Post-graduate Course

"Forest management and biodiversity conservation in southern cool temperate forest ecosystems"

Offered by:
Recursos Forestales Laboratory - Centro Austral de Investigaciones Científicas

Sponsored by:
IUFRO Landscape Ecology International Group
IALE (International Association of Landscape Ecology)

Offered in:
Saloon Houssay at Centro Austral de Investigaciones Científicas. Ushuaia, Tierra del Fuego (Argentina)

Date:
3rd to 5th March 2010

Workload:
24 hours comprising 16 hours lectures and 8 hours field trip, plus assignments

Eligibility:
Forest Engineers, Biologists and related Bachelor degrees

Vacancy:
20 students

Cost:
$250

Contact:
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Leader teachers:
Dr. Simon Grove (Forestry Tasmania, Australia)
For. Eng. Mark Neyland (Forestry Tasmania, Australia)
Dr. Guillermo Martínez Pastur (CONICET, Argentina)

Invited teachers:
Biol. Fred Duncan (Forest Practices Authority, Australia)
Dra. Maria Vanessa Lencinas (CONICET, Argentina)
Dra. Alicia Moretto (CONICET, Argentina)

Course description:
The course examines the challenges associated with biodiversity conservation in anthropic-managed landscapes, with a particular emphasis on forest structure, as well as flora and fauna components. Biodiversity is globally unique but threatened by unsustainable human uses. This course provides students with a full understanding of the significance of biodiversity in planning and managing sustainable systems and processes. The course will span elements from theoretical to practice, and from qualitative to quantitative. Traditionally, nature reserves have been the primary means by which society has sought to conserve biodiversity. It is becoming increasingly clear that reserves alone will fail to conserve biodiversity. In times of rapid global change, conservation strategies outside

reserves will be increasingly important, particularly with respect to native forest management. This course covers key concepts relevant to forest management and biodiversity conservation in southern cool temperate forest ecosystems, including conceptual models of new silviculture, habitat loss, landscape heterogeneity and resilience. Key guiding principles for conservation will be discussed. Finally, the social and normative context of forest management and biodiversity conservation in two distinctive countries will be discussed (Tasmania, Australia and Tierra del Fuego, Argentina).

Lectures:
The lectures will include knowledge based on personal research and professional experiences of the professors, including data review of the main journals, and personal data from published and unpublished papers.

1. Forest types of economic importance in Tierra del Fuego: *Nothofagus antarctica* and *N. pumilio* forests. Silvicultural proposals, state of knowledge: fifty years of silvicultural history. Harvest planning and harvesting methods in *N. pumilio* forests. Long-term study plots: regeneration treatments to thinning treatments. Forest industries and the challenge of their implementation. Evaluating the role of theory and the application of scientific strategies in biodiversity management

2. Forest types of economic importance in Tasmania: rainforest, blackwood (*Acacia melanoxylon*), wet eucalypt, high altitude and dry eucalypt forests. Planning, implementation and monitoring of harvesting, particularly with respect to partial harvesting methods. Thinning management description in Tasmanian forests. Development of variable retention at the Warra trial (*www.warra.com*) and implementation throughout Tasmania: objectives and challenges for the future. Forest industries and their implementation.

3. The nature of biological diversity: species and ecosystems in Southern Patagonian landscapes. Description of a particular case-study in central Tierra del Fuego Island. Processes threatening biodiversity: their main causes in Tierra del Fuego forests. Measuring and assessing biodiversity: survey and inventory, indicator species, monitoring changes in biodiversity. Cattle and beaver impacts. Forest management impacts in *N. pumilio* forests: microclimate, soil properties, nutrient cycles, decomposition, flowering and seeding cycles, understory plants, birds, insects, *Lama guanicoe*, mosses and fungi. Challenges for the present and future: designing new silvicultural approaches to improve biodiversity conservation.

4. Using conservation biology to plan for ecologically resilient forestry landscapes. Learning from nature: natural forest disturbance dynamics compared with forestry-related disturbance. Wildfires. Forestry as something that happens at multiple scales in space and time, inducing conservation issues of continuity and connectivity. '*Managing for persistence*' through complimentarily of nature reserves and '*off-reserve management*' (i.e. the managed forest matrix). Approaches to the conservation of cryptic biodiversity ('the other 99%') compared with the conservation of charismatic mega-fauna. Threatened species as special cases. The indicator species concept in practice. Importance of forest structure for biodiversity: old trees and coarse woody debris as case-studies. Long-term ecological research and monitoring.

5. Social and normative context of forest management and biodiversity conservation in Tasmania, Australia and Tierra del Fuego, Argentina. Forest management, forest practices and biodiversity conservation proposals with state-wide and industry views. Legislative frameworks and options for conserving biodiversity at the local and regional levels.

