What determines plant species diversity along the Modern Silk Road in the East?

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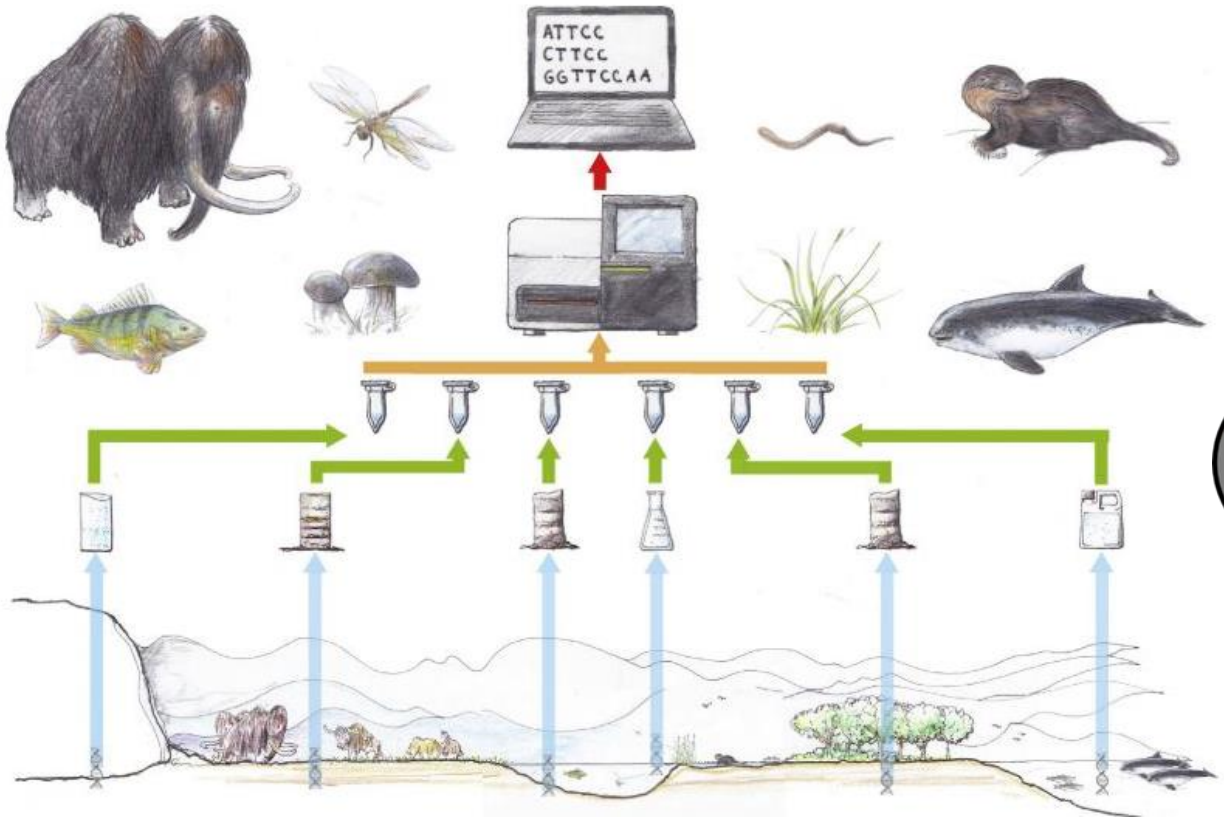
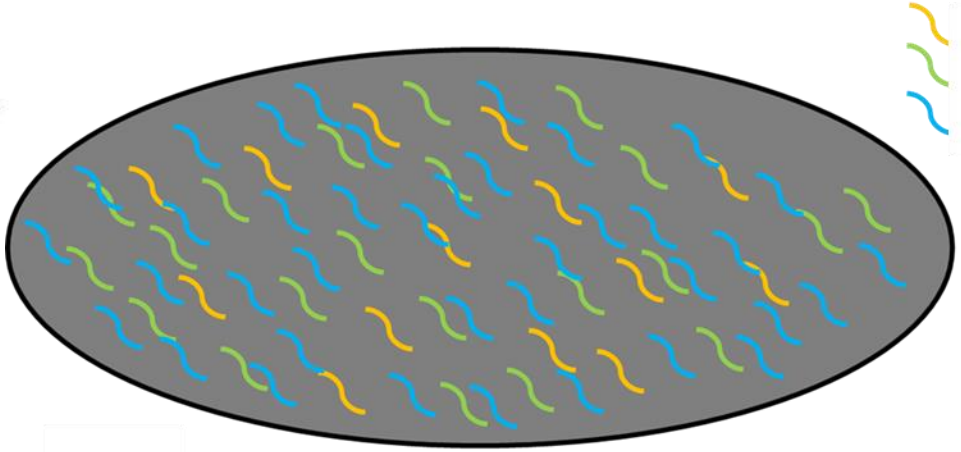
Introduction



