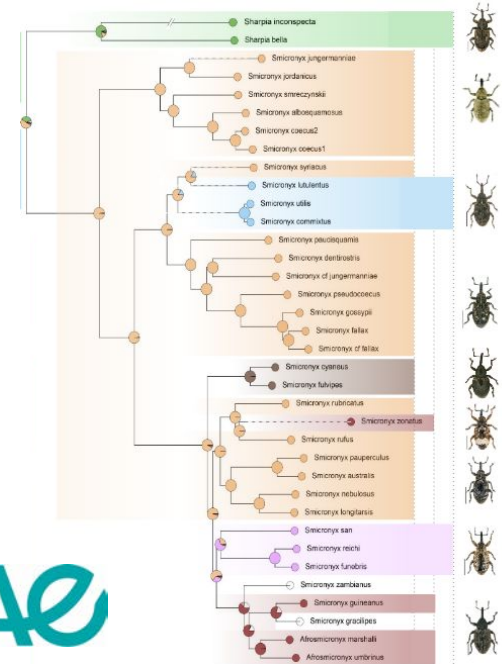


# From collections to phylogenomics: unraveling the evolution of Smicronychini

Zelvelder B., Kergoat G.J., Benoit L., Haran J. & Allio R.

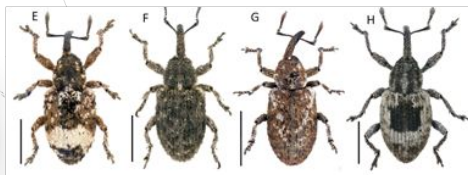
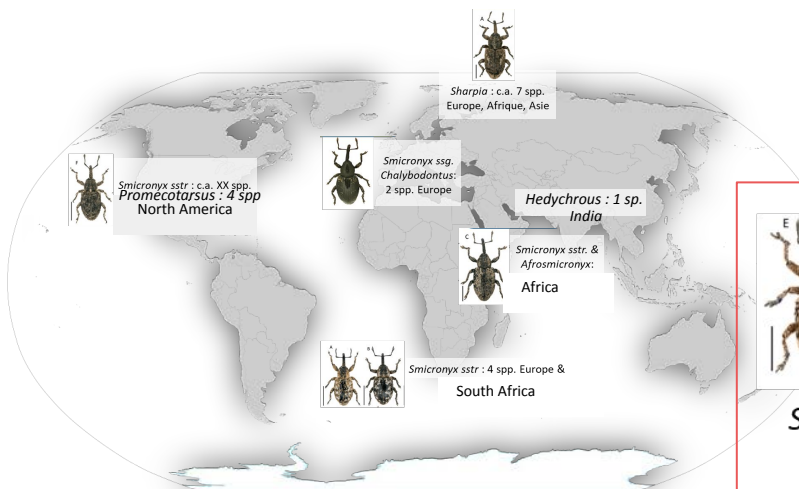
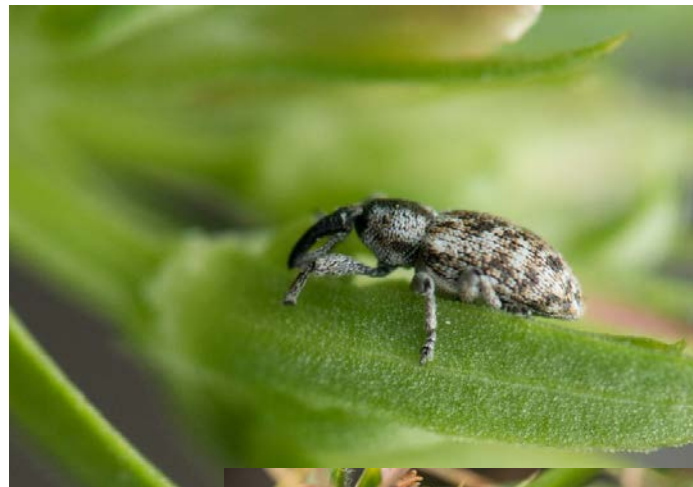


