

How to get an ERC grant? Experience with Advanced ERC project

Ecological determinants of tropical-temperate trends in insect diversity

Vojtěch Novotný, Biology Centre, Czech Academy of Sciences

2015 – 2020, Budget EUR 3,428,367 including large equipment EUR 929,000

# Why to apply?

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[illegible]

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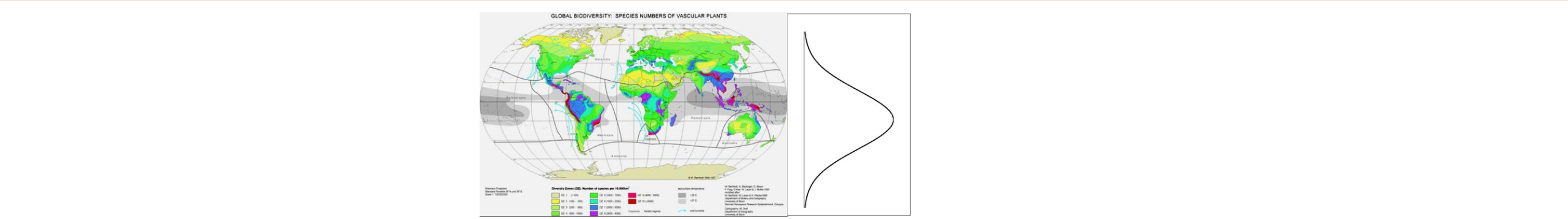
# Why to apply?

The key question to be answered by the proposed project

Why are there so many species in the tropics?

Why are there more insect species in tropical than temperate forests?

Are tropical insects more/less diverse than expected from higher diversity of tropical plants?



The question should be “childish”:

deceptively simple yet of fundamental importance for a wider research field

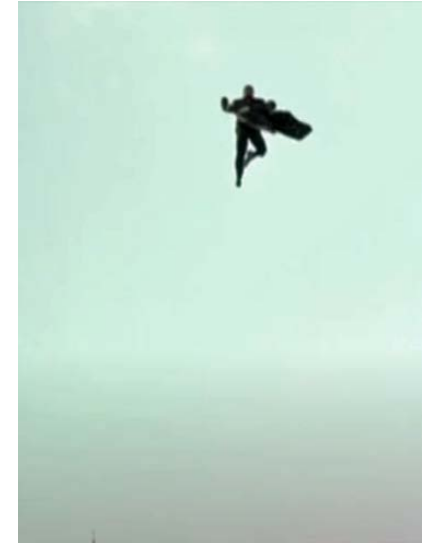
It is a fine balance between the question sufficiently narrow to be answered in 5 years,  
yet sufficiently broad to be of interest for a wide scientific audience

Look out from your academic bubble – not every problem that excites all the world's 112 colleagues working precisely in your field is suitable for ERC

# How much pilot data is enough? And too much?

There must be some pilot data to prove that you have solid foundations for your research.

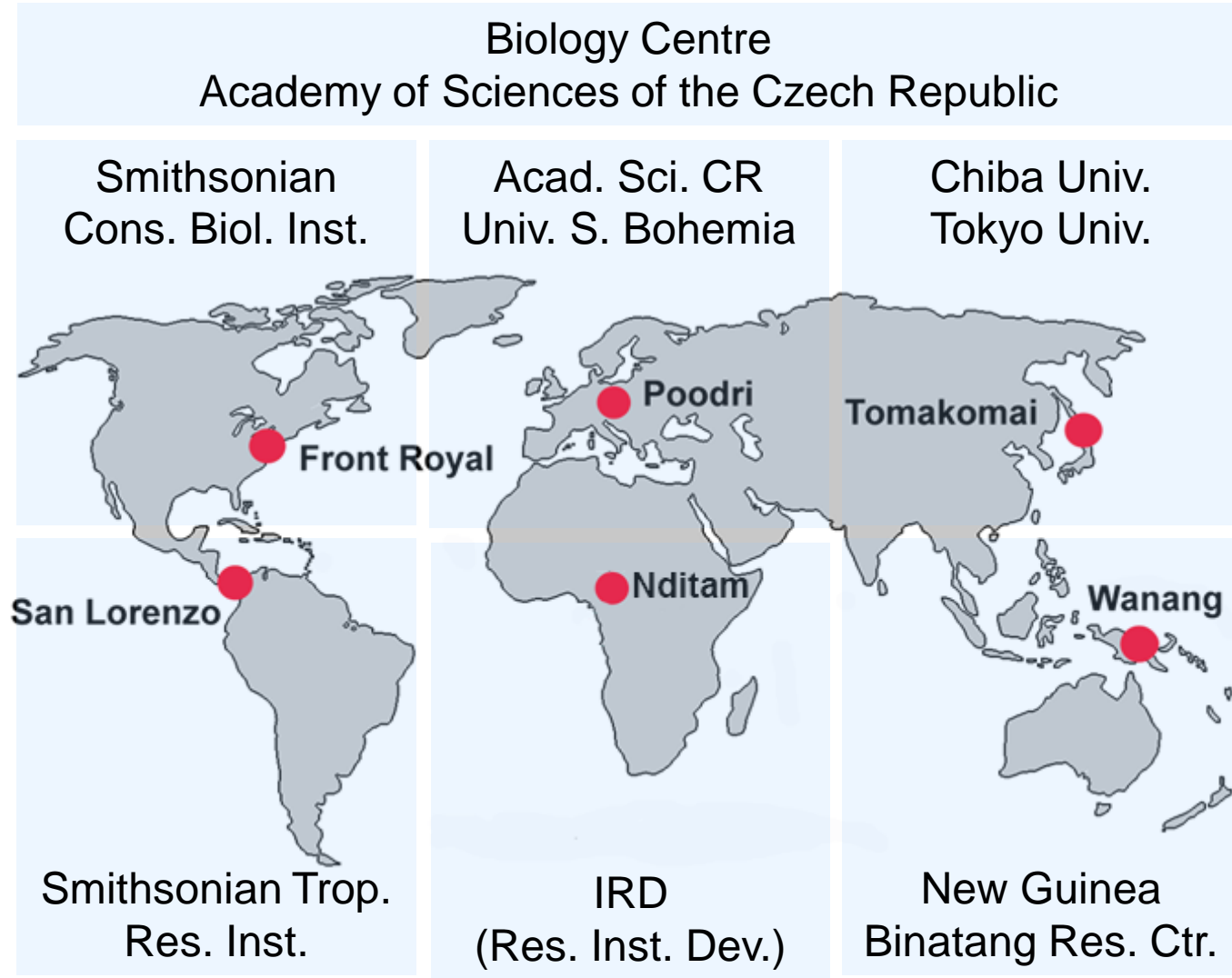
But then there must also be that impossible jump, leap of faith that will radically advance your research, not only gradually improve it.



