

Urban Greening Solutions Using Regional and Insect-Friendly Perennials



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Why Regional and Insect-Friendly Perennials?



Ecosystem Services and Nature-Based Solutions



Wildflower-patches and Naturalistic Planting



- Mitigate climate change effects
 - Improvement of air quality
- Food security (pollinators, beneficial insects)

Why Regional and Insect-Friendly Perennials?



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Changing public perception



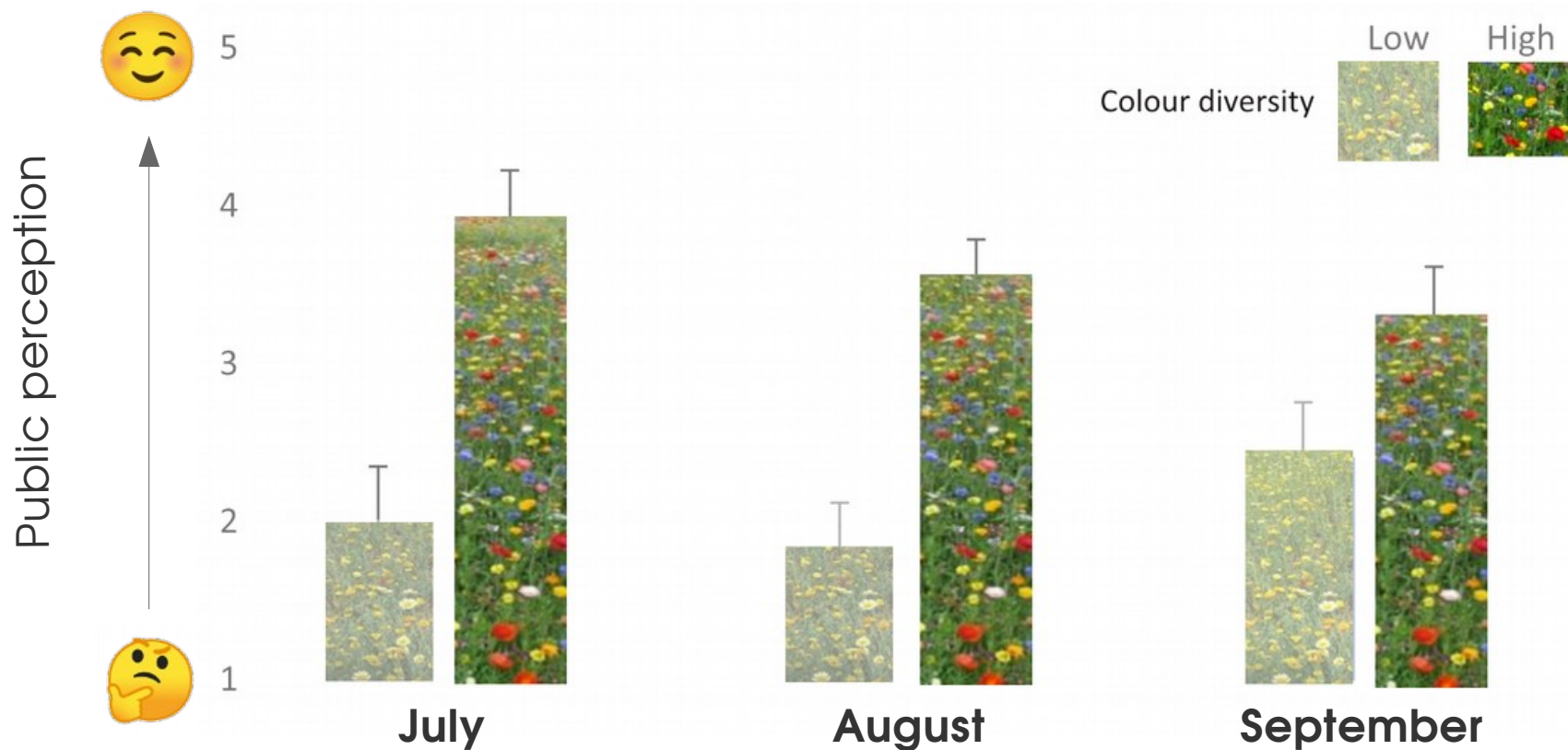
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Public Perception