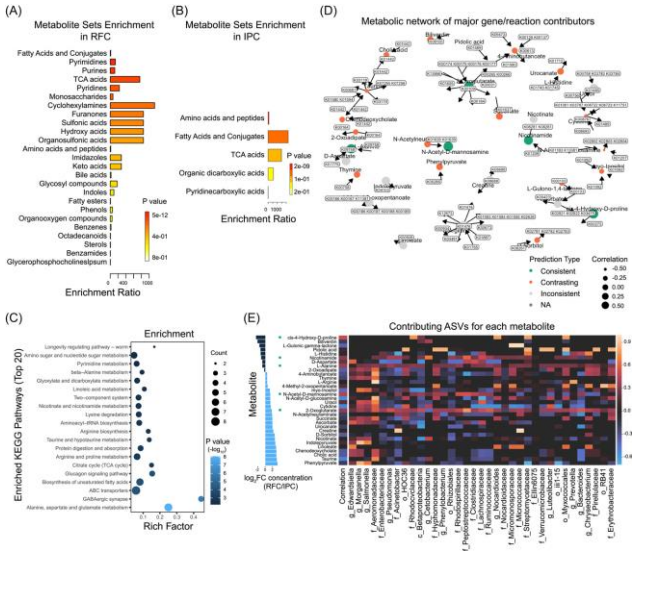


Animal DNA
Plant DNA
Microorganism DNA

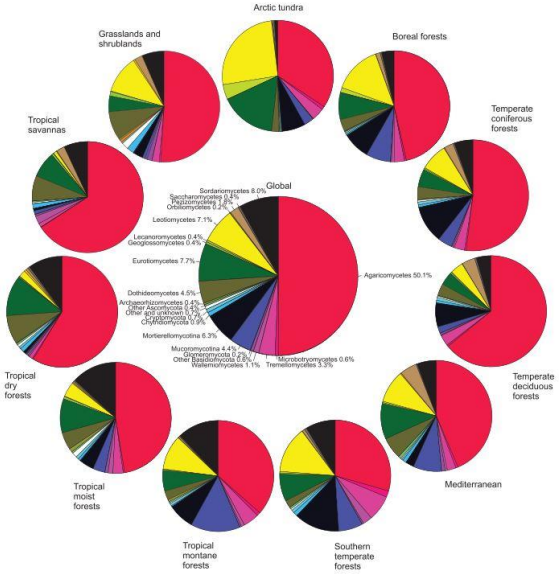
Environmental sample

Thomsen & Willerslev, 2015. Biological Conservation

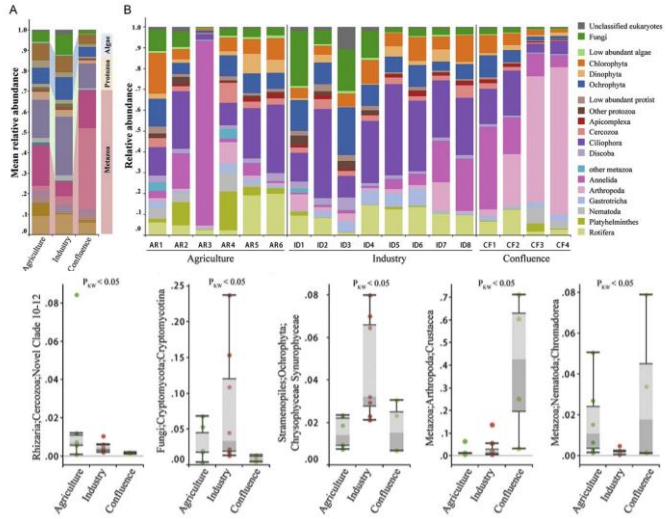
Introduction



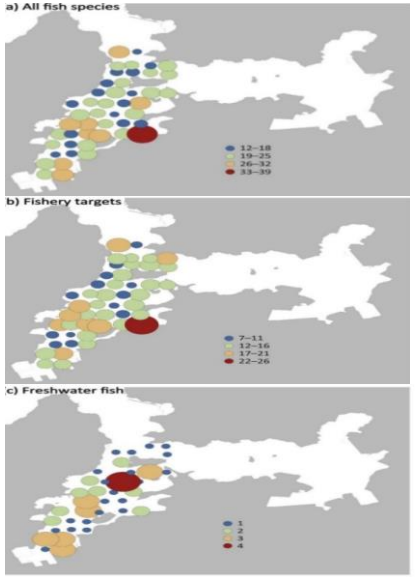
Ding et al. 2022. iMeta.



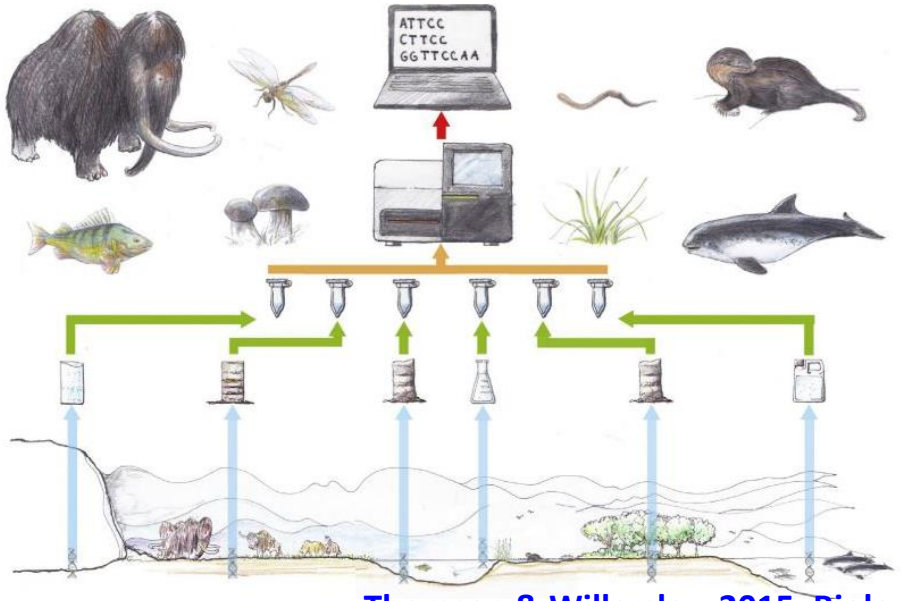
Leho et al., 2014. Science



Xie et al., 2017. Chemosphere



Yamamoto et al., 2017. Scientific Reports



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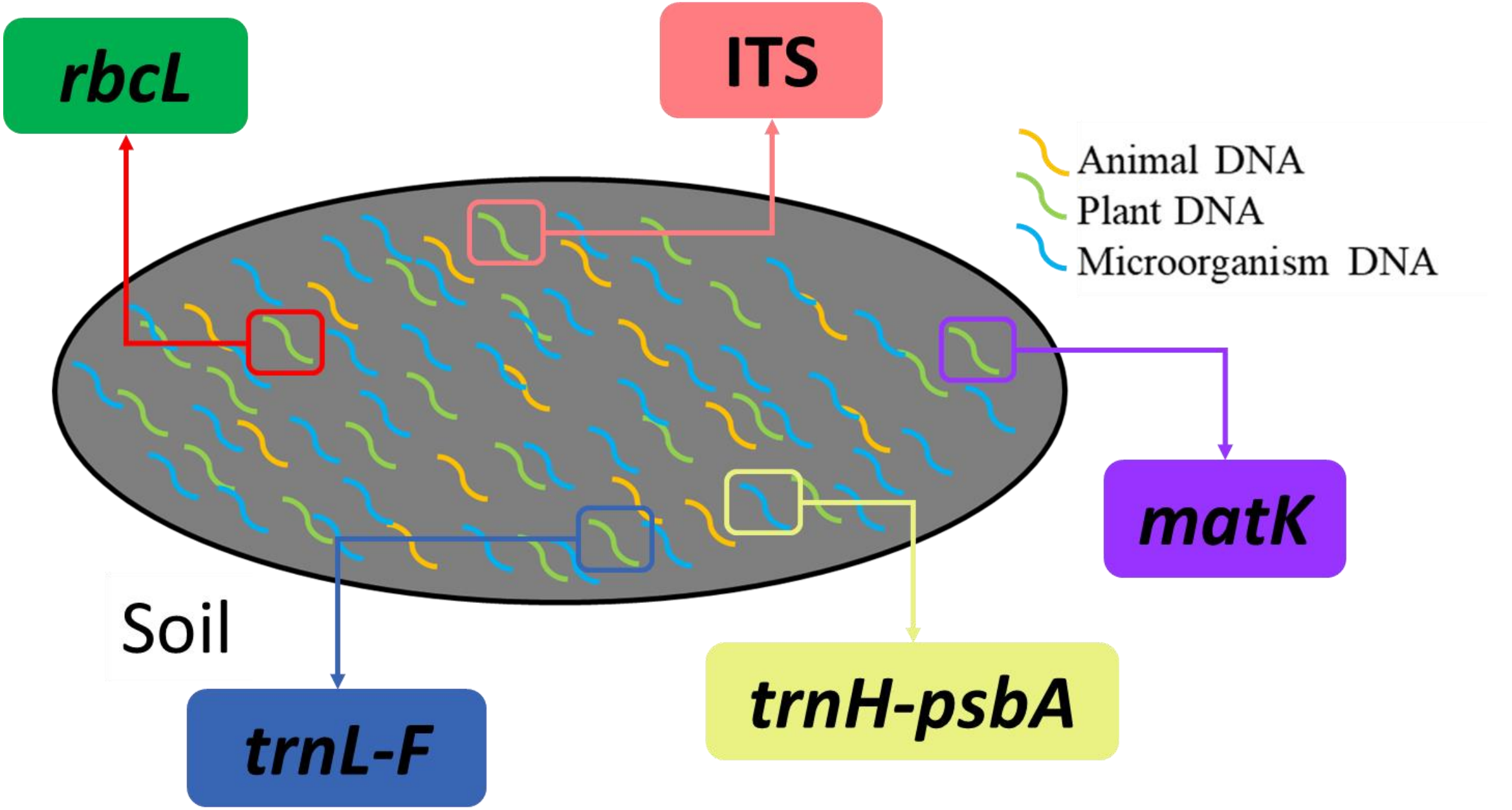

