

Bee Diversity & Pollination Service in China



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- Bees
- Pollination Services
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3 New Efforts

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- Bee Diversity and Services
- Protect Habitats for Native Bees
- Provide More Services by Bees

4 Future Collaborations

- Next Generation Bee Biologists
- Better Pollination Services
- Mapping Bee Diversity in China/SE Asia

Questions

1. How many wild bees are there in China?
2. What and how much pollination services can wild bees provide?
3. How can we protect wild bees and provide enough pollination services to secure food safety?

Major Challenges - Bees

Bees are the primary pollinators in different ecosystems.



Major Challenges - Pollination Services



natural ecosystems



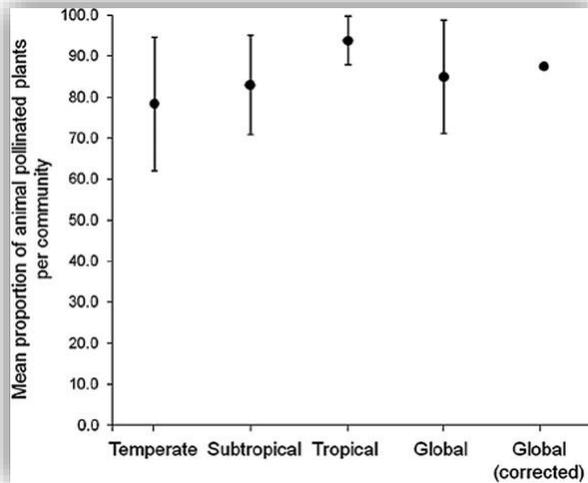
Source: <https://www.mountaineers.org>

cultivated ecosystems



Source: <https://archive.shine.cn>

the most important pollinators



Source: <https://www.nwf.org>

- They pollinate ~90% of all flowering plants that depend on pollination.

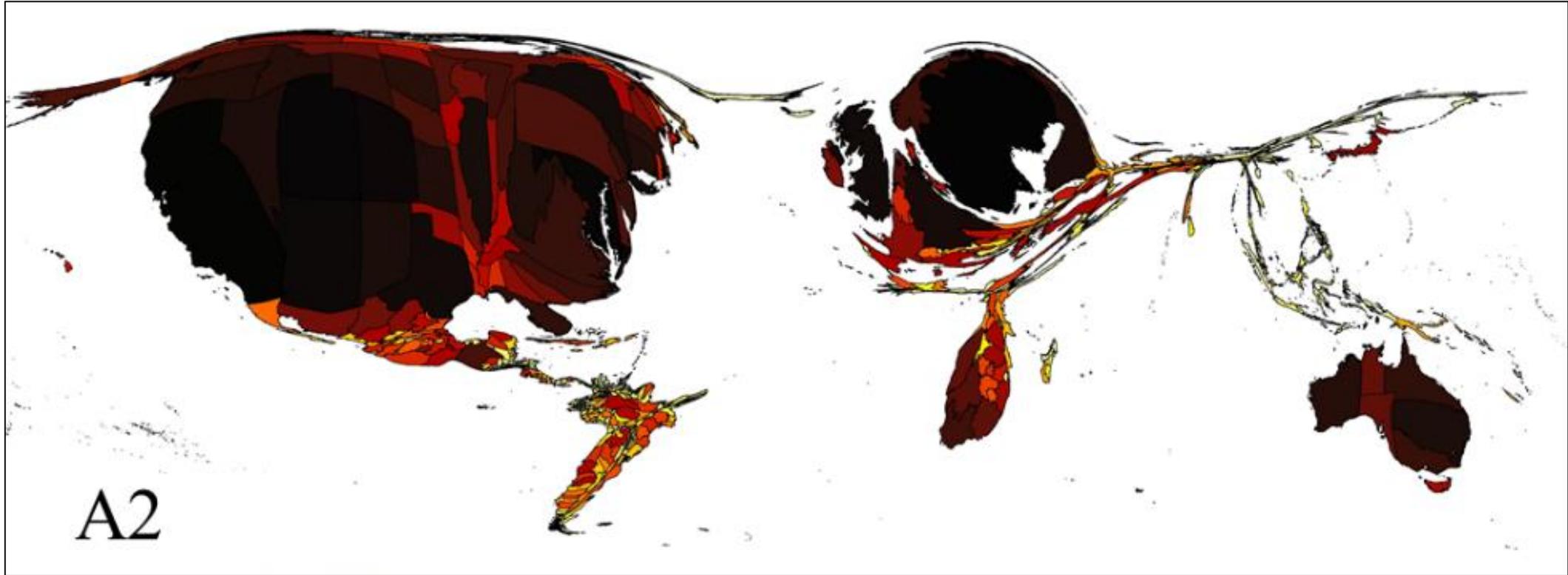
Major Challenges

- Hand pollination is needed in some areas
- Too many pesticide/fertilizer inputs
- Land degradation/desertification threaten areas in Northern China
- Apple and other fruits will become less economically profitable
- Bees are in decline, while there are less taxonomists to provide basic information on bees



