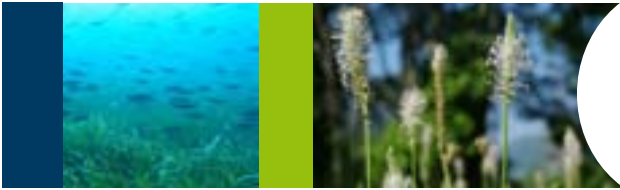




EUROPEAN CONSERVATION
FOR THE 21st CENTURY





Partners



Ingolf Kuhn,
Jennifer Hauck,
Oliver Schweiger

Veiko
Lehsten

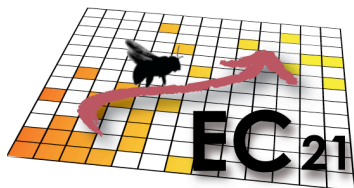
Uno
Wennergren



Regan Early

David
Vieites

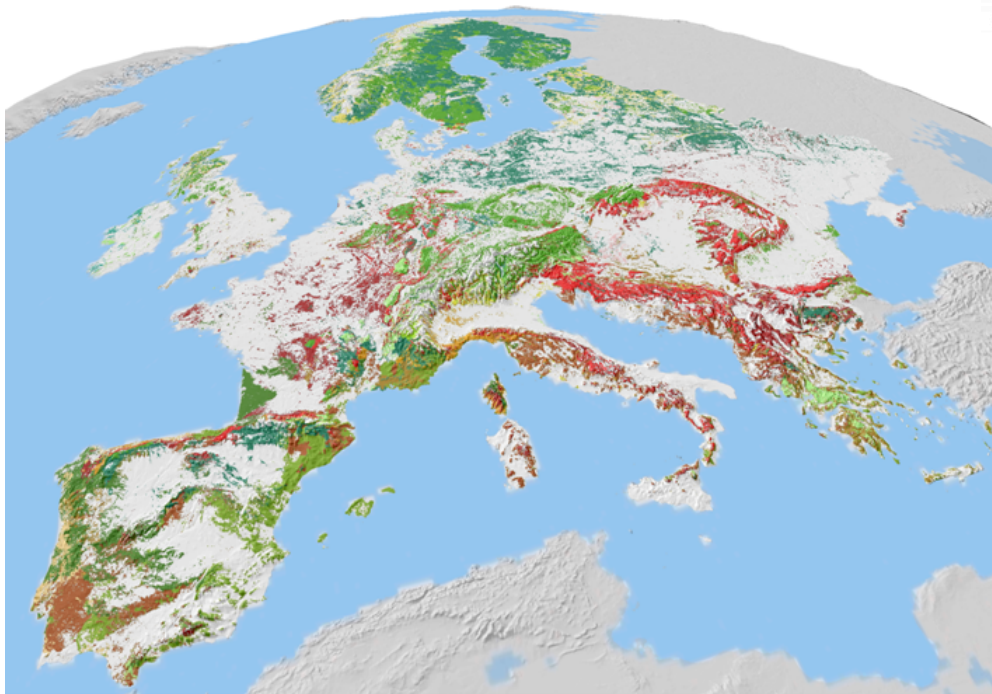
Xavier
Morin



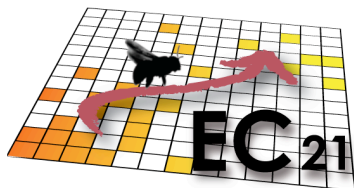
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Problem

Biodiversity crisis is EU-wide –
policy response must be as well



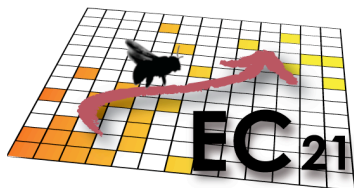
Biodiversity dynamics – species,
community & ecosystem
interactions – are local



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Problem

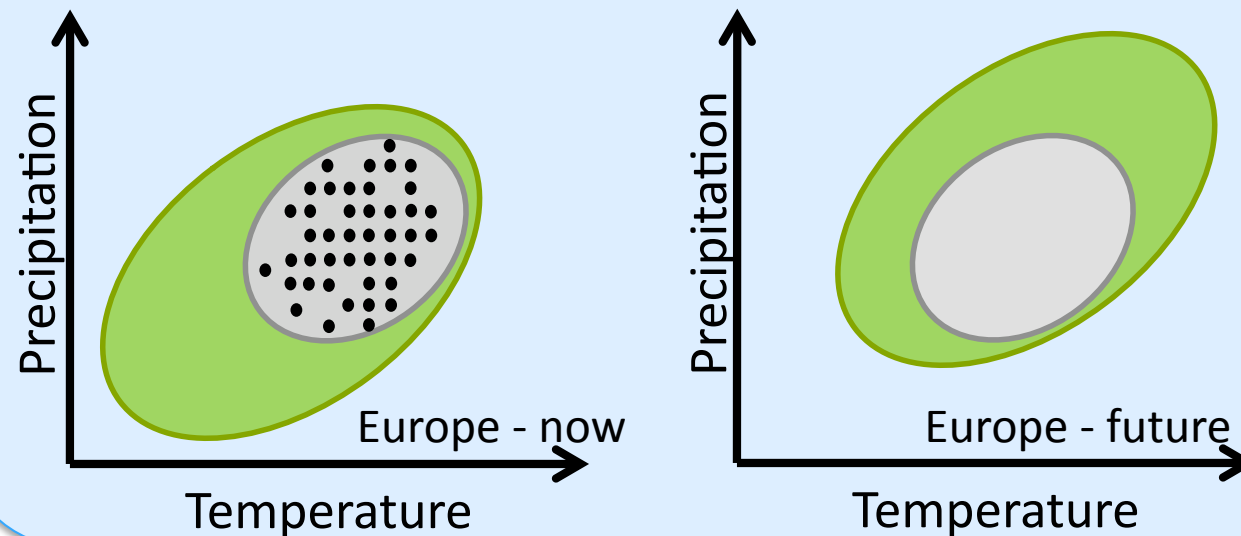
EU-wide
biodiversity
& policy scenarios
under global change



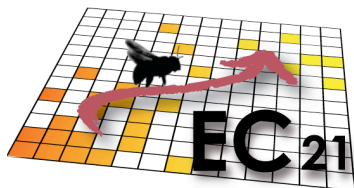
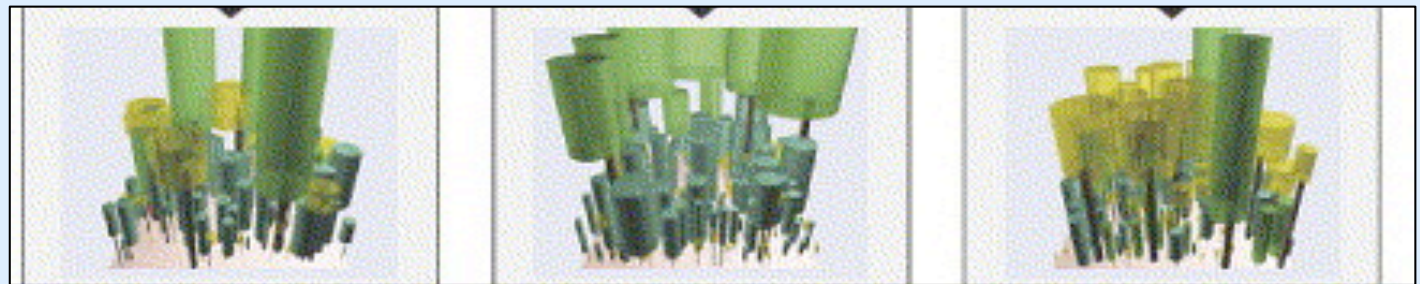
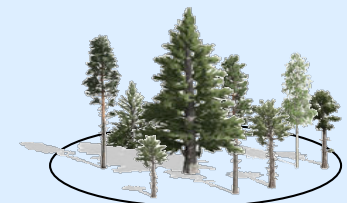
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Tools for large scales

SDMs – Species distribution Models



DVMs – Dynamic Vegetation Models

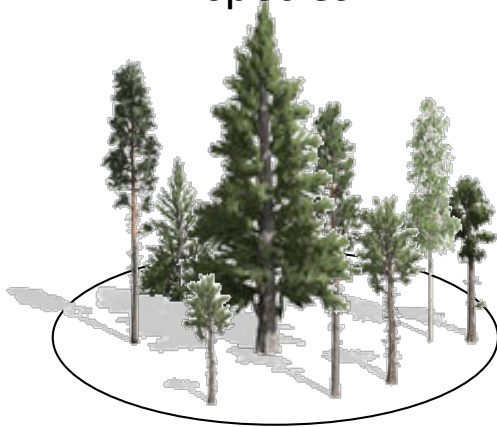


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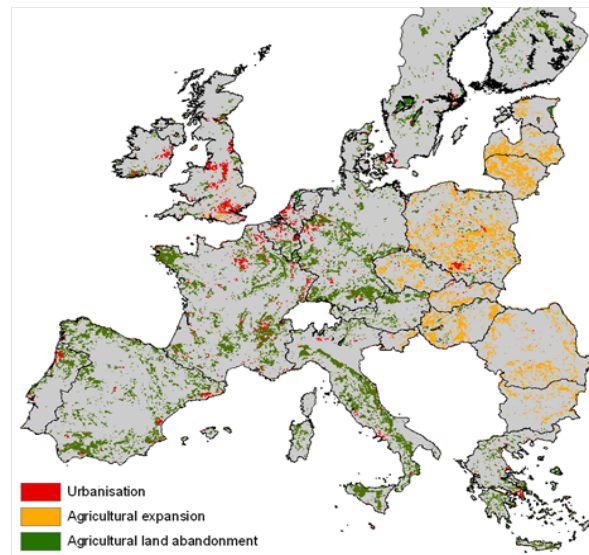
WP1

DVM - LPJ-GUESS

Models growth of 20
dominant woody plant
species



21st century land-use
forecasts (CLUE)



Dispersal



21st century shifts in vegetation community
structure Europe-wide, 1km resolution,



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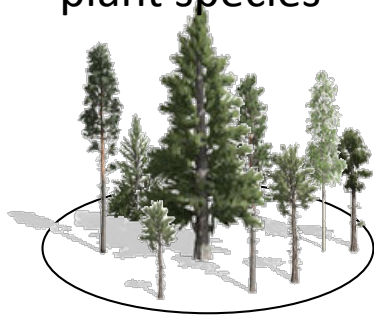
Lund



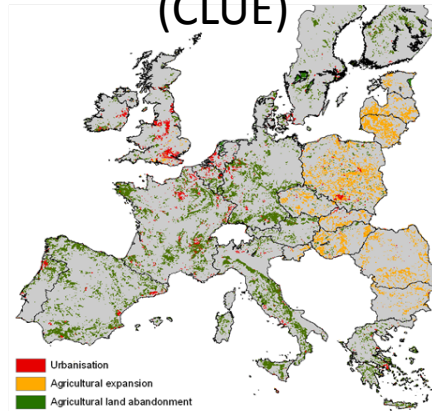
WP1

DVM - LPJ-GUESS

Models growth of 20 dominant EU woody plant species



21st century land-use forecasts (CLUE)

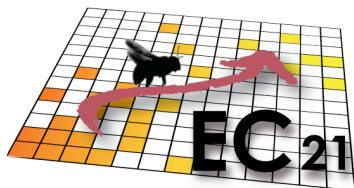


Dispersal



Simulate ecosystem services: crop and timber yields + carbon sequestration, erosion-control, and groundwater recharge