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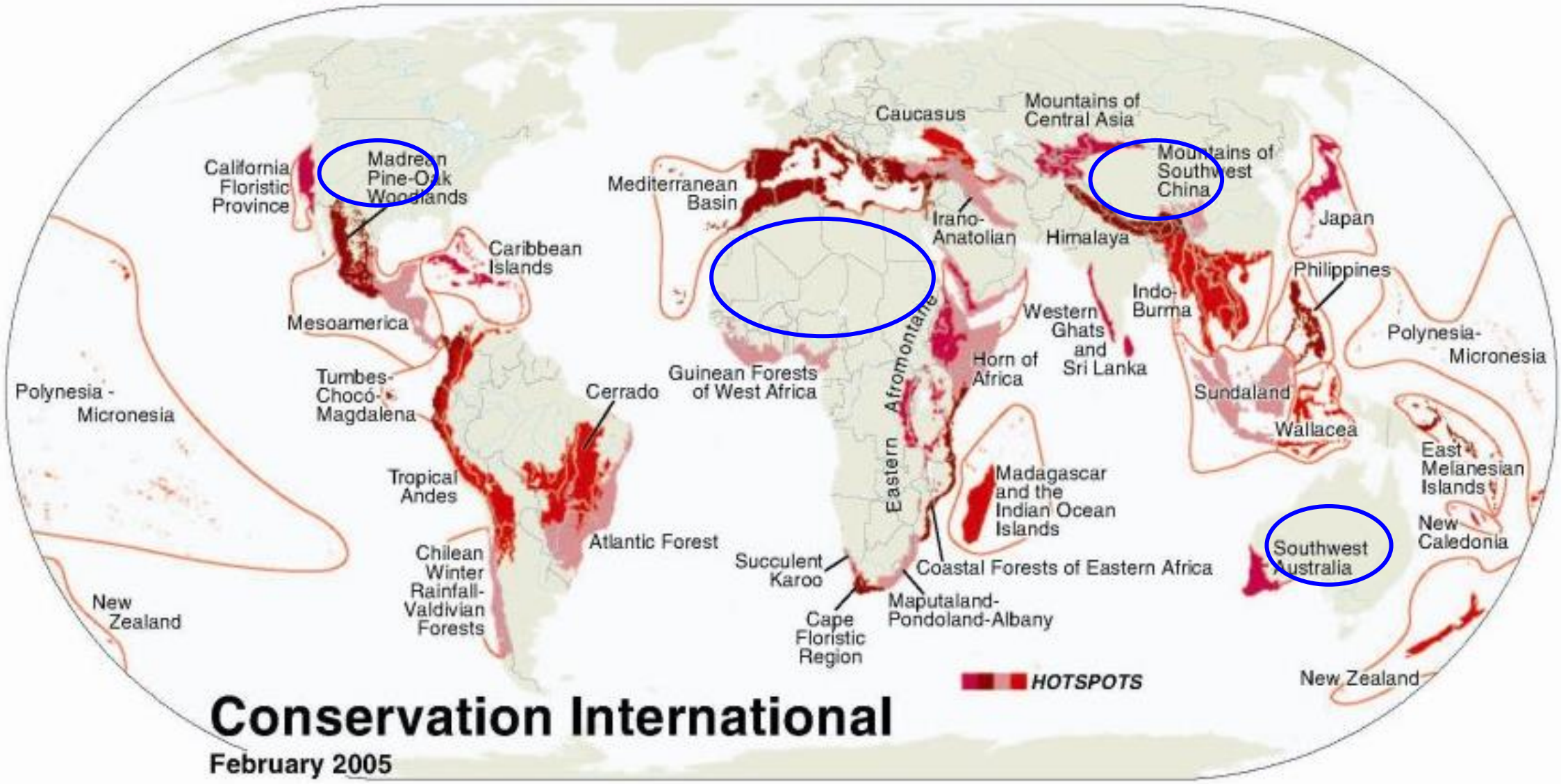