# Introduction

Ordre : Coleoptera

Famille : Curculionidae

Tribu : **Smicronychini**



*Smicronyx sstr.* : c.a. 100 spp.  
Worldwide



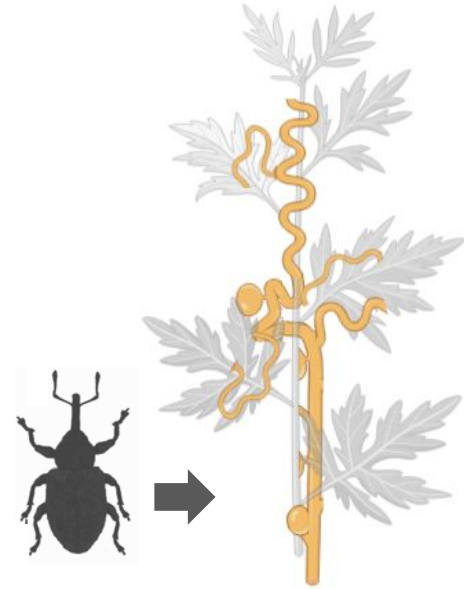
# Introduction

## Holoparasitic plants

Convolvulaceae



Orobanchaceae



Holoparasitic plants

# Introduction

## Holoparasitic plants

Convolvulaceae

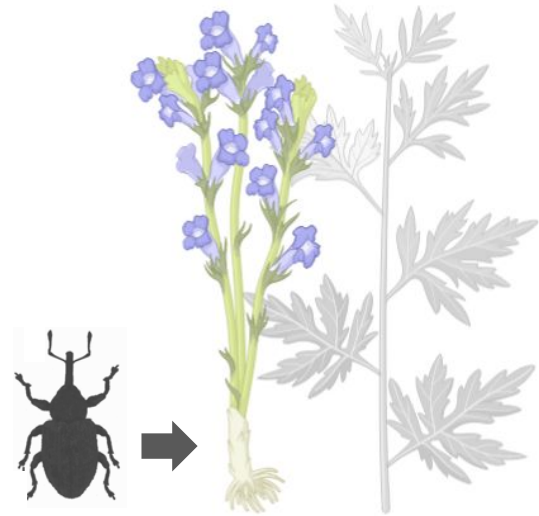
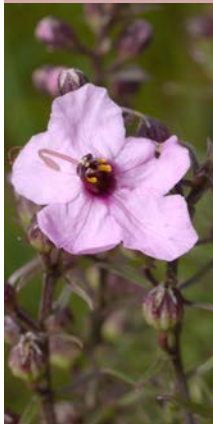


Orobanchaceae



## Hemiparasitic plants

Orobanchaceae



Hemiparasitic plants

# Introduction

## Holoparasitic plants

Convolvulaceae



Orobanchaceae



## Hemiparasitic plants

Orobanchaceae



## Non-parasitic plants

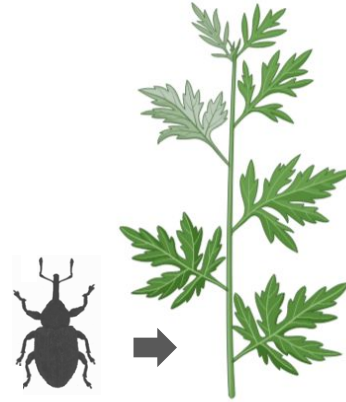
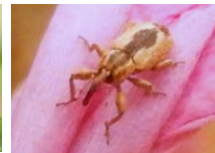
Asteraceae



Gentianaceae



Convolvulaceae



Non-parasitic plants

# Introduction

## Holoparasitic plants

Convolvulaceae

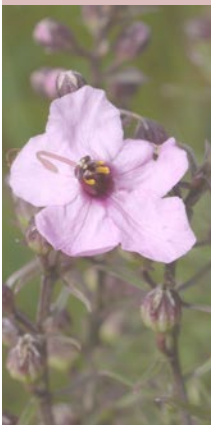


Orobanchaceae



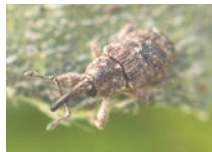
## Hemiparasitic plants

Orobanchaceae



## Non-parasitic plants

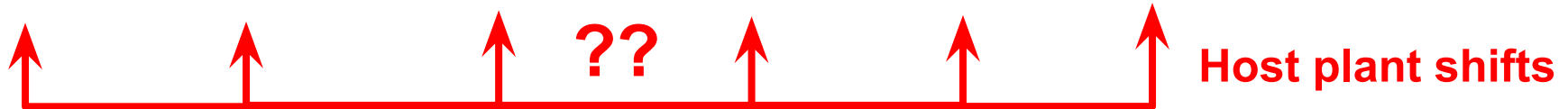
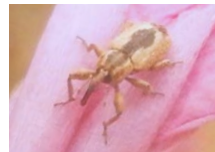
Asteraceae