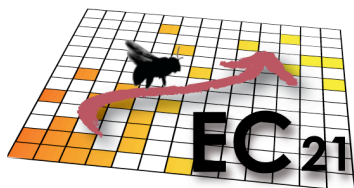
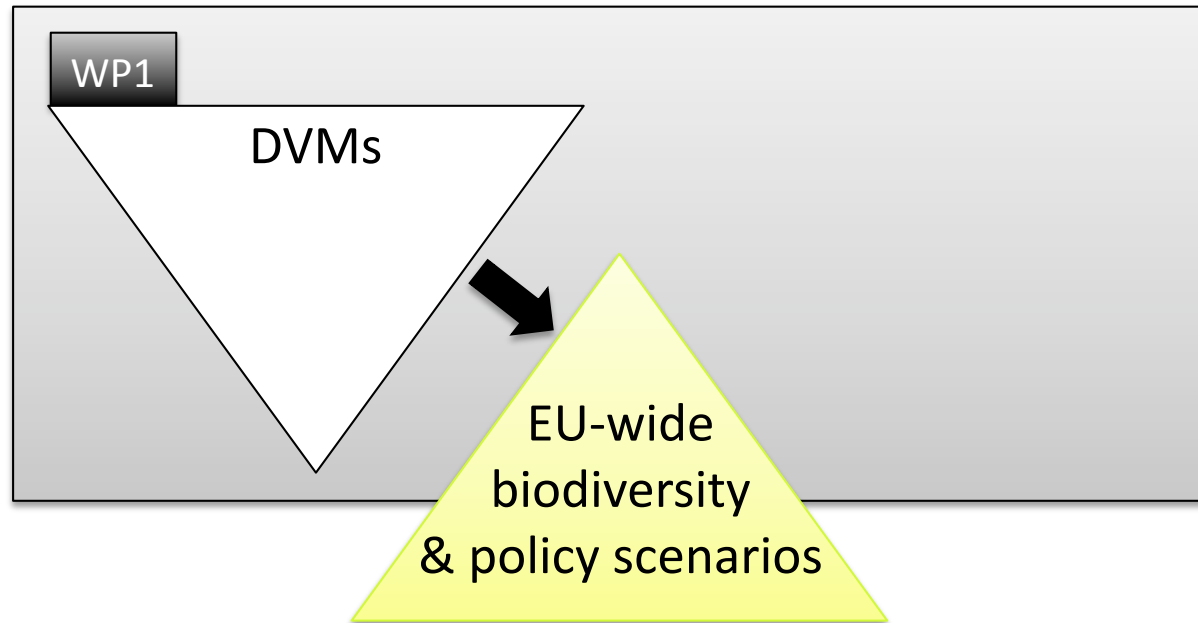
Evaluate resilience & tipping points in the response of ecosystem services to habitat fragmentation, climate change, and increasing CO₂.



EUROPEAN CONSERVATION
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Workplan



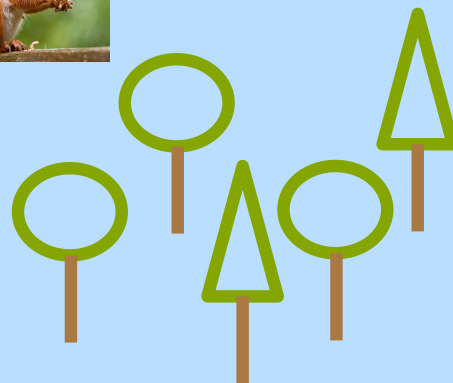
EUROPEAN CONSERVATION
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WP2

Coupling climate and land-use change

Climate is suitable

'Habitat' is suitable



SDMs - European plants
and vertebrates



EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

Portugal



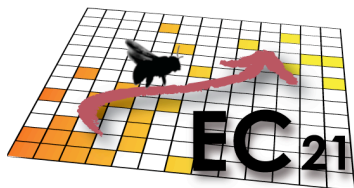
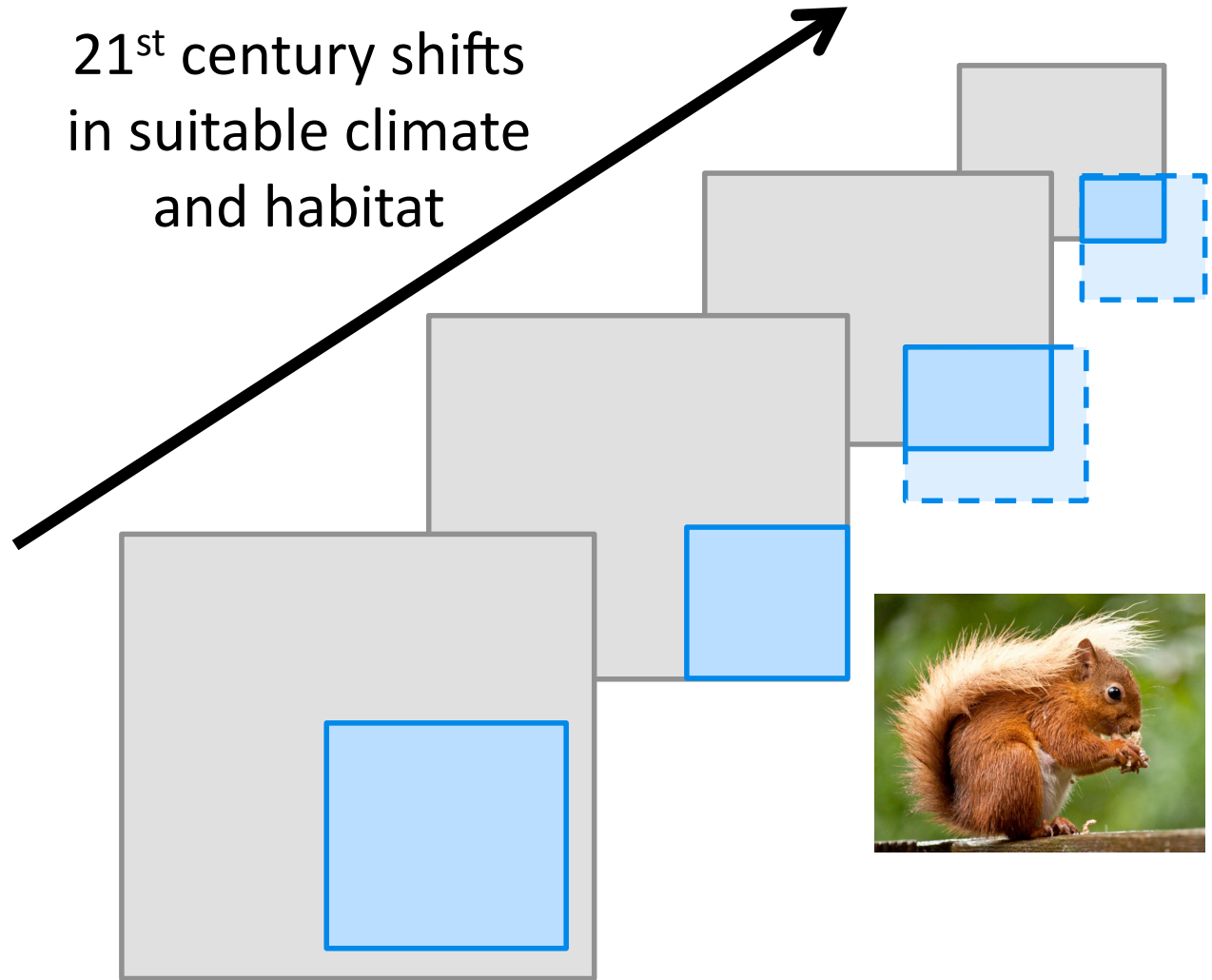
WP2

Coupling climate and land-use change

Suitable climate
predicted with
climate forecasts +
SDMs

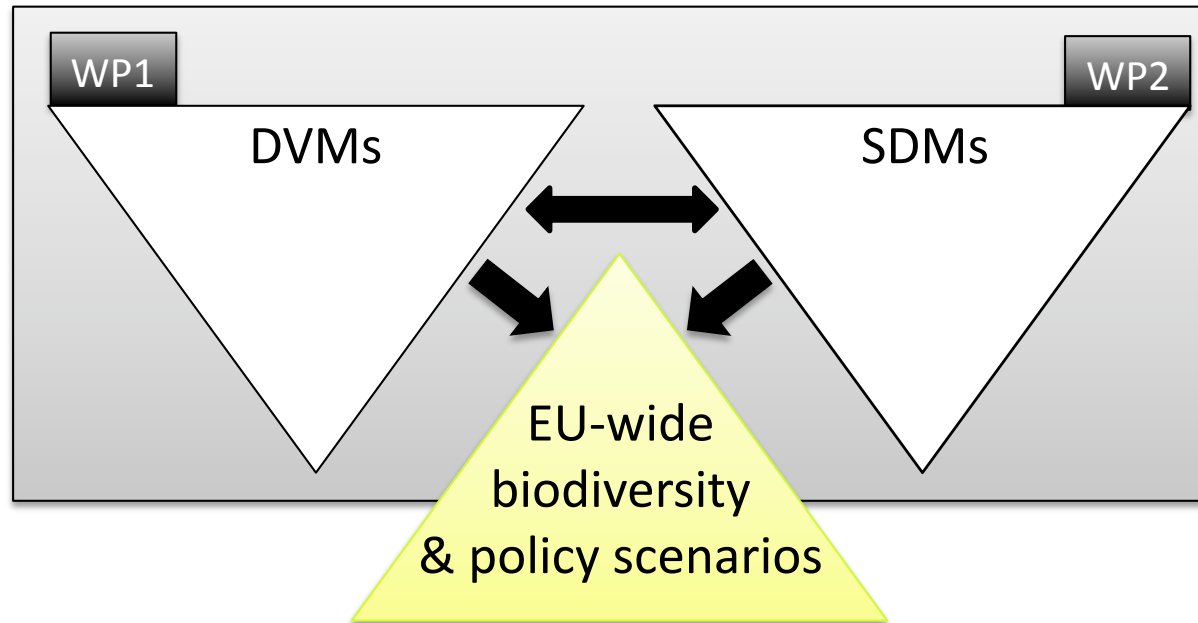
Suitable habitat
predicted using
LPJ-GUESS DVM

