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Diana Lloyd  
Southern Cross University

J Doland Nichols  
Southern Cross University

Kathryn H. Taffs  
Southern Cross University

Jerome K. Vanclay  
Southern Cross University

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Forestry at Southern Cross University: fifteen years in review

D. LLOYD1, J.D. NICHOLS2, K.H. TAFFS2 and J.K. VANCLAY2

1Southern Cross University, PO Box 1425, Mt Gambier SA 5290, Australia
2Southern Cross University, PO Box 157, Lismore NSW 2480, Australia

Email: JVanclay@scu.edu.au

SUMMARY

After 15 years, it is timely to review the 4-year bachelor degree in forestry offered by Southern Cross University (SCU), now the only remaining such 4-year degree in Australia. The SCU program is characterised by innovative teaching, a strong fieldwork component, emphasis on research, and strong links with local interest groups (both environmental and industrial). The progressive introduction of two-site delivery and on-line lectures has maintained the viability of the course despite modest student demand.

Keywords: forestry education, bachelor degree course, research

Foresterie à l’université Southern Cross: révision des quinze dernières années

D. LLOYD, J.D. NICHOLS, K.H. TAFFS et J.K. VANCLAY

Après 15 ans, il est temps d’examiner la licence de 4 ans en foresterie offerte par l’université Southern Cross (SCU), à présent le seul diplôme de 4 ans en foresterie en Australie. Le programme SCU est caractérisé par un enseignement innovatif, un élément important sur le terrain, un accent sur la recherche ainsi que des liens solides avec les groupes d’intérêt locaux (environnementaux et industriels). L’introduction progressive de deux sites de cours magistraux, ainsi que de cours par ordinateur ont réussi à maintenir la viabilité du cursus, malgré la demande modeste dont il est témoin.

Ciencias Forestales en la Universidad de Southern Cross: una revisión tras quince años

D. LLOYD, J.D. NICHOLS, K.H. TAFFS y J.K. VANCLAY

Después de 15 años, parece apropiado revisar la licenciatura de 4 años en ciencias forestales ofrecida por la Universidad de Southern Cross (SCU), que es la única que ofrece en Australia dicha titulación con una duración de 4 años. El programa de SCU está caracterizado por una docencia innovadora, un componente de campo sustancial, énfasis en investigación, y lazos estrechos con grupos de interés local (tanto medio-ambientales como industriales). La introducción progresiva de la formación en dos campus y ofrecer clases en línea han mantenido la viabilidad del curso a pesar de una modesta demanda por parte de los estudiantes.
INTRODUCTION

Forestry training and research commenced at Southern Cross University (SCU) in 1996, with the introduction of a 4-year degree of Bachelor of Applied Science (Forestry). In the intervening 15 years, the program has been revised and renamed Bachelor of Forest Science and Management, and supplemented with complementary degrees including a Graduate Diploma of Forestry, and a coursework Master of Forest Science and Management. Although growth has been modest, student numbers at Southern Cross University during these 15 years have run counter to national and international trends of declining enrolments in forestry (Leslie et al. 2006, Innes 2010). This paper reviews selected SCU Forestry achievements and identifies aspects that may help strengthen tertiary forestry programs elsewhere.

The history of forestry education in Australia has been documented elsewhere (Carron 1980, Roche and Dargavel 2008, Collett 2010), so it suffices to observe that in recent times, SCU was the third university in Australia to offer a 4-year bachelor degree in forestry, after the University of Melbourne in 1943 and the Australian National University in 1964. Three other Australian universities briefly offered comparable degrees (Vanclay 2005c), but these offerings have been short-lived due to a shortage of students. More recently, both the University of Melbourne and the Australian National University have ceased to offer 4-year forestry degrees, with the University of Melbourne adopting the ‘Bologna model’ (a generic 3-year bachelor degree followed by a 2-year masters degree in forestry), and the Australian National University switching to a 3-year forestry degree within a broader environmental program. SCU’s response to the changing student demography was to establish a satellite program at Mount Gambier in the ‘Green Triangle’ region of southern Australia (so-named because of the concentration of forest industry). Since 2005, students have been able to study SCU’s forestry program in Lismore or in Mount Gambier, with units offered via a combination of online lectures, local tutors and residential. The Mount Gambier program has been strongly supported by local industry, with companies offering staff study-leave, offering scholarships and vacation employment, and offering employment to graduates.