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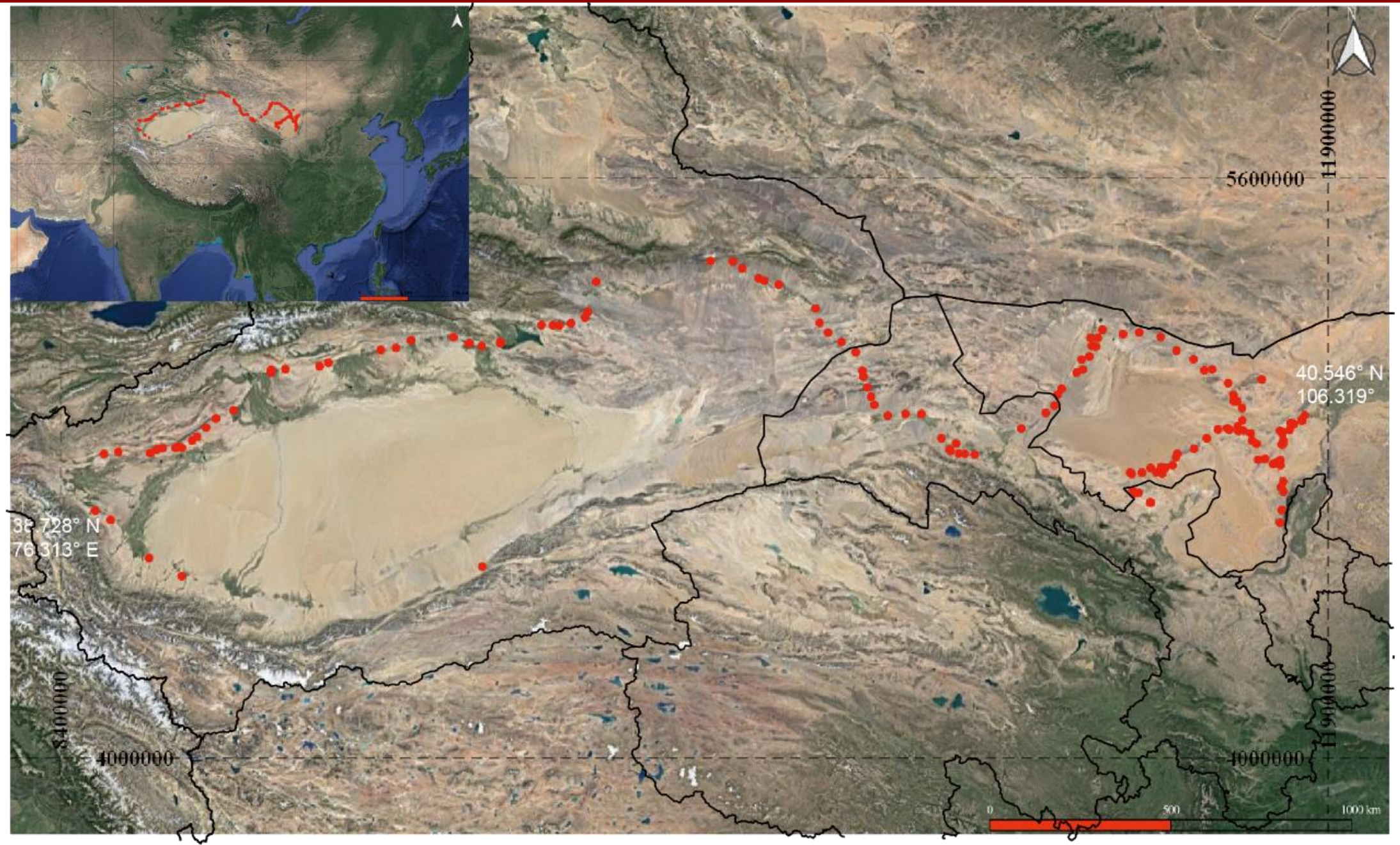
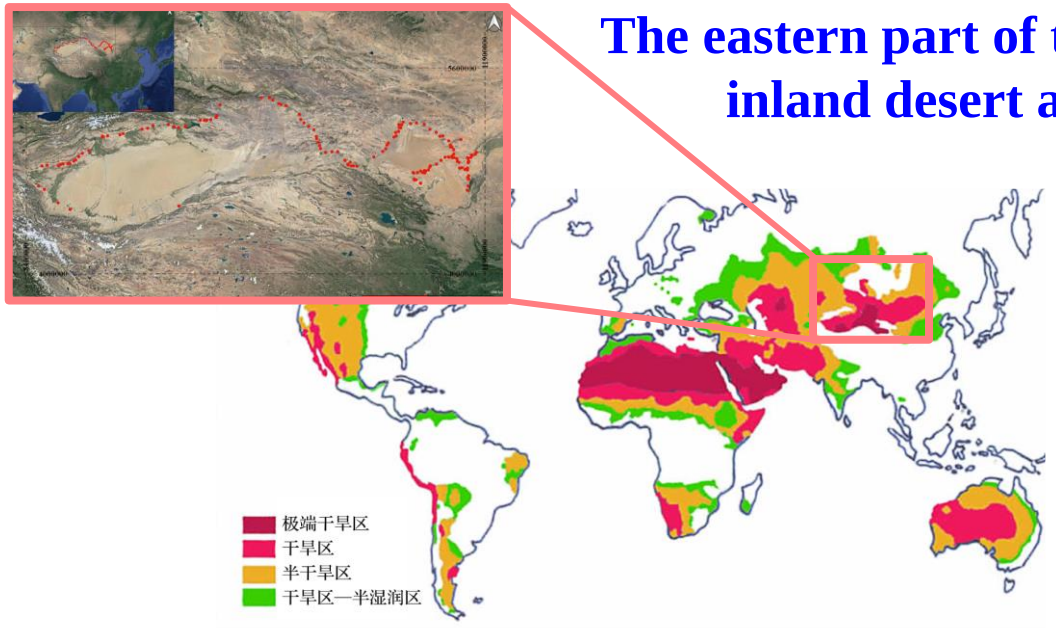
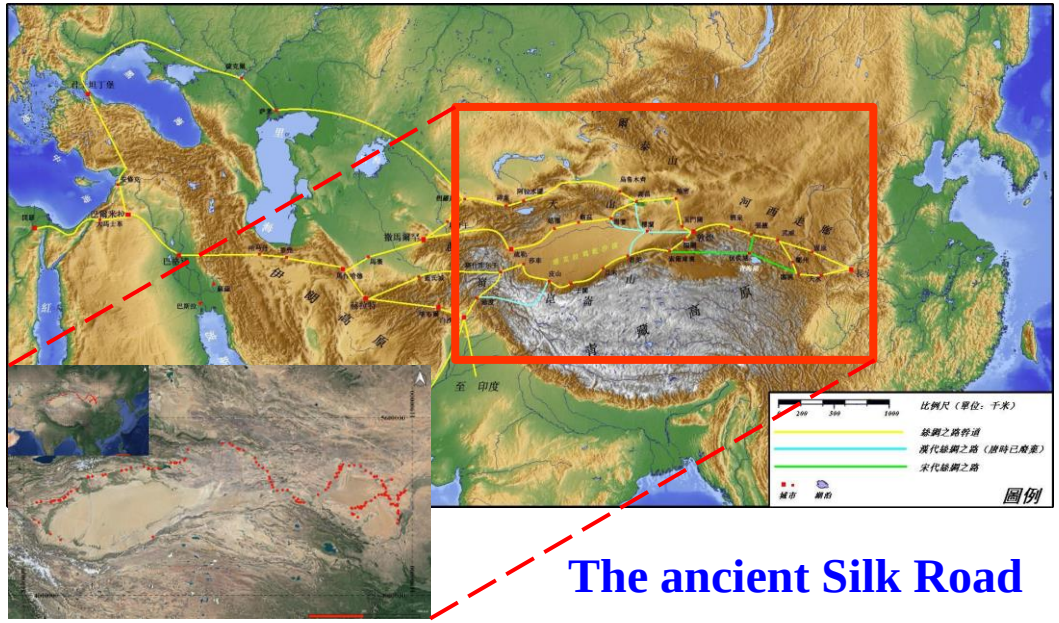


Introduction

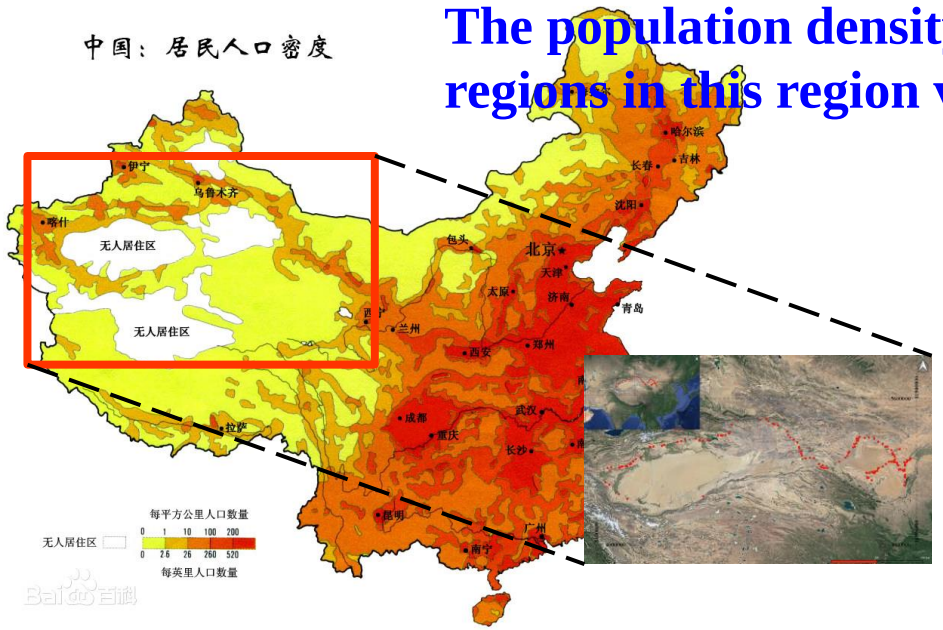
The eastern part of the Asian inland desert area