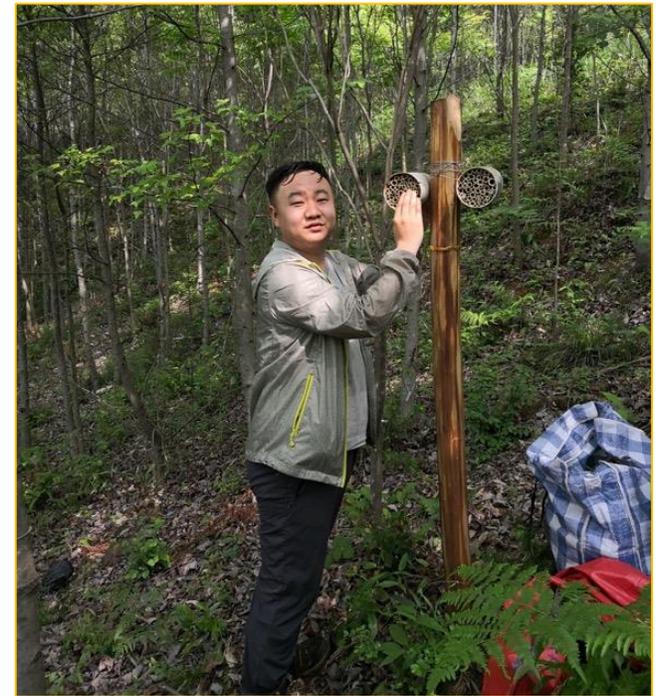
Major Challenges - Bee Diversity Data Gap

Bees are important, **however ?**

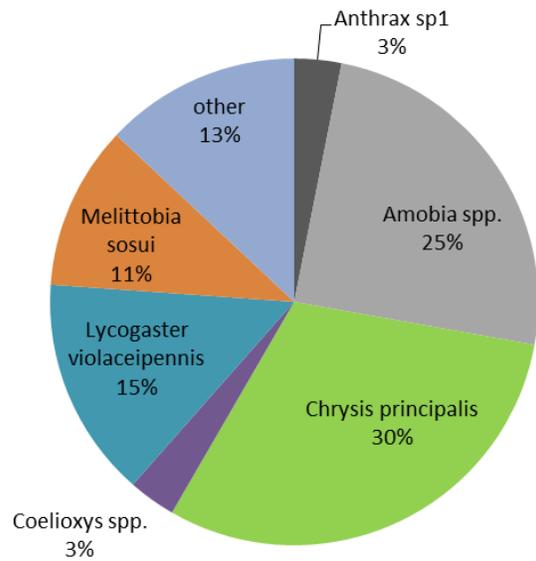


Huge bee diversity data gap exists between China and developed countries, before we can evaluate their status and services.

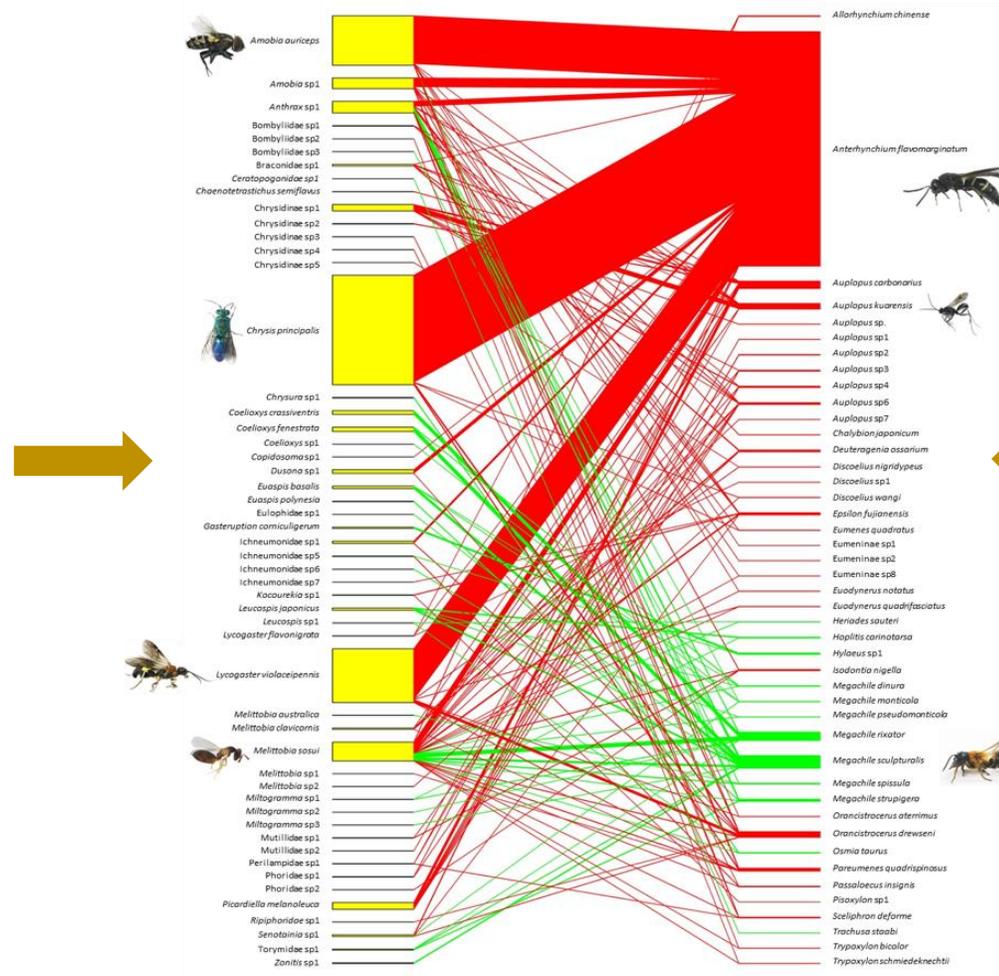
Innovative Approaches - Bee Diversity and Services



