



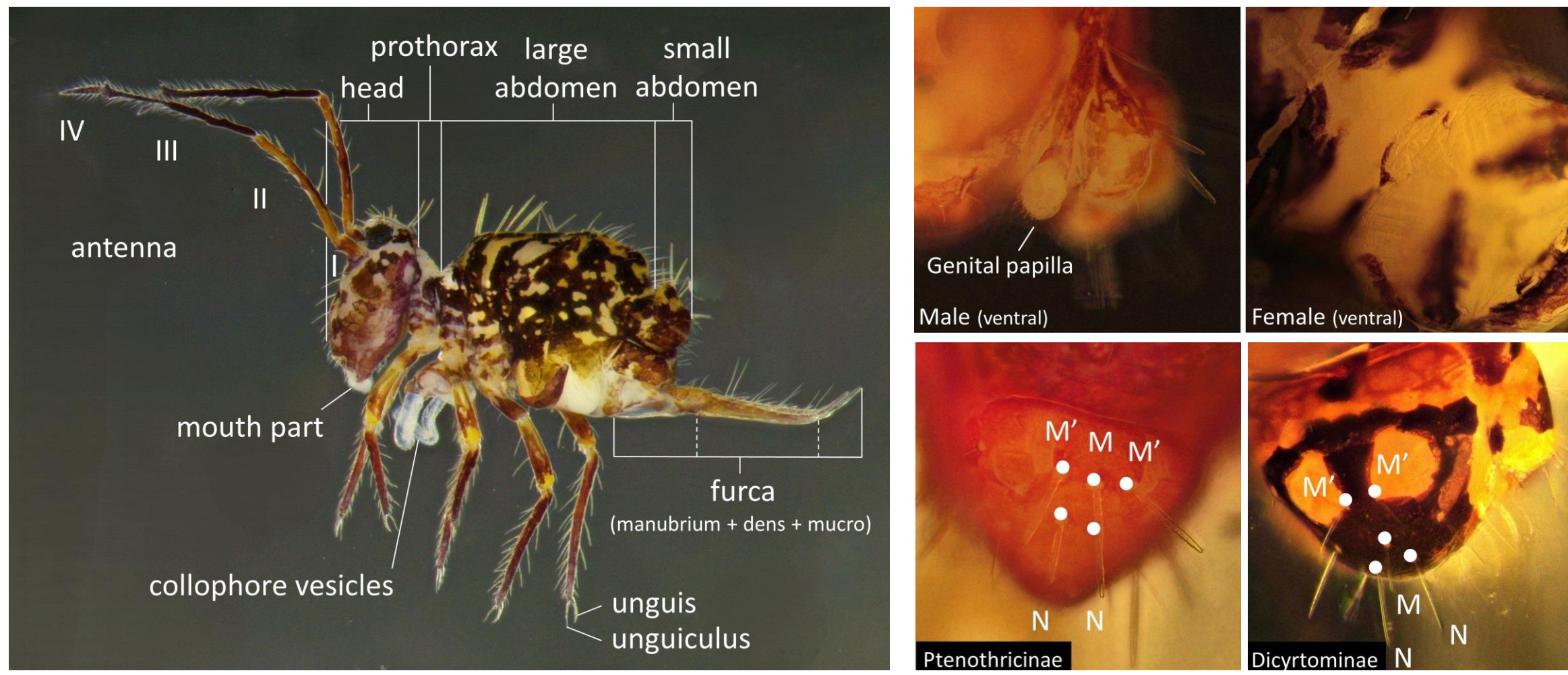
Taxonomy of Dicyrtomidae (Collembola: Symphypleona) in Taiwan