Field trip:
Managed forests with distinctive silvicultural methods in Tierra del Fuego over the last forty years (1970 to 2010): Lasifashaj valley, Milnak river, Valdez river, Lote 93 forest reserve and Irigoyen river.
The oldest permanent thinning plot at Cuartel `Aguas Blancas´.
A medium size traditional sawmill near Tolhuin city.
Escondido and Fagnano lakes.

Leader teachers:

Dr. Simon Grove

Bachelor of Science in Biological Sciences at Plymouth Polytechnic, UK (1984). Master of Science in Forestry and its Relation to Land Use at Oxford University, UK (1992). Doctor of Philosophy (PhD) "Saproxylic insects and sustainable rainforest management" at James Cook University, Cairns, Australia (2001).

I am currently the Conservation Biologist in the Biology and Conservation Branch, Division of Forest Research and Development, Forestry Tasmania, where I have worked since 2001. In 2009 I also worked as a Conservation Planner in the same organization. My research interests in conservation biology are broad, but with a particular emphasis on invertebrates, habitat structure, forest dynamics and forest landscape ecology. In recent years my research has had a strong focus on understanding the dynamics and management of coarse woody debris and its dependent biota. I am the research coordinator for Tasmania's Warra Long Term Ecological Research (LTER) site (*www.warra.com*). Previously, I have worked in the United Kingdom conservation sector, and in the forestry sectors of Uganda and Indonesia. In these last two countries I worked as a forestry training coordinator in sustainable forest management and biodiversity conservation. I have also spent time living and studying in the tropical rainforests of Peru, Costa Rica and northeast Australia.

I have authored or co-authored over 150 articles in refereed journals, technical reports and conference proceedings, and have presented papers at many national and international conferences as well as giving public talks at Forestry Tasmania.

Dr. Mark Neyland

Bachelor of Science in Forestry at the Australian National University (1980). Member of the Institute of Foresters of Australia and the Royal Society of Tasmania. Certificate IV in workplace training and assessment.

I am currently the Principal Research Scientist, Native Forests Branch, Division of Forest Research and Development, where I lead a small team responsible for conducting a varied program of research into native forest management, and for maintaining an overview of native forest operations within Tasmania. The research in recent years has focused on developing alternatives to clear-felling in tall wet eucalypt forests. This research was a central component of the recently published report '*A new silviculture for Tasmania's public forests: a review of the variable retention program*' (http://www.forestrytas.com.au/publications/a-new-silviculture-for-tasmania-public-forests). We also conduct a review of all native forest operations in Tasmania each year and report to the executive of Forestry Tasmania on the quality of those operations. This information then becomes an important component of the Forestry Tasmania annual report. I have worked in Tasmania since graduating in 1980. Until 1995, when I joined Forestry Tasmania I worked as a consultant, both privately and to government, as an ecologist, botanist and forester.

I have authored or co-authored over 70 articles in refereed journals, technical reports and conference proceedings. I have presented papers at international conferences and served on the organizing committee for a recent international conference in Hobart (Old Forests New Management). I have delivered a number of public presentations during my time with Forestry Tasmania. I have run training courses, both internal and external, for many years, focusing on the ecology and management of Tasmania's native forests.

Dr. Guillermo Martínez Pastur

Forest Engineer at Universidad Nacional de La Plata (1991). Master of Science (2000) and Doctor in Agronomy (2006) at Universidad Nacional del Sur.

I am currently researcher of CONICET with a category of independent, in the Forest Resource Laboratory at the Centro Austral de Investigaciones Científicas (CADIC) since 1999. Also, I represent in Latin America the IUFRO Landscape Ecology International Group, and I was one of the coordinators of the FRAGFORNET.

I made my first postgraduate research in Universidad Nacional de La Plata as Ad-honorem assistant (1991-1992), as scholarship at CADIC (1992-1998) and thesis student in the Universidad Nacional del Sur (1998-1999). I also worked as private consultant and as agent of the Forest Service in Tierra del Fuego (1999).

My research in the last fifteen years has focused on biometry, silviculture, forest management and biodiversity conservation, with particular emphasis on forest regeneration processes. With my research, my group can define the basis for the biometry, yield and harvesting strategies for the forest management of the southern Patagonian forests, including the proposals of alternative silviculture with biodiversity conservation variables. The main findings of the research were included in the forest management plans of the most of the private companies in Tierra del Fuego (*www.cadic.gov.ar/forestales*).

I have authored or co-authored of 81 articles in refereed journals and book chapters, 181 conference proceedings, and 38 technical reports, most of them related to the native forests in southern Patagonia.