21st century shifts
in suitable climate
and habitat



EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

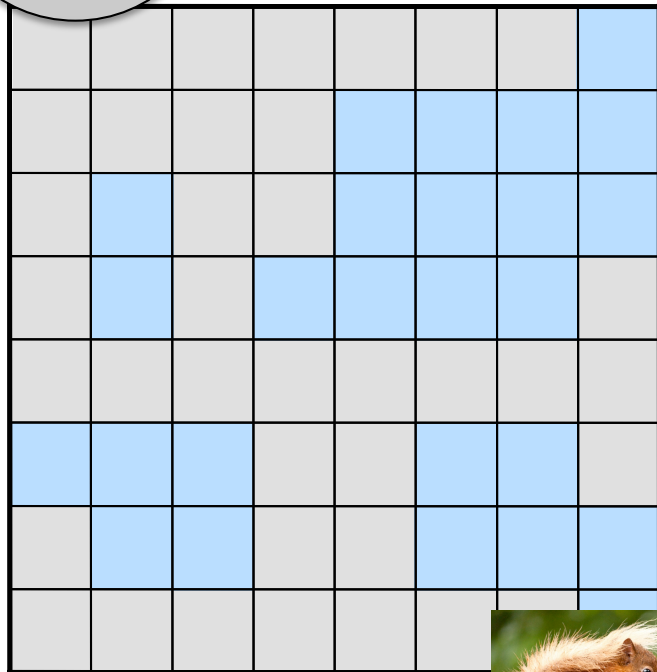
Workplan



EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

WP5

Landscape effects: theory and forecasts

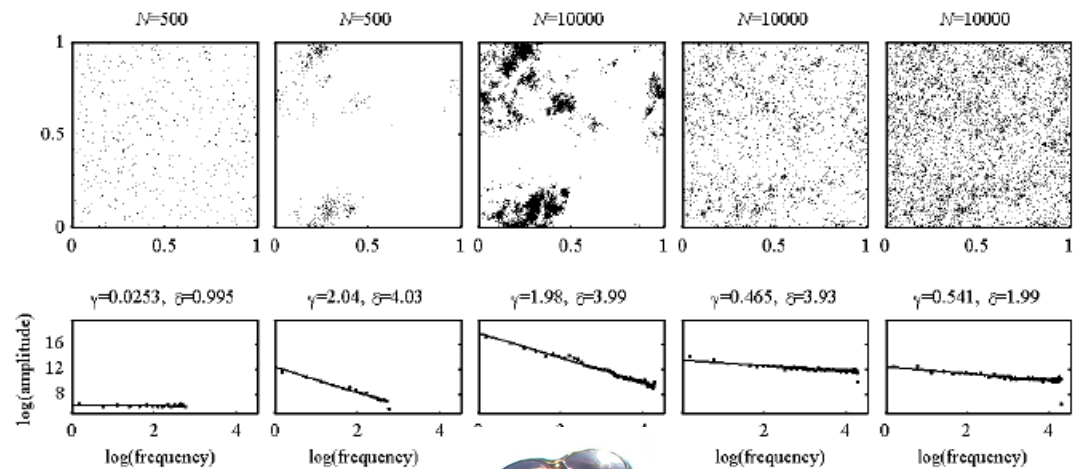


Suitable climate



Suitable climate & vegetation

1km vegetation forecasts → effects of habitat fragmentation across Europe



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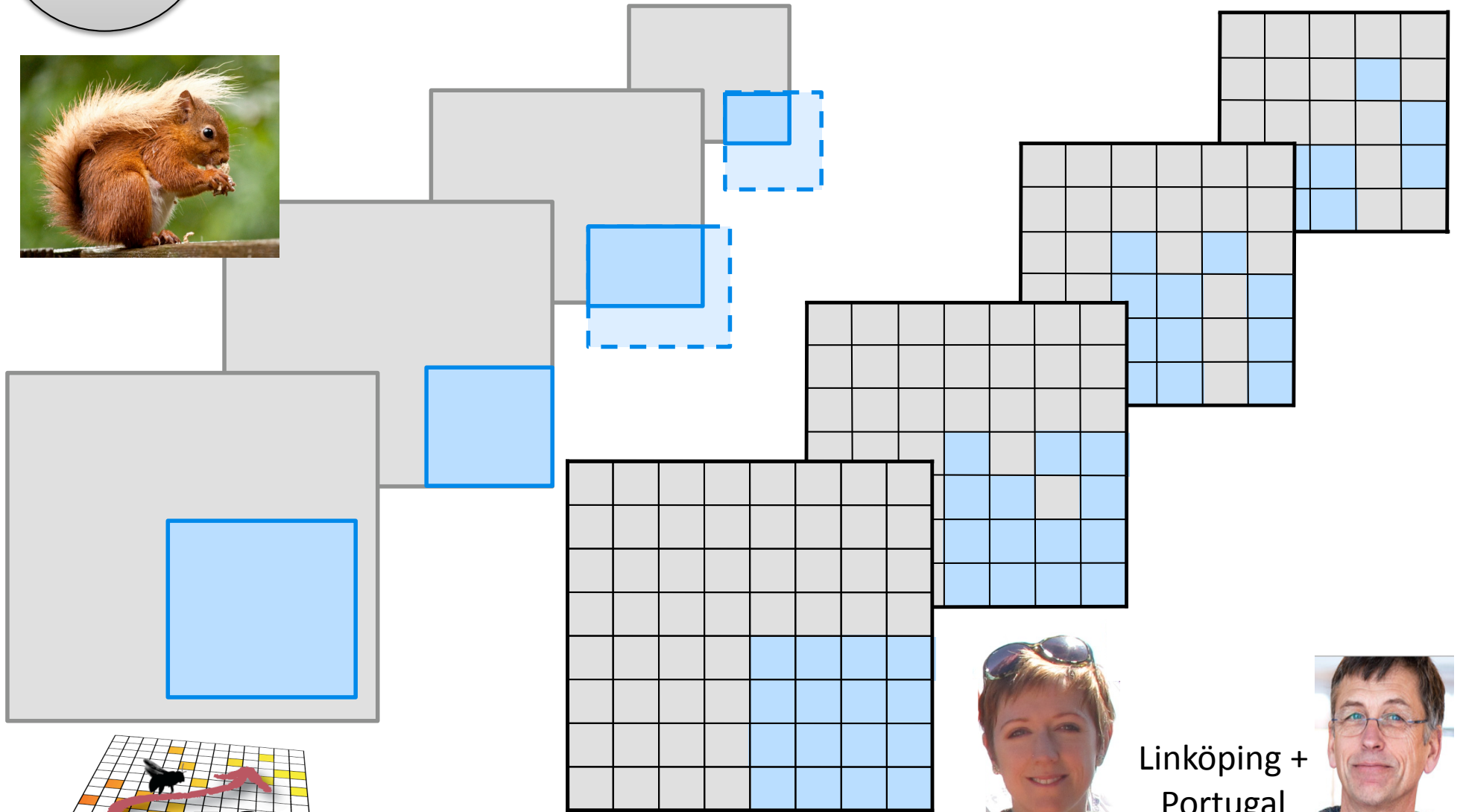


Linköping +
Portugal



WP2+5

Landscape effects: theory and forecasts



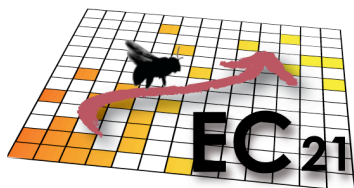
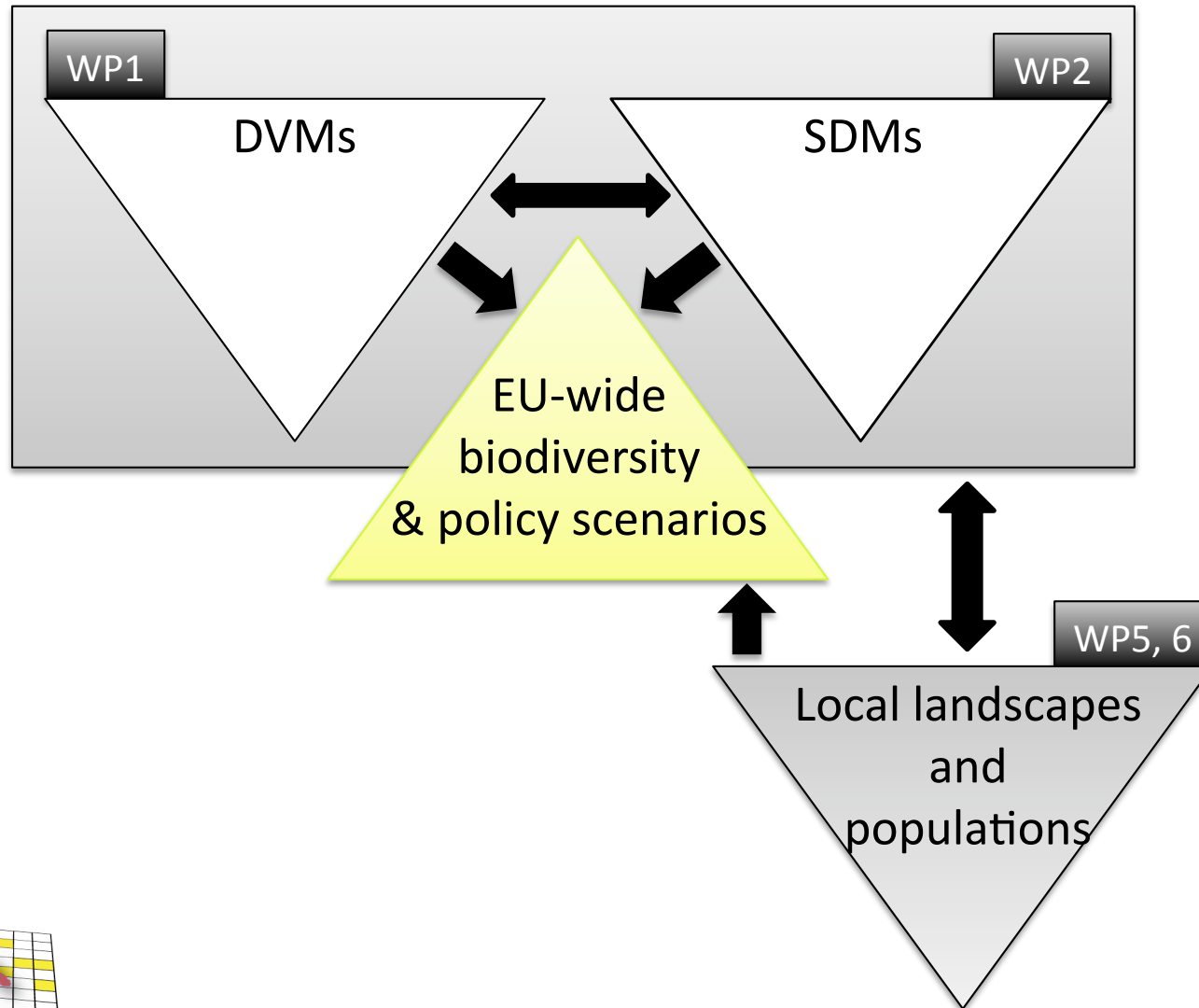
EUROPEAN CONSERVATION
FOR THE 21ST CENTURY