Wildflower-patches in urban settings



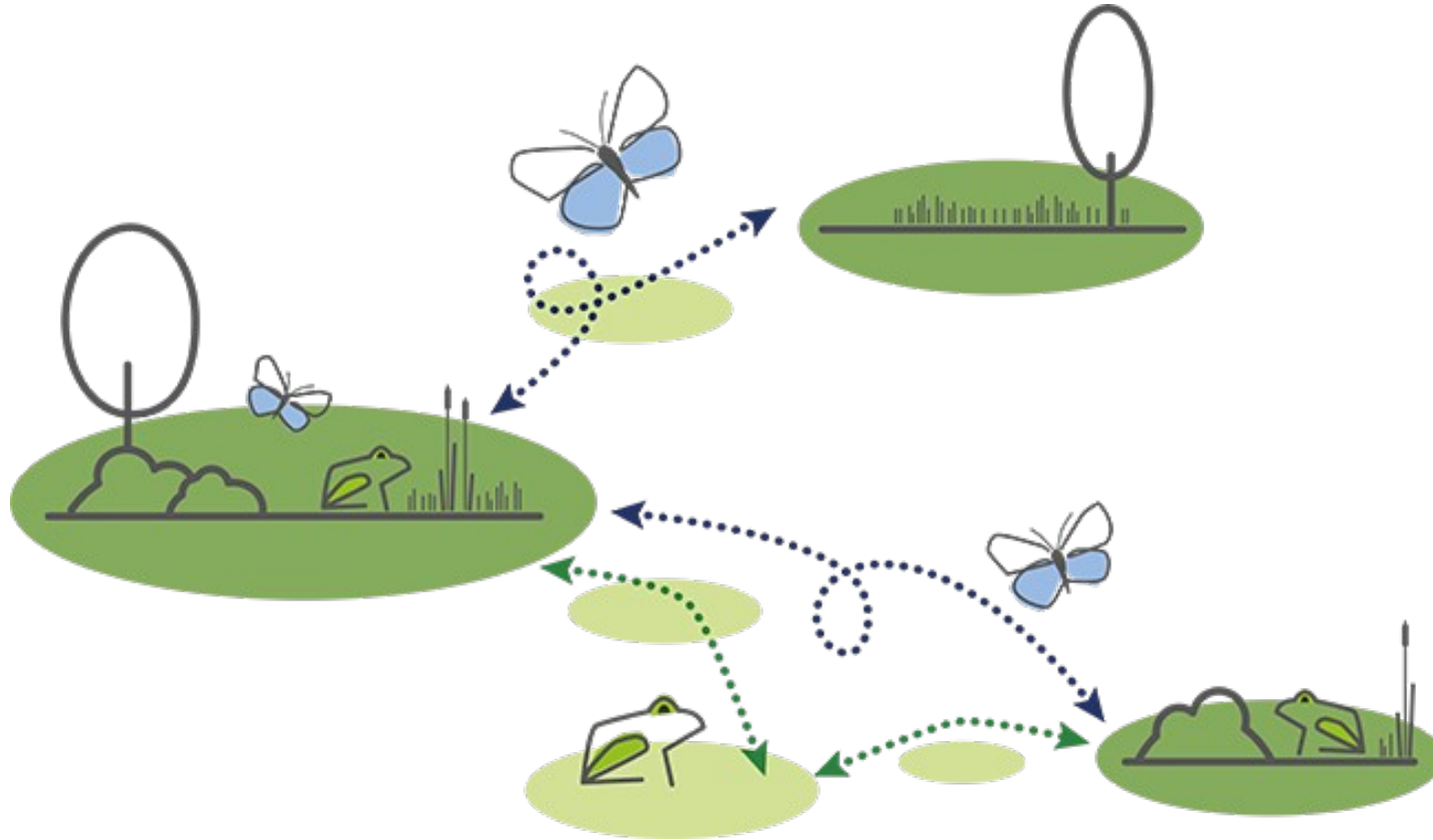
© Hoyle et al., 2018. Landscape and Urban Planning

Wildflower-patches and Naturalistic Planting



- Colourful designs and 'medium' tidiness
- Communication: signs, web, local papers, social media etc.
- Involvement of the public and maintenance staff

Why Regional and Insect-Friendly Perennials?



Reduces biodiversity loss

and function as stepping stones of (urban) biotopes

Why Regional Wildflowers?



- Better adapted to local climate and soils
- Stronger defense against herbivores and pests
 - Higher fitness and biomass
- Food sources for specialist feeder, e.g. solitary bees

Exotic (Annual)












Native (Perennial)