Gentianaceae



Convolvulaceae



# Introduction

## Holoparasitic plants

Convolvulaceae

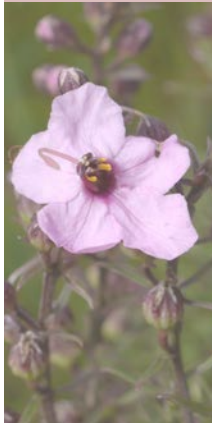


Orobanchaceae



## Hemiparasitic plants

Orobanchaceae



## Non-parasitic plants

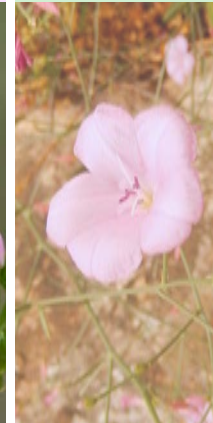
Asteraceae



Gentianaceae



Convolvulaceae

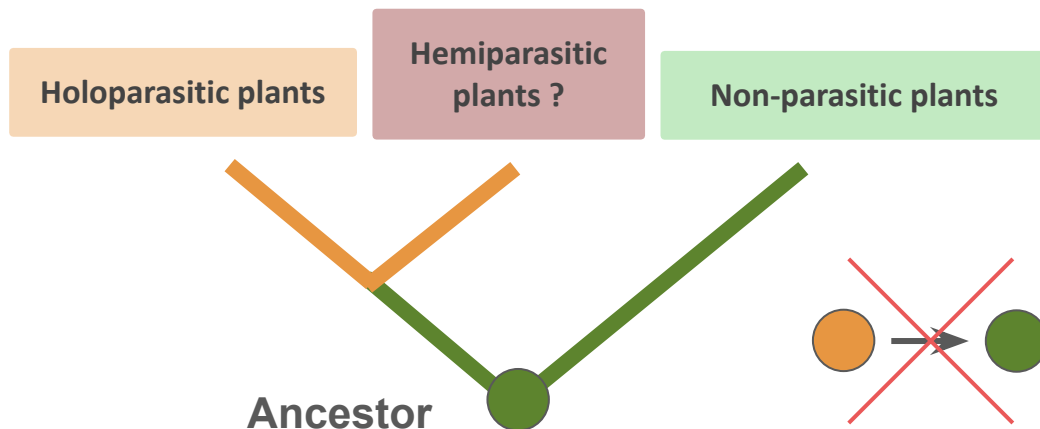
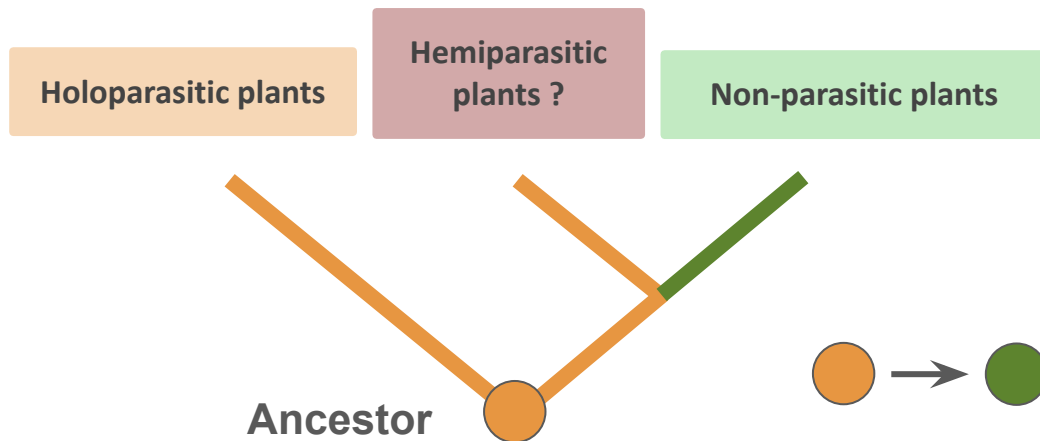


facilitation?