Linköping +
Portugal



Workplan



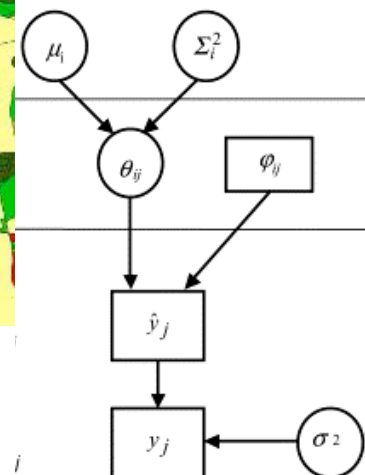
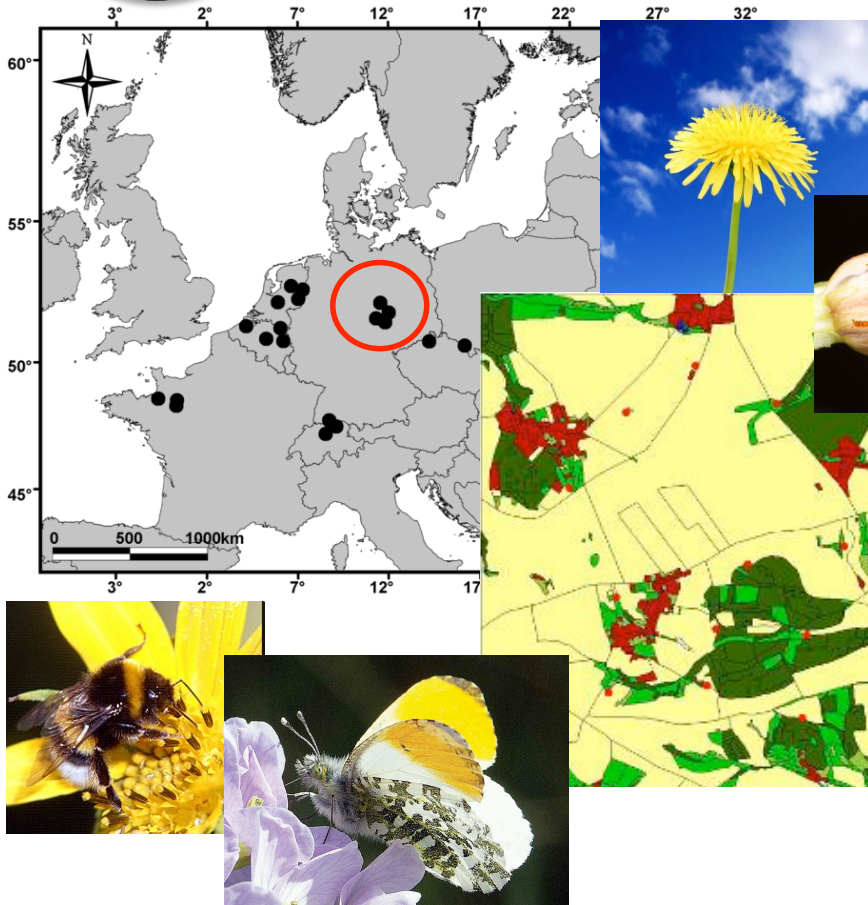
EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

WP6

Landscape effects: empirical

Pollinators, natural enemies and
plants in an agricultural landscape

Hierarchical models
integrate landscape
structure and
continental-scale
climate data →
local suitability



Germany



WP6

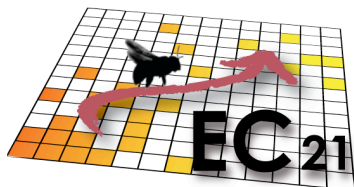
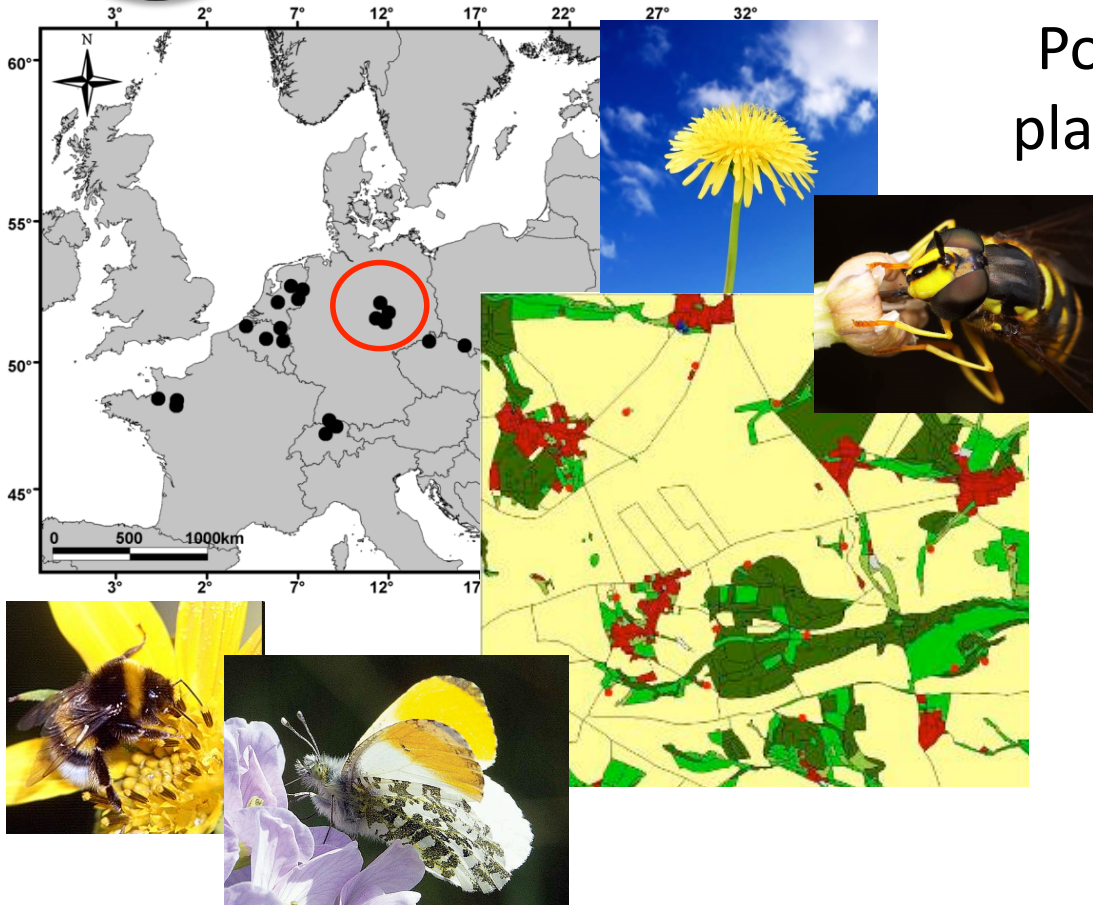
Landscape effects: empirical

Pollinators, natural enemies and
plants in an agricultural landscape

Population studies
measure effect of
landscape structure under
climate change:

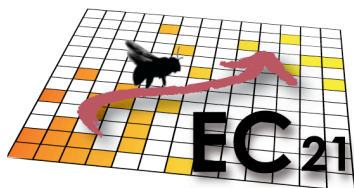
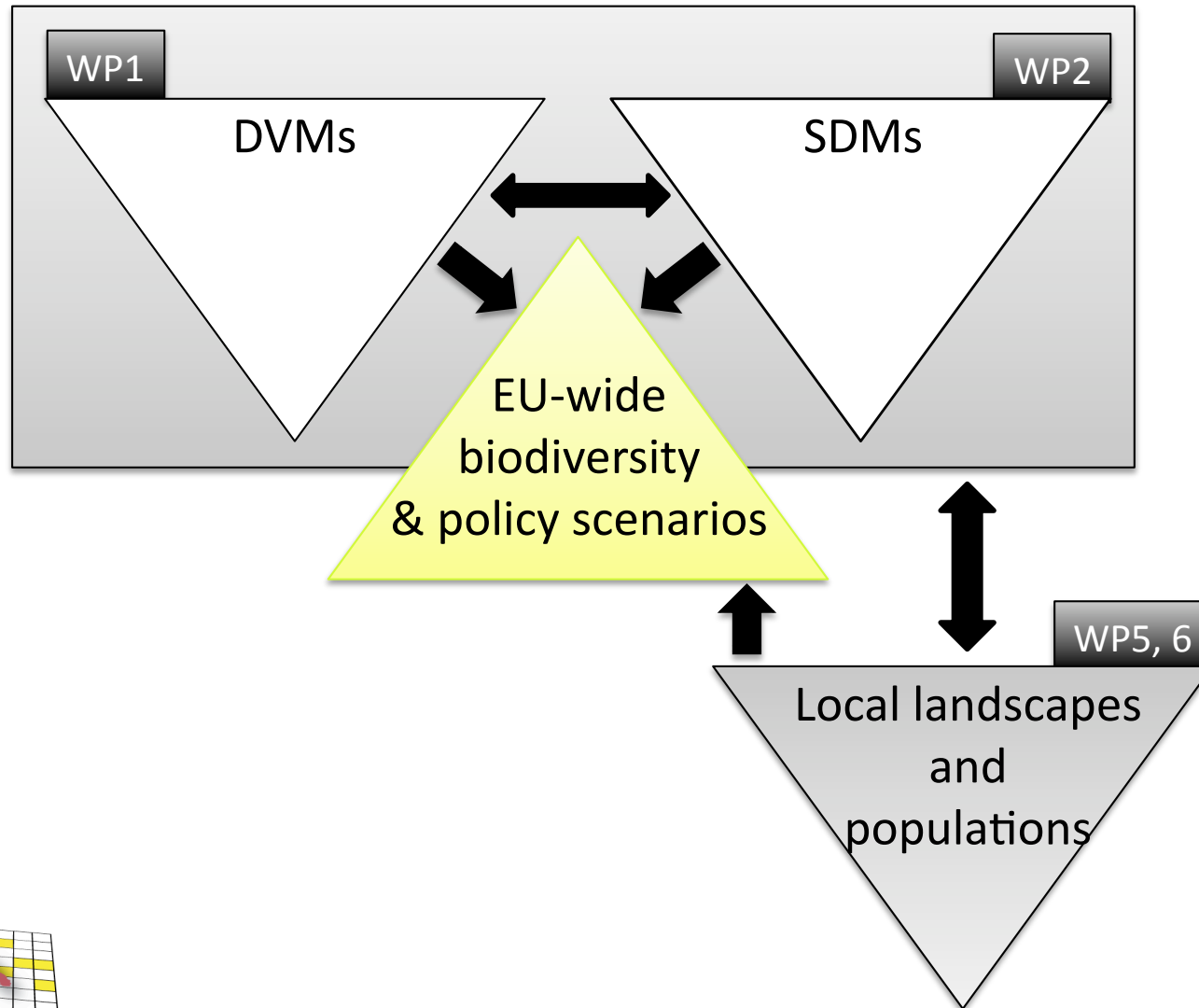
- population robustness *in situ*
- permeability to range shifts