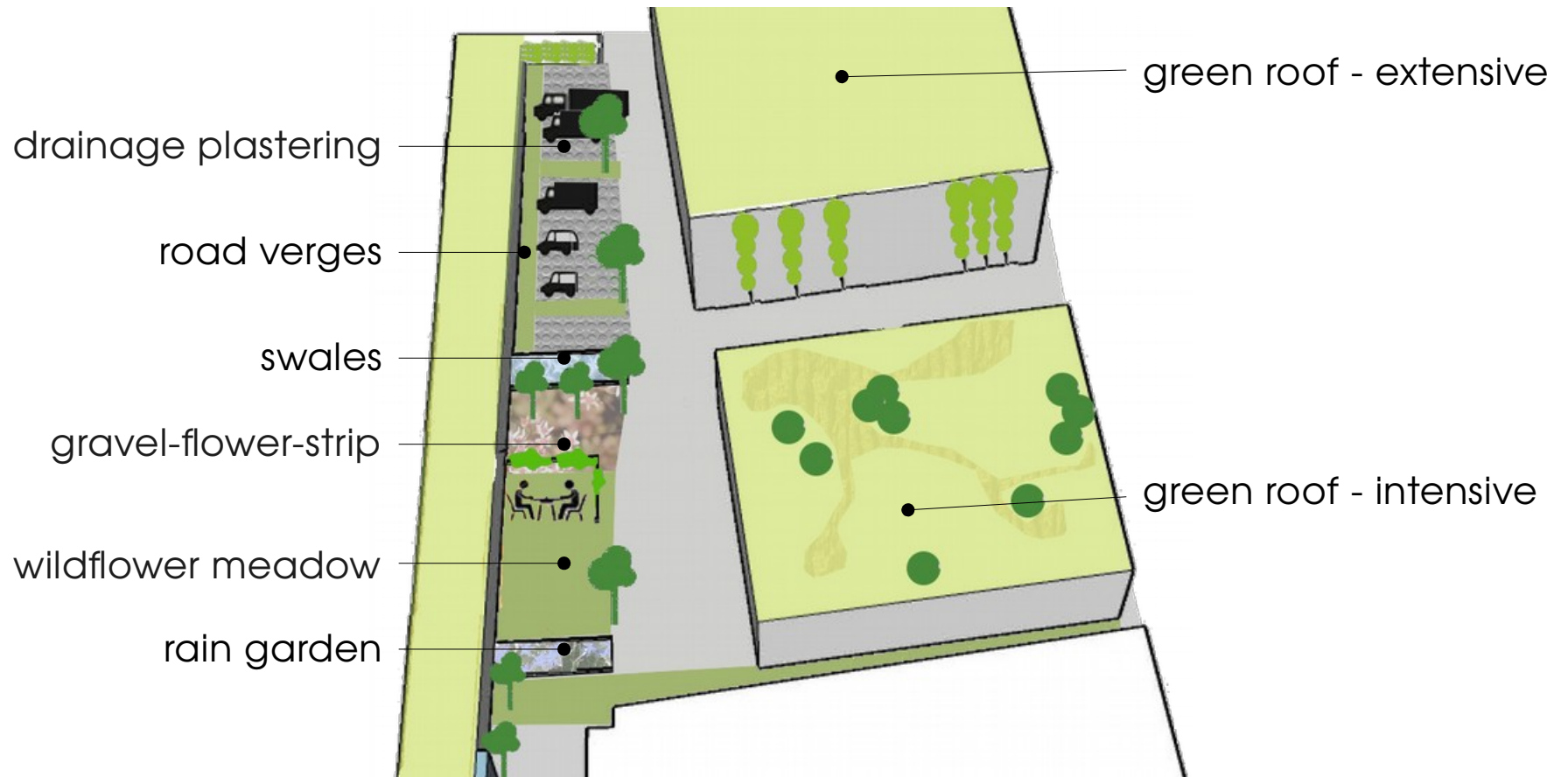


Lawn



Biodiversity			
Public Perception			
Ecosystem-Services			
Longevity	annual	> 20 yrs	> 10 yrs
Maintenance	new each year, weeds!	mowing 2-3 times / year	regular mowing, fertilising, watering

Grey to Green with Naturalistic Planting



Grey to Green with Naturalistic Planting

Wildflower Meadows and Strips



Grey to Green with Naturalistic Planting

Road Verges, Roundabouts and Parking



Regional wildflowers seed mixtures



Planting and sowing



Grey to Green with Naturalistic Planting

Bio-Swales, Raingardens and Wetlands



© Naturgarten

Grey to Green with Naturalistic Planting

Schools and Playgrounds



Colourful and fragrant plants



Participation of school children

Grey to Green with Naturalistic Planting

Green Roofs



Extensive



© Kumpfmüller

Intensive



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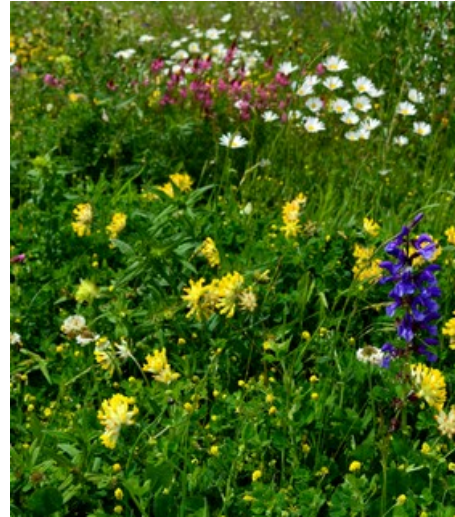
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Gravel-flower-strip
(road verges, parking)



Wildflower meadow
(residential, parks)



Rain garden / Bio-swale
(road verges, parking, residential)



Construction	simple	depending on native soil	several layers, complex
Plants	seed mixture	seed mixture / planting	planting
Costs	€	€€	€€€
Maintenance	mowing 1-2 times / year	mowing 2-3 times / year	mowing and weeding 2-3 times / year

Steps to Biodiversity-Friendly Green Spaces



Building, Sowing and Planting

Soil and Substrates



- Native soil: well draining, nutrient poor
- Artificial substrate: 0-32 gravel, weed-free compost
 - Mulching with gravel or grit
- Swedish Method (Peter Korn): sand and perennial plants