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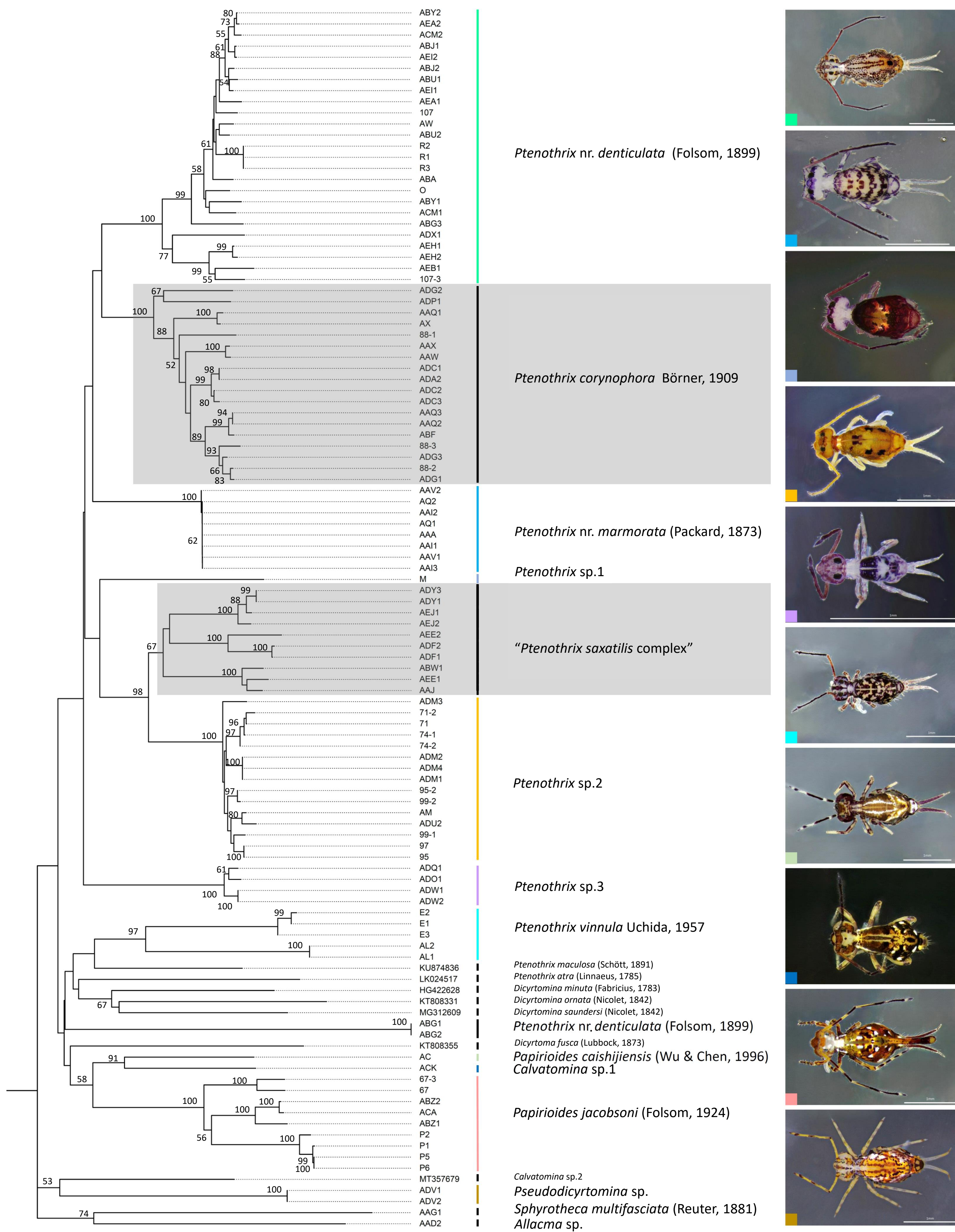
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■ Introduction to Dicyrtomidae

- Globular springtails, Ant. VI shorter than 1/2 Ant. III. (Bretfeld 1999)
- Atmobiotic. Usually live in shady woods near soil, under stone and dead wood.
- In the world: 222 species, 9 genera, 2 subfamilies (Bellinger et al. 1996-2022)
- In Taiwan: 7 species, 3 genera, 2 subfamilies (Cheng et al. 2022)
- Most Dicyrtomidae species in Taiwan are also recorded in Japan and Korea.



■ COI phylogeny of Dicyrtomidae



Neighbor-joining tree based on COI sequences and Kimura's two-parameter model. Numbers near nodes are bootstrap values. Colored lines indicate potential species recognized by integrating morphological and molecular evidence. Two Smnthuridae, *Sphyrotheca multifasciata* and *Allacma* sp., are used as outgroups.

