
Challenges and opportunities in educating the next generation of foresters¹

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Introduction

Thank you for this opportunity to be with you at the University of Cumbria, and to make this presentation.

I was asked to talk about the challenges and opportunities in educating the next generation of foresters, with a second year undergraduate audience in mind. This is a topic I have engaged with for over 20 years.

First I would like to open with a few words about the nature of forestry, forestry education and the current drivers that are impacting the delivery of sustainable forestry.

I would then like to review just a few of the many challenges in educating future foresters.

From there I would like to consider some of the many and varied opportunities available, linked to current growth in the forestry sector.

Finally, I will end with a personal reflection on learning, focusing on two important concepts – that of the work ready graduate and secondly the importance of life-long learning.

Forestry and Professional Forestry Education

Forestry is generally defined as the art and the science of managing forests and associated natural resources for human and environmental benefits. It is a key element of landscape and natural resources management. As a discipline, it has several important features – not least that forestry is not a pure science, it is applied. It requires interpretation of data, decision making, often without complete information, and problem solving.

As a profession and an academic discipline, its roots can be traced back to university programmes in central Europe in the 18th century. Hans Carl Von Carlowitz wrote his seminal work on the management of forests in 1713, and following this a distinct profession, with its own traditions and evidence-base, has emerged.

Forestry might nowadays be called a form of applied ecology. However, it is important to note that ecology as a discipline followed that of forestry. Many well-known ecologists and conservationists gained their professional and academic qualifications as foresters. For example, Aldo Leopold, in the United States, father of conservation biology, and Alfred Moller, in Germany, who completed pioneering studies of mycorrhizae and formed theories of forest development were both trained first as foresters and forest scientists.

Forestry education, then, is a very distinct area that has developed to serve the needs of the forestry profession and train future foresters, as well as support learning and development

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of established professionals. But it has also trained many others who apply their learning in a broader context.

In a recent paper by John Innes, from the University of British Columbia, the basic curriculum addresses seven areas of competency: tree and stand dynamics, forest and landscape ecology, forest management, economics and administration of forestry, leadership skills, information acquisition and analysis, professionalism and ethics.

However, the balance of these “pillars” is not something that is static. The drivers for forestry have evolved through time. Early foresters were concerned with the sustainable supply of timber for industrial development, forest protection functions and land reclamation. More recently, forestry has become an increasingly complex endeavour, and the drivers can be summarised under three major headings – resilience (the need to adapt to climate change, and both abiotic and biotic threats to forests), multifunctionality (the need to manage for multiple management objectives and values), and the bioeconomy (sustaining the production of economic goods, mostly timber/wood-based products).

Due to climate change and other environmental issues, forestry now has a higher profile than at any point in modern history. However, I think it is important to note that the focus has to be a positive one. Rather than considering forestry as a compensatory activity that supports our current (often failing) economic models, forestry and forest conservation should be a positive element of the necessary change in society’s relationship with nature and natural ecosystems.

Challenges in Forestry Education

These drivers and lofty ambitions are at once daunting and challenging. Nowhere is the challenge greater than in the area of professional forestry education. Over recent decades, traditional institutions have found it difficult to sustain forestry as a specialist discipline, many have withdrawn from teaching the programme or integrated the core elements within a wider natural resources curriculum.

There are many challenges, from the perspective of the institution, the profession and the individual wishing to embark on a career in forestry. However, I just have time to mention three that I think are highly important:

1. The challenge of delivering a specialist programme in the modern university, where resources are limited. This requires very careful programme planning and management.
2. The need to modernise and refresh the curriculum to maintain relevance and ensure that graduates are work ready. This is not just a question of technical functions, but the wider social science elements associated with communication, working in teams and engaging more directly with the wider community. It was once put to me that a modern forester must be a citizen with a toolbox. Deciding what is essential and relevant is key and this is one of the challenges we face today as forestry educators.
3. Inclusion and participation. In some countries, notably Germany, forestry is seen as a highly desirable degree, not just as a training for a job but