In September 2011 I attended the XIII International Symposium on Biological Control of Weeds. The Symposium is held once every 4 years and is the most relevant meeting for anyone involved in weed biocontrol. At these meetings collaborations are formed, priorities for international research are determined, and standards for best practice are constantly challenged and improved. The meeting was run in New Zealand in 1992 and in Australia in 2004. This time the meeting was held in Hawai'i. This chain of islands suffers from severe weed problems, and is the home of weed biocontrol, which made it a suitable location for this important gathering.

One of the worst weeds in Hawai'i is the woody strawberry guava which takes over native forest and forms monocultures. Biodiversity loss due to infestation is not the only problem: recent research found that strawberry guava stands alter precipitation regime and much of the water from rainfall is lost compared to over native woodland. Biological control candidates for strawberry guava exist, and the main constraint on the programme is opposition from one highly vocal local activist who plays clever politics. This debate demonstrates the value of public consultation early in the process, as practiced in New Zealand.

Indeed, New Zealand was praised as the only country with a sufficiently robust yet manageable process for approving biocontrol agents. The secret of the New Zealand system was identified as the combination of an independent authority for risk assessment, the weighing of benefits vs. risks (not only of risks as other countries focus on), and early, comprehensive public consultation.

The good news for Hawai'i is that late last year the approval was granted to release a biocontrol agent for strawberry guava – a scale insect, *Tectococcus ovatus*. We in New Zealand will be watching closely the progress and impact of this agent, because strawberry guava is naturalised and could become weedy in the North Island.

A strong topic in this meeting was that more attention is required to the role of plant chemistry in host recognition by insect biocontrol agents. Rapid evolution of agents post establishment in the new range had also come up as a rapidly developing area of research. Another important point was made, that practitioners must demonstrate the weed has major adverse effects on the invaded ecosystem and that the weed population is not likely to decline naturally over time. A workshop run by CSIRO's Dr Andy Sheppard triggered participant to consider the appropriateness and justification for classical biocontrol paradigm in today's world of increasing public distrust in science.

My presentation was about a retrospective study of a successful biocontrol programme, and its lessons for the future. In addition to my oral presentation I presented a poster titled: "**Is tutsan in New Zealand a good classical biocontrol candidate?"** and judged student oral presentations.

I thanks CAWS for the generous contribution towards my travel, which made this valuable trip possible.

My oral presentation title and abstract:

Avoid rejecting safe agents – what more do we need to know? St. John's wort in NZ as a case study

St. John's wort beetles (*Chrysolina hyperici* and *C. quadrigemina*), were introduced to New Zealand (NZ) in 1943 and 1965 (respectively) to control St. John's wort (*Hypericum perforatum*), without any NZ-focussed host range testing. The beetles produced one of NZ's greatest classical weed biocontrol successes. In a recent retrospective host range testing study we found that, under current safety standards, these beetle species would almost certainly have not been introduced into NZ. This is due to successful oviposition, feeding and development on indigenous *Hypericum* species However, field surveys portray a more complex picture, with the indigenous *Hypericum* species possibly declining, but suffering little to none non-target feeding by the biocontrol agents. This raises the question – what more do we need to know in order to better interpret risk apparent in artificial arenas in containment to improve risk assessment? Unusually, the response of some *Chrysolina* spp to the secondary plant chemical hypericin in *Hypericum* spp has been well-studied, but we show that this information would

not have helped in *a priori* risk assessment. More positively, we discuss how knowledge of the seasonal phenology of the herbivores and plants, and the potential for direct and apparent competition between the target weed and indigenous congeners, could be used to improve agent risk assessment and perhaps avoid rejecting excellent and safe weed biocontrol agents in the future.

Ronny presenting at the conference

Strawberry guava infestation in Hawai'i

Strawberry guava fruit

Scale insect (*Tectococcus ovatus*), recently released in Hawai'i for biological control of strawberry guava