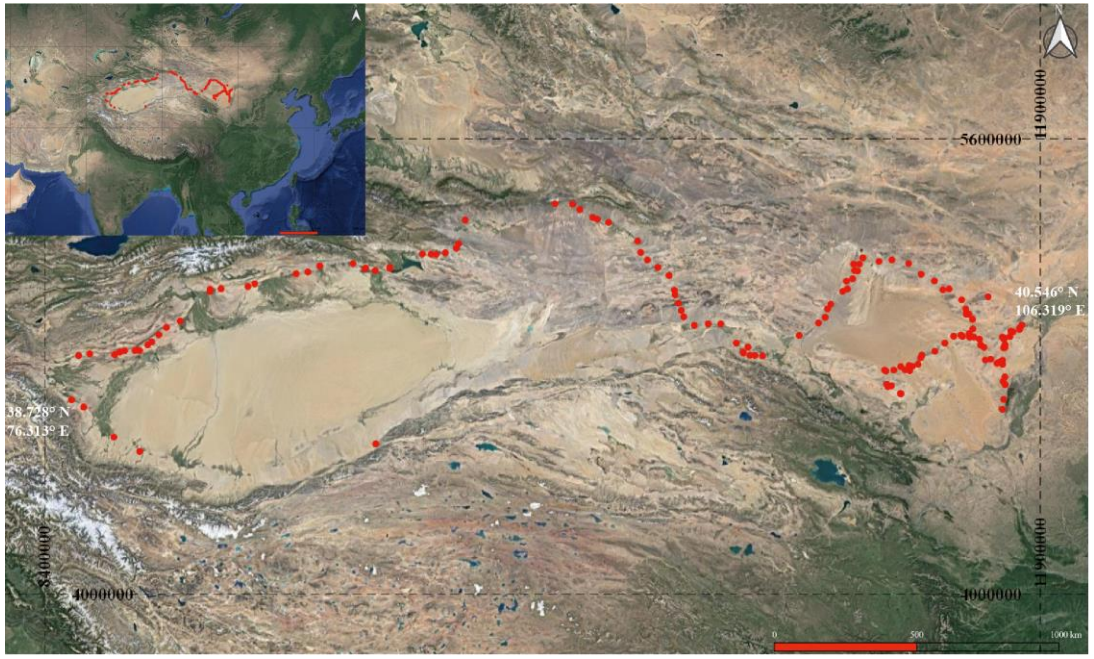




The ancient Silk Road

The population density of different regions in this region varies greatly





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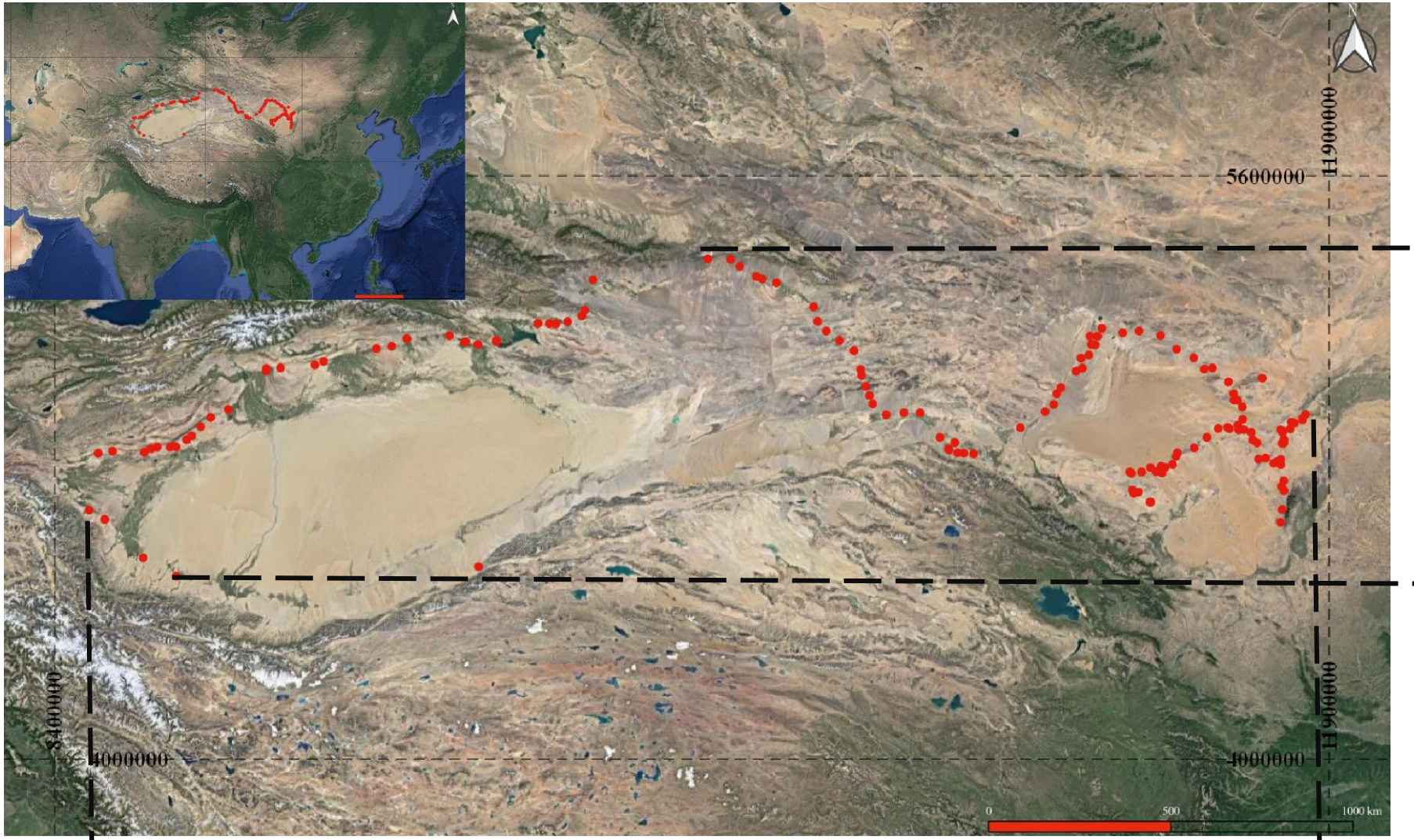