■ References

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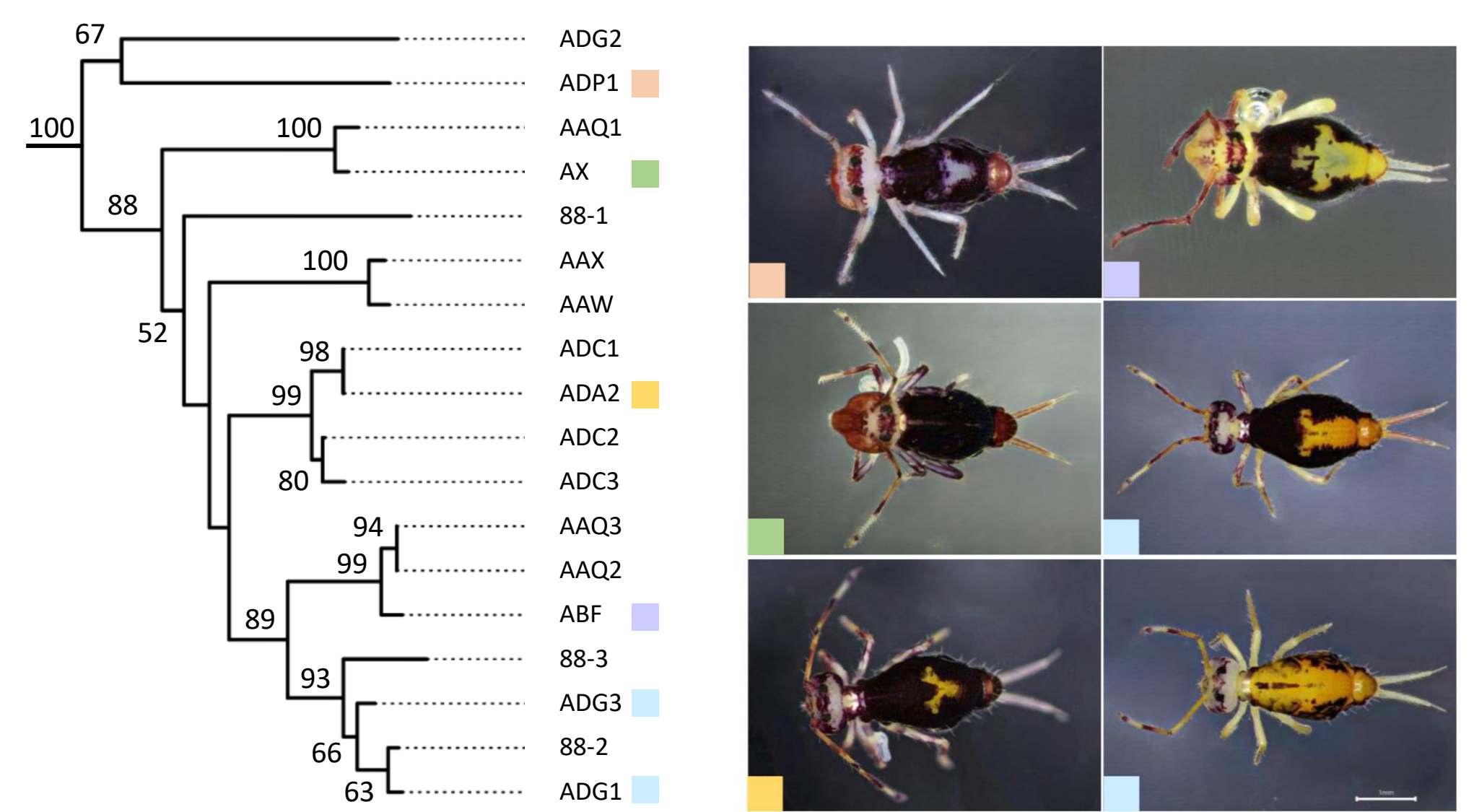
■ Materials and Methods

- Up to 2,000 samples were collected throughout Taiwan using beating, searching and aspirating, Berlese Funnel after sifting leaf litter, pitfall trap, and Malaise trap.
- Ethanol and slide specimens were examined using a compound microscope.
- 103 cytochrome c oxidase subunit 1 (COI) sequences were used to construct a neighbor-joining tree.
- Clades with *p*-distances larger than 8% were tentatively recognized as potential species (Katz et al. 2015). They were then combined with morphological identification for species delimitation.