Highly complex plant-insect food web  
in New Guinea rainforests

~200 tree species, ~9,600 insect species,  
~50,000 interactions

# Study design: maximize your competitive advantage



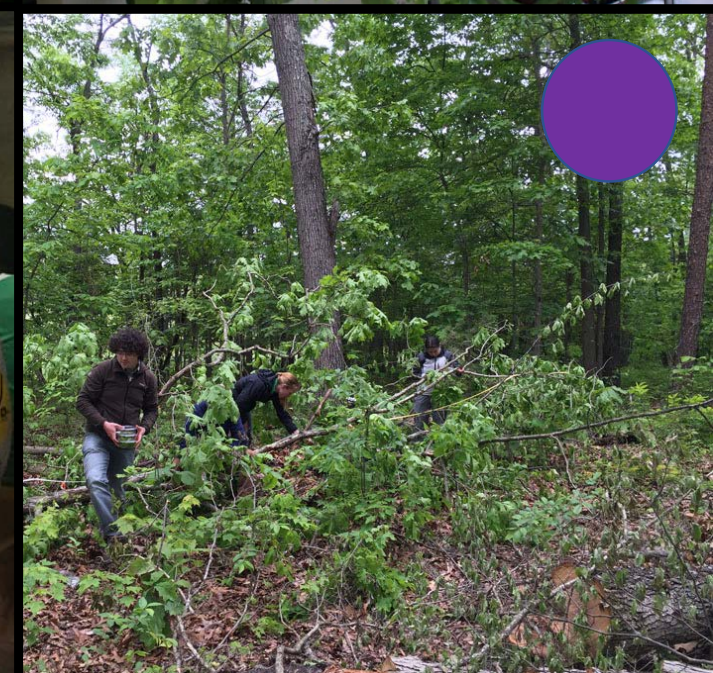
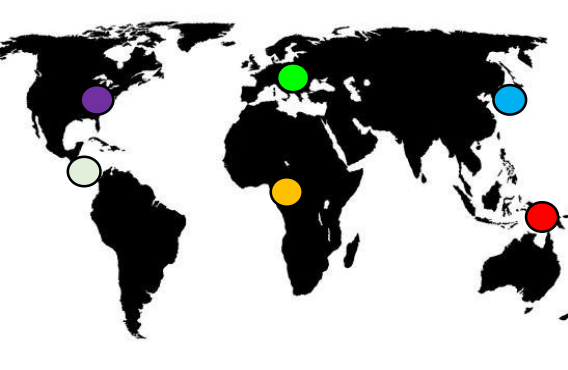
geographic  
scale

data volume  
& resolution

our food web study

experimental  
manipulation







No more of botany-envy: sampling entire forest plots for insects  
as botanists do for plants



PLOT-BASED  
SAMPLING

**Methodological innovation**  
Creative use of existing methods  
Sheer scale of data collection





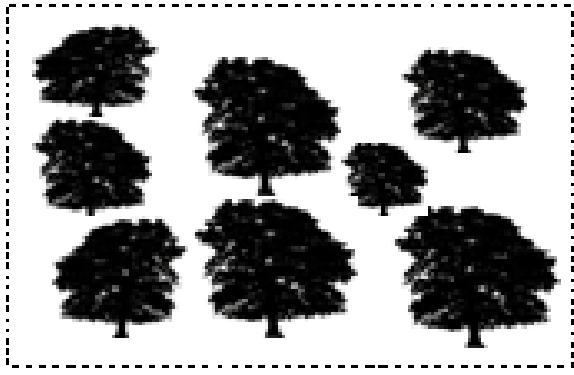
Methodological innovation  
**Creative use of existing methods**  
Sheer scale of data collection



