Life (for a taxonomist) was never meant to be easy

I'm writing this on the summit of Peak Charles, in Peak Charles National Park. It's mid-summer but a reasonably cool day, the wind that was a pleasant breeze down in the campground is here blowing a minor gale, and I'm delighted because my wife Suzanne and I have just found one of the rarest plants in Western Australia.

By anyone's standard, *Pilostyles* is extraordinary and peculiar. A handful of species, all parasites, are found in the USA, parts of Africa and the Middle East and south-west WA. But unlike normal parasites like mistletoes or dodder, *Pilostyles* live for most of the year completely inside their hosts, growing through their stems like strands of fungus. Only when their flowers erupt through the host's stems, like some awful botanical equivalent of the monster in *Aliens*, are they visible. To me the flowers are quite wonderful, but for the host it's probably not a pretty sight.

We're at Peak Charles in mid-summer because one of WA's three known species of *Pilostyles*, *P. collina*, was collected here at this time in 1982, growing on a species of poison pea (*Gastrolobium*). It hasn't been seen here since, until today. Only two other locations are known for the species – at the foot of Bluff Knoll (again, last seen in 1982), and near Hyden, where in previous summers I've found it in Dragon Rocks Nature Reserve.

And that's where a taxonomic conundrum starts. Bluff Knoll, Dragon Rocks and Peak Charles are hundreds of kilometres apart, and no-one has found it elsewhere in 30 years of collecting. So is *Pilostyles collina* one species or several? Unfortunately, herbarium specimens of *Pilostyles* look a lot like sticks with blackish bumps on them, and without leaves and stems and with flowers that are small and difficult to interpret, they don't help a taxonomist much. Nevertheless, I have a hunch that something is up, which is why I've searched long and hard over several years at Peak Charles and Bluff Knoll.

This year's scramble up Peak Charles was particularly slow (and painful), because yesterday we tried following up another lead, hiking a 16km round trip along a long-overgrown track to Ellison Rock, a small granite rock west of Peak Charles and another possible *Pilostyles* hiding place. Alas, we found no host and no *Pilostyles*, the only result being stiff legs and sore feet. But the ascent this time was worth it because finally, in a patch of poison peas growing just below the summit, we found pencil-thick stems of the host thickly clad with small, orange-brown *Pilostyles* flowers.

Finding it after so many unsuccessful attempts helps in many ways. We've confirmed that this very rare plant still grows here, so we can better ensure its conservation. I also now know that the Peak Charles and Dragon Rocks plants look the same. But, are they the same at Bluff Knoll? The fresh flowers also showed, rather alarmingly, that *Pilostyles collina* flowers appear almost identical to those of *Pilostyles coccoidea*, a species I described from around Eneabba, more than 500km away, on another pea genus. Could these be the same? That would be both embarrassing (no taxonomist likes to describe a species only to find that it's already been named), and confusing.

However these turn out, *Pilostyles collina* remains a fascinating and very odd plant. At all three places the rare and localised *Pilostyles* is only found parasitising a rare and localised *Gastrolobium*, apparently spurning (or unable to infect) common and widespread hosts. As well, no-one knows what pollinates *Pilostyles* flowers, how their seeds disperse, how they infect their hosts, or how they survive fires. One could easily spend a lifetime studying *Pilostyles*, and probably still not answer all the questions surrounding it.

Pilostyles is an ongoing taxonomic conundrum, one of the most fascinating (and, it must be said, obscure and rarely-seen) plants in WA. Having finally relocated it at Peak Charles, the focus of activity will now turn to climbing and scrambling around Bluff Knoll and the Stirling Ranges. Taxonomy is often not easy, but it's always a heap of fun.

Above Western Australian Herbarium Curator Kevin Thiele with a specimen of *Pilostyles* growing in its host plant.
Photo – Peter Nicholas/Parks and Wildlife