Germany



EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

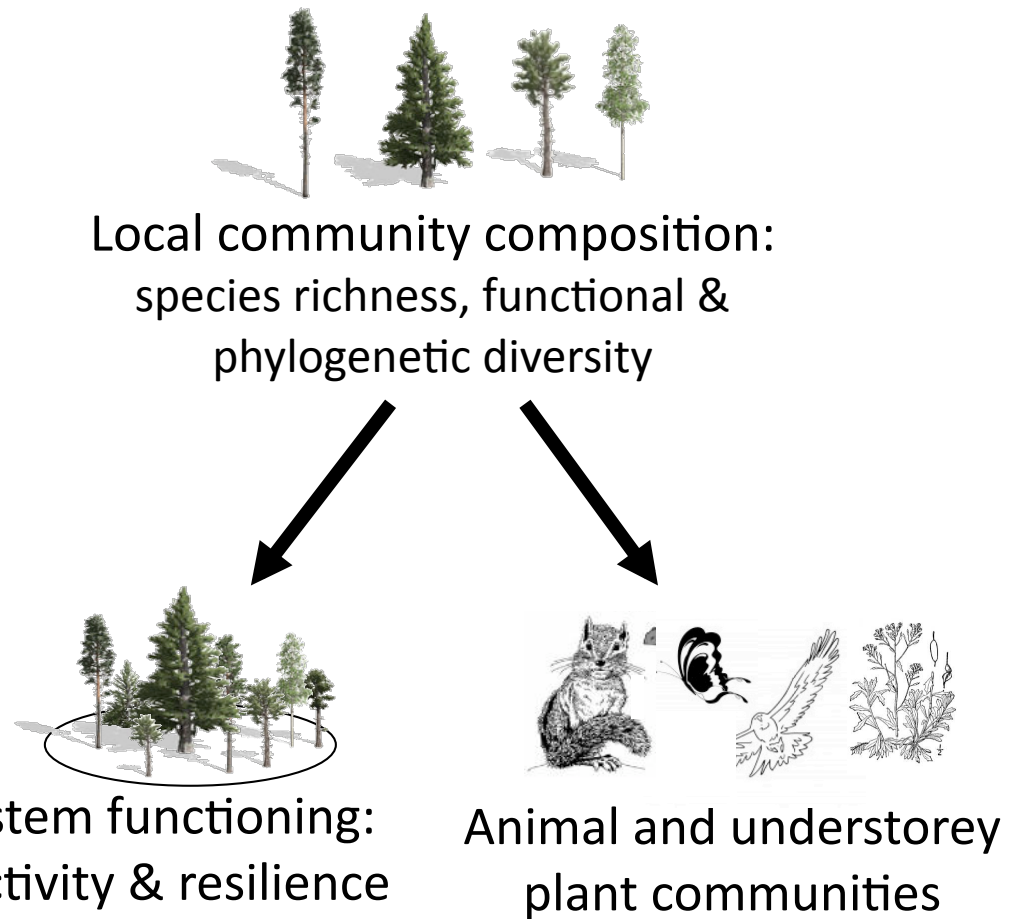
Workplan



EUROPEAN CONSERVATION
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Forests:

- >25% of European land
- Major providers of ecosystem services

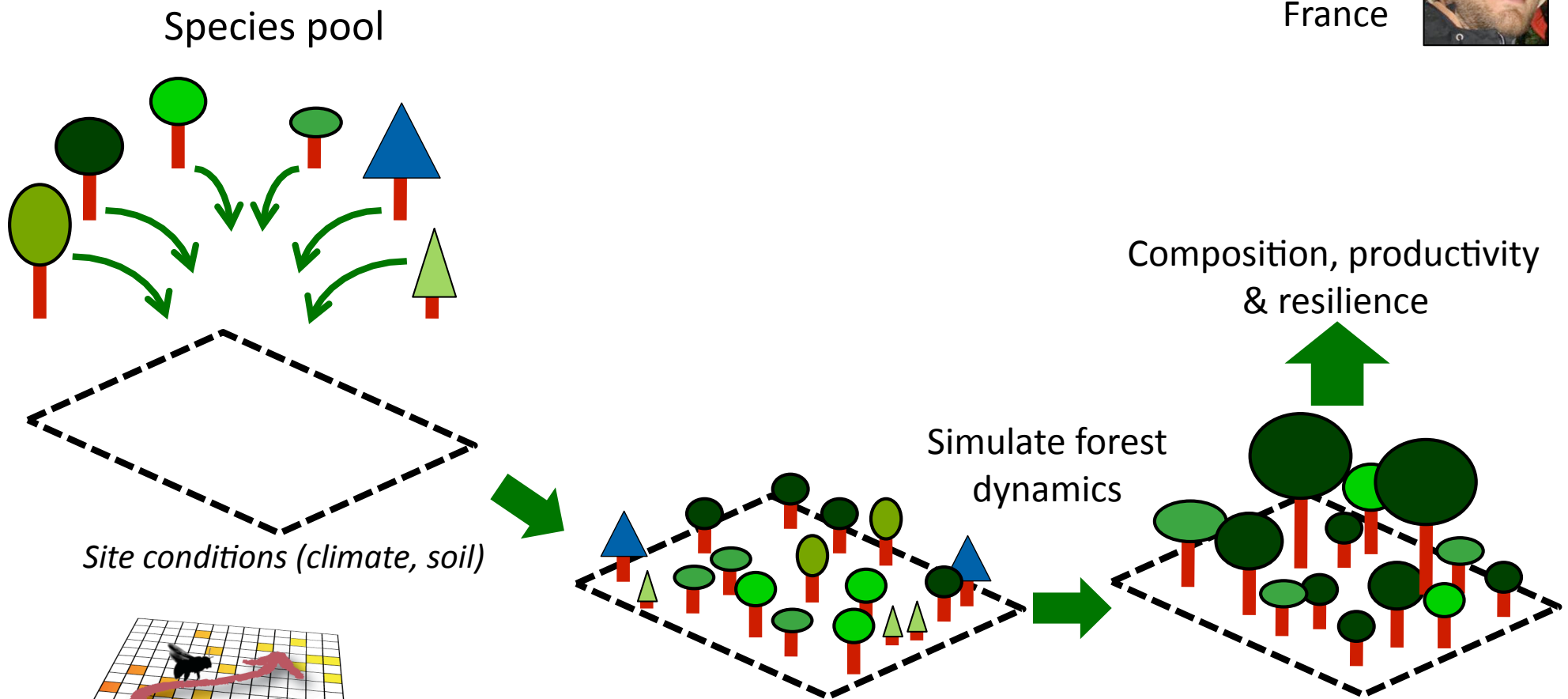


WP3

Community & ecosystem - empirical

ForClim: individual-based forest succession model

France



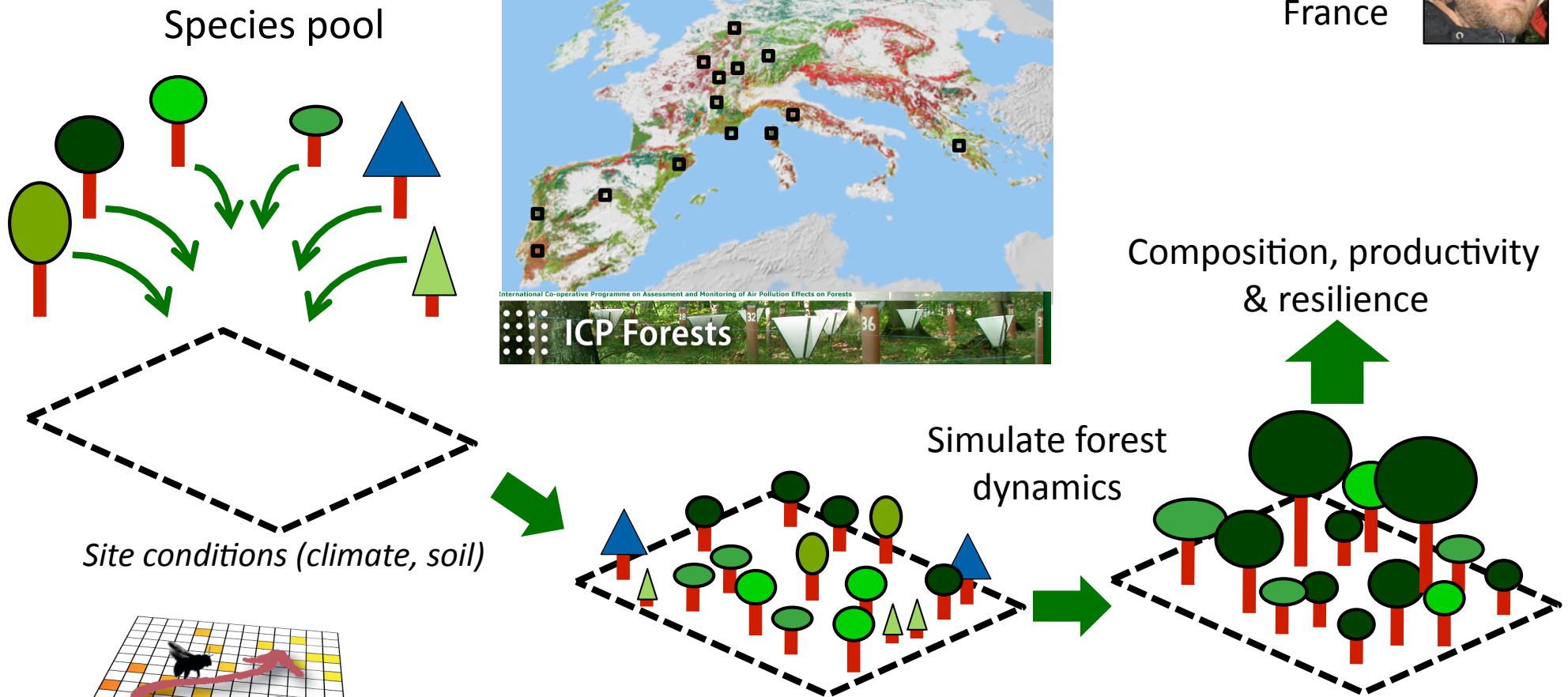
EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

WP3

Community & ecosystem - empirical



France



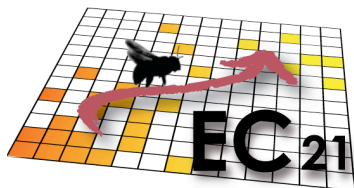
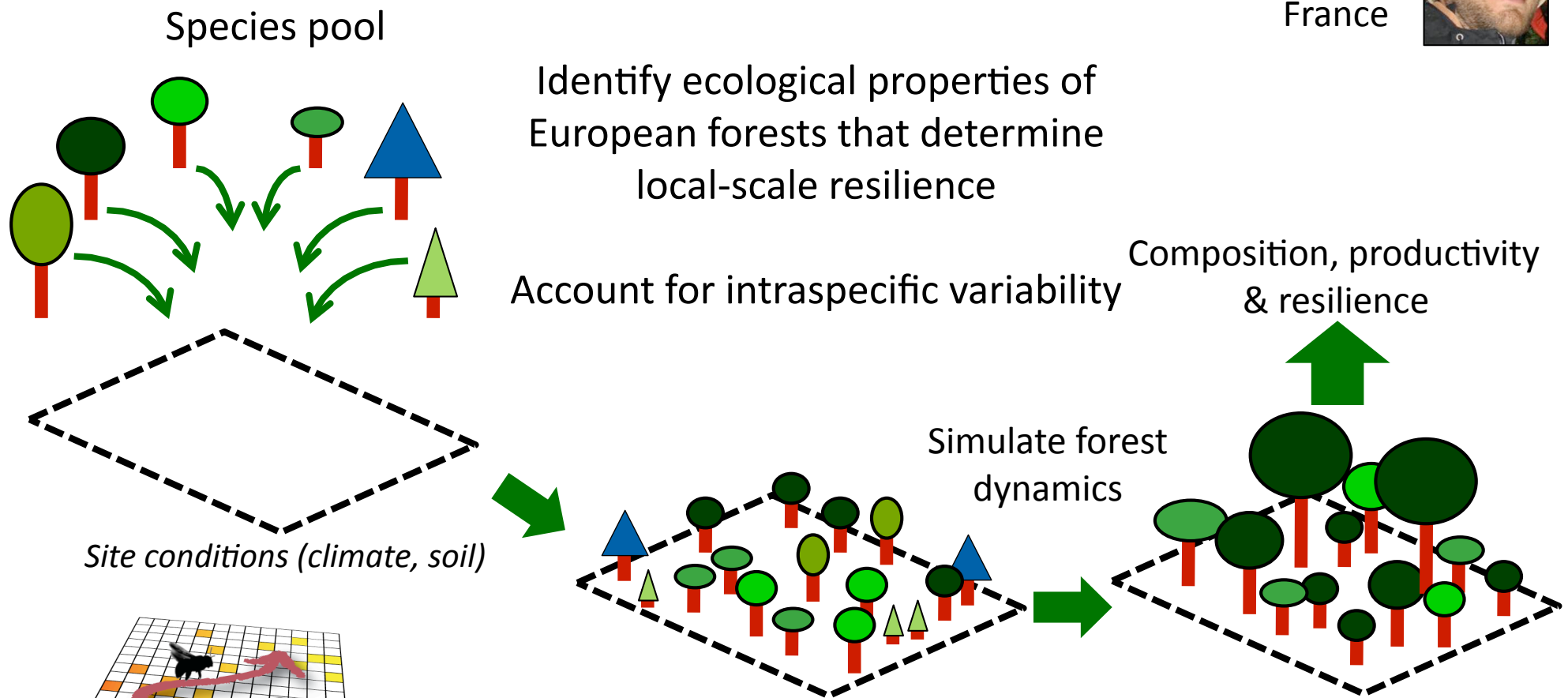
EUROPEAN CONSERVATION
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WP3

