

Research BIODIVERSITY within SOLAR PARKS

Improving the chances for biodiversity

SMARTLAND

Landscape architects

In collaboration with
Naturalis
Biodiversity Center



Commissioned by
Shell
International bv



URGENT TOPIC ENERGY; TRANSITION to SUSTAINABLE ENERGY HIGH PRIORITY



BUT STILL MUCH OPPOSITION

URGENT TOPIC BIODIVERSITY; THE RURAL AREA is a GREEN DESERT

Steeds minder insecten

Gevangen insecten in Duitse natuurgebieden
per val, in gram per dag



Deltaplan Biodiversiteitsherstel

*In actie voor een rijker
Nederland*

SAMEN VOOR
BIODIVERSITEIT

CONNECTING ENERGY AND BIODIVERSITY is a SOLUTION



Opportunities for BIODIVERSITY in SOLAR PARKS:

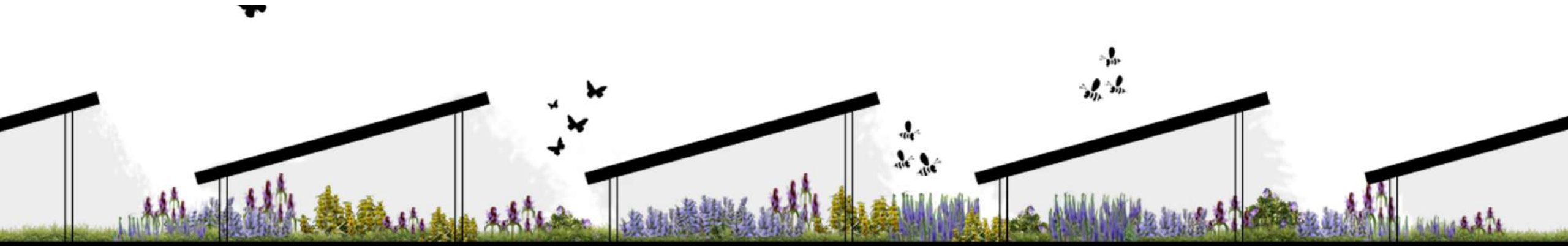
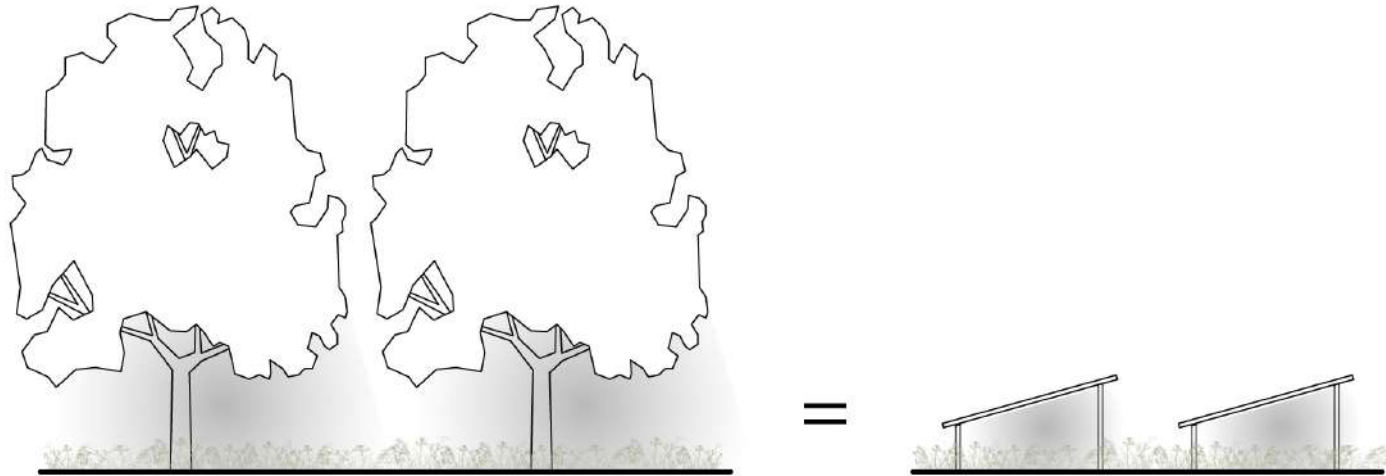
1. Positive impact in a landscape that is poor in terms of insects
2. Make use of the conditions under the panels
3. Include landscape elements – the edge of the forest as a reference