N 43.390°

>5°

N 37.266°

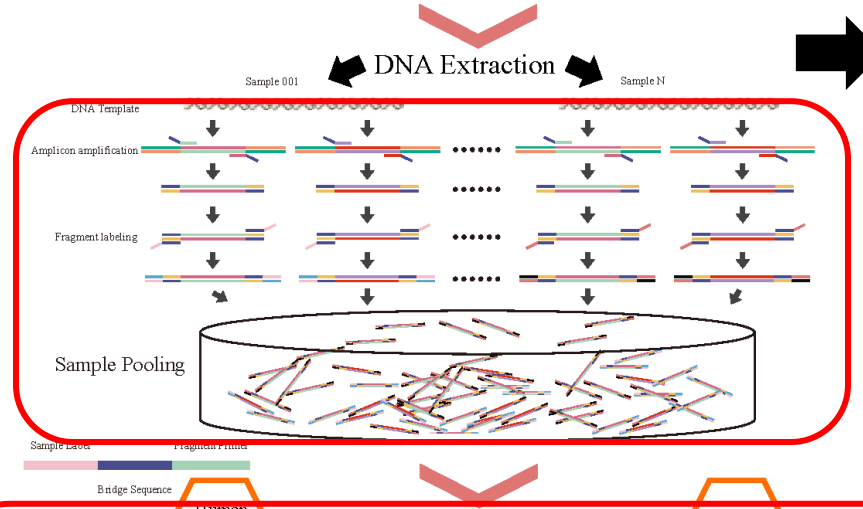
E 76.313°

>30°

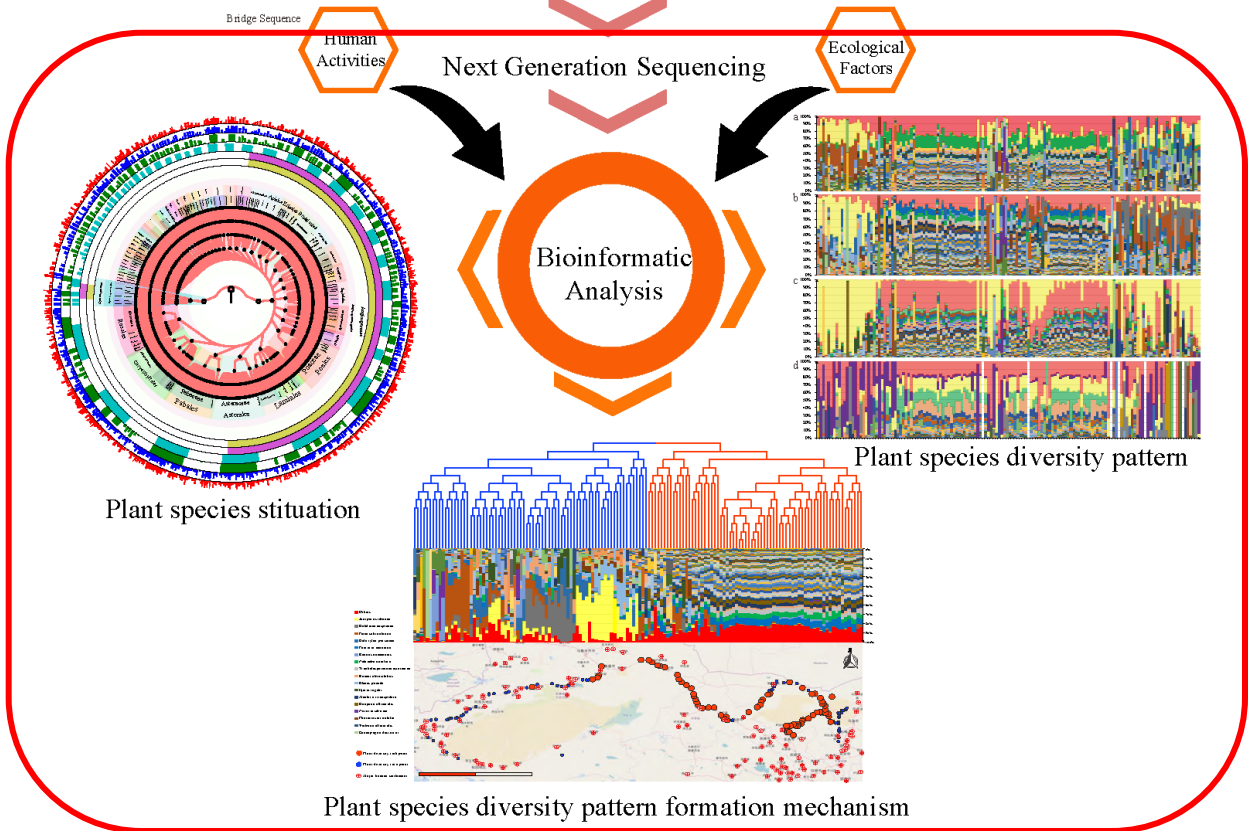
E 106.319°

Introduction

Total DNA Extraction



Labelling PCR Amplification

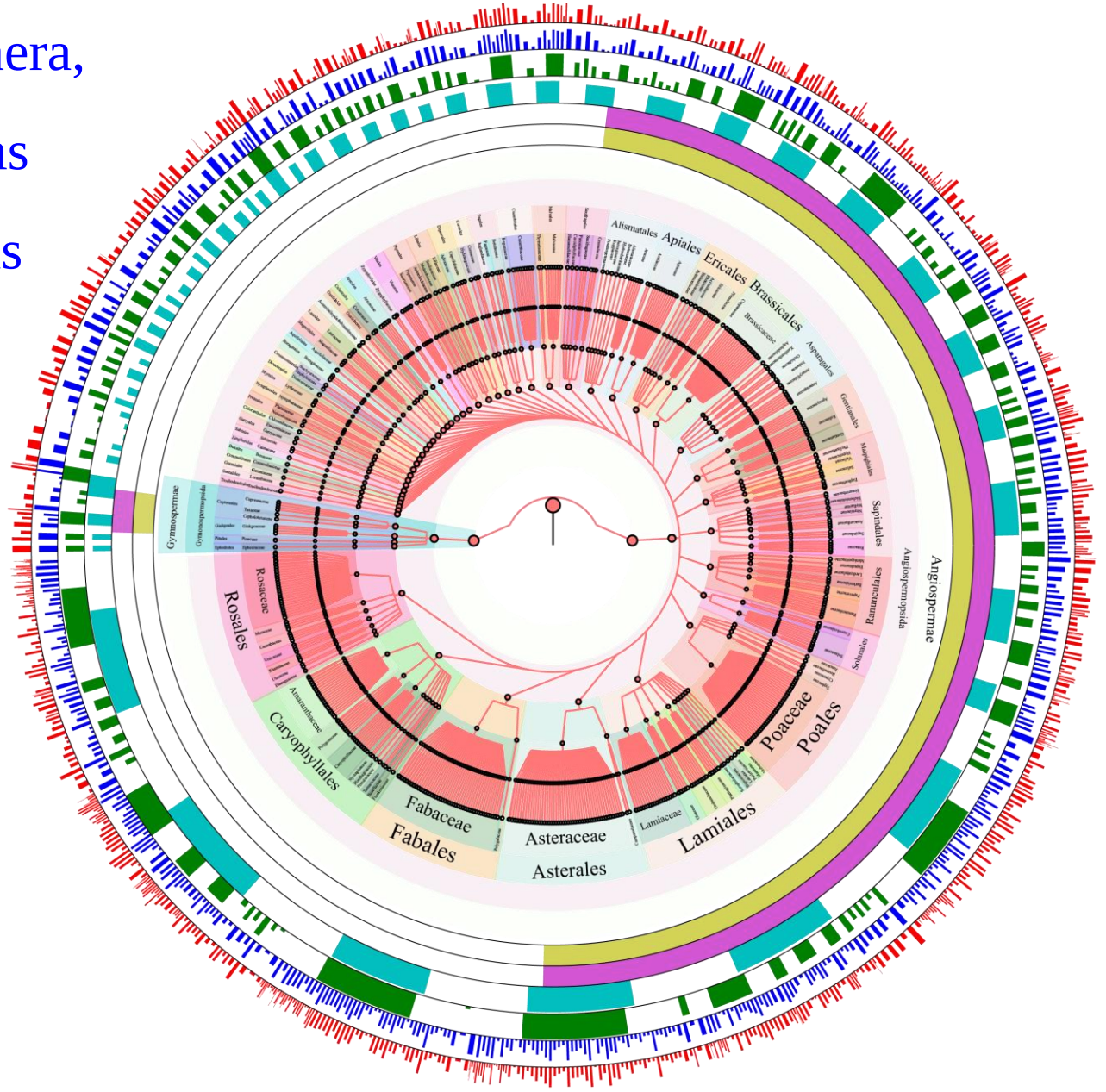


Bioinformatics Analysis

Results and Discussion

This study found a total of 65 families, 291 genera, and 671 plant species in the region, angiosperms accounting for 97.8% of the total, gymnosperms accounting for 2.2% of the total.