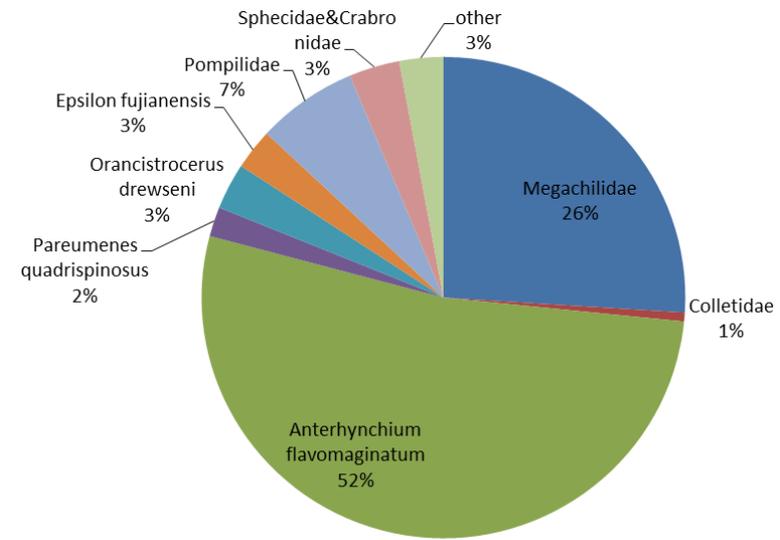
Innovative Approaches - Bee Diversity and Services



Parasitoids



The network between hosts and parasitoids



Hosts

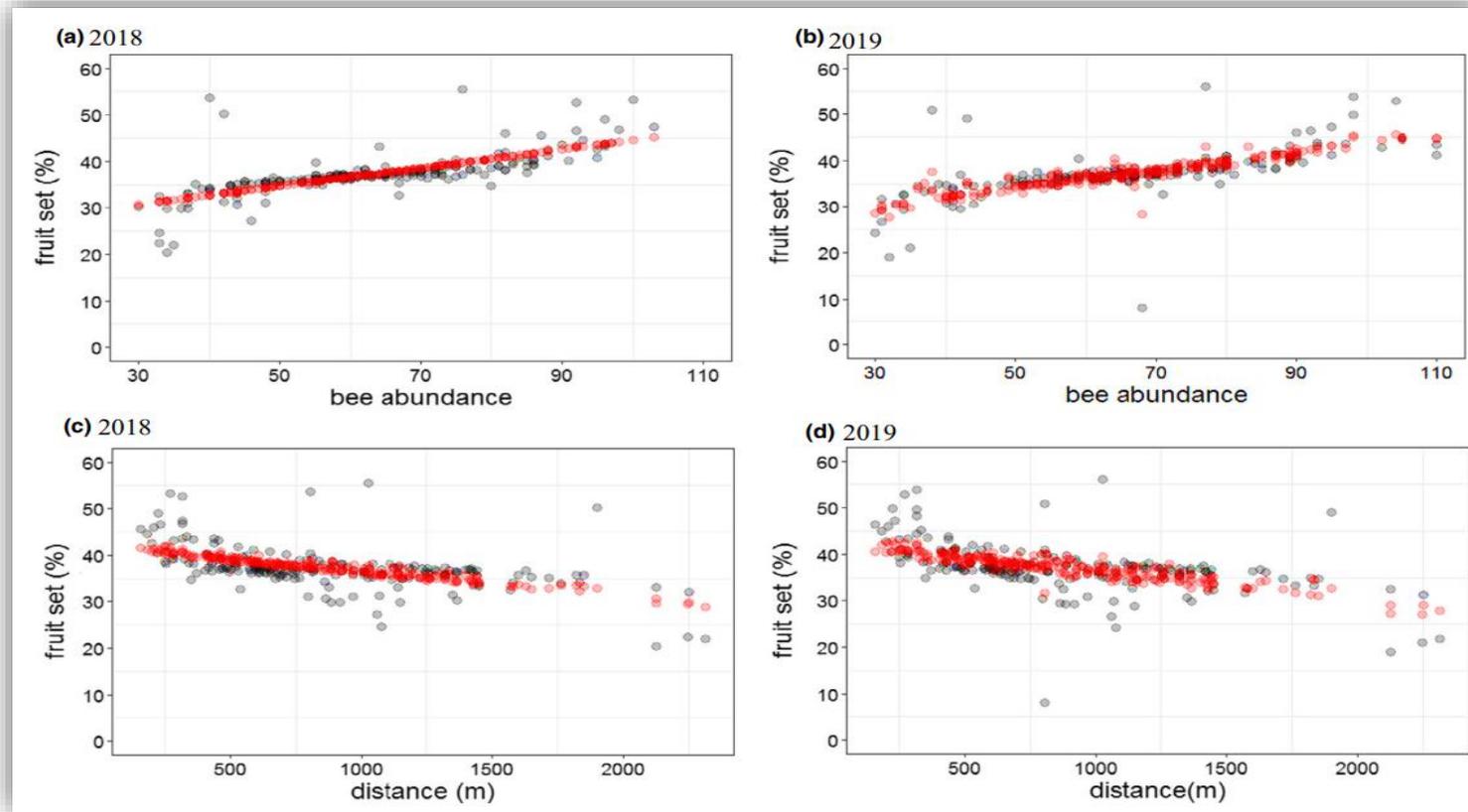
Innovative Approaches - Protect Habitats for Native Bees