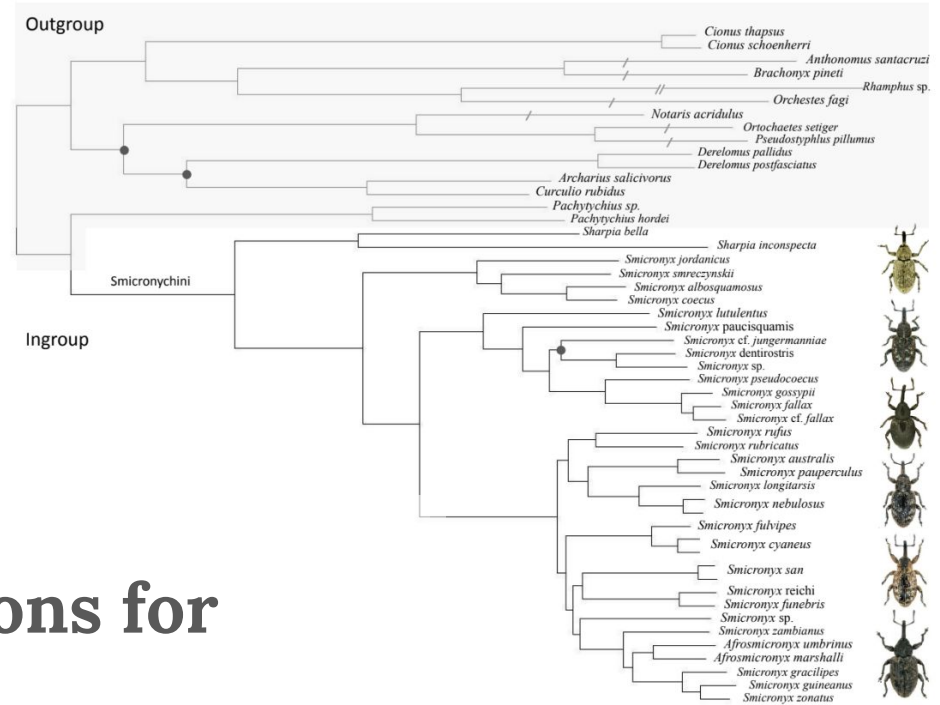
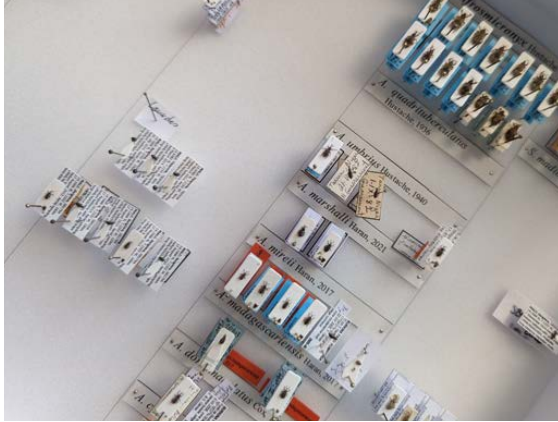
Host plant shifts

Did  
Parasitic interactions  
**mediate**  
Host plant shifts  
?