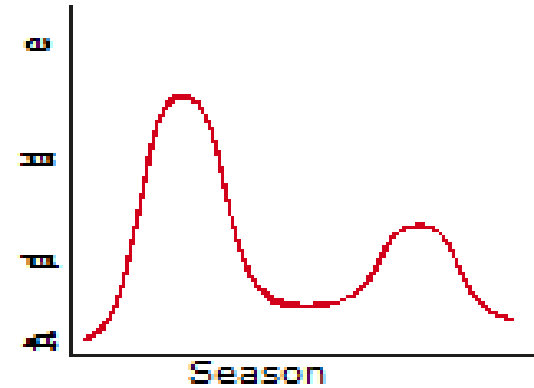


# Workflow for plot-based sampling

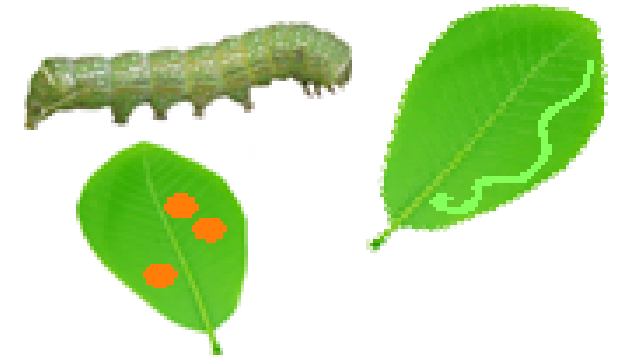
## Setting up the plot



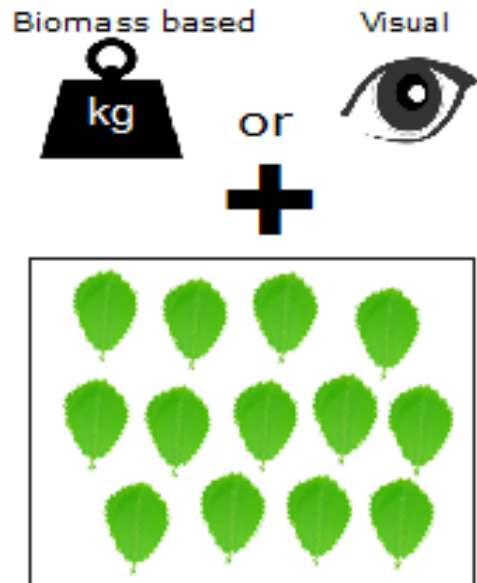
## Timing the sampling



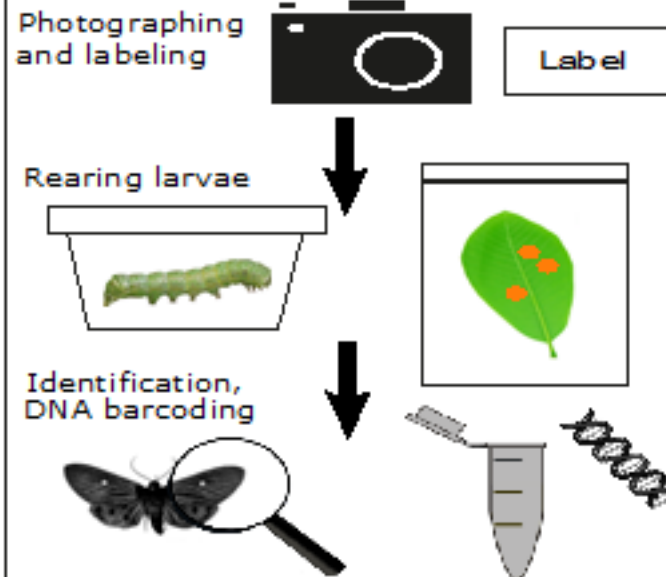
## Arthropod sampling



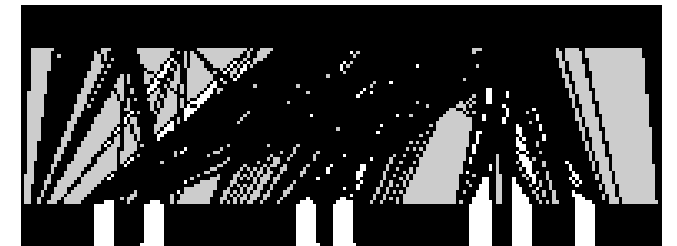
## Leaf area estimates



## Processing and rearing

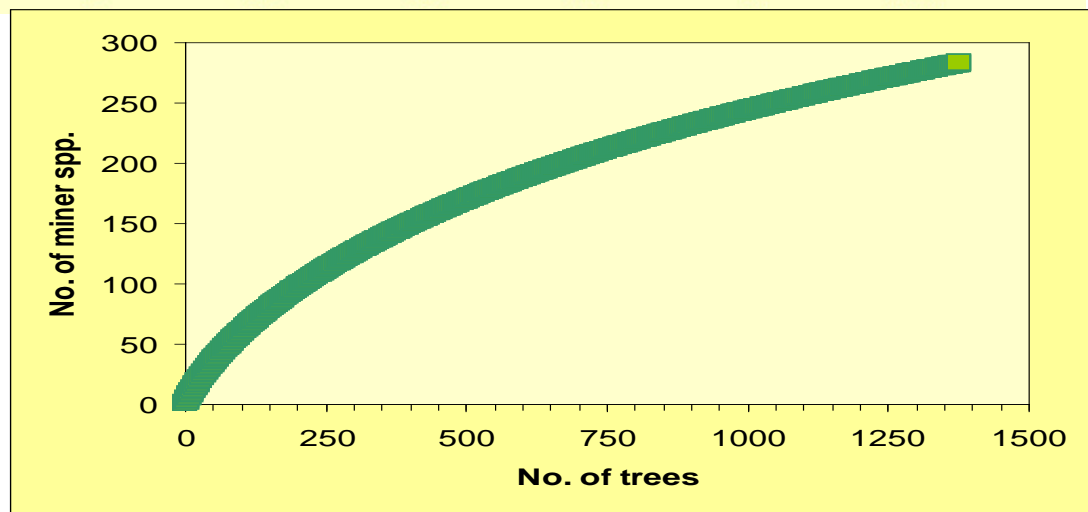
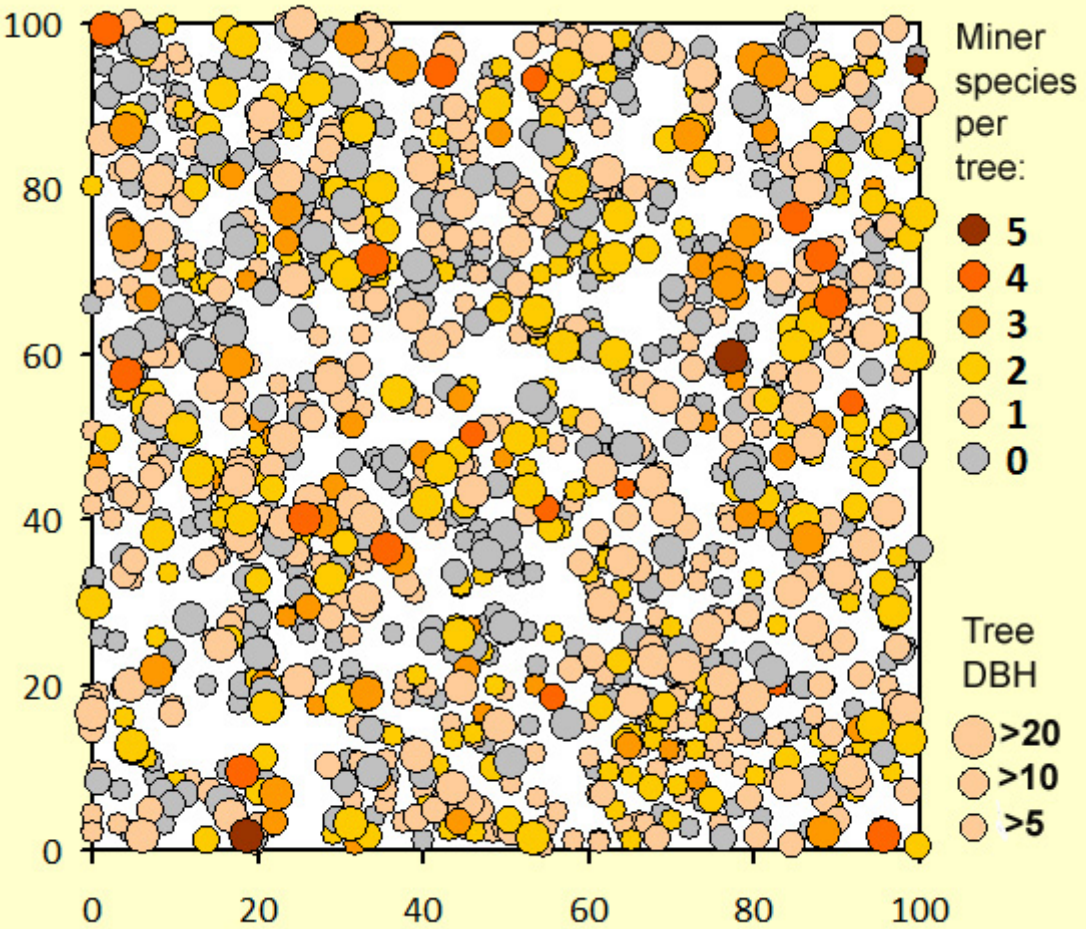


## Statistical analysis





Methodological innovation  
Creative use of existing methods  
Sheer scale of data collection