1. Native bees visiting *Camellia oleifera*



Innovative Approaches - Protect Habitats for Native Bees

1. Pollinator bees visiting *Camellia oleifera*



The **positive relationships** between wild bee **abundance** and **fruit-setting** of *Camellia*

FIGURE 3 Relationship between distance and bee abundance with fruit set, estimated as the number of fruit divided by the number of flowers at each tree. We marked 205 sample trees in the final analysis. Each dot represents several trees. The red points were the predicted values, and the black points were the measured values.

Innovative Approaches - Provide More Services by Bees

2. Pollination experiments on *Paeonia* spp.



Oil peony (*Paeonia* spp.) is a new type of woody oil crop in China with a large cultivation area.

Insufficient
pollination



Low and unstable
production of oil
tree peony

Honeybee

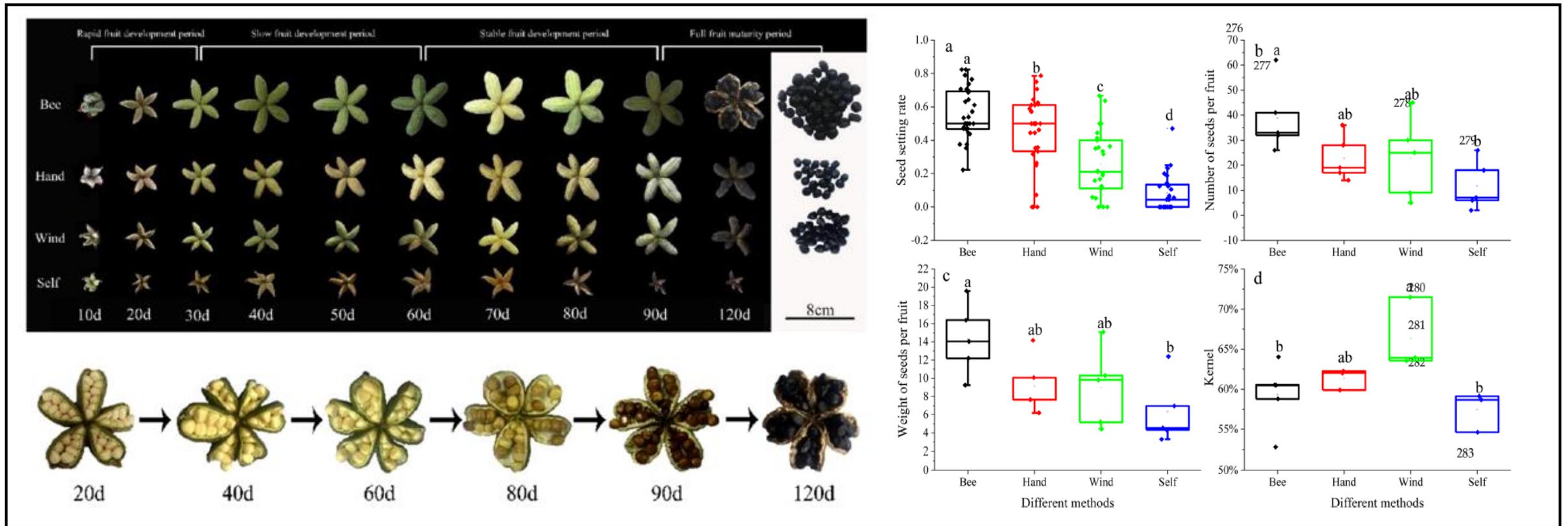
promote



Seed setting of oil
peony

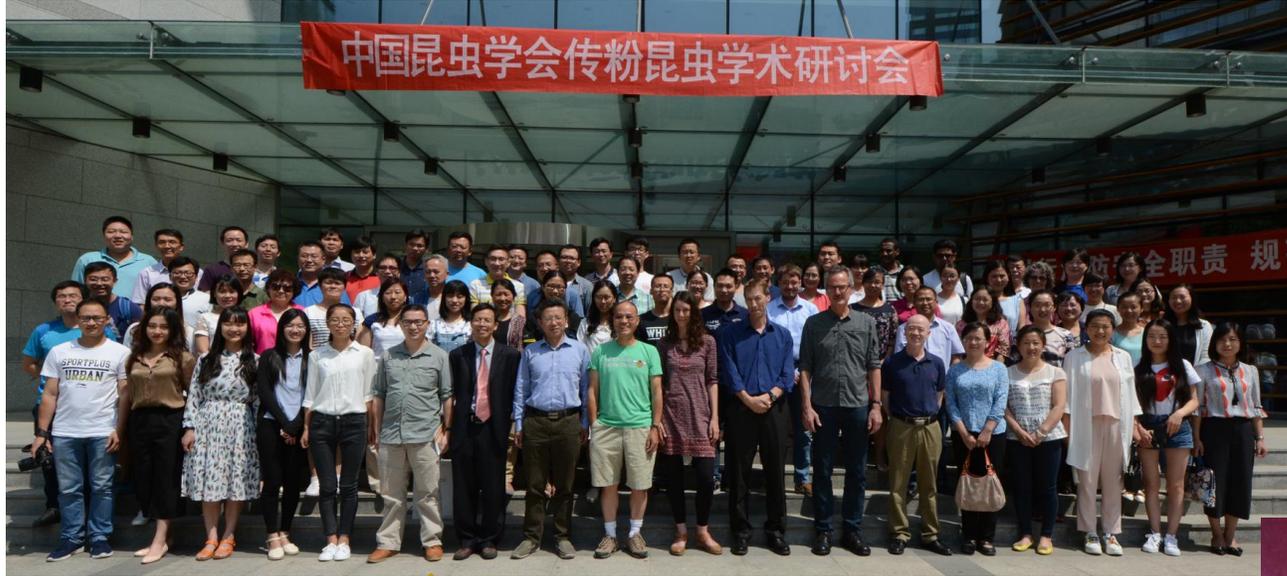
Innovative Approaches - Protect Habitats for Bees

2. Pollination experiment on *Paeonia* spp.



Pollination by honeybees increased yield per fruit by 56.28%, 59.42% and 126.27% compared to the hand, wind and self-pollination, respectively.

New Efforts - Special Committee & Forum



Special Committee on Pollinator Insects,