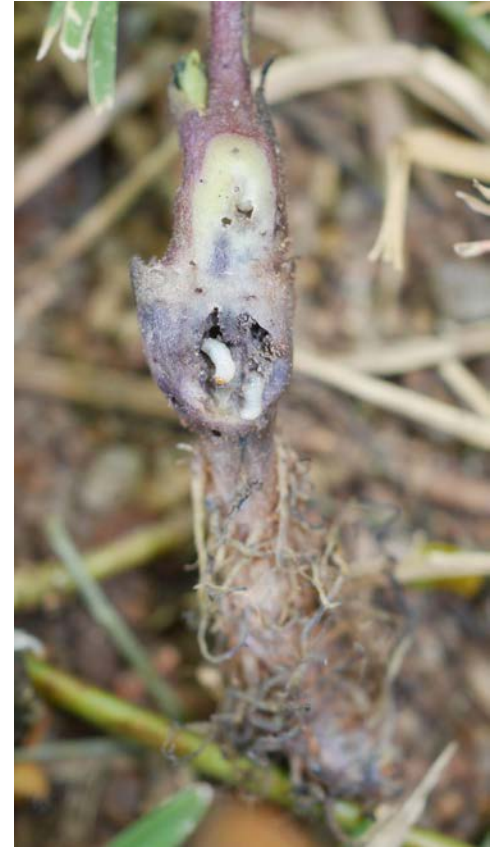
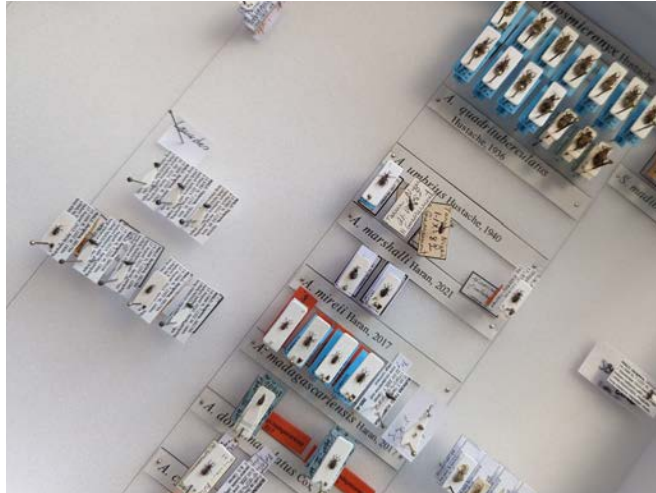
# Material & Methods



The central role of collections for phylogenomics

# Material & Methods

- Over 10 years of sampling and exchanges with Museums
- Species sometimes hard to sample
- Specimen data conserved for decades

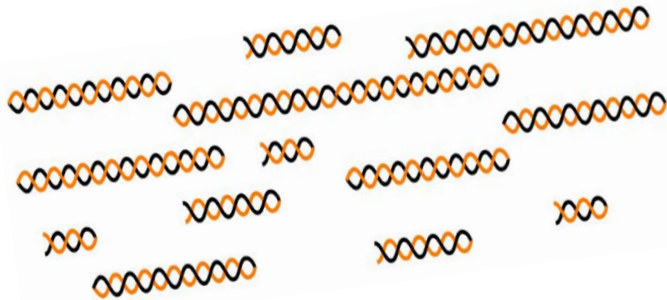


## Material & Methods

- Over 10 years of sampling and exchanges with Museums
- Species sometimes hard to sample
- Specimen data conserved for decades