Fabaceae	72
Asteraceae	56
Rosaceae	55
Poaceae	40
Amaranthaceae	35
Solanaceae	23
Brassicaceae	22



Results and Discussion

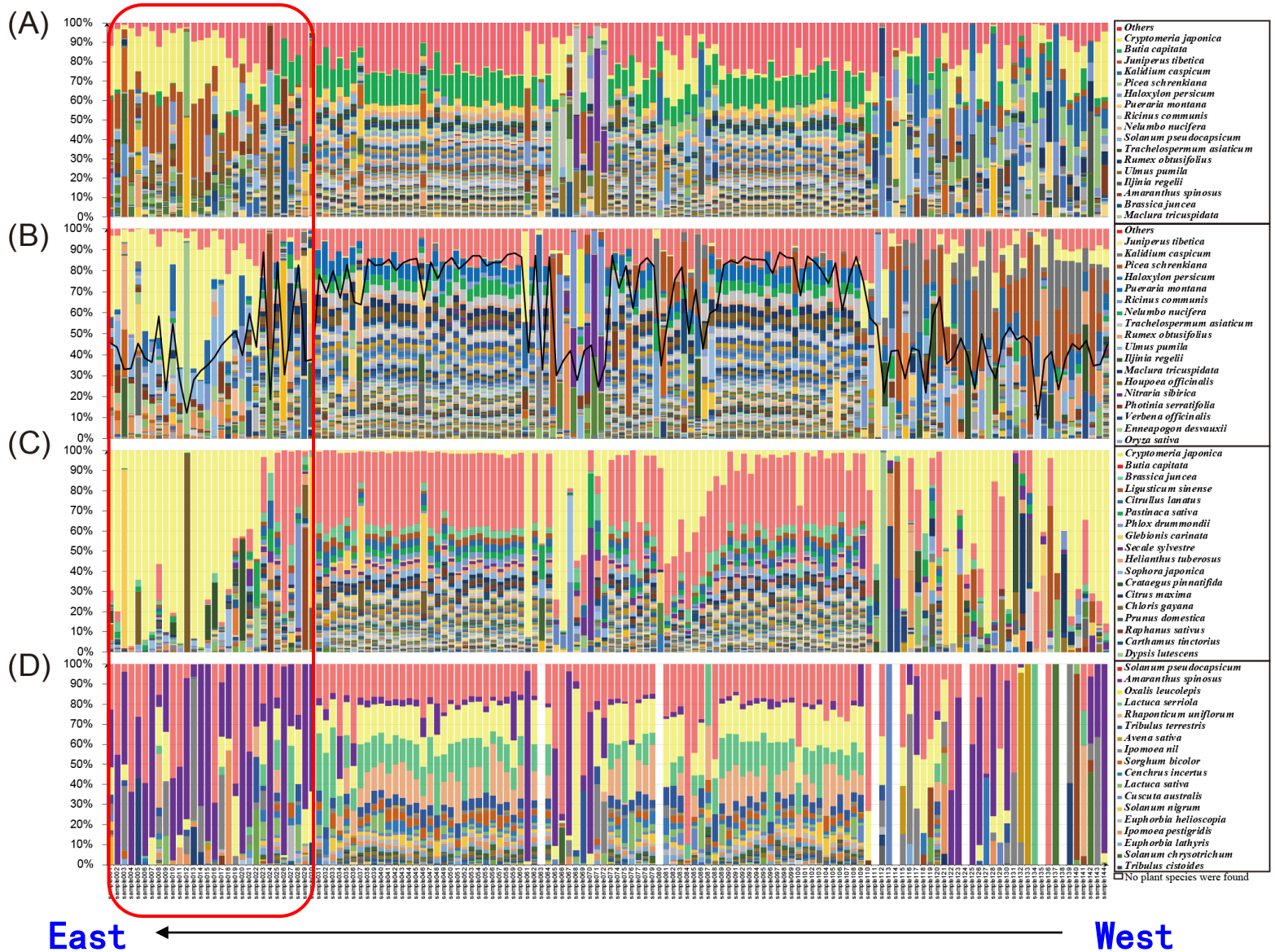
Spatial pattern of plant species in the eastern section of the Silk Road