Japan

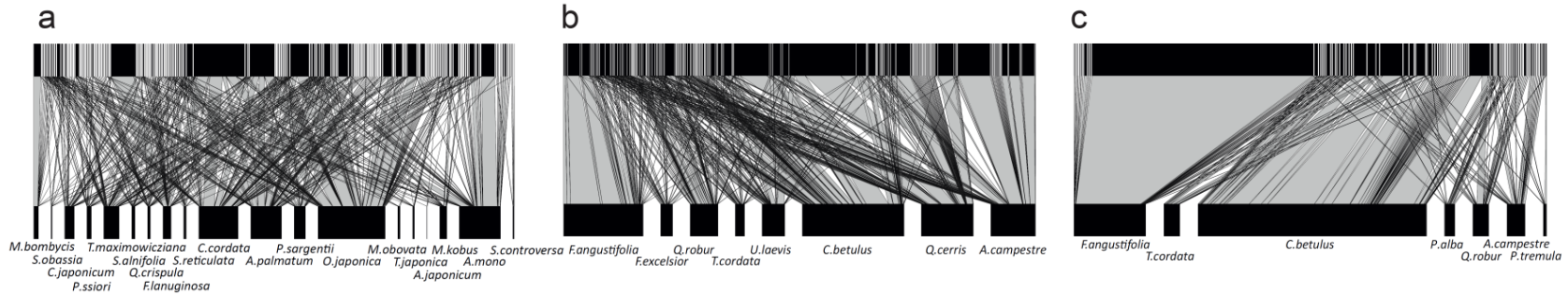


C. Europe 1

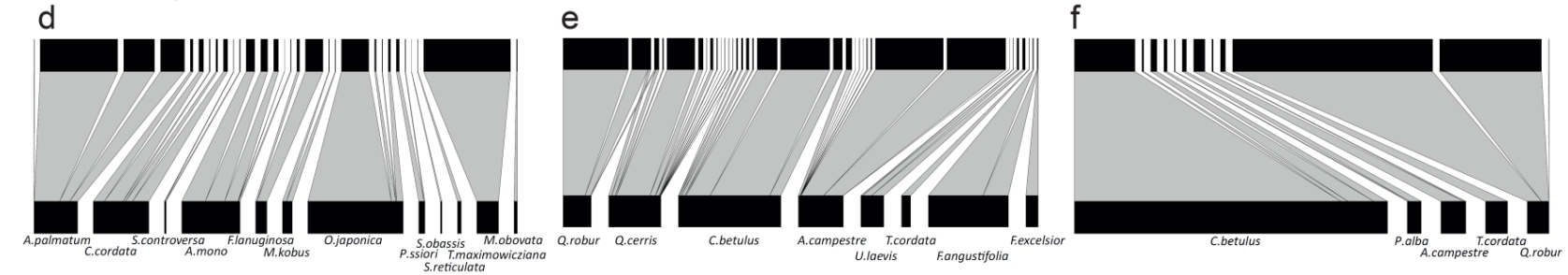


C. Europe 2

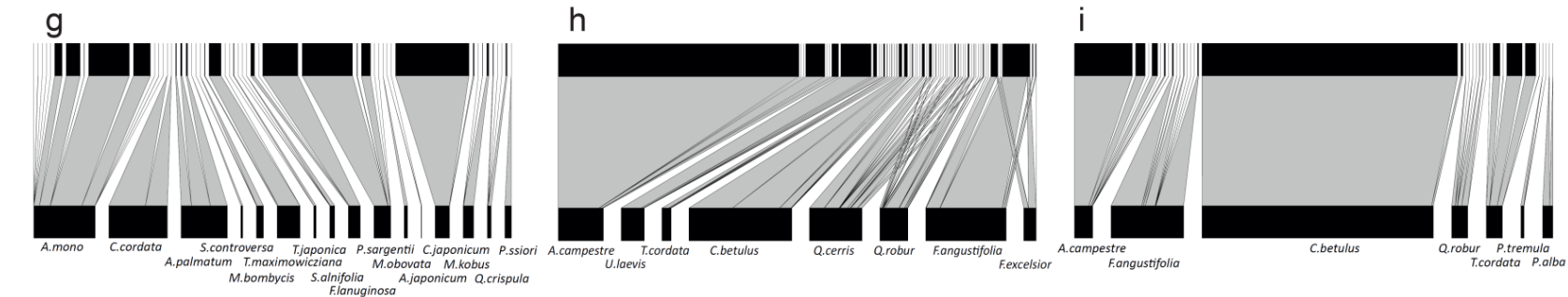