Community & ecosystem - empirical

ForClim: individual-based forest succession model

France



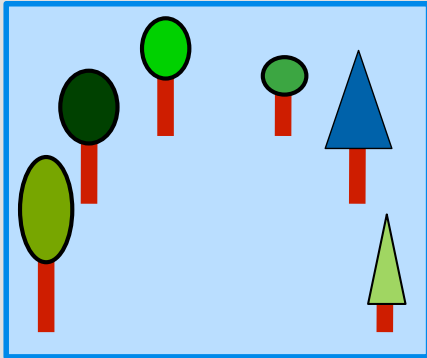
EUROPEAN CONSERVATION
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WP3

Community & ecosystem - empirical

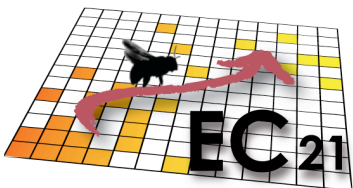
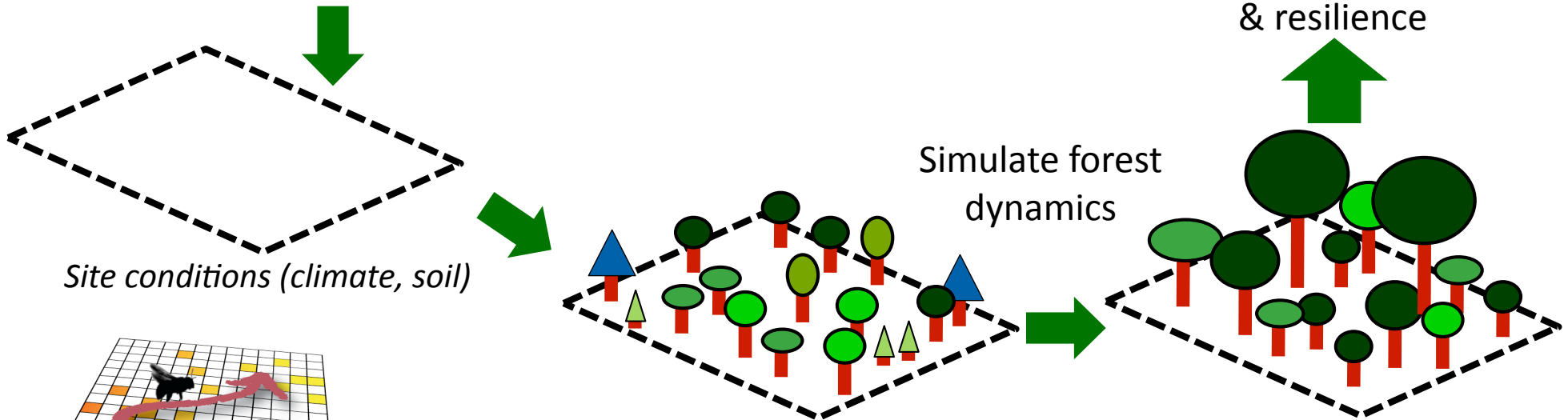
ForClim: individual-based forest succession model

Climate suitable (SDM)



Species pool

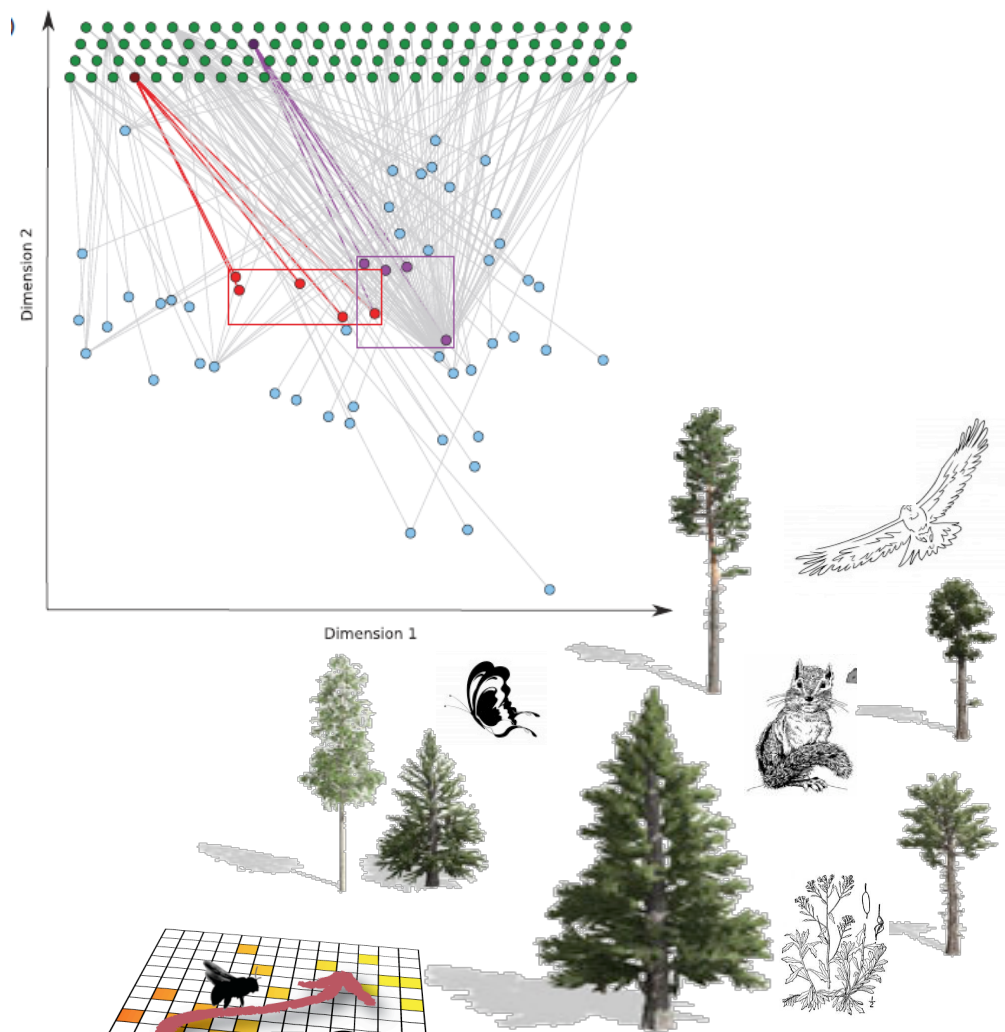
France



EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

WP4+5

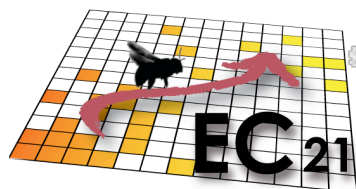
Community & ecosystem – theory



Use functional traits to identify species assemblages in which species identity and functional characteristics might change radically (tipping points)

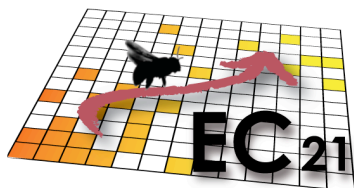
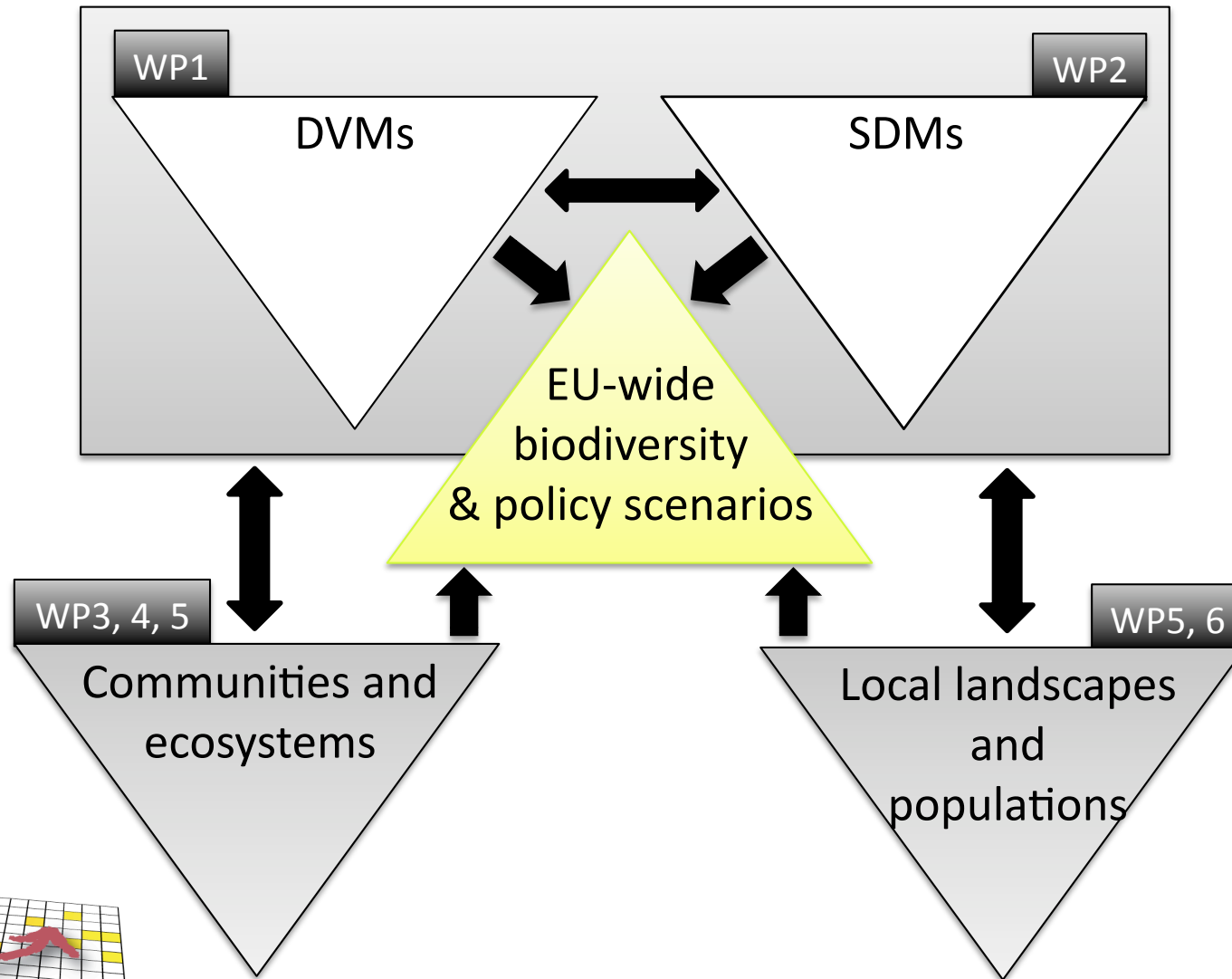


Linköping +
Portugal



EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

Workplan



EUROPEAN CONSERVATION
FOR THE 21st CENTURY

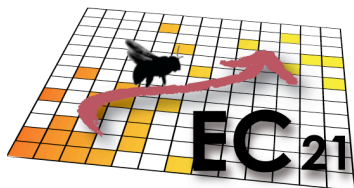


“...a strategically planned and delivered network of high quality green spaces and other environmental features.” (

http://ec.europa.eu/environment/nature/ecosystems/green_infrastructure.htm)

Action 6 of the EU Biodiversity Strategy foresees the development of:

‘... a strategy by 2012 to promote the deployment of GI in urban and rural areas, including through incentives to encourage up-front investments in GI projects and the maintenance of ecosystem services, for example through better targeted use of EU funding streams and Public Private Partnerships’.

