

It was a hot dry Dunedin day to be climbing an untracked volcanic cone through creeper-encrusted scrub and scratchy fragments of coastal forest – and an interesting way for Bastow and Raewyn to be spending the first day of their honeymoon. Botanical chat ranged wide: when does a forest become, or cease to become, a coastal forest; how effective are crushed Ngaio (*Myoporum laetum*) leaves at repelling sandflies; were outbreaks of Ergot associated with witchcraft; could *Muehlenbeckia* vines be nature's healer, sealing off disturbed bush edges from more invasive weeds, as well as an important host for the native copper butterfly; why would a mistletoe (*Tupeia antarctica*) grow upon another mistletoe (*Ileostylus micranthus*); why were the lichens most prolific on dead branches and deciduous trees?...All this and more was triggered by what we saw. What with the brilliant view back down the coast to Warrington and John Barkla's excellent notes and guidance it was another sparkling trip to remember. Lichens noted on one small hawthorn (*Crataegus monogyna*) twig included: *Ramalina celastri*, *R. inflexa*, *Teloschistes chrysophthalmus*, *Physcia* sp., *Hyperphyscia plinthiza*, *Usnea* 'tenerior' (OTA). Participants included John, Marilyn, Kirsten & Rebecca Barkla, Bastow & Raewyn Wilson, Jean Bretherton, Nina Hewitt, Julia Reimann, Pat Enright, Chuck Landis, Allison Knight.

**Fish, frustules, fungi, flowers and foliage** 15 March

Mary Anne Miller

Imagine a lake, formed by water accumulating in a volcanic crater in schist, surrounded by lowland forest. A myriad of diatoms, freshwater algae, sponges, galaxids and insects make this their home and it was all 20 million years ago at Middlemarch. This was the scene set by Jennifer Bannister when she presented, to a packed Benham Seminar Room, an update of research she and Daphne Lee of the Geology Department have been involved with, which focuses on well preserved Early Miocene sedimentary deposits on private property at Foulden Hills.

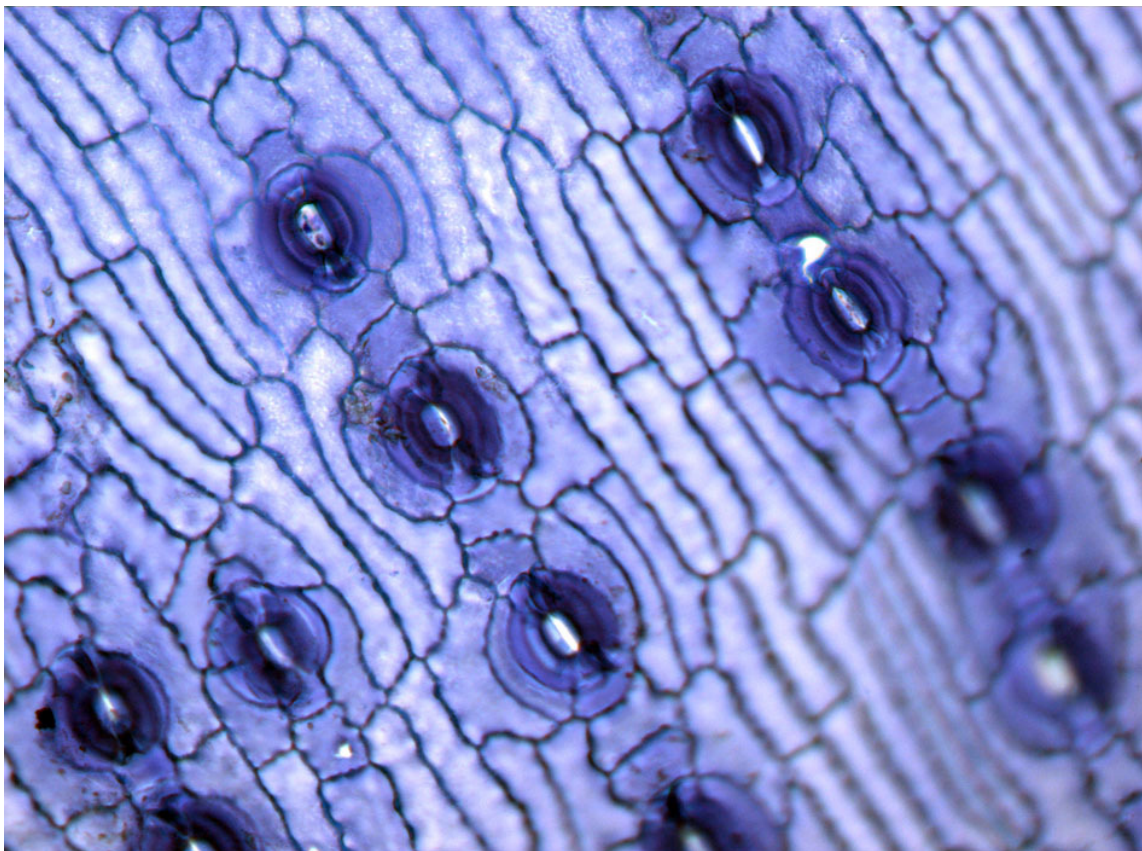
The range of biota was well illustrated with light microscope, SEM (Scanning Electron Microscope) and UV light images. Jennifer's love of microscopy and microphyta was obvious as we were treated to some beautiful examples of diatoms, pollen, fungi and algae. On a larger scale were leaves, fruits and flowers, including Jennifer's *Fouldenia staminosa*, the only fossil flower found in New Zealand with pollen in the stamens.

The challenge for Jennifer is to identify plants, particularly trees that surrounded the lake. Pollen analysis revealed 9 fern, 12 conifer, 1 monocot and 35 dicot species in the sediment. However, pollen gives a distorted picture as it can blow in from far away, so Jennifer has been perfecting techniques of identification using leaf cuticles as leaves are well preserved in this deposit and are more likely to have fallen from the immediate vicinity as there were no incoming streams to the lake. Once processed the next step is to compare these cuticles with contemporary samples, but when there is no such resource you are forced to make your own database and that is what Jennifer is now doing – another first in New Zealand.

So far, in the leaves, she has found no ferns, 1 conifer, 4 monocots and a variety of dicots, the most prominent being those from the Lauraceae family, which is now represented in New Zealand by *Beilschmiedia* and *Litsea*. There was no evidence of Lauraceae pollen. Other means of identification are the pattern of cells around trichome or hair bases and stomatal arrangements so Jennifer has been recording these as well. The low number of epiphyllus fungi and the presence of sub-tropical trees indicate a low rainfall, warm climate for this era and location.

One could easily appreciate the time and effort involved in the research and clearly it is a journey of immense pleasure for someone as dedicated to detective work and detail as Jennifer.

20 million year old fossil stomata on *Podocarpus* sp. leaf- *Jennifer Bannister*



18<sup>th</sup> March 2006, **BotSoc foray to Akatore**

*Harry Livesey*

On a chilly Saturday morning a small number of people gathered outside the Botany building under a sky that threatened rain. Squeezing into three cars we completed the short journey to the Akatore river without losing anybody along the way.

We were visiting a remnant of coastal shrub land that covers the hill slope on one side of the Akatore River. The area is particularly fertile owing to the proximity to the Akatore fault and, hence the broken nature of the rock. The shrub land at Akatore supports a diverse range of species and some particularly rare species among them.