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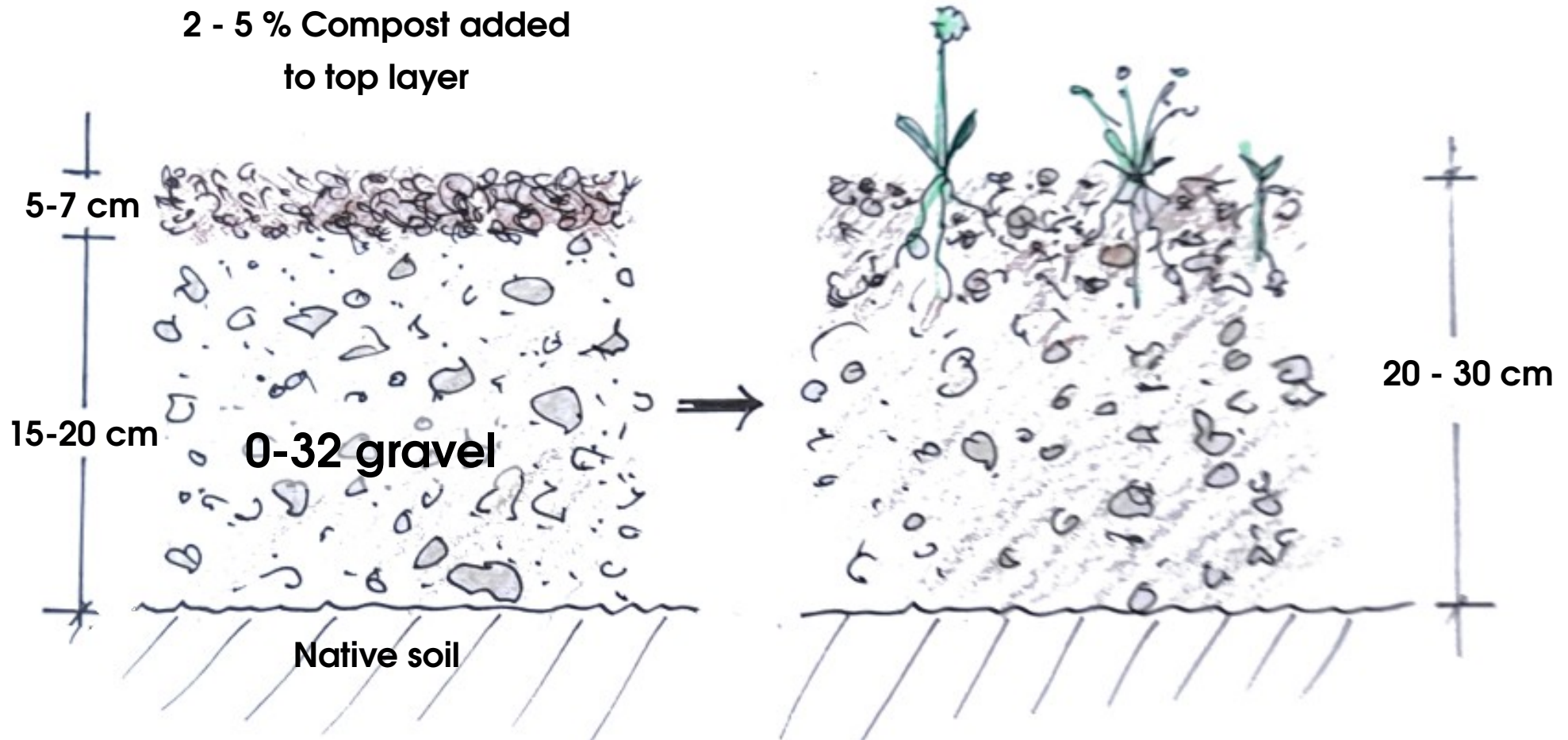
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Building, Sowing and Planting

Substrate Layers for Wildflower Meadows

on heavy soil



Building, Sowing and Planting

Sowing



- **Less is more:** 2 - 3 g seed mixture / m² (or less!)
- Seed mixture specific for location, soil and microclimate
- 'Urban' seed mixtures: ca. 30 % Annuals, 70 % Perennials, no grasses
- Some plants need > 2 years to become established



Building, Sowing and Planting

Perennials and Bulbs



- 'Black Box Gardening' method, free seeding
 - Plants that are difficult to grow from seed
- 'Statement' perennials, no bi-annuals or annuals
- Bulbs: early ground cover and food for insects



Practical Examples of Urban Greening with Wildflowers



Practical Example Road Verge (Gravel-Flower-Strip)





Practical Example Road Verge (Gravel-Flower-Strip)



Removing vegetation and top soil,
cleaning out roots of weeds by hand



Adding the first layer of
0-30 coarse gravel



Adding the second layer of
gravel and compost





Practical Example

Road Verge (Gravel-Flower-Strip)



The seed mixture is pressed onto the substrate using the back of shovels.



Annuals as ground cover
3 months after sowing



Practical Example

Road Verge (Gravel-Flower-Strip)



April 2024

Poor growth after drought



May 2024

Growth has recovered



September 2024

After mowing in June



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Practical Example

Playschool Wildflower Slope





Practical Example

Playschool Wildflower Slope



Removing vegetation and top soil



Adding climbing stones and stumps



Adding compost and working it in



Adding 0-32 gravel





Practical Example

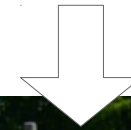
Playschool Wildflower Slope



planting and sowing



Six weeks later



After 3 months



After 2 months



Practical Example

Playschool Wildflower Slope

Perennials



Aromatic herbs

Calamintha nepeta
'Triumphator'

Santolina chamaecyparissus
var. *nana* '

Helichrysum italicum

Origanum vulgare

Ruta graveolens

Thymus spp.



Cultivars

Anthemis tinctoria 'Sauce
Hollandaise'

Campanula glomerata
'Dahurica'

Verbascum bombyciferum
'Polar Summer'

Veronica teucrium
'Knallblau'



Regional wildflowers

Dianthus carthusianorum

Echium vulgare

Campanula glomerata

Leucanthemum vulgare

Malva moschata

Verbascum nigrum



Practical Example

Playschool Wildflower Slope

Seed Mixture

Annuals

Agrostemma githago

Barbarea vulgaris

Centaurea cyanus

Papaver rhoeas



No grasses!