BIODIVERSITY; SOLAR PARK has MANY CHARACTERISTICS of a NATURAL AREA

Such as:

- No fertilization
- No pesticides
- Extensive mowing management
- Higher water levels
- Areas of semi-shadow/ variation in terms of sunlight
- Landscape elements such as hedges and woodlands

BIODIVERSITY; the FOREST as REFERENCE MICROCLIMATE





Forest edge: core of Biodiversity

In 'Zoom': Concentration of insects

In 'Mantel': Concentration of birds

Due to:

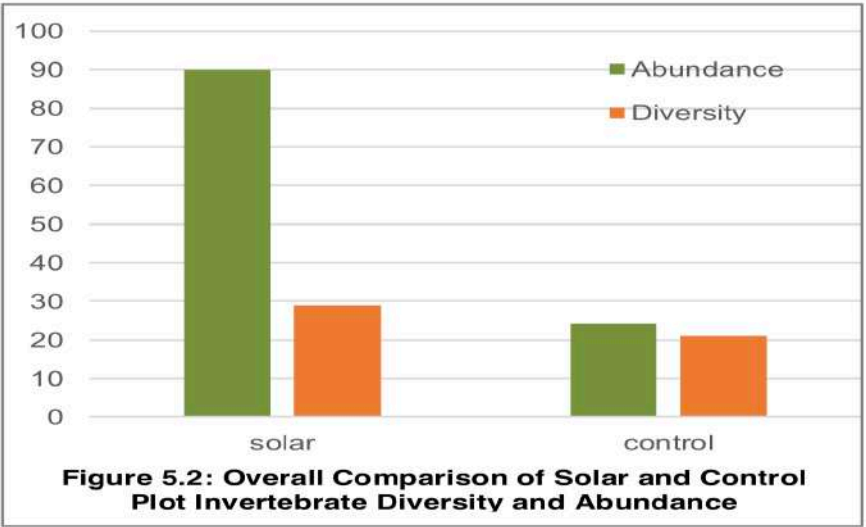
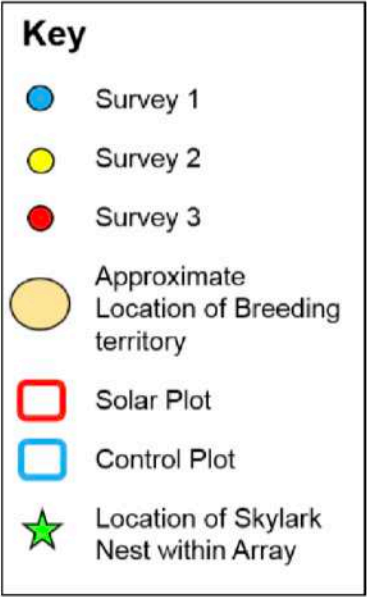
Flowers

Wind screen

Temperature

Nesting opportunity

APPENDIX C: GROUND NESTING BIRD TERRITORY MAPS



SOLAR PARK MOERDIJK; OPPORTUNITY for RESEARCH IN DUTCH SITUATIONS

Research

Biodiversity of pollinators in solar parks

Naturalis Biodiversity Center

Provisional results / project 'Biodiversiteit in zonneparken'

