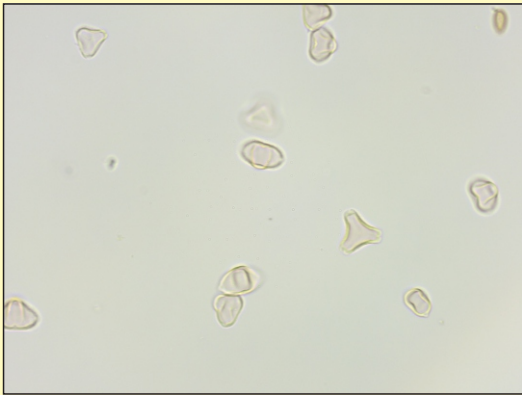


Differentiation of manuka and kanuka pollen in honey

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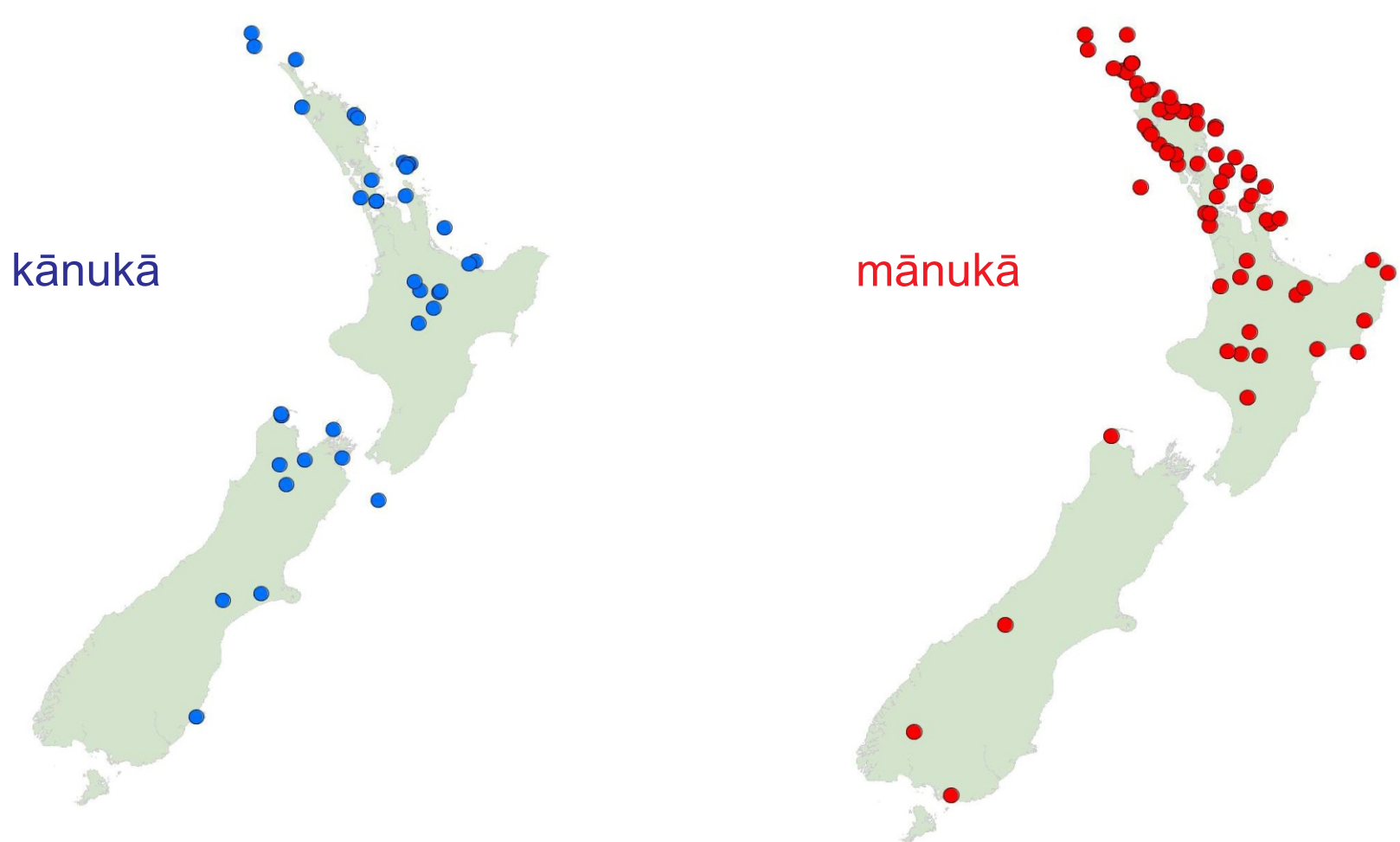