## Chewers



## Miners



## Gallers





# Subset of tropical trees matching temperate forest

number & size of individuals, number of species

**Methodological innovation**

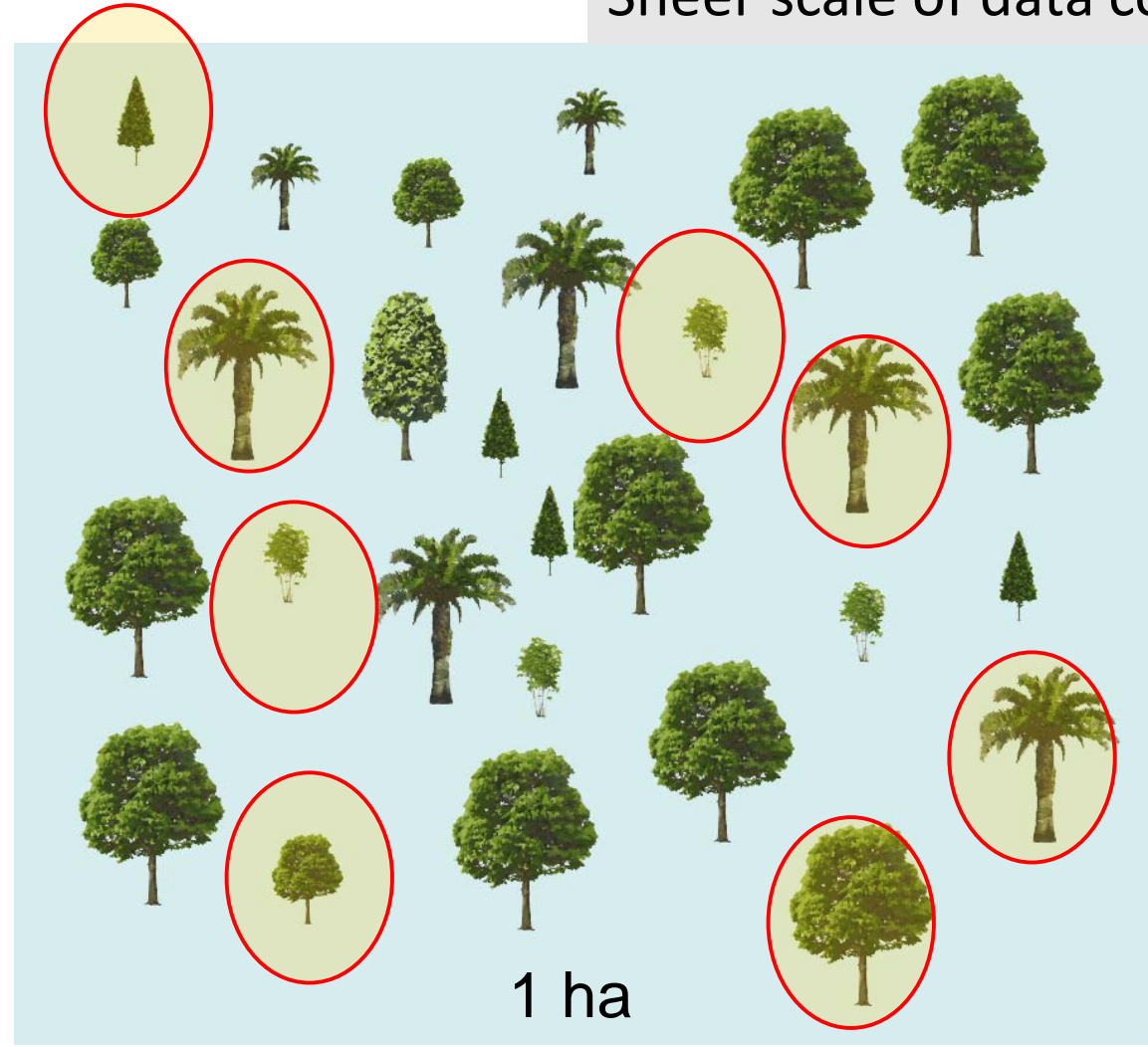