Lisette van Kolfschoten, Ilah de Haan, Laura Vriend, Francisca Wit

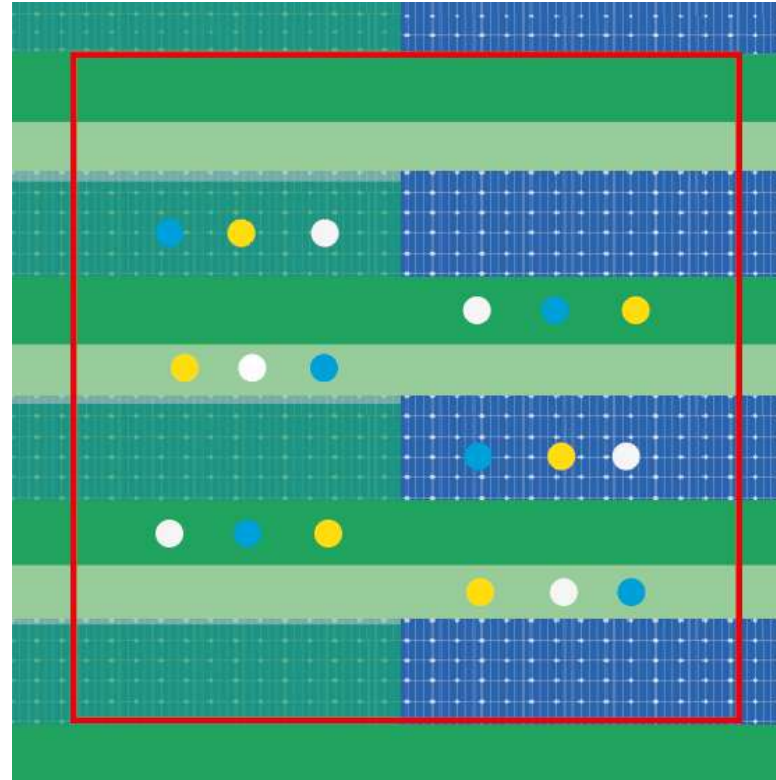


Measuring Biodiversity

Method: Insect Traps



Method: Survey



Method: Seed mixtures

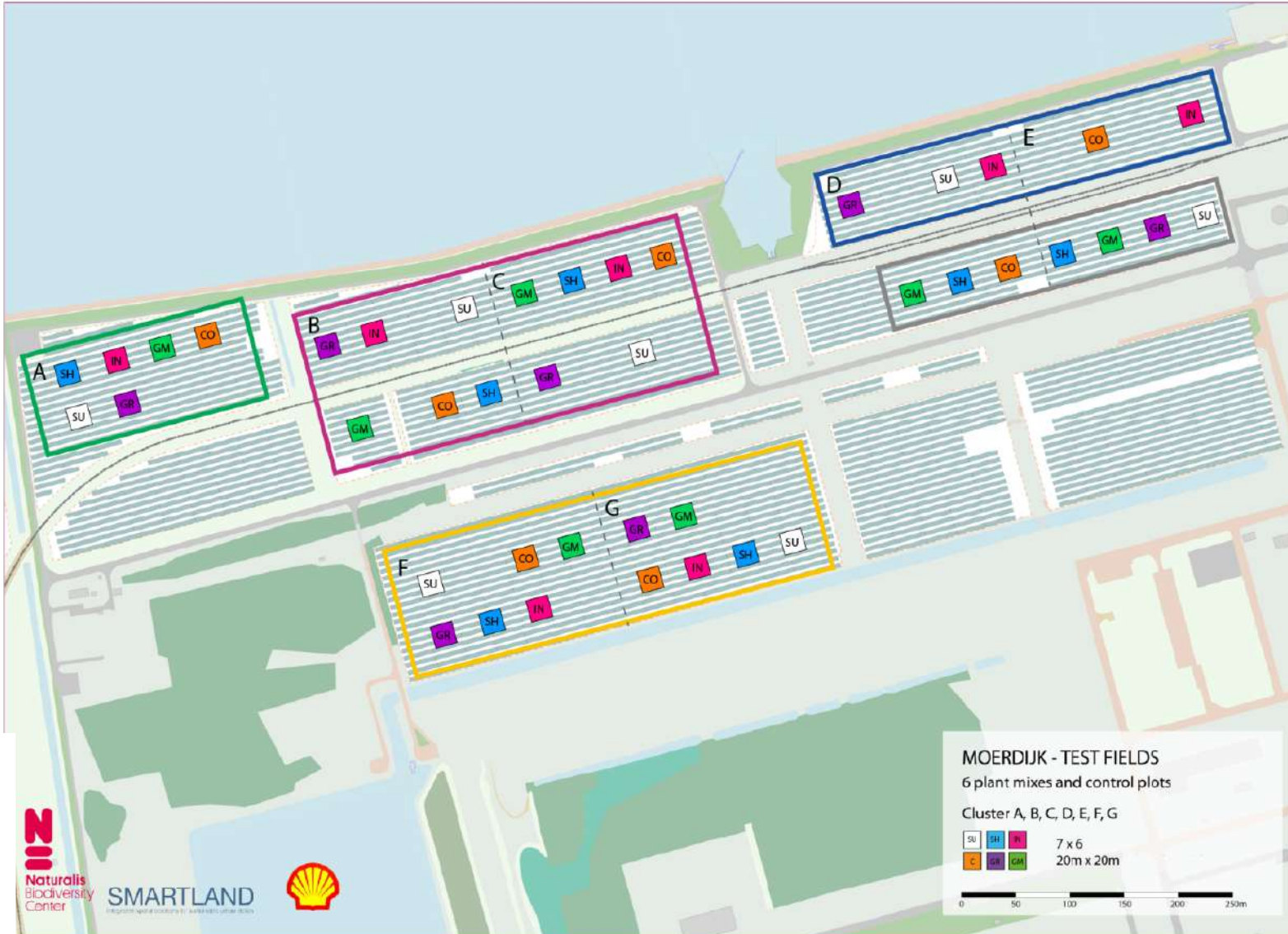