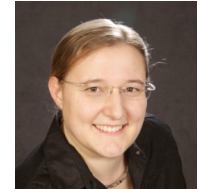


WP6

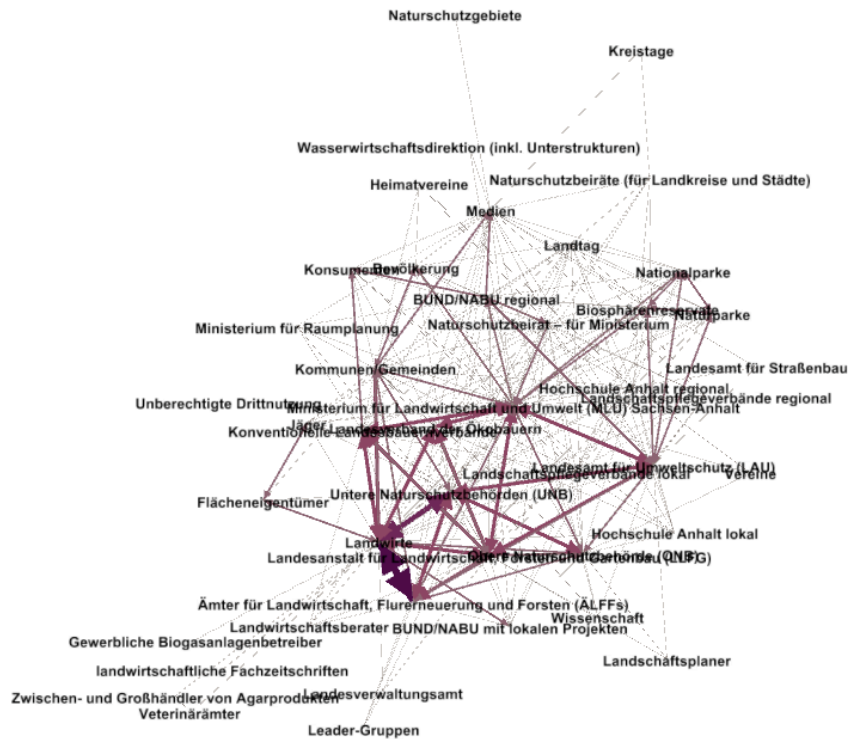
Green infrastructure

Analysis of political framework

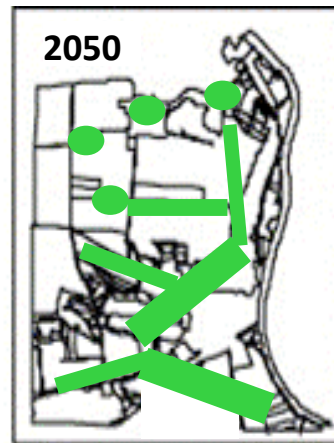
Germany



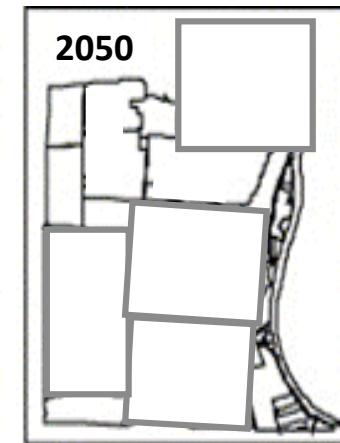
Analysis of stakeholder capacity and willingness to implement



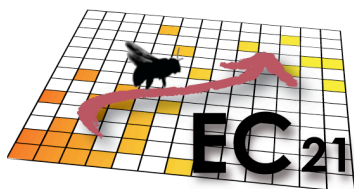
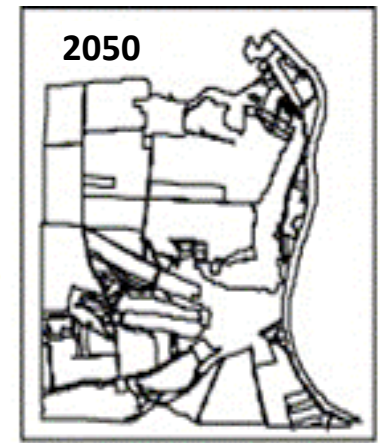
Best case



Worst case

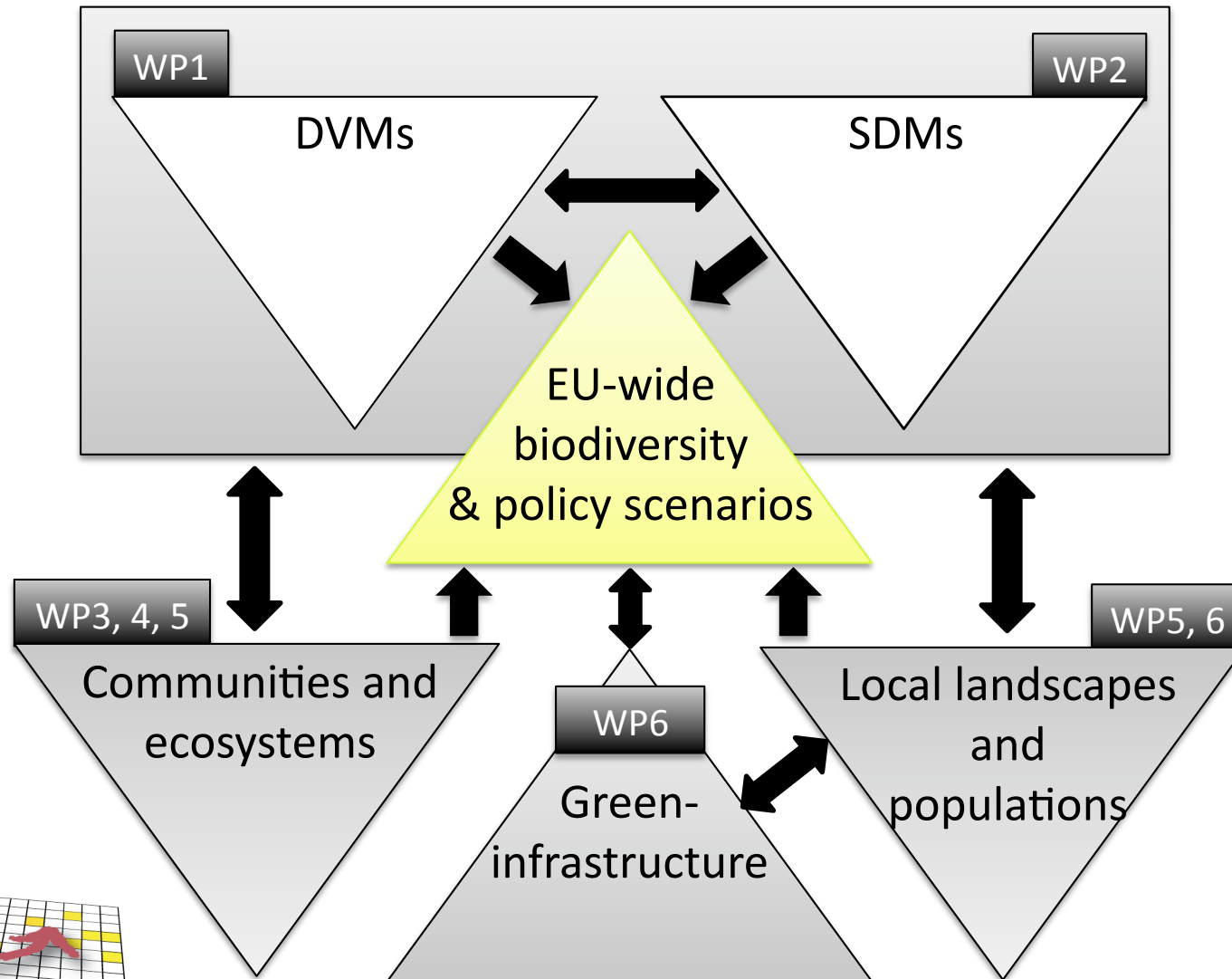


Business as usual



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Workplan



EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

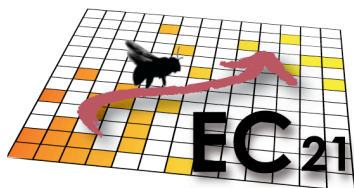
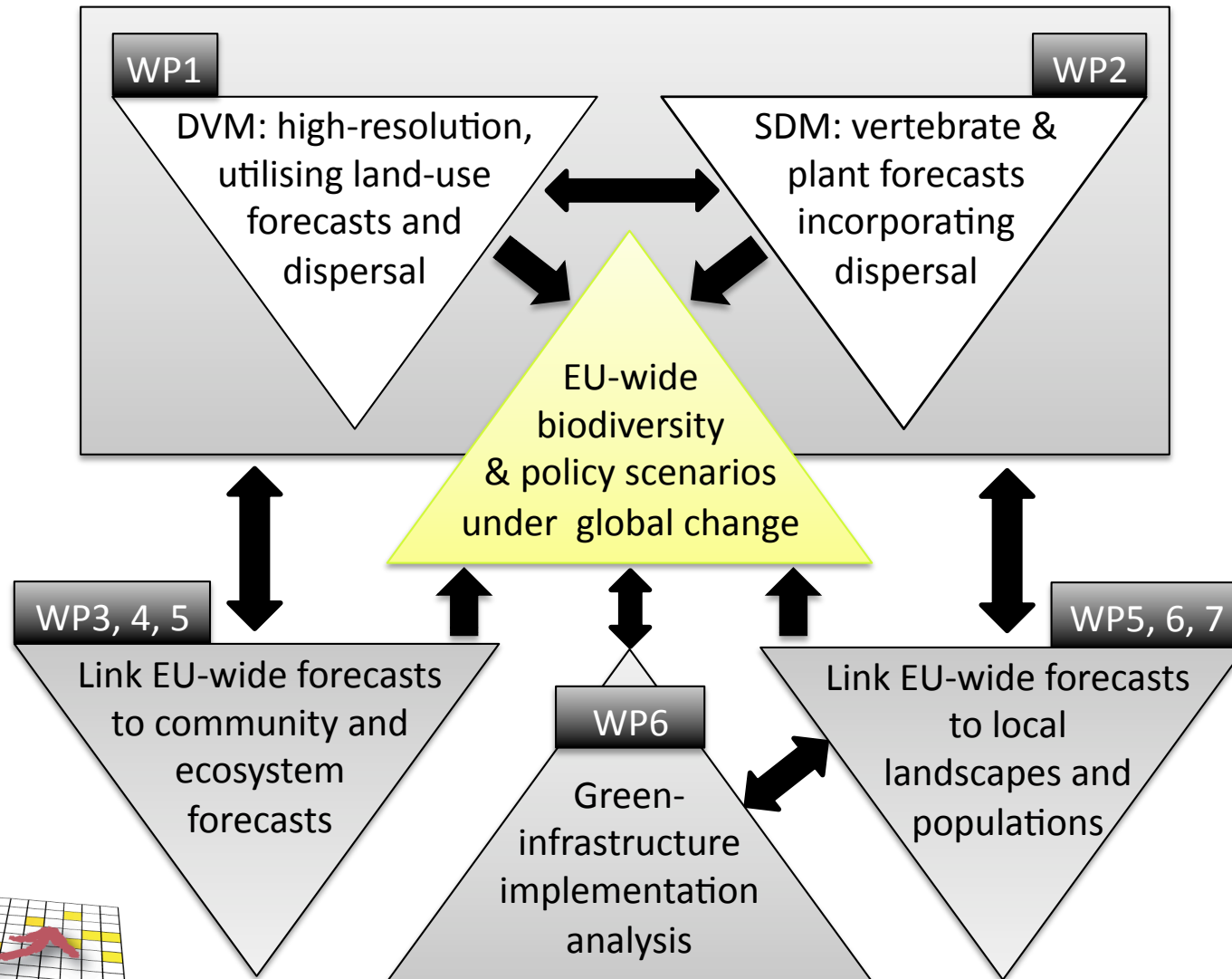