Creative use of existing methods

Sheer scale of data collection



0.1 ha

Temperate forest

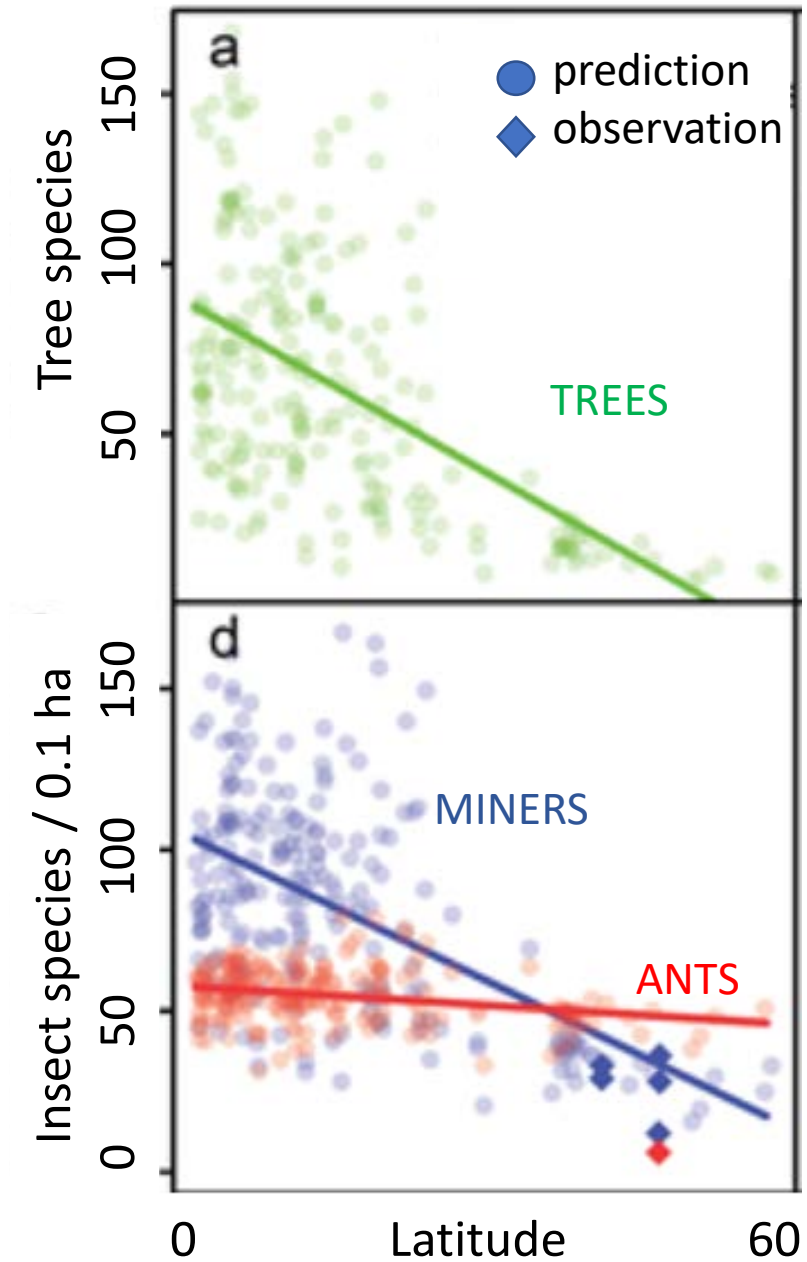
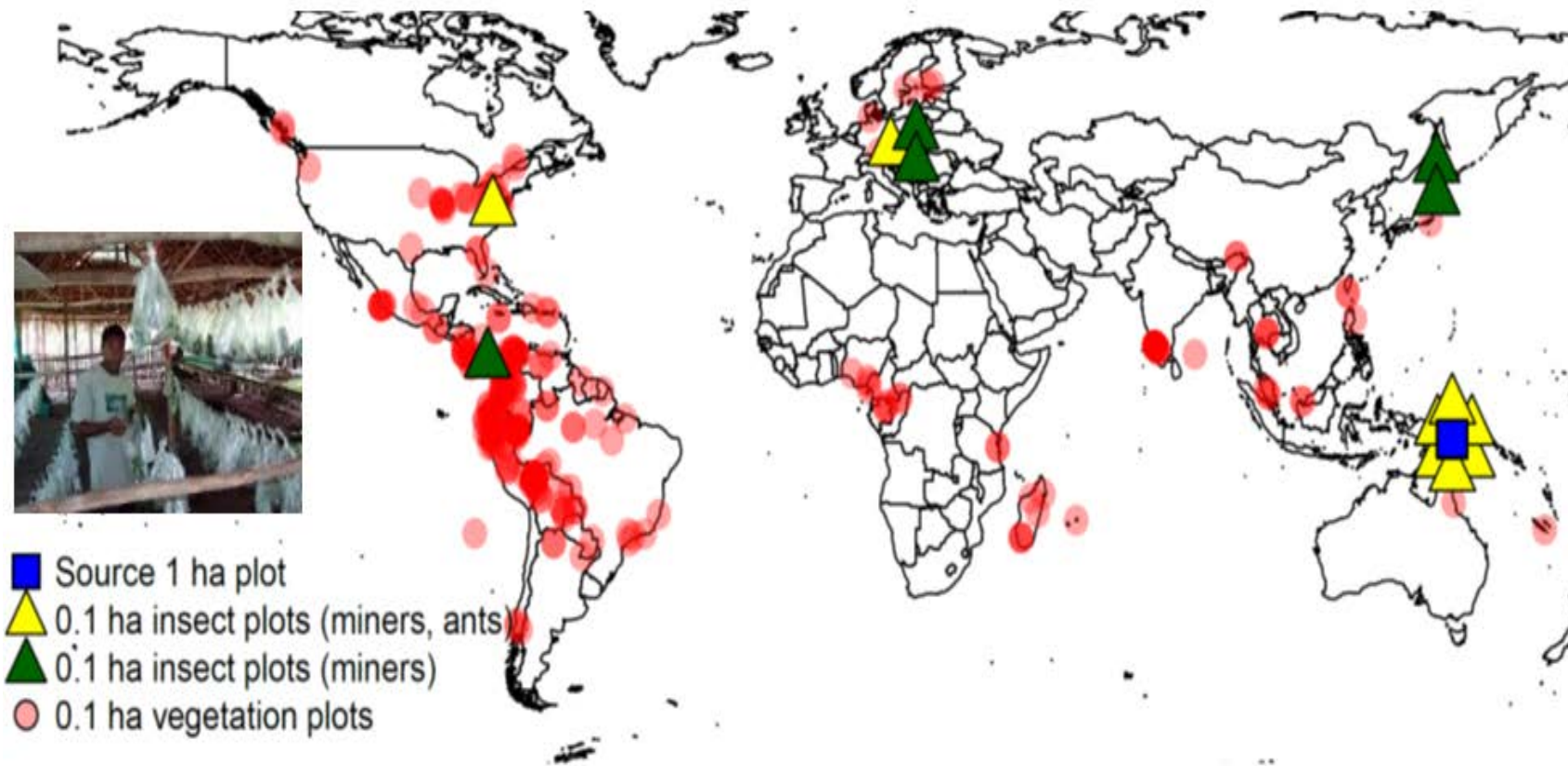