Sampling locations

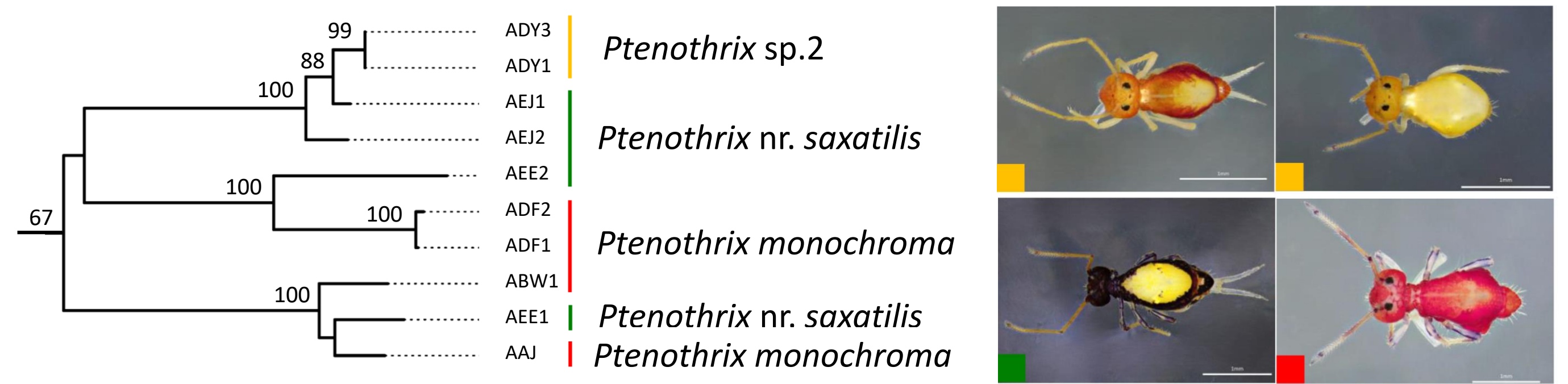


■ Polymorphism of *Ptenothrix corynophora*



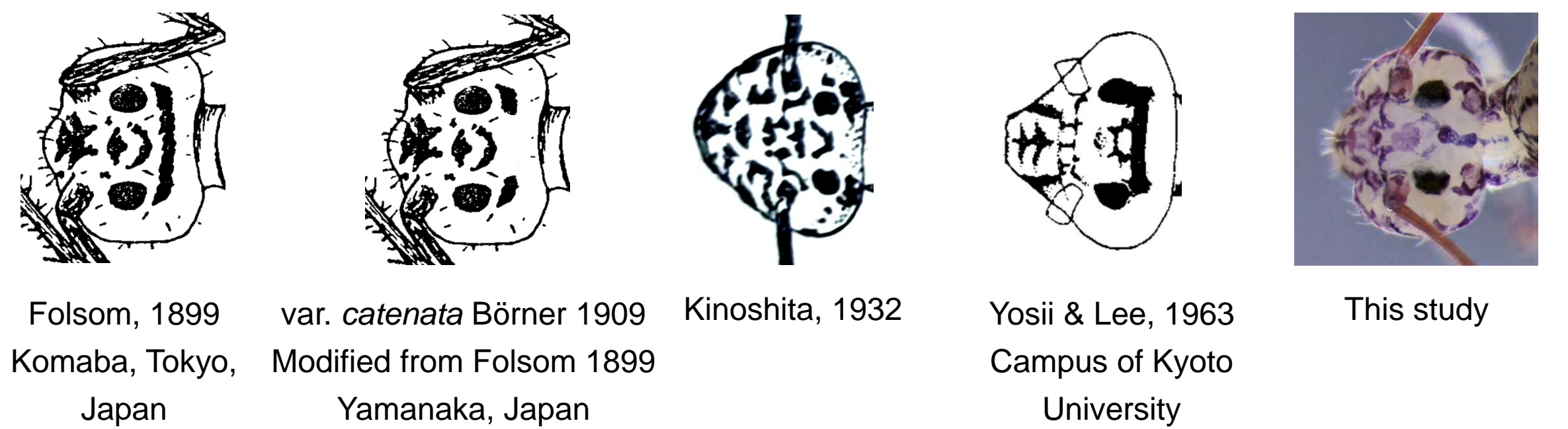
■ “*Ptenothrix saxatilis* complex”

- Both *P. nr. saxatilis* and *P. monochroma* are not monophyletic.
- Ongoing literature review and morphological examination will help reevaluate their taxonomic status.



■ *Ptenothrix denticulata* (Folsom, 1899)

- Potential *P. denticulata* in Taiwan has different patches on dorsal head.
- Are the specimens in Taiwan *P. denticulata* or a different species?
- It is necessary to redescribe the species based on type specimens and acquire specimens from the type locality for molecular analysis.



■ Discussion and Conclusion

- An integrative approach based on morphology and DNA provided new insights into the taxonomy of Dicyrtomidae.
- Richness of Dicyrtomidae in Taiwan increased from 7 to 12 species, but many species remain to be discovered.
- Polymorphism is common in species of Dicyrtomidae.
- COI *p*-distance within the same population can be as high as 8.4%; the minimum of mean interspecific distances is 13.3%.
- Both *P. monochroma* and *P. saxatilis* are not monophyletic.
- 16S and 28S rRNA will be included to study the phylogeny.
- Future work will focus on the taxonomy and phylogeny of Dicyrtomidae.

■ Acknowledgment

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