the Entomological Society of China

Pollinator Insects Forum
(Annual meeting from 2016~2019)



New Efforts - Training Courses on Pollinators

中国昆虫学会传粉昆虫专业委员会

传粉昆虫学讲习班

第一期

方式：线上交流
时间：2020年5月-6月

传粉昆虫泛指花上活动并能传授花粉的昆虫。多数物种属于昆虫纲膜翅目、鳞翅目、鞘翅目、双翅目等类群，常见的如蜂类、蝶类、蛾类、甲虫类、蝇类等。

昆虫传粉在维持生态系统功能和野生植物多样性中发挥重要作用。目前，国内外对传粉昆虫多样性及其在生态系统中的传粉服务功能研究日益重视。

我国幅员辽阔，蜜粉源植物和传粉昆虫种类丰富。在中国科学技术部的资助下，我国已启动东部农业主产区传粉昆虫的调查和监测，建设物种分类鉴定能力，提升传粉昆虫多样性研究水平。

在中国昆虫学会传粉昆虫专业委员会、北京昆虫学会、北京生态学学会和云南省昆虫学会的指导下，中国科学院动物进化与系统学重点实验室特组织了此期传粉昆虫学讲习班，以培养、壮大我国从事传粉昆虫学研究的人才队伍，服务于国家发展需求。

本次讲习班特别邀请了国内长期从事这些类群研究的分类专家，讲解各类传粉昆虫的分类和鉴定知识。

授课专家团队



中国昆虫学会传粉昆虫专业委员会
中国东部传粉昆虫资源调查与评估项目组



欢迎各位老师同学
扫描此二维码填写
报名信息参加

传粉昆虫学讲习班

第一期

课程表

授课专家	单位	授课题目	授课时间
	陕西理工大学	常见传粉蚜蝇及其识别	5月28日19:30
	中国科学院动物研究所	Diversity of Chinese Bees	5月29日14:00
	中山大学	膜翅目寄生部	5月30日19:30
	中国科学院动物研究所	常见传粉甲虫概述及分类	5月31日19:30
	中国科学院动物研究所	谈谈传粉鳞翅目昆虫的鉴定	6月5日19:30
	河南科技大学	认识、利用和保护木蜂资源	6月8日19:30
	沈阳师范大学	访花传粉的寄蝇和寄蝇科常见类群分类与鉴定	6月9日19:30
	云南农业大学	蓟马--或许你一辈子都看不到的昆虫	6月13日9:00
	华南农业大学	中国瓢虫科昆虫的系统分类	6月14日19:30
	中国农业科学院蜜蜂研究所	中国熊蜂分类简介	6月20日14:00
	云南农业大学	膜翅目泥蜂和蛛蜂主要类群识别	6月21日9:00
	中国农业大学	分子分类学及DNA条形码的工作原理	6月26日9:00
	金华职业技术学院	中国蜂虻科昆虫系统分类研究和传粉习性介绍	6月27日14:00
	西北大学	胡蜂漫谈	6月28日19:30



中国昆虫学会
传粉昆虫专业委员会
中国东部传粉昆虫资源
调查与评估项目组



欢迎各位老师同学扫描此
二维码填写报名信息参加

➤ On-Line Training courses

传粉昆虫研讨群

511163229

发消息

首页 成员 设置
管理: 11/15人 [修改我的群昵称](#)