Biennials and perennials

Achillea millefolium

Anthemis tinctoria

Campanula patula

Cichorium intibus

Daucus carota

Malva alcea

Knautia arvensis

Leucanthemum vulgare

Pastinaca sativa

Salvia pratensis

Scorzoneroides autumnalis

Silene flos-cuculi



Practical Example

Public Park: Wildflower and Orchard Meadows



Practical Example

Public Park: Wildflowers and Orchard Meadows



3.500 m² of naturalistic planting, meadows, orchards and a woodland garden in a rejuvenated public park



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Practical Example

Public Park: Wildflower and Orchard Meadows



Removing vegetation and top soil, preparation for gravel paths



Adding and distributing 0-32 gravel

Practical Example

Public Park: Wildflower and Orchard Meadows



High-quality compost
as top layer



Compost is worked into
the gravel layer

Practical Example

Public Park: Landscape Elements and Swales



Building landscape elements



Six weeks later,
November 2022

Public Park: Wildflower and Orchard Meadows

Sowing Design



Streuwiese (ca. 110 m²)

100 % Wildblumenmischung

Einjährige:

Agrostemma githago, Barbarea vulgaris
Centaurea cyanus, Papaver rhoeas
Silene latifolia, Silene noctiflora,
Trifolium dubium

Mehrfährige Stauden:

Achillea millefolium, Aquilegia vulgaris,
Anthyllis vulneraria, Betonica officinalis,
Campanula patula, Centaurea jacea
angustifolia, Centaurea jacea jacea,
Centaurea scabiosa, Daucus carota,
Dianthus deltoides, Galium album,
Galium verum, Knautia arvensis,
Leontodon hispidus, Leucanthemum
vulgare, Linaria vulgaris, Lotus
corniculatus, Lychnis flos-cuculi,
Lychnis viscaria, Malva alcea, Plantago
lanceolata, Salvia pratensis, Sanguisorba
minor, Scorzoneroide autumnalis,
Silene dioica, Silene nutans, Silene
vulgaris, Veronica teucrium

Gräser:

Agrostis capillaris, Anthoxanthum
odoratum, Briza media, Bromus erectus,
Cynosurus cristatus, Festuca nigrescens,
Poa angustifolia

Einzelnsaatgut:

Pastinaca sativa
(Wilde Pastinake)



Echium vulgare
(Natternkopf)



Hypericum perforatum
(Johanniskraut)



Wildblumenwiese (ca. 210 m²)

80 % Kräutermischung nährstoffarm

Achillea millefolium, Agrostemma
githago, Bupthalmum salicifolium,
Anthyllis vulneraria, Centaurea
jacea, Centaurea scabiosa,
Cichorium intybus, Daucus carota,
Dianthus carthusianorum, Galium
album, Galium verum, Hypericum
maculatum, Hypericum perforatum,
Leontodon hispidus, Leucanthemum
vulgare, Lotus corniculatus,
Medicago lupulina, Medicago
falcata, Plantago media, Prunella
grandiflora, Salvia pratensis,
Scabiosa columbaria, Silene aperia,
Silene nutans, Silene vulgaris, Trifolium
arvense, Trifolium campestre,
Trifolium dubium

20% Gräser

Briza media
Avenella flexuosa
Festuca nigrescens

Einzelnsaatgut:

Verbascum densiflorum
(Großblütige Königskerze)



Trapogodon pratensis orientalis
(Östl. Wiesen-Bocksbart)



Verbascum chaixii
(Österr. Königskerze)



Hypericum perforatum
(Johanniskraut)



Silene viscaria
(Pechnelke)



Blumen-Schotterrasen (ca. 20 m²)

Thymus serpyllum
(Sandthymian)



Thymus pulegioides
(Thymian/Quendel)



Potentilla argentea
(Silber-Fingerkraut)



Anthyllis vulneraria
(Wundklee)



Dianthus carthusianorum
(Karthausemelke)
am Rand zur Blumenwiese



Helianthemum nummularia
(Sonnenröschen)





Practical Example

Public Park: Wildflower and Orchard Meadows



May 2023



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Practical Example

Public Park: Wildflower Meadow



May 2023



June 2023



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Practical Example

Public Park: Orchard Meadow



June 2024



May 2025



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Steps to biodiversity-friendly green spaces