**Fragmented DNA**



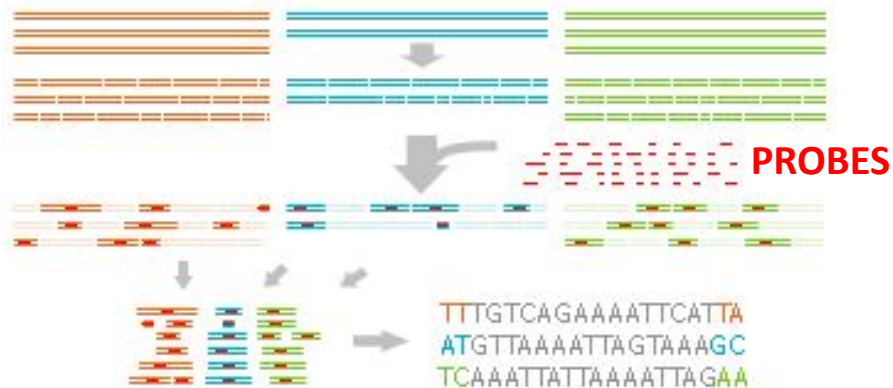
**Target capture**

# Material & Methods

## Taxon sampling



## Target capture



Assembly & Alignments

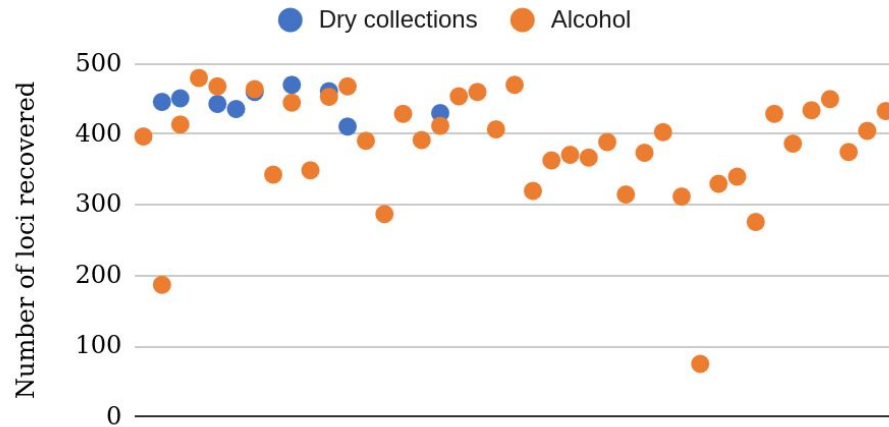
**Phylogenomic pipeline**

Phylogenetic inference

**Ancestral character state reconstruction**

# Results & Discussion

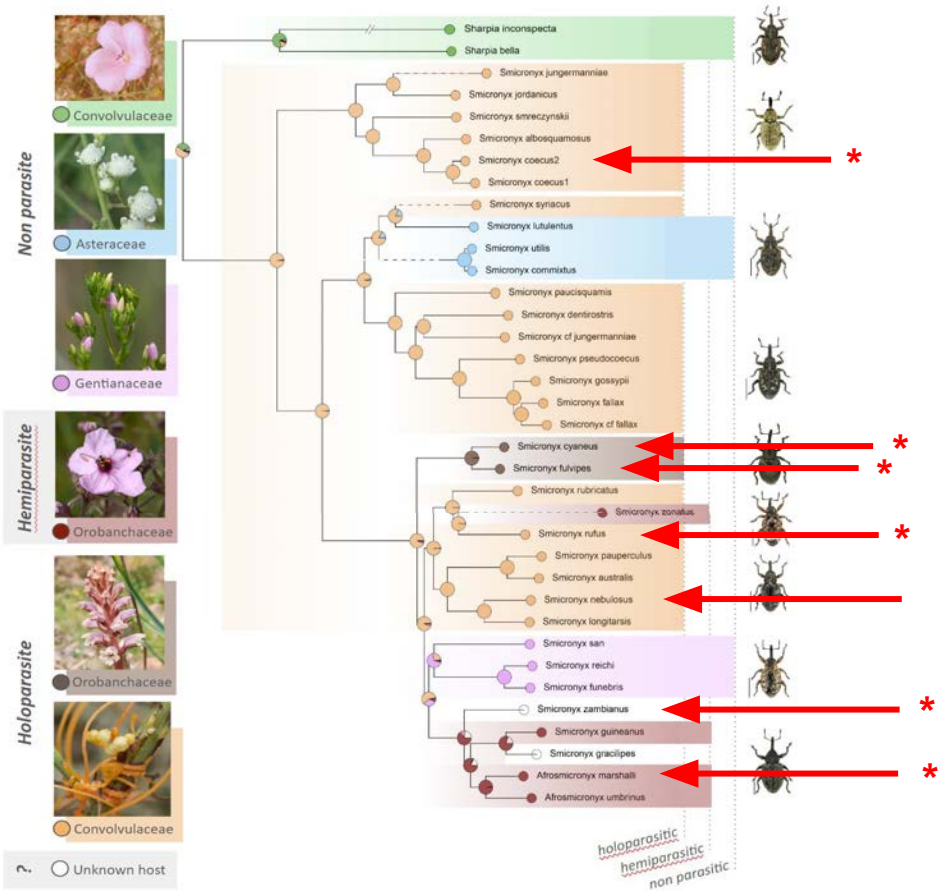
Number of loci recovered by target capture



**But only 9/20 specimen passed filtration**

=> Why ?