In response to a recognised shortage of foresters in Australia (Anon 2009), several tertiary and vocational education providers work closely with government and industry to attract more students into forestry-related study within Australia. One of these initiatives is a series of scholarships worth AU$10,000 sponsored by the Institute of Foresters of Australia. One of these initiatives is a series of scholarships worth AU$10,000 sponsored by the Institute of Foresters of Australia. One of these initiatives is a series of scholarships worth AU$10,000 sponsored by the Institute of Foresters of Australia. On the island of Espiritu Santo Island, Vanuatu. SCU values this international engagement, and has hosted forestry students from Bhutan, China, Germany, Indonesia, Laos, PNG, Solomon Islands, Vanuatu and Vietnam. There is currently an active two-way exchange agreement with Northern Arizona.

TEACHING FORESTRY AT SCU

The forestry curriculum at SCU is characterised by small classes offered in two locations (Lismore in eastern Australia, and Mt Gambier in southern Australia), supplemented with regular field trips (Figure 1), interactive tutorials (e.g., Vanclay et al. 2006) and on-line support (reading material and video-recordings of lectures available for download). Students at the Lismore campus have the choice of weekly face to face lectures, or on-line lecture recordings available on demand. The curriculum at both Lismore and Mt Gambier includes tutorials, practicals and field work, which may be conducted weekly or during intensive residential programs. This means that students have a great choice in how to learn – ranging from weekly face-to-face classes to online on-demand with intensive workshops – satisfying diverse student learning styles. Courses are informed by regular internal and external reviews intended to refresh offerings and maintain relevance (Vanclay 2007, Ewan 2009). When appropriate, problem-based learning is favoured (Boyd 2011), and students are assisted to publish findings (e.g., Aenishaenslin et al. 2007, Vanclay et al. 2011). Students complete sixteen weeks of work experience in approved work placements during their studies (Cullen 2005); these placements foster community engagement, help strengthen the relationship between university and industry, and often lead to offers of employment for the students involved. Several students have used these work placements to gain overseas experience and pave the way to an international career. The Commonwealth agencies Australian Youth Ambassadors in Development (AYAD) and Australian Volunteers International (AVI) also provide opportunities for forestry graduates to gain international experience. In some cases they are specifically nominated to be associated with university-led research projects. The Australian Centre for International Agricultural Research (ACIAR) project on silviculture of the native Vanuatu species Whitewood (Endospermum medullosum) recently sponsored two AYAD volunteers, each of whom spent six months on the island of Espiritu Santo Island, Vanuatu. SCU values this international engagement, and has hosted forestry students from Bhutan, China, Germany, Indonesia, Laos, PNG, Solomon Islands, Vanuatu and Vietnam. There is currently an active two-way exchange agreement with Northern Arizona.
University in Flagstaff, Arizona, USA, which enables students to substitute one or two semesters at the exchange institution. These opportunities diversify the experience of all students helping them to become global citizens able to respond to management issues with a diverse knowledge of environmental and cultural issues.

The majority of forestry students at SCU are ‘mature-age’, defined by Australian authorities as students over 20 years old. Few of the students entering the SCU forestry program are “school-leavers” who have just completed high school, and most have had some years of experience in the workplace. In many cases students are in their thirties or forties and undertake the undergraduate degree to enable a career change. In some cases (Mt Gambier in southern Australia), most of the students have long been employed by the industry and their formal qualifications will facilitate a promotional pathway to professional positions with their current employer. The SCU program recognises prior learning and experience, and the diversity of the curriculum allows independent learning to meet the needs of both younger and mature students within the same unit cohort.

Employer and graduate surveys consistently reveal the need for diverse skills, especially with regard to communication (Vanclay 2007, Jacobsen et al. 2008). Thus oral presentation and writing skills are emphasised within SCU’s degrees, and students are encouraged to publish research arising from honours (e.g., Pelletier et al. 2008), graduate diploma (e.g., Thinley et al. 2005) and doctoral programs (Angel et al. 2008, Bristow et al. 2006, Grant et al. 2010, Kariuki et al. 2006a,b, Leys and Vanclay 2011a,b).