1 ha

Tropical forest



# 0.1 ha plant plots used to predict insect composition from PNG 1 ha data set







Should you include large equipment?  
(It does not compete with the other budget.)

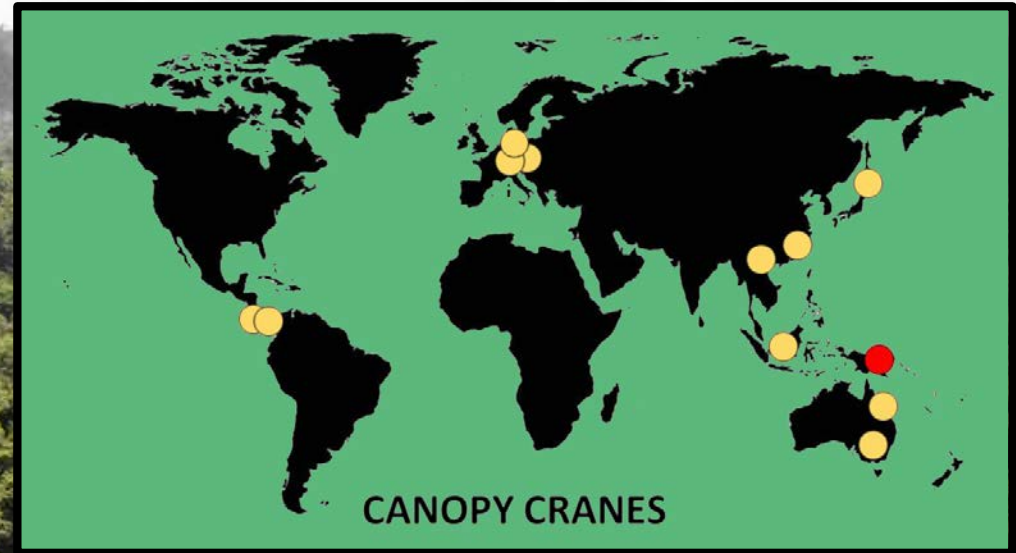
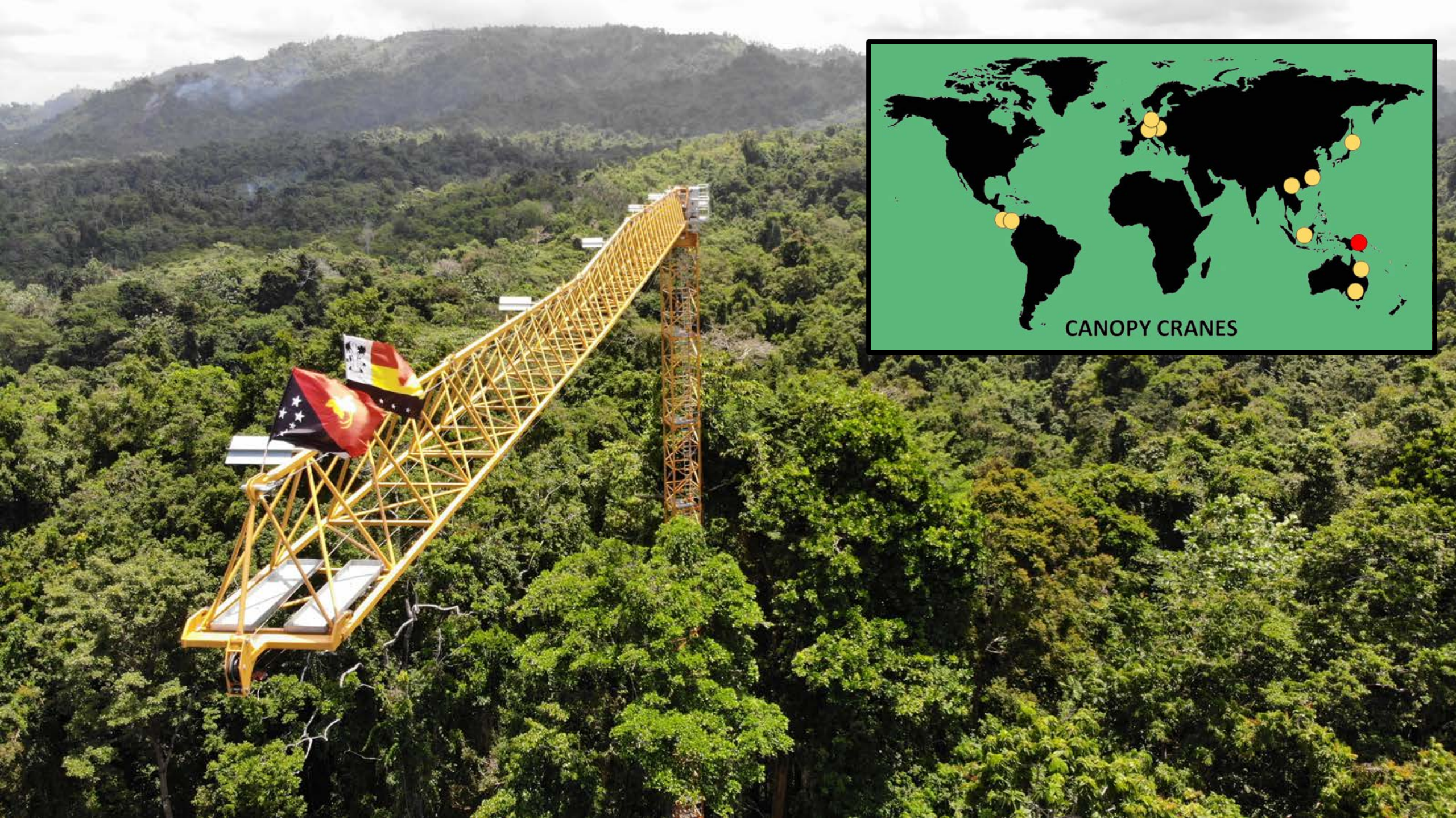
Yes in general, especially if it significantly