群聊二维码

群名称: 传粉昆虫研讨群
群号: 511163229

保存到电脑
发送到手机

积分	最后发言
18	2022/04/07
5	2021/06/27
0	2018/04/13
0	2021/07/03
0	2021/09/14
0	2016/11/02
2	2021/12/20
0	2016/11/02
0	2020/11/11
0	2021/12/21
0	2019/01/08
0	2019/05/05
0	2017/02/04
0	2019/11/14

New Efforts - East China Program of Pollinators

Aims - Survey and evaluate pollinator insects in East China

Work areas:

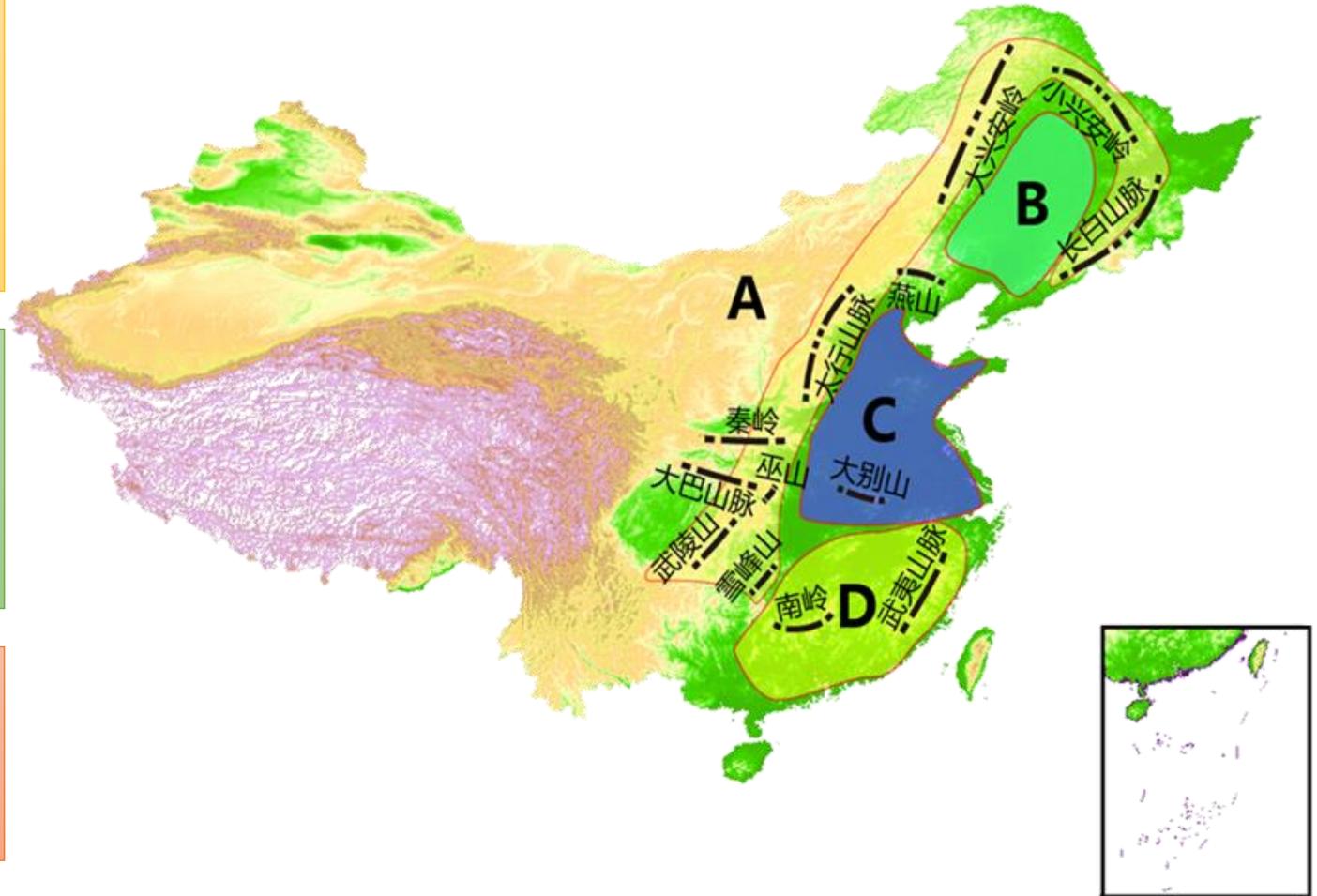
- A. The Third Steps of China's Terrain
- B. Northeast China Plain
- C. Central China Plain
- D. Southeast China Hills

Funding:

15 million RMB from National Science & Technology Fundamental Resources Investigation Program of China

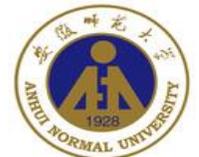
Organization:

6 projects,
29 institutions/universities



New Efforts - East China Program of Pollinators

Sub-Projects	Team members
Integration, platform sharing and evaluation of pollinator insects resources in Eastern China	 
Monitoring network Construction of pollinator insects	 
New technologies development for pollinator insects diversity	 
Crop pollinator insects diversity and pollination services evaluation	 
Investigation and evaluation of pollinator insects resources in Eastern temperate agroforstry ecotone regions	 
Investigation and evaluation of pollinator insects resources in typical Eastern tropical and subtropical agroforstry ecotone area	 