SOLAR PARK MOERDIJK; RESEARCH



SOLAR PARK MOERDIJK; RESEARCH

Experiment scheme



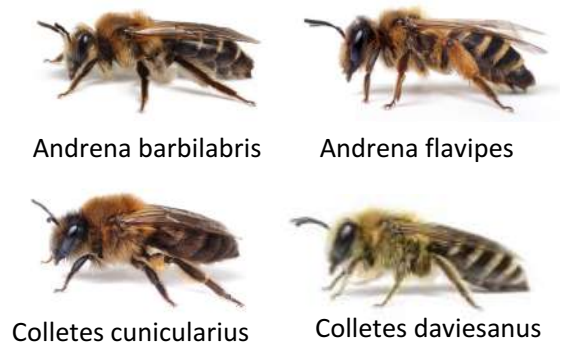
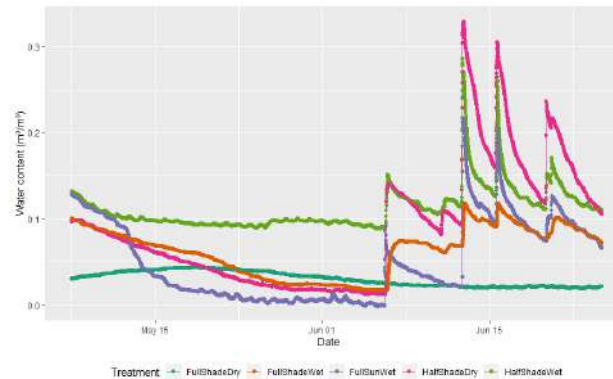
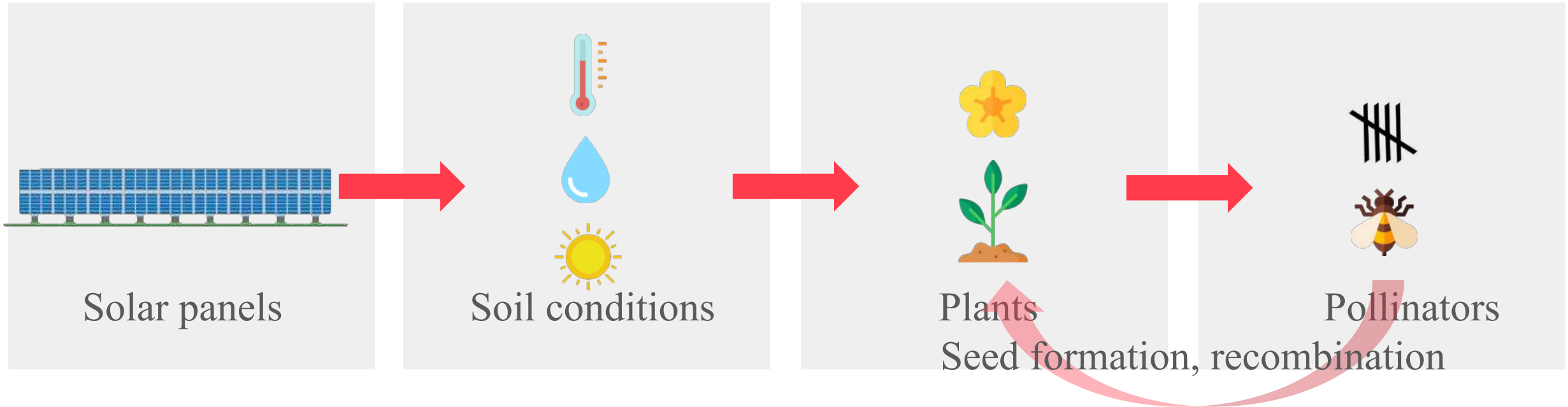
42 plots