- "Kānuka" is a species complex, recently resolved by de Lange (2014) into 10 distinct botanical species with different but partly overlapping geographic distributions.
- "Mānuka" is extremely variable in respect to growth habit, characteristics of leaf, flower and capsule, and chemistry, and is also genetically diverse. There may be as many as 10 distinct botanical species.
- We examined pollen morphologies of 115 mānuka and kānuka specimens from around New Zealand and found some consistent differences between these species groups.
- The differences in pollen morphology are sufficient to distinguish mānuka and kānuka pollen in honeys
- Honey analyses show that the pollen percentage of mānuka is generally positively correlated to MGO content, once geographically-related mānuka segregates are taken into account (even though MGO content might vary for other reasons).

Methods

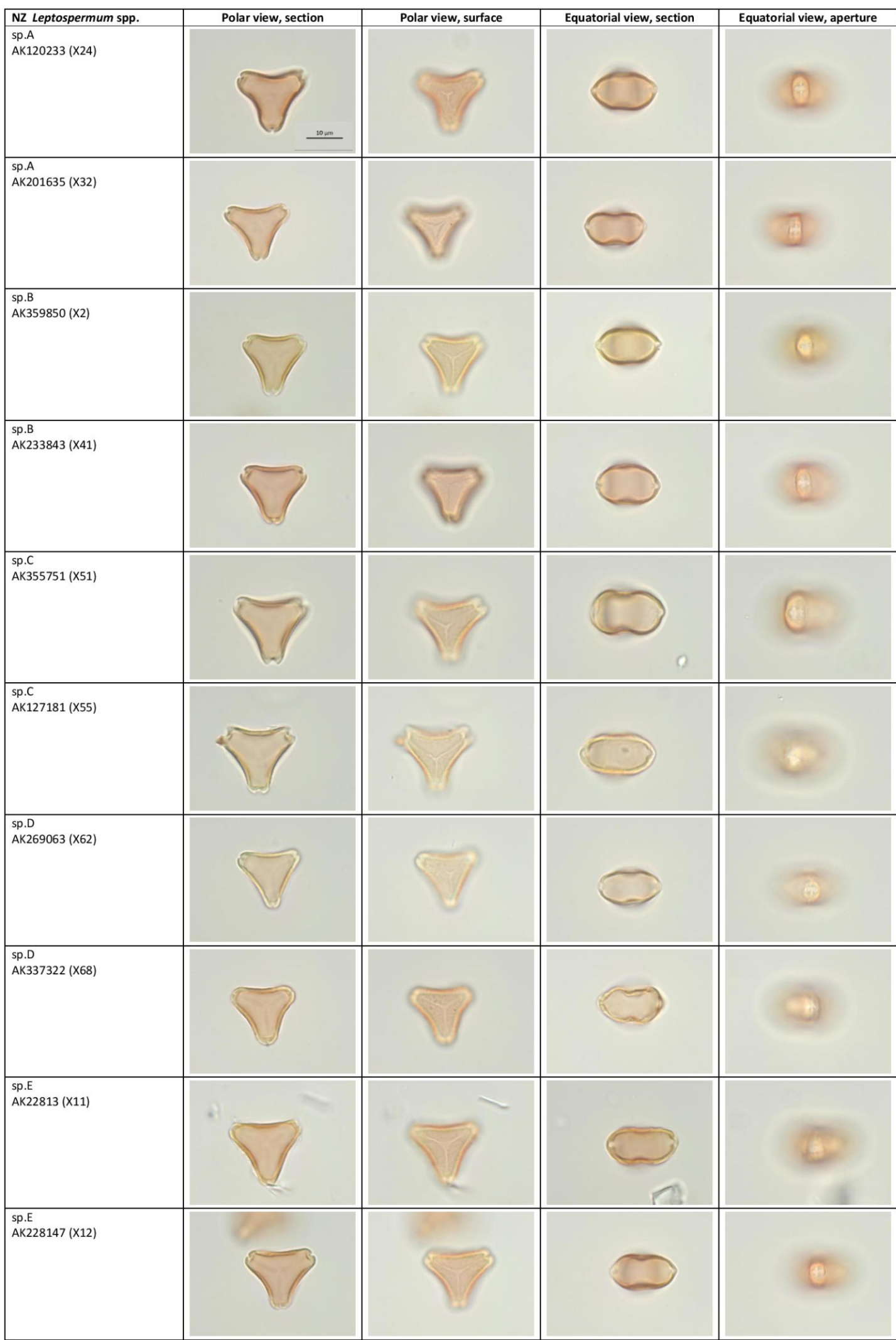
115 flower specimens of mānuka and kānuka were collected from Auckland War Memorial Museum herbarium, to cover all newly defined kānuka species and likely subdivisions of mānuka populations from around New Zealand. All samples have been acetolysed using standard modern pollen preparation procedure.