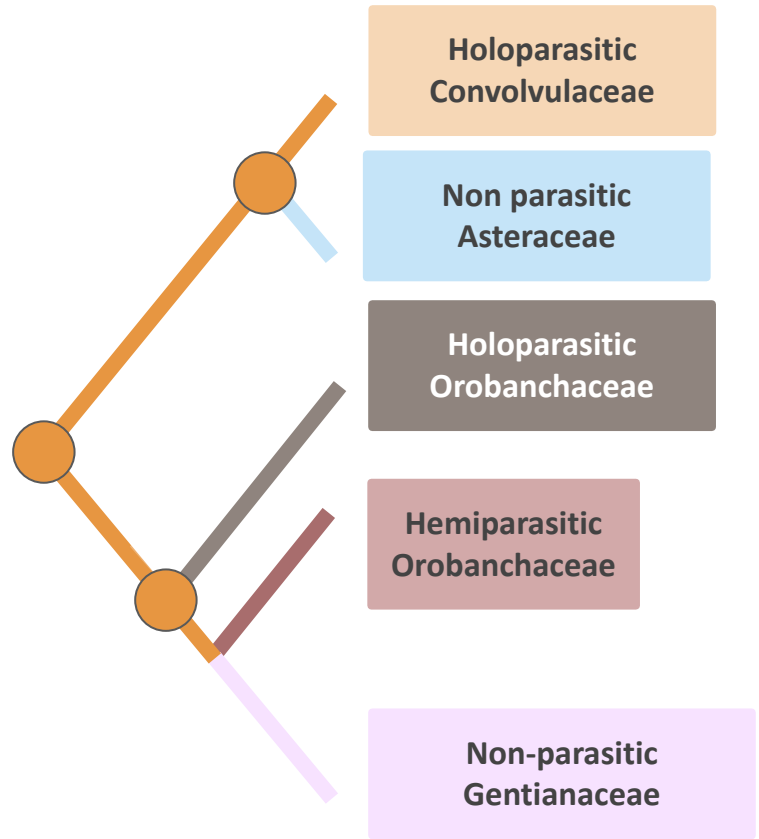
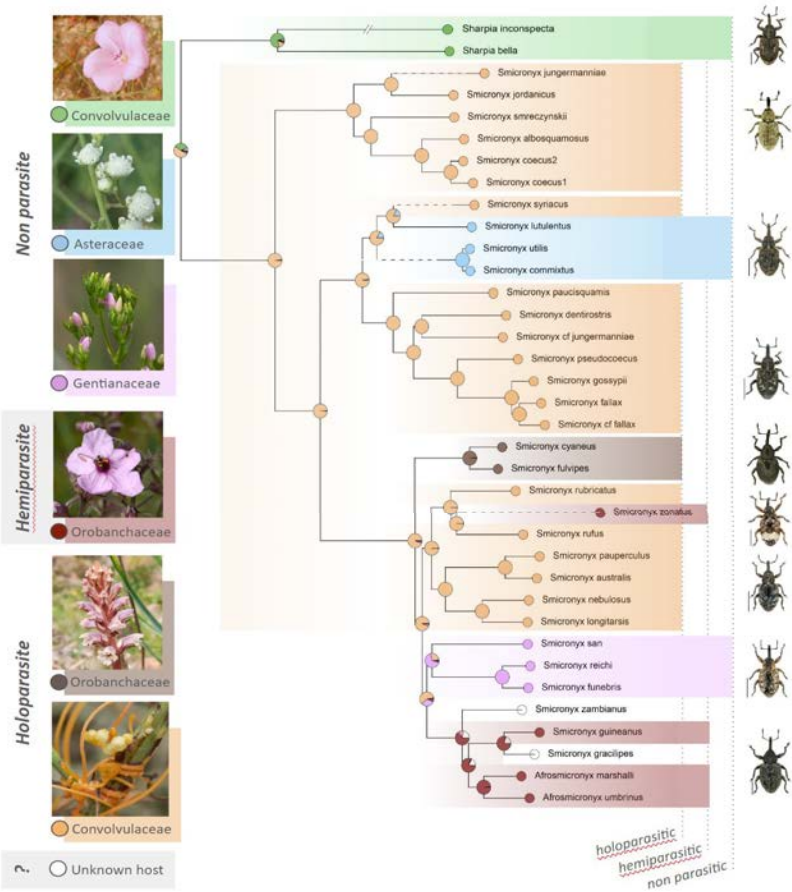
# Results & Discussion