EC21C web page:
www.cibioue.uevora.pt

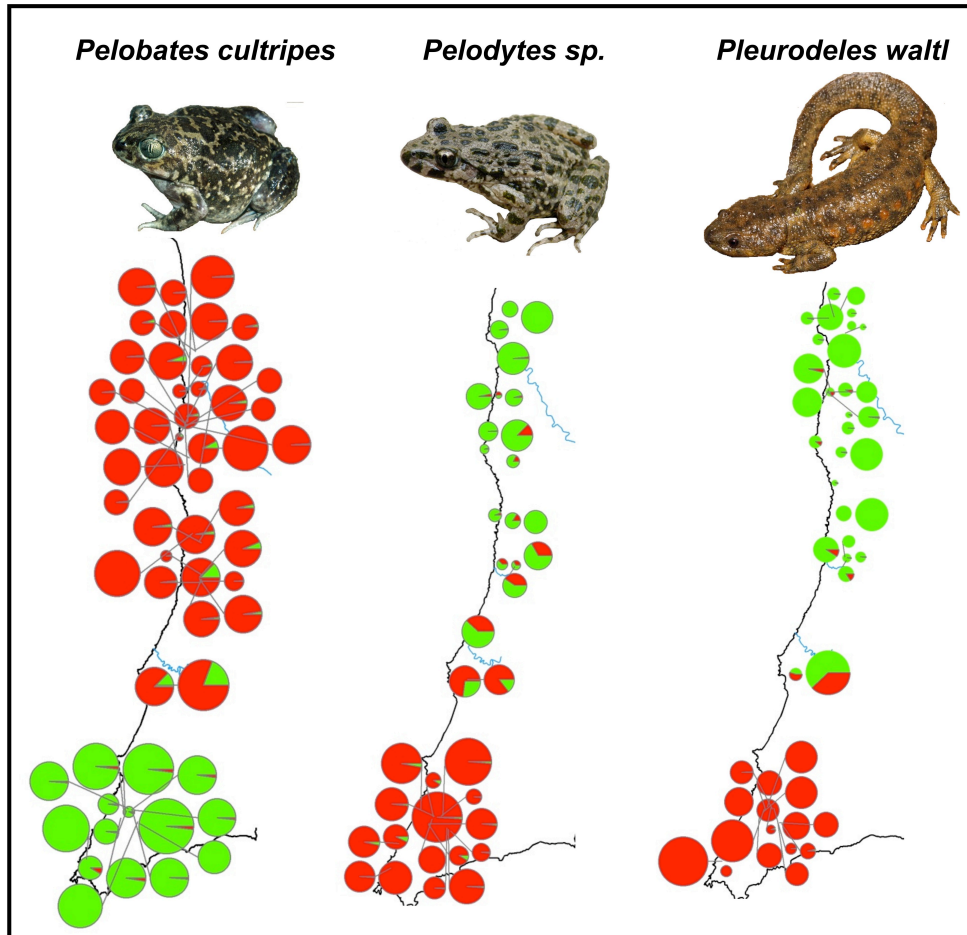


EUROPEAN CONSERVATION
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Workplan

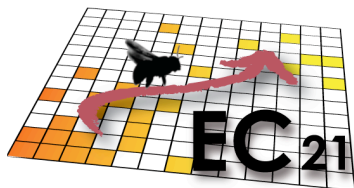


Dispersal



Group effort – collate dispersal estimates from different sources (e.g. observed, range size, population dynamics, population genetics).

Compare and assess potential to inform range shift.



EUROPEAN CONSERVATION
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WP2

Coupling climate and land-use change

Progress report:

Dispersal and vegetation associations largely collected

SDMs

Suitable habitat
predicted using
LPJ-GUESS DVM

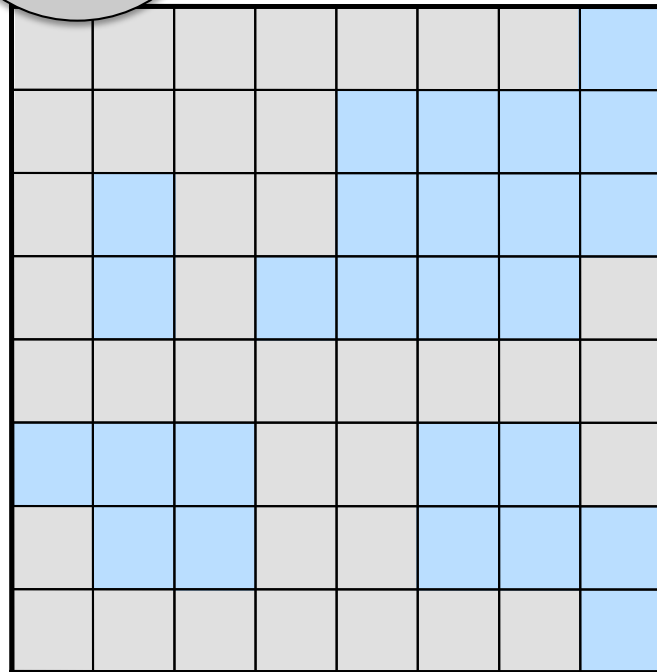


EUROPEAN CONSERVATION
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WP5

Landscape effects: theory and forecasts



Suitable climate



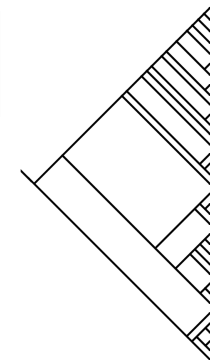
Suitable climate & vegetation

Landscape effects dependent on
population growth rate + dispersal
ability.

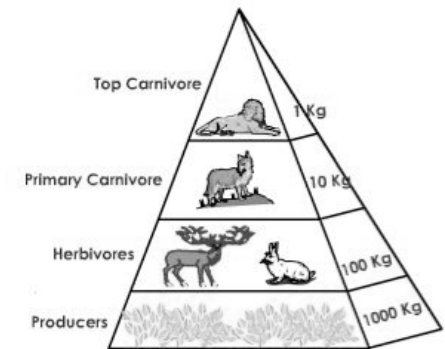
Generalisations across:



Body size



Phylogenies



Trophic level



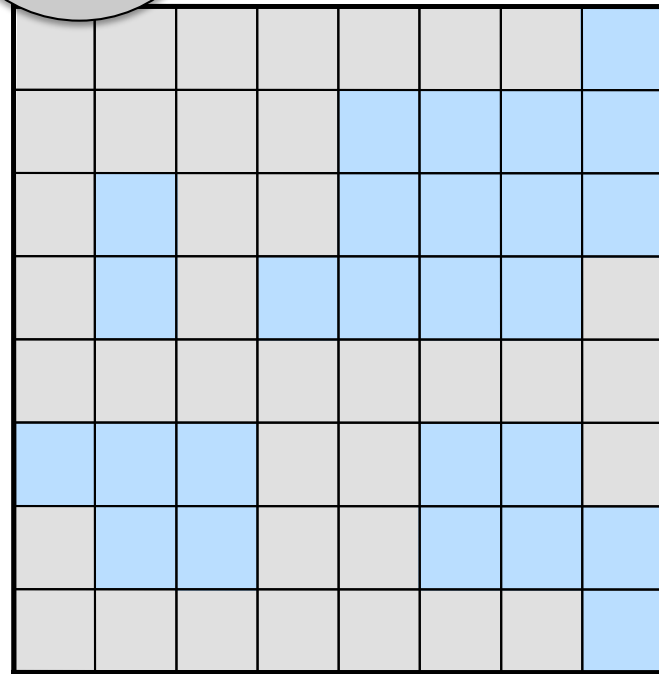
EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

Linköping

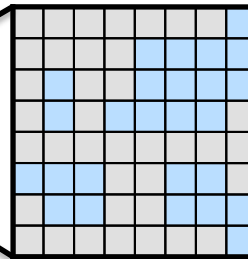
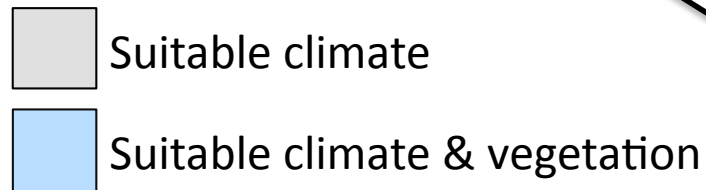


WP5

Landscape effects: theory and forecasts



Landscape effects dependent on
spatial scale?



EUROPEAN CONSERVATION
FOR THE 21ST CENTURY

Linköping



WP6

Landscape effects: empirical

Pollinators, natural enemies and
plants in an agricultural landscape

Progress report

Abundance/activity data for pollinator communities 2010-2013

Habitat maps and microclimate compiled

- permeability to range shifts

Germany



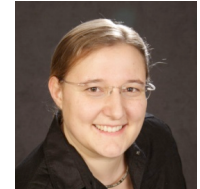
EUROPEAN CONSERVATION
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WP6

Green infrastructure

Analysis of political framework

Germany



Progress report

Stakeholder analysis completed:

Several farmers and farmer associations

Local & regional environmental, planning and agricultural agencies

Land owners

Hunters

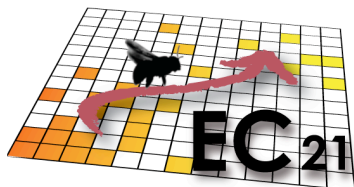
Conservation NGOs

Local communities

Stakeholder workshop – 16th September

Naturschutzgebiete
Kreistage
Mini
Unberechtigt
Fläc
Ämt
Gewerbliche Biogasana
landwirtschaftliche
Zwischen- und Großhändler vo
Veterinäräm

ty and
ss as usual



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