20 x 20 meter plots

Different seed mixtures

5 soil sorts

Effects of shadow



Provisional results First year: Seed mixtures

Seed mixture	Amount of germinated species of plants	Of which blooming
Industrial	5	4
Eco Sun	1	0
Eco Shade	3	0
Green Manure	6	4
Grasses	3?	0



42 and counting!

Species found in Shell Moerdijk

Michael & Mandy Fritzsche



Andrena barbilabris



Andrena flavipes



Andrena haemorrhoa



Andrena nigroaenea



Andrena ventralis



Bombus lapidarius



Bombus pascuorum



Eupeodes luniger



Colletes cunicularius



Colletes daviesanus



Dasypoda hirtipes



Halictus tumulorum



Lasioglossum calceatum



Episyrphus balteatus



Eupeodes corollae



Helophilus trivittatus



Lasioglossum pauxillum



Lasioglossum punctatissimum



Lasioglossum semilucens



Lasioglossum sexstrigatum



Lasioglossum zonulum



Scaeva pyrastris



Sphaerophoria rueppelli



Sphaerophoria scripta



Apis mellifera



Lasioglossum leucozonium



Sphecodes albilabris



Bombus pratorum



Bombus terrestris complex



Melangyna lasiophthalma



Syrphus ribesii



Epistrophe sp.

Opportunities for BIODIVERSITY in SOLAR PARKS:

1. South facing panels give shade, but leave enough light for plant growth
2. Soil humidity partly disturbed, but also buffered by shading
3. Resulting microclimate different, but viable, shade vegetations still developing
4. Plantgrowth everywhere, flowering mostly in sunny strips
5. Many insects counted, with high abundance and high biodiversity
6. Moerdijk special situation (diverse vegetation as start), research on agricultural fields prepared

A photograph of a solar farm with rows of blue photovoltaic panels tilted towards the sun. The panels are mounted on metal frames in a grassy field filled with small purple and yellow wildflowers. Numerous butterflies, including yellow and orange ones, are scattered throughout the scene, some on the panels and others in flight against a backdrop of white clouds and a blue sky.

THANK YOU FOR YOUR ATTENTION!

Special findings



Anthidiellum strigatum
kleine harsbij
vrij algemeen



Globaal overzicht
naar Peeters et al. 2012