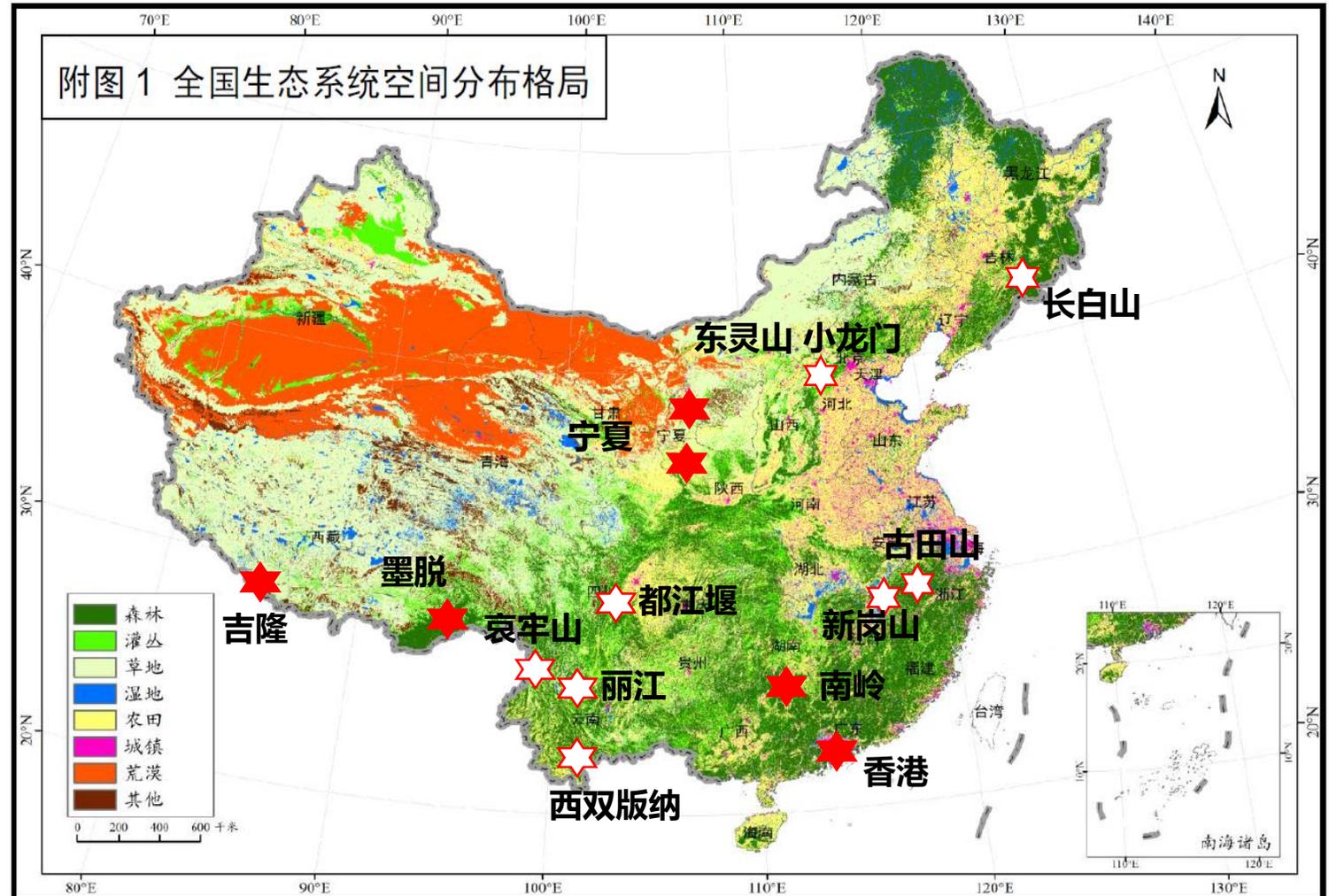


Questions again

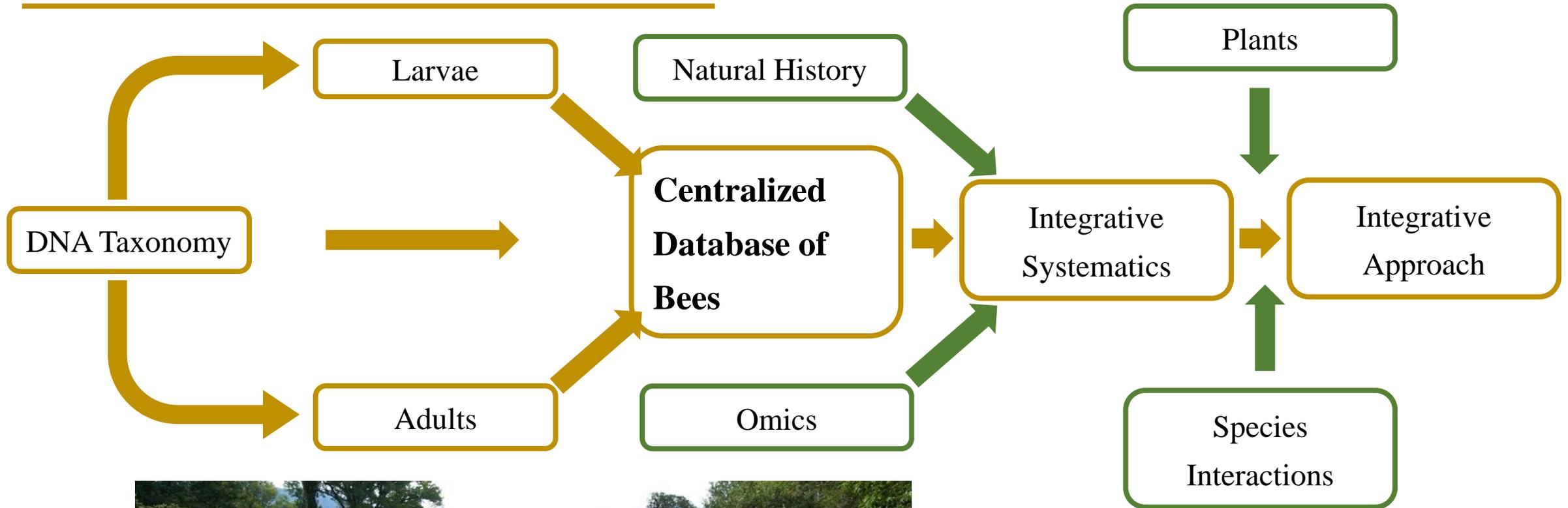
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Future Collaborations – Sino-BON - Insects

