A Week in Doubtful Sound: Seaweed Taxonomy Workshop and Subtidal Survey.

Sheryl Miller

A workshop was held 1st – 7th October in Doubtful Sound where marine students were taught how to identify subtidal macroalgae. A subtidal survey was then carried out to determine:

- the number of alga species per unit area at different depths along Doubtful (modified) and Thompson (not modified) sounds. The depth strata were determined from a preliminary survey.
- percent cover of corallines and their distribution
- landscape survey with underwater video.

This is the first known subtidal survey to quantify algae in Doubtful Sound. Macroalgae were surveyed within four depths strata to a depth of 18 meters, using randomly placed quadrats (1m x 1m) at twelve paired sites throughout the two sounds. Unknown algae were collected and later indentified in the laboratory. Smaller seaweeds, including coralline algae were surveyed using a 25 cm x 25 cm quadrat, also randomly placed within the four depths strata. Students learnt how to identify macroalgae and to plan and implement an underwater field survey of macroalgae diversity.

Arthropod Morphospecies vs. Taxonomic Species: A Comparative Field Study with Araneae, Coleoptera and Lepidoptera

José Derraik

In times of "Biodiversity Crisis" there is an increasing need for faster and cheaper ways to perform species inventories. This situation is especially troublesome for invertebrates, a group as diverse as it is unknown, and whose taxonomy is a major barrier for conservation action. The use of morphospecies instead of taxonomic species has been proposed as a way around that problem. The present study was conducted in a modified native shrubland in New Zealand's South Island where Lepidoptera, Coleoptera and Araneae were sampled in autumn by beating and pitfall traps. All specimens were separated into morphospecies by a non-specialist and then identified by specialist taxonomists, and the results compared. Results were analysed with respect to correct separations (one taxonomic species to one morphospecies), lumping (more than one species classified as a single morphospecies) and splitting (one species separated into more than one morphospecies). Among the individual orders, Lepidoptera yielded very accurate results (91% correct separation) followed by Coleoptera (63%), while there was a poor result for Araneae (50%). The overall difference between the morphospecies and taxonomic species estimates for the site was only 3.3%, but that was actually caused by the splitting and lumping results often balancing each other. Morphospecies present a useful tool for invertebrate inventories

but their effectiveness varies. It is advisable to establish the morphospecies-taxonomic species relationship for a particular target group before adopting it in studies involving morphospecies inventories.

Epiphyte ecology: temperate and tropical rain forest affinities

Katharine Dickinson, Robert Hofstede, Alan Mark and Stephan Halloy

In tropical rain forests, epiphytes can contribute significantly to species diversity and biomass, a feature not generally associated with temperate forest systems. This study investigates lianoid-epiphytic diversity and biomass on three host trees (two species *Dacrycarpus dacrydioides* Podocarpaceae and *Nothofagus menziesii* Fagaceae) of varying height and architecture, in different positions in a South Island, New Zealand temperate rain forest 45° 43' S. Cover of epiphytic and lianoid species (vascular and non-vascular) was recorded in 5 m vertical height segments (trunk), on four aspects (north, south, east and west); and in three sections (inner, middle and outer branches) on four branch faces (positions: topside, both sides, underside) on each tree. Inclination, branch face, and diameter of branch/trunk substrate, height above ground, duff thickness and location on tree (trunkfoot, main trunk, inner branches, middle branches, outer branches, branch extremes) were all recorded in 359 samples. Epiphytic biomass was derived for one phorophyte. Sixty-one vascular and 96 non-vascular species were recorded. Eight communities associated with the highly vegetated inner branches and main trunk, and seven indicative of the less vegetated middle to outer branches, were recognised. Thirteen communities were present on a forest interior *D. dacrydioides* tree, nine on a riverside *D. dacrydioides* tree and seven on a *N. menziesii* tree. All measured environmental variables were statistically significant in relation to ordination analysis of the samples. Dry mass per unit area and dry bulk density recorded were 350 ± 125 g dm^{-2} and 118 ± 13 g dm^{-2}, respectively (trunkbase), and 206 ± 21 g dm^{-2} and 91 ± 4 g dm^{-2}, respectively (inner & middle branches combined). Epiphytic community analyses that do not include vascular and non-vascular flora are potentially flawed. Values for epiphytic dry weight for the trunkfoot of one tree appear to exceed comparable figures recorded from tropical rain forest systems. Within-tropics epiphytic comparisons potentially ignore significant conducive conditions for both epiphytic diversity and mass that may occur in equally perhumid climates of temperate rain forests. Comparisons are made with a comparable study conducted in Bolivian cloud forest.

Virus spread

Paul Guy

This was a litany of concerns about viruses as invaders of plant communities.