Total Plants

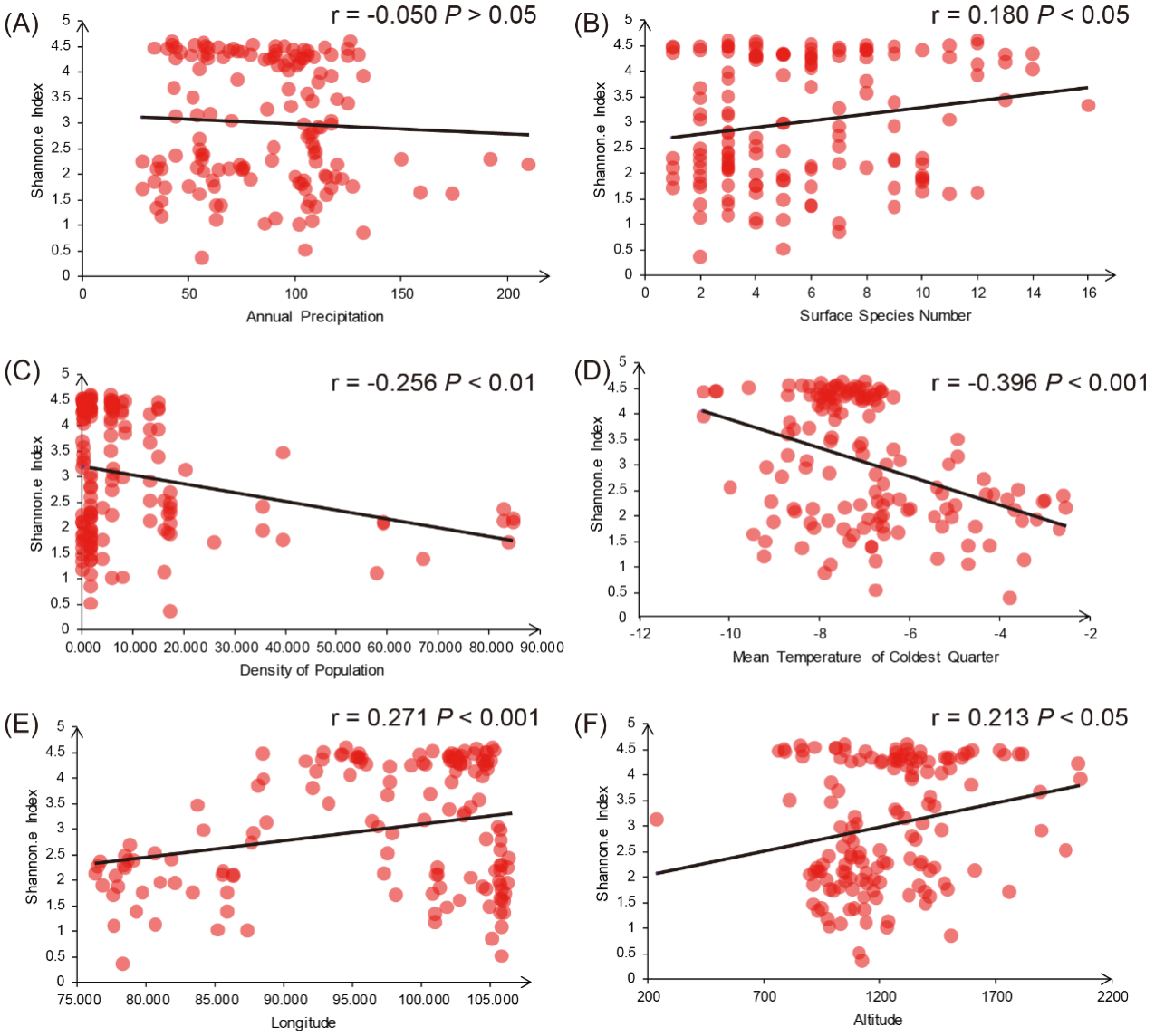
Wild Plants

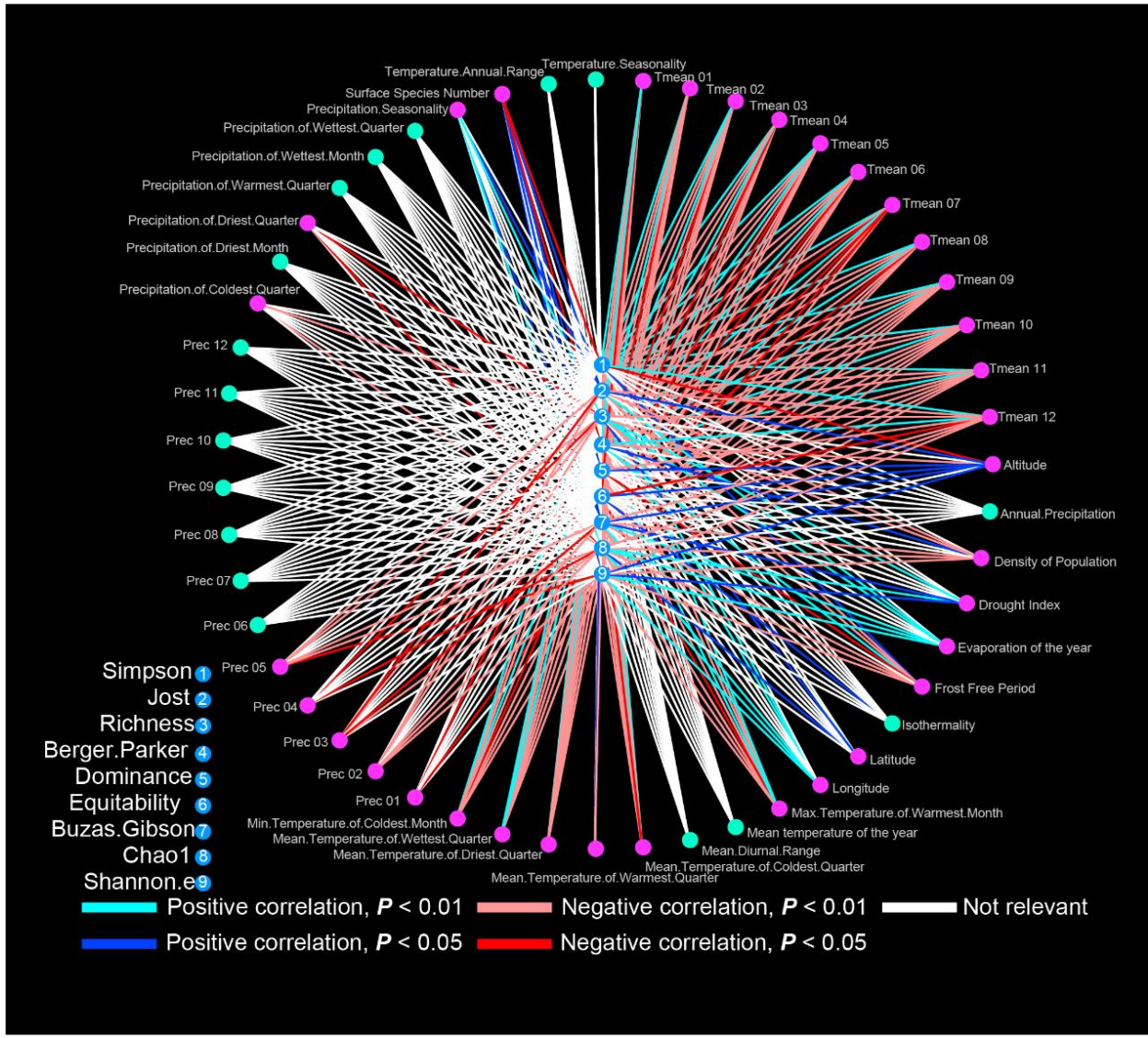
Cultivated Plants

Invasive Plants

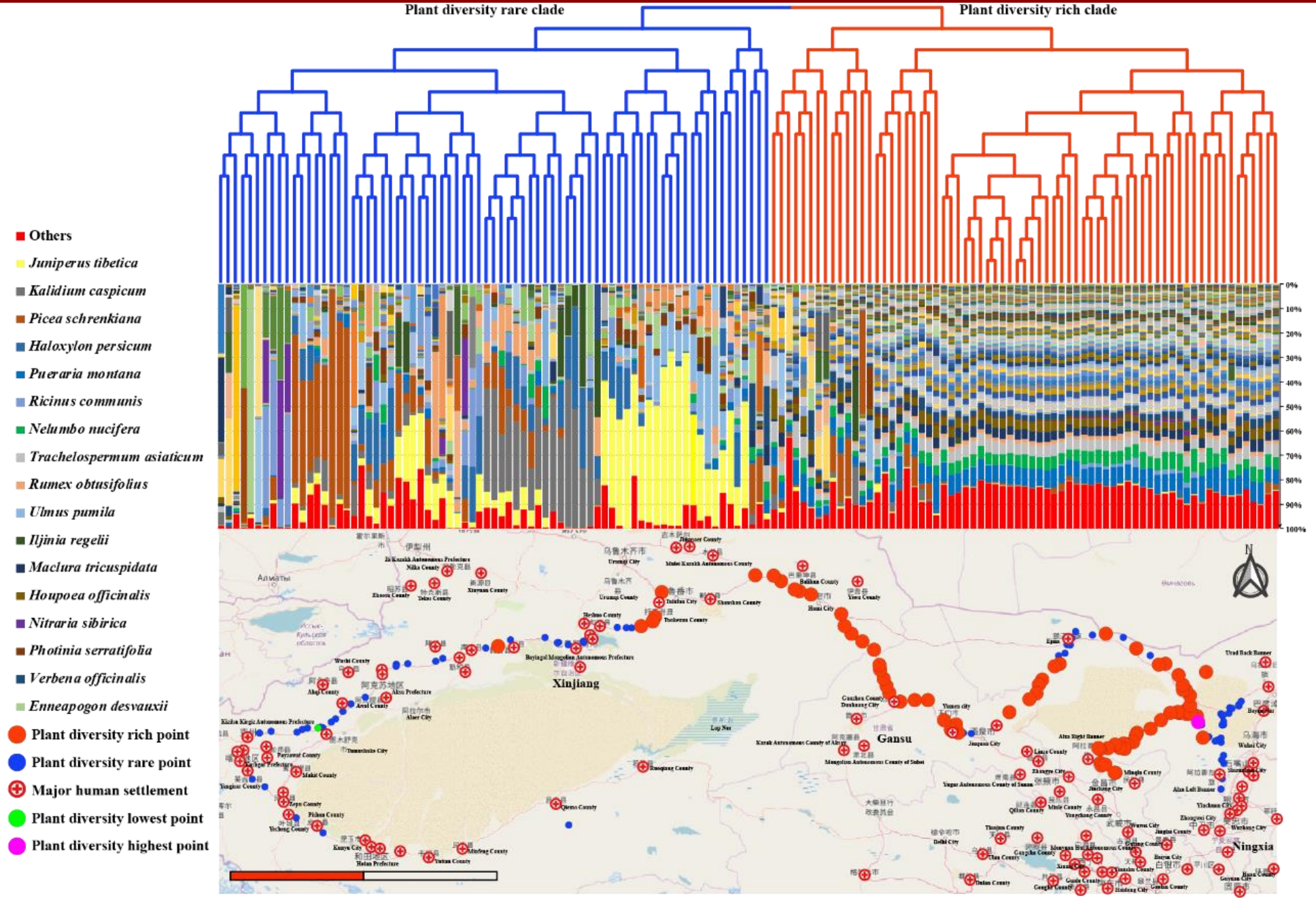


Results and Discussion





Results and Discussion



Summary

Environmental DNA is a quick and accurate indicator for plant diversity assessment.

First using environmental DNA assessed large scale plant species diversity.

Temperature is the main ecological factors affecting desert plant diversity.

Human activities were proved to affect plant species diversity in desert area.

Proposed the hypothesis: plants in desert areas depend on groundwater for survival.

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