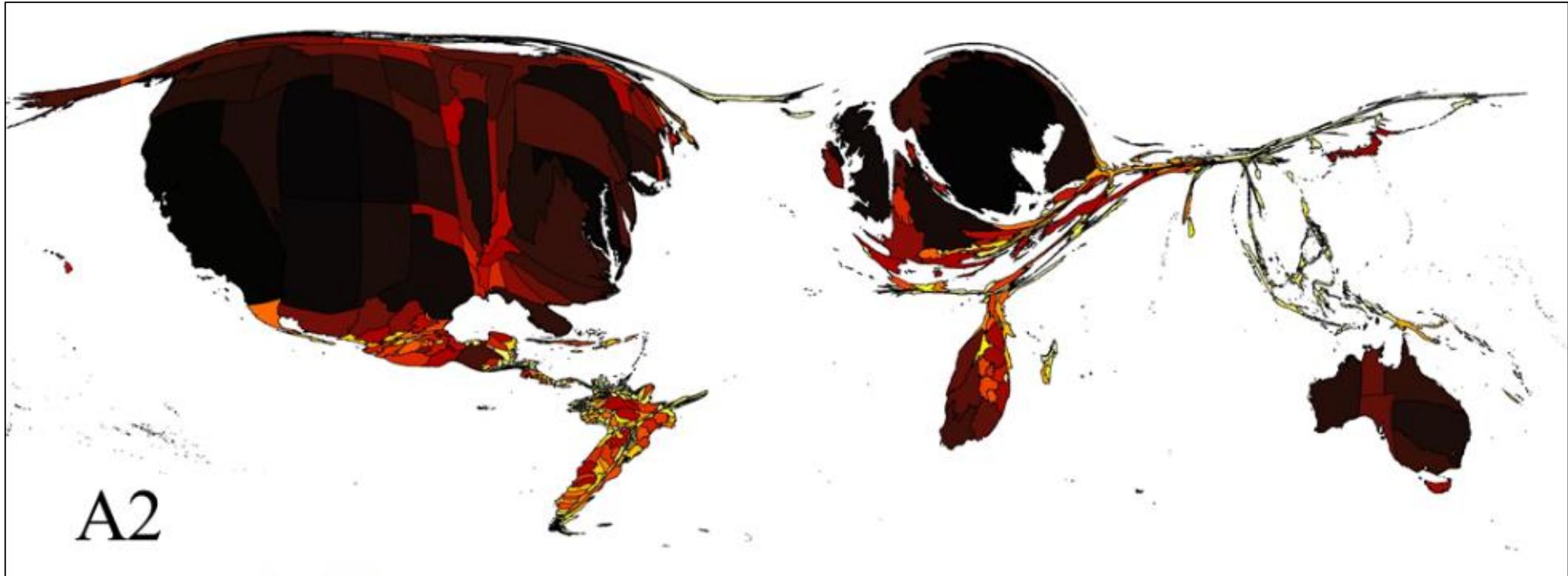
14 monitoring sites to cover –
Forests
Agriculture
Marginal areas between



Future Collaborations - Next Generation Bee Biologists



Future Collaborations – Mapping Bee Diversity in China/SE Asia

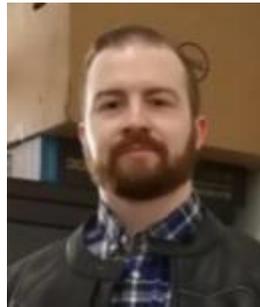


Capacity building of wild bee diversity monitoring;
Centralized databasing of wild bee diversity
Quantifying pollination services by wild bees

Future Collaborations - Better Pollination Services



Acknowledgements



A close-up photograph of a flowering plant with a bee flying nearby. The plant has a central stem with several clusters of small, light pink flowers. The leaves are long and narrow, and the background is a soft, out-of-focus green. A bee with orange and black stripes is flying towards the left, positioned to the right of the plant's stem.

**Protect Flowering Plants,
Protect Pollinator Bees**

Thanks !