Public Park Woodland Garden



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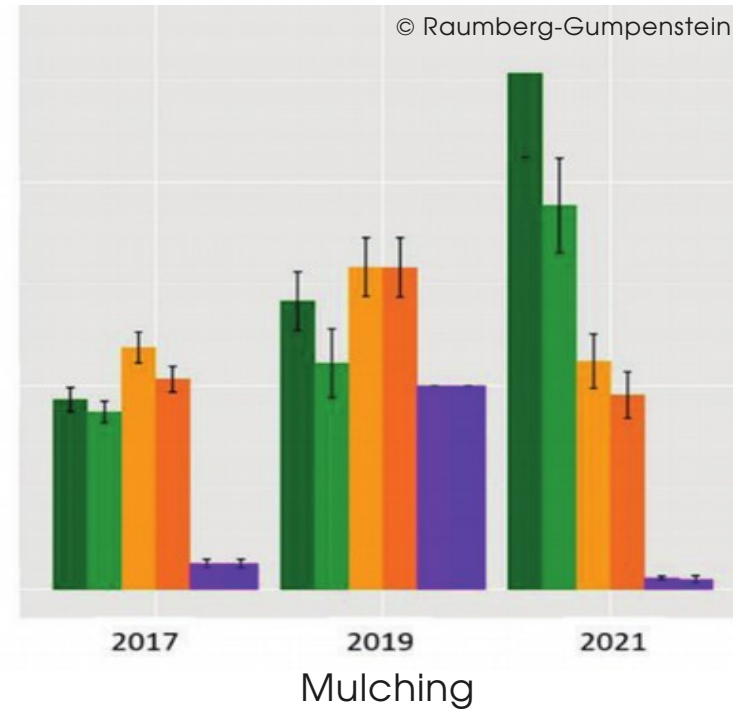
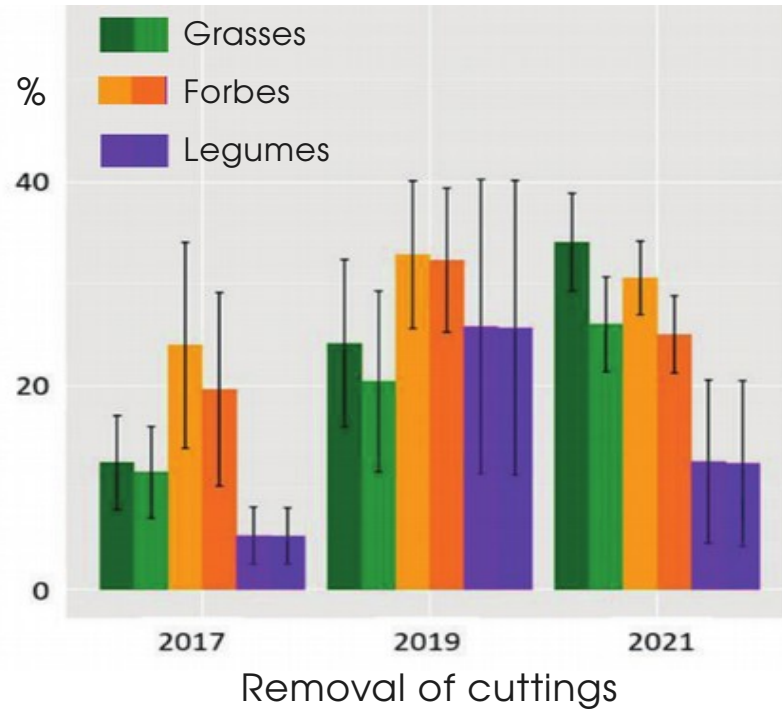


Maintenance



- No watering, no fertilizer
- Mowing 2 - 3 times / year (June, August, October)
- Trimmer, bar mower or similar, ca. 10 cm above ground

Maintenance



- No watering, no fertilizer
- Mowing 2 - 3 times / year (June, August, October)
- Trimmer, bar mower or similar, ca. 10 cm above ground
- Removal of cuttings after 2 - 3 days
- Avoid weeding, only in 1st year