## First molecular phylogeny of the Smicronychini

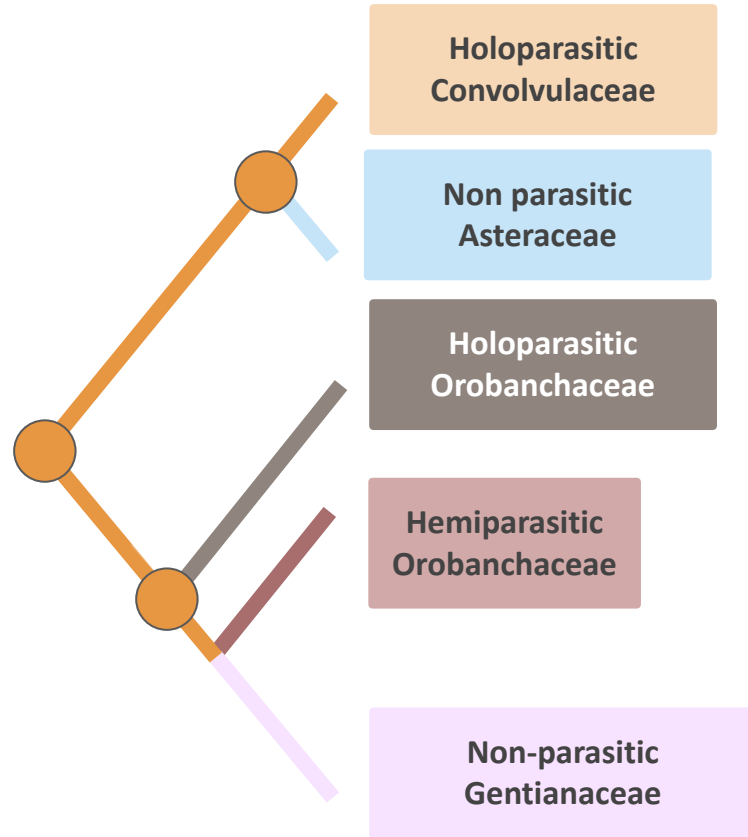
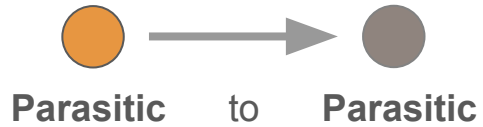
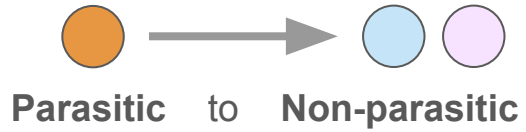
**Individuals from museums**  
**\* = only record for this species for target capture**

# Results & Discussion



# Results & Discussion

## Host plant shifts inferred:





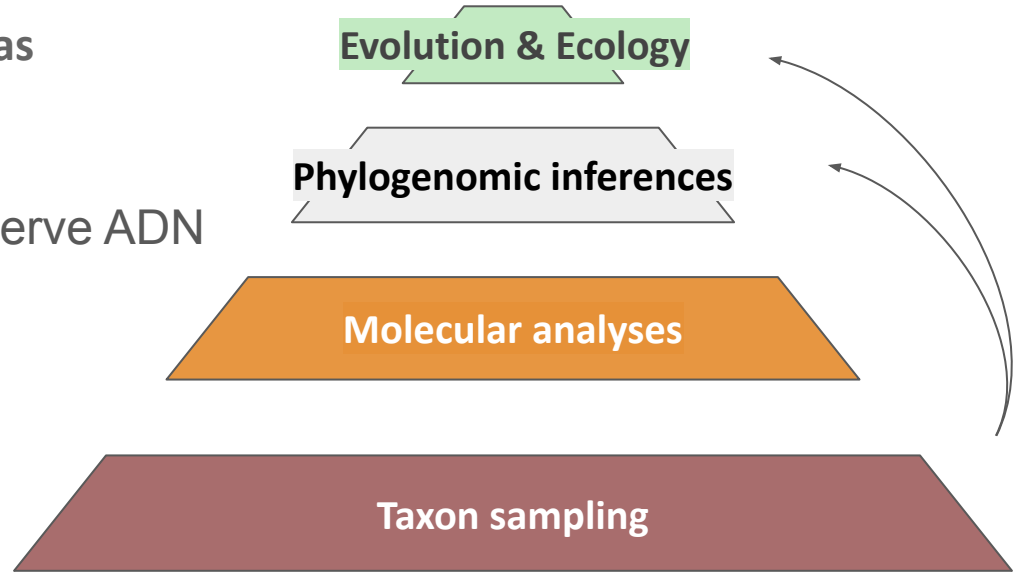
# Conclusion

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## Collections:

- necessary against sampling bias

=> Better understand how to conserve ADN



Thanks for your attention !



| *Smicronyx cyaneus*, *Cuscuta epithymum*, *Smicronyx reichi-funebris* ; Photos : B. Zelvelder