TABLE 1 Graduate destinations of SCU Forestry graduates

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Forest Services</td>
<td>45%</td>
</tr>
<tr>
<td>Private Industrial Forestry Companies</td>
<td>17%</td>
</tr>
<tr>
<td>Further Study</td>
<td>6%</td>
</tr>
</tbody>
</table>

FORESTRY RESEARCH AT SCU

Research is one of the strengths of the SCU Forestry program, with a steadily increasing output of research findings spanning the breadth of forestry (Table 2). Particular strengths are arboreal fauna (Goldingay 2009), community engagement (Leys and Vanclay 2011a), forest genetics (Shepherd and Raymond 2010), forest health (Lan et al. 2011), growth modelling (Weiskittel et al. 2011), mangroves (Saenger and Brooks 2008, Stokes et al. 2010), mixed species plantations (Nichols et al. 2006, Forrester et al. 2011), native forest silviculture (Kariuki et al. 2006a), plantation management (West 2006), policy (Lloyd 2008, Vanclay and Nichols 2005), and wood science (Raymond et al. 2010a). Figure 2 illustrates the co-authorship network amongst the SCU forestry staff, along with key topics identified by the citation analysis package CiteSpaceII (Chen 2006). Figure 2 is a minimum spanning tree that eliminates redundant links, but the remaining non-redundant links reveals the extent of collaboration reflected as coauthorship of journal articles.

Most forest research at SCU is conducted in partnership with end-users such as land management agencies and forest industries, helping to maintain relevance and prompt uptake of research findings. These client relationships are supplemented with a commitment to publish research findings, and to monitor impacts (Vanclay 2008a,b, 2010a, 2011a).

SCU is a member of the International Union of Forest Research Organizations (IUFRO) and SCU forestry staff are active as IUFRO office-bearers. This relationship with IUFRO facilitates professional networking and fosters specialist mentoring that can otherwise be difficult to arrange within small institutions. SCU participates in other international endeavours including EFIMED (the Mediterranean Regional Office of the European Forestry Institute) and the IUCN (International Union for Conservation of Nature) Commission on Education and Communication.

COMMUNITY ENGAGEMENT

Consistent with SCU’s mission to ‘be regionally relevant and globally significant’, forestry staff and students engage with professional and community groups such as the Institute of Foresters of Australia, Australian Forest Growers (AFG), and the Subtropical Farm Forestry Association (SFFA). The SFFA is a non-governmental organisation involved in promoting on-farm tree planting, particularly in the moist subtropics surrounding Lismore (in eastern Australia), but also in generally advocating farm forestry for the country. University researchers have supported the AFG, SFFA and other interest groups by assisting with field days, conferences and workshops, as well as by contributing current research findings in accessible ways through association newsletters. SCU faculty have also assisted in writing funding proposals and make in-kind contributions of their time and expertise when projects are supported. For example, with SCU support, the SFFA recently received a $350,000 grant from the national ‘Caring for Our Country’ scheme that focuses largely on forests for biodiversity and conservation outcomes.

Several SCU Forestry staff have been recognised for their achievements: Dr Ross Goldingay was awarded the 2011 Vice-Chancellor’s award for Excellence in Teaching and Learning for “authentic, field-based learning about wildlife conservation that illuminates the nexus between teaching and research”. Diana Lloyd is a director of Australian Forest Growers, the national association representing private forestry and commercial tree-growing interests in Australia. Dr Doland Nichols has been recognised as a Fellow of the Institute of Foresters of Australia. Dr Graeme Palmer is secretary of the Australasian Timber Drying Group. Prof Jerry Vanclay is a member of the advisory group to EFIMED (the Mediterranean Regional Office of the European Forestry Institute) and received the 2010 IUFRO Scientific Achievement Award. This recognition reflects both their calibre and commitment.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Planted and natural <em>Eucalyptus</em> forest</th>
<th><em>Pinus</em> and other conifers</th>
<th>Mixed and indigenous plantings</th>
<th>Mangroves</th>
<th>Rainforests</th>
<th>Environmental services and non-wood products</th>
</tr>
</thead>
</table>
CONCLUSIONS

SCU, like most educational institutions, seeks to create a quality learning experience for students, and it is our view that success in inspiring students to become self-motivated life-long learners will also lead to success for the host institution. Even though funding limitations may constrain the available resources, our experience is that a quality experience can be provided through innovative teaching informed by current research and illustrated with field trips and other hands-on experiences. Our experience also reveals that strong community engagement is mutually beneficial and produces graduates who are global citizens well-equipped to become forestry leaders.

REFERENCES


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