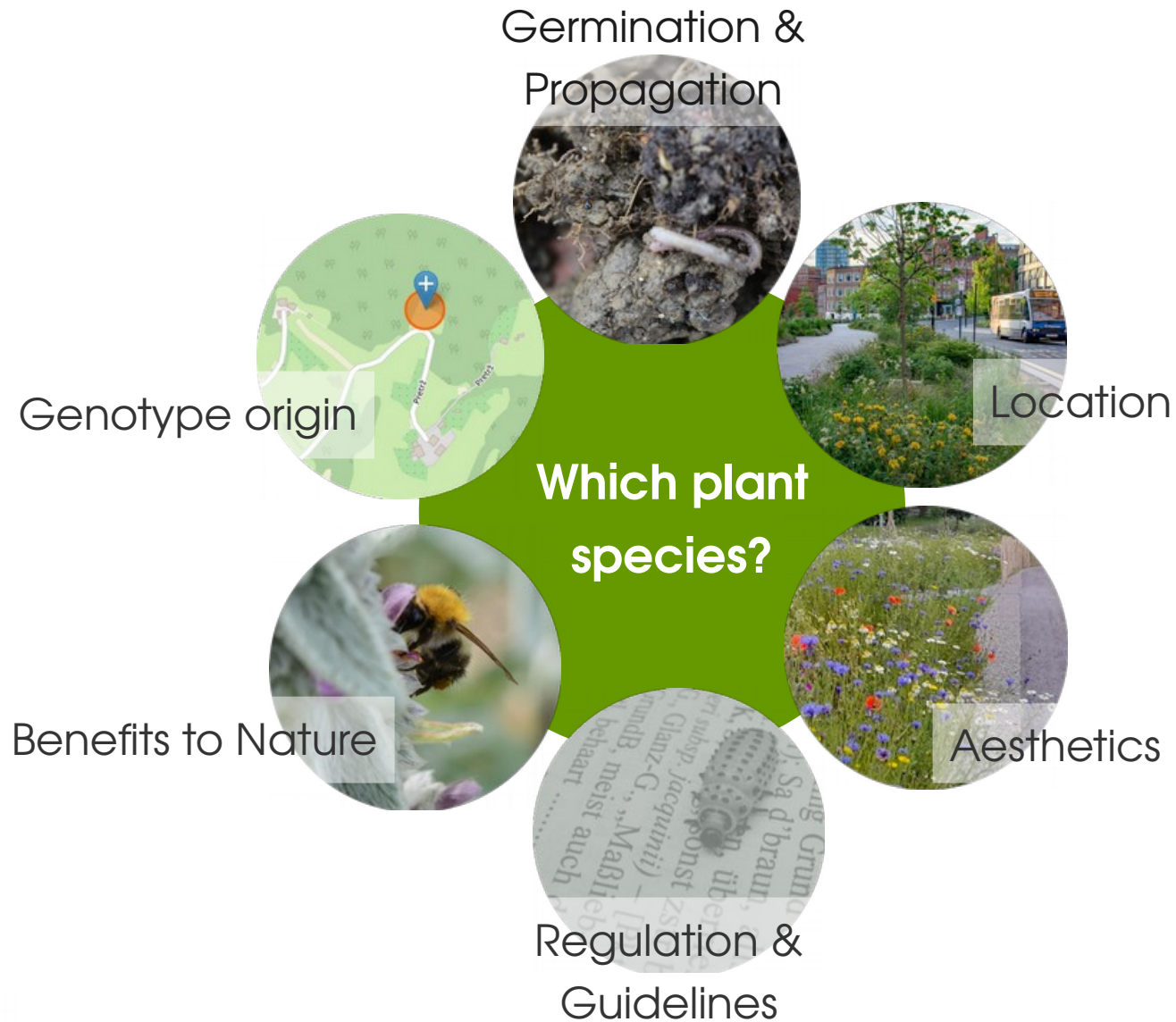
Maintenance Cost

Five German municipalities, 2010 - 2018



Municipality	Costs (EUR) per m ² woody vegetation	Costs (EUR) per m ² flower meadow
Erfelden	5.52	1.54
Goddelau	8.93	0.90
Wolfskehlen	7.94	0.86
Leeheim	6.00	2.31
Crumstadt	5.49	0.85
Average	6.78 (0.70)	1.29

Growing Regional Wildflowers



Growing Regional Wildflowers

Which Plant?

Establishment success of wildflowers on prepared native soil:

Good

Achillea millefolium
Campanula patula
Centaurea jacea
Galium album
Hypericum perforatum
Leucanthemum vulgare
Lotus corniculatus
Plantago lanceolata
Silene vulgaris
Trifolium pratense

Medium

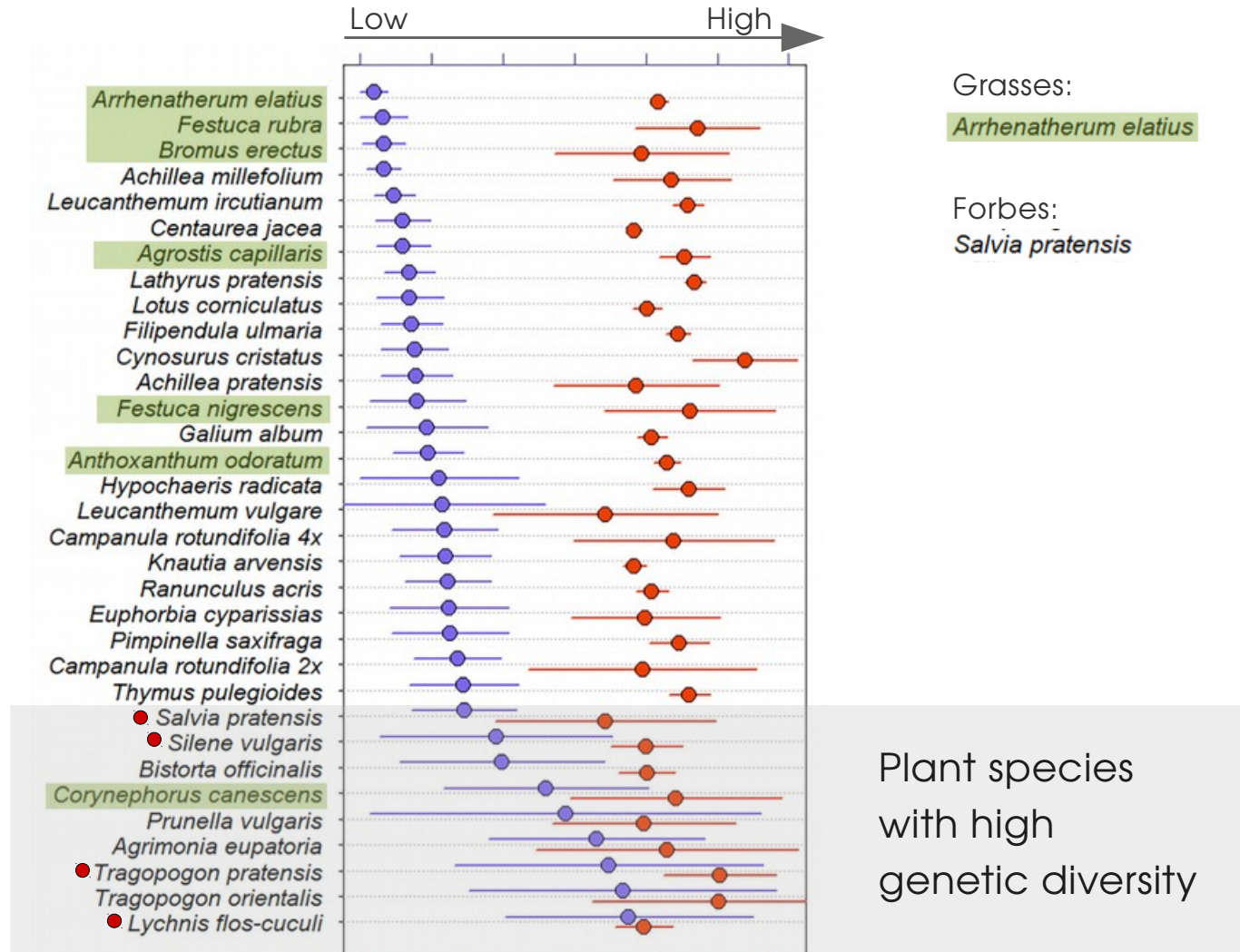
Cichorium intybus
Crepis biennis
Daucus carota
Dianthus carthusianorum
Hypericum maculatum
Knautia arvensis
Leontodon hispidus
Rumex acetosa
Salvia pratensis
Sanguisorba minor
Stellaria graminea