- expands the range of methods
- increases the volume of data
- builds national capacity
- increases the interest of the project

Canopy crane:

Expands canopy sampling to New Guinea  
One of only 6 such tropical facilities  
First tropical canopy crane operated by EU

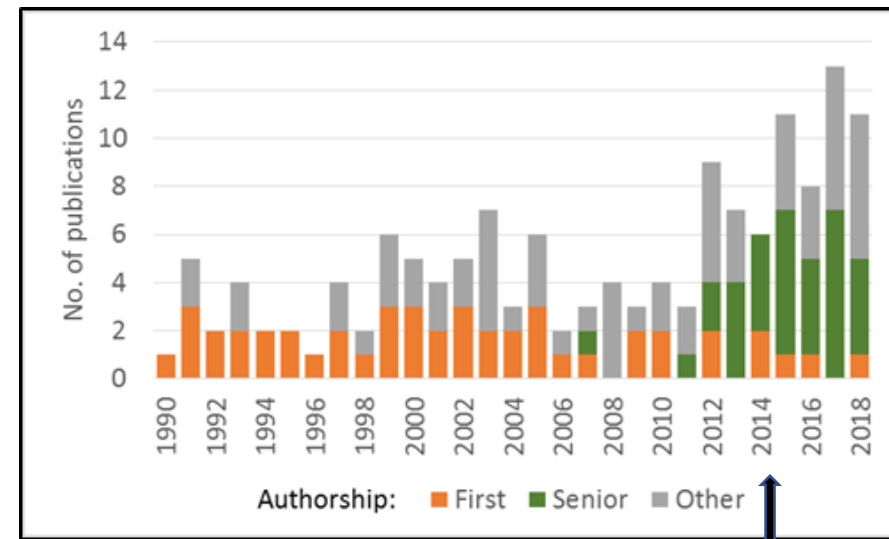






# How important is your CV?

- the quality of your best paper(s) – and journal – matters
- first (and senior) authorships matter
- recent papers matter



Vojtech Novotny

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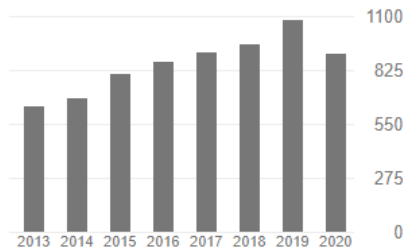
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<input type="checkbox"/> TITLE	CITED BY	YEAR
<input type="checkbox"/> <a href="#">Averting biodiversity collapse in tropical forest protected areas</a> WF Laurance, DC Useche, J Rendeiro, M Kalka, CJA Bradshaw, ... Nature 489 (7415), 290-294	875	2012
<input type="checkbox"/> <a href="#">Low host specificity of herbivorous insects in a tropical forest</a> V Novotny, Y Basset, SE Miller, GD Weiblen, B Bremer, L Cizek, P Drozd Nature 416 (6883), 841-844	708	2002
<input type="checkbox"/> <a href="#">Why are there so many species of herbivorous insects in tropical rainforests?</a> V Novotny, P Drozd, SE Miller, M Kulfan, M Janda, Y Basset, GD Weiblen science 313 (5790), 1115-1118	545	2006
<input type="checkbox"/> <a href="#">Rare species in communities of tropical insect herbivores: pondering the mystery of singletons</a> V Novotný, Y Basset Oikos 89 (3), 564-572	510	2000
<input type="checkbox"/> <a href="#">Arthropod diversity in a tropical forest</a> Y Basset, L Cizek, P Cuénoud, RK Didham, F Guilhaumon, O Missa, ... Science 338 (6113), 1481-1484	348	2012
<input type="checkbox"/> <a href="#">CTFS-Forest GEO: a worldwide network monitoring forests in an era of global change</a> KJ Anderson-Teixeira, SJ Davies, AC Bennett, EB Gonzalez-Akre, ... Global change biology 21 (2), 528-549	343	2015

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	George Weiblen Professor, University of Minnesota	>
	Pavel Drozd University of Ostrava	>

application  
year



## Your team

You typically have to hire most of the team for the project.

However, consider what are competitive advantages of the team members and collaborators you already have.







While there is no point in frivolous submissions of poor ERC applications, most of Czech researchers err on the side of caution and do not submit when they should have!

The importance of institutional “esprit de corps”:  
at our Department, every “tenure track” researcher is expected to apply for ERC