Pollen grains were examined under a microscope and general observations were made on pollen size, pollen shape and surface ornament. Based on this information, separate "mānuka" and "kānuka" pollen percentages in a geographically diverse set of honeys with known MGO values were determined.

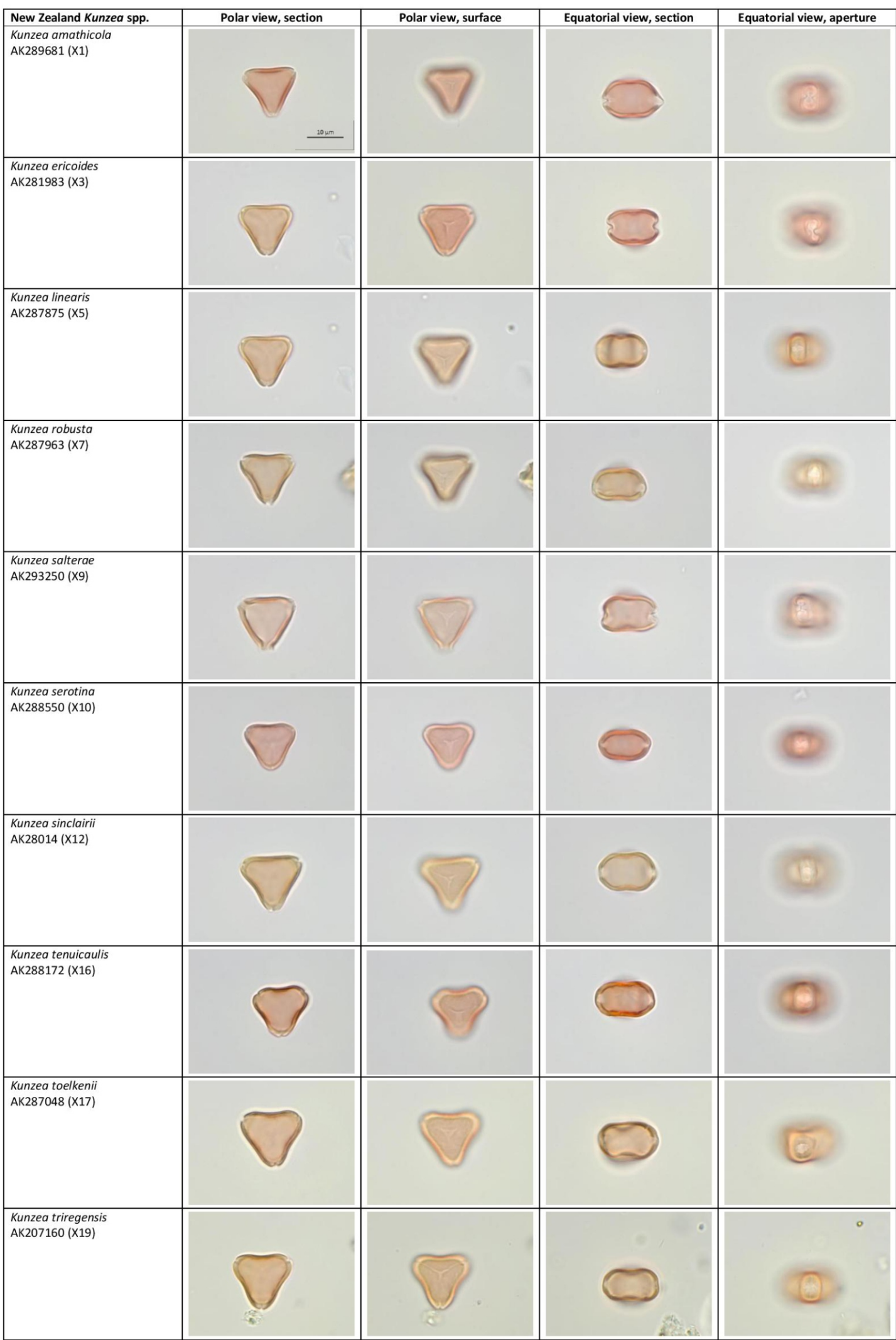


Results

Mānuka

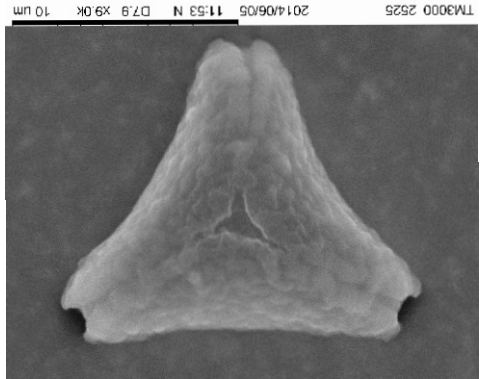


Kānuka

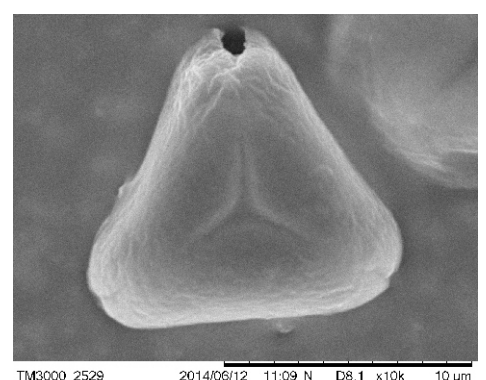


Mānuka pollen appears to be different from kānuka pollen in size, shape and surface ornament. These observations support what we have found from a small number of samples from East Cape area (Raine & Li, 2014) and previous works by Pike (1956), McIntyre (1963), Harris et al. (1992), Moar (1993) and Holt and Bebbington (2014).

mānukā



kānukā

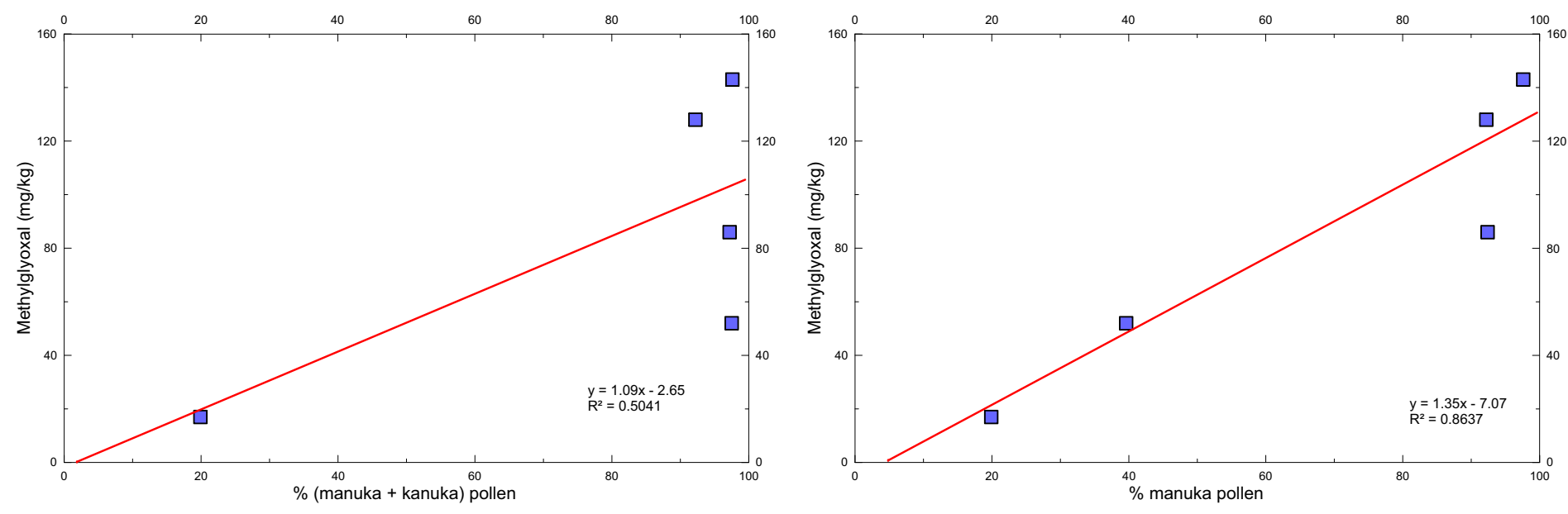


Honey test

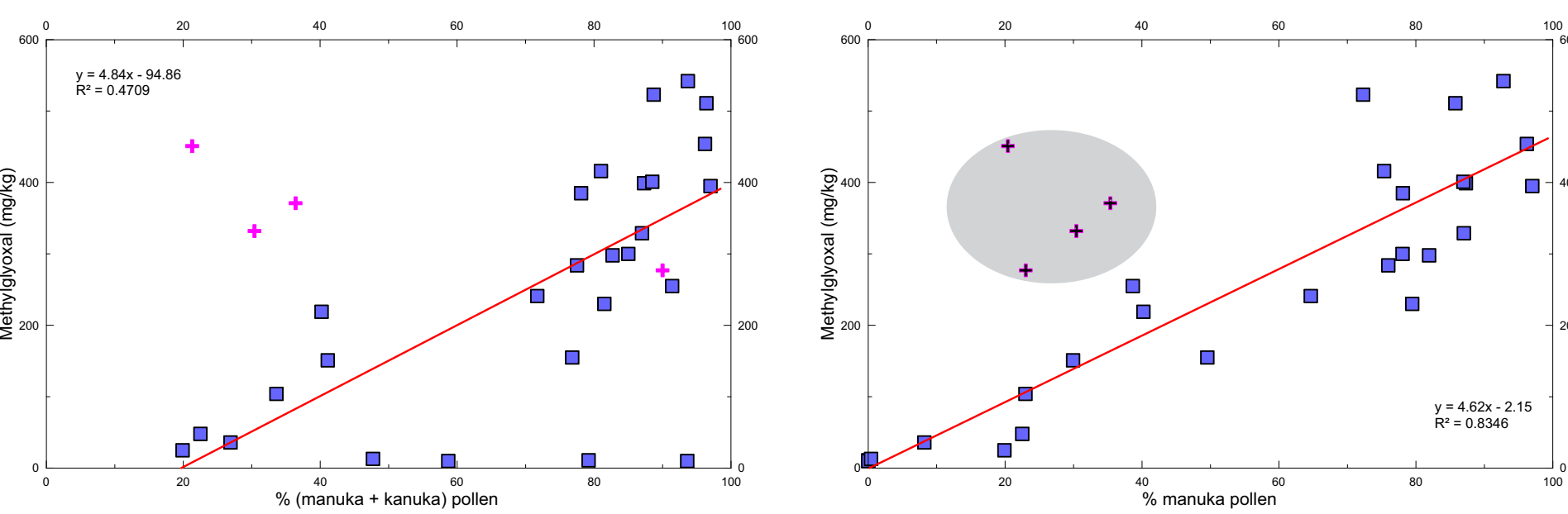
Once mānuka pollen is distinguished from kānuka in honey analyses (RH plots below), there is a clear correlation between percentage of mānuka pollen and MGO content in honey samples from South Island and northern North Island. Central North Island correlation is less good, perhaps partly because several "mānuka" species are involved.

*all honey samples were extracted by a uniform method in the "Honey Vault" project organized by Oritain Global Ltd

South Island honey



North Island honey



"+" samples are anomalous, and may indicate a local geographic isolate, or other MGO source.

Future directions

- Statistical measurements of pollen size, shape and surface character should be made on large samples to confirm the discrimination.
- It is feasible to separately consider "mānuka" and "kānuka" pollen in monofloral honey guidelines.

Acknowledgments

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