our plant list "Bee Pasture" you will find a selection of suitable species, which cope well with substrate heights up to 100 mm. For areas with more substrate, you can refer to the plant list „Heather with Lavender“ for semi-intensive green roofs with more demanding herbs and perennials, and you can also include other drought-resistant forage plants.
The plants can be seed sown, e.g. with the seed mixtures "Meadow Scent" and "Country Colours", in combination with sedum cuttings or planted as pre-cultivated perennials and grasses.

For biodiversity roofs, the use of native species is also possible, as long as they are drought-tolerant and suitable in their requirements for the location on the roof with the selected substrate height.

Maintenance and Irrigation:

Overall, the Biodiversity Green Roof is low-maintenance. The aim is natural development without major human intervention. An herb meadow on the roof is mowed as needed and the mowed material removed. Shrubs require some pruning and emerging seedlings of undesirable species must be removed. Seed stands may be cut if excessive self-seeding is not desired for some species. Fertilization in early spring with a coated compacted slow-release fertilizer, e.g. ZinCo-Plantfit® 4 M, is recommended, in the purely extensive areas every 2-3 years if necessary, on the mounds with more demanding vegetation annually. At the same time, roof drains and connections as well as fixing devices must be checked. Dead wood may need to be replaced from time to time as branches decompose over the years.
In any case, we recommend signing a maintenance contract with a specialized company.
The possibility of emergency irrigation during long dry periods should be available to ensure continuous flowering and thus nectar and pollen supply.
Additional enhancement of the species spectrum is possible if a permanent irrigation system is installed. If this is desired, we recommend installing our "Irrigated Extensive Green Roof" with Aquafleece AF 300 as the basis for the Biodiversity Roof.

Visitor centre of the IGA 2017, a few months after installation: flowering perennials, deadwood and a nest box

Roof of a hotel in Erlangen, Germany: temporary water/clay surface and species-rich greening.

We are happy to assist in the planning of a biodiversity green roof.

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