

## Agromyzid leaf miners on silver fern: not so simple?

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Martin (2003) stated that the agromyzid *Phytoliriomyza cyatheae* is ‘the only insect that forms mines on silver ferns.’ If true, then *P. cyatheae* can be safely identified and surveyed in the field from its unique “plant signs”, as was suggested by Martin. However, I herein present evidence, albeit inconclusive, which suggests that there may well be two species of *Phytoliriomyza* involved, so further research is required to resolve this issue before we can safely identify such mines without rearing.

*Phytoliriomyza tearohensis* is known in the literature only from its unique holotype, from Mount Te Aroha, north-eastern Waikato. Silver fern (*Cyathea dealbata*) is the suspected host plant for *Phytoliriomyza tearohensis*, based on the holotype having been found resting on that plant and also the strong morphological similarity of the adult fly to other fern feeders (Spencer, 1976). It is unclear why Martin did not take this evidence into account. A recent discovery of mine, detailed below, adds further evidence for this association.

On Oct 24, 2018, I found a pair of agromyzids *in copula* on the Manukau Harbour seashore at Grannys Bay, Hillsborough, Auckland. They agree well in external morphology with *Phytoliriomyza tearohensis*, and do not match any other known species from the North Island, including *P. cyatheae*. No obvious host plant was associated with the pair at the time. I have not fully examined the genitalia, so my identification is technically still slightly tentative.

In retrospect, it was unfortunate that I found the flies on the seashore because it led me to notice that the common seashore plant *Atriplex prostrata* also

had agromyzid leaf mines along this stretch of coastline (and elsewhere). Since no agromyzid leaf miners had been recorded from *A. prostrata*, I postulated that these mines were associated with *P. tearohensis*. As it turned out, however, the mines on *A. prostrata* were evidently associated with another agromyzid, *Liriomyza chenopodii*. Although I have not reared larvae from these mines, I have now observed numerous *L. chenopodii* adults resting by day on mined leaves of *A. prostrata* (sometimes *in copula*), in the absence of adults of any other candidate species. *Liriomyza chenopodii* has a wide host range within just two plant families, Amaranthaceae and Caryophyllaceae. Although *A. prostrata* has not been recorded as a host plant for *L. chenopodii*, it is a member of the Amaranthaceae.

On Nov 11, 2020, I specifically searched Grannys Bay and vicinity for leaf mines on silver fern. I found three mines, each containing a live agromyzid larva, on young fronds of one trackside plant in Hillsborough Reserve, near Grannys Bay. I believe these larvae to be *P. tearohensis* as they were found in the immediate vicinity of where I found the initial pair of adult flies. As explained by Martin (2003), such mines on silver fern are very far from ubiquitous, so it would be rather a coincidence if *P. cyatheae* just happened to also be present at the same site as *P. tearohensis*.

My observations of putative *P. tearohensis* (adults and mines) are online, with photos, here: [inaturalist.nz/taxa/395191-Phytoliriomyza-tearohensis](https://inaturalist.nz/taxa/395191-Phytoliriomyza-tearohensis)

I encourage other entomologists to collect more data to definitively resolve the issue, but, for now, it is not safe to identify leaf mines on silver fern as *Phytoliriomyza cyatheae*. There may well be two species involved.

## References

- Martin, N. 2003: Changes in abundance of the silver fern leaf miner. *The Weta* 25: 31-32.
- Spencer, K.A. 1976: The Agromyzidae of New Zealand (Insecta: Diptera). *Journal of the Royal Society of New Zealand* 6: 153-211.