Low

Anthyllis vulneraria
Carum carvi
Centaurea scabiosa
Dianthus detoides
Dianthus superbus
Galium verum
Heracleum sphondylium
Leontodon autumnalis
Lychnis flos-cuculi
Prunella vulgaris
Silene dioica
Verbascum nigrum

Growing Regional Wildflowers

Genetic Diversity of Native Perennials



Genetic differences within sites ● Genetic differences among sites ●

Growing Regional Wildflowers

From Seed to Plant to Seed



Machine-harvested (nature restoration)



By hand (seed production, urban greening)

Sowing and propagation

- Medium nutrient-rich substrate
- Well draining
- Cold-stratification, gibberellin, scarification



Growing Regional Wildflowers

From Seed to Plant to Seed



Growing Regional Wildflowers

From Seed to Plant to Seed



Changing culture every 4 - 5 years

Problems: voles, pests, deer

Harvesting by hand or machine harvest

Seed cleaning



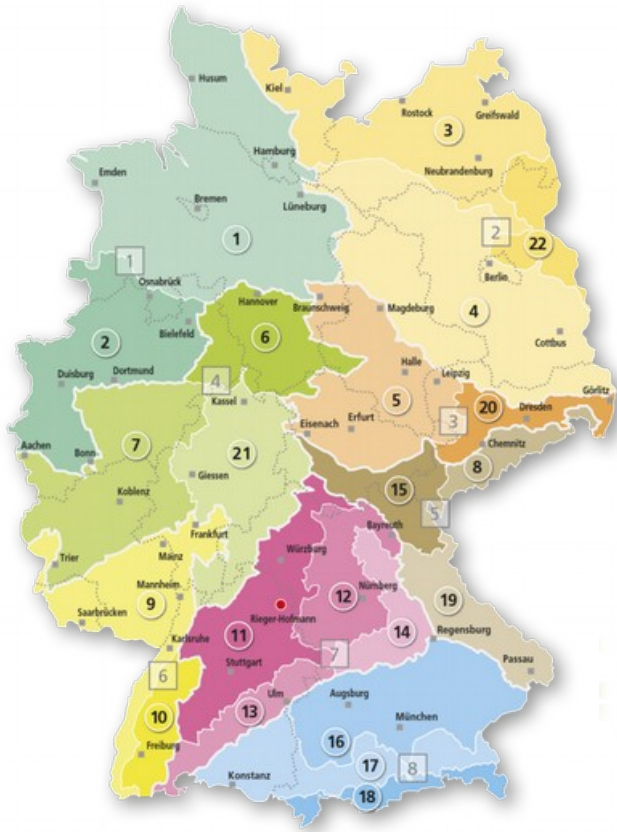
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Growing Regional Wildflowers

Certification

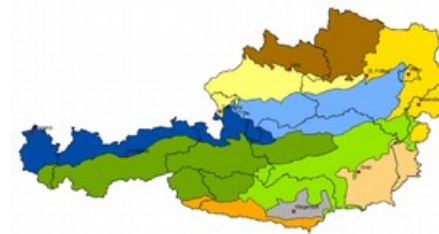


Germany:

Distinct geographic regions of origin,
nature conservation law



www.rewisa.at



G-Zert
Raumberg-Gumpenstein

Austria:

G-Zert, REWISA
geographic regions

Wildflower Seed Suppliers



www.rewisa.at

www.blumensaat.at

wildblumensaatgut.at

www.gruenewerkstatt.at



www.rieger-hofmann.de (DE)

shop.hof-berggarten.de (DE)

wild-saat-gut.de (DE)

wildblumen.ufasamen.ch (CH)

www.localfloraseed.com (IT)

Funding and Grants

Interreg



Co-funded by
the European Union

2021 - 2027

Small scale and classic projects



1. LIFE DELAVNICA 2026 ZA PISANJE PROJEKTHNIH PRIJAV

Datum: 27. in 28. januarja 2026

Lokacija: Kreativno središče Center ROG

- Prednostne teme
- Definicija okoljskega problema
- Cilji in rezultati
- Indikatorji

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Ljubljana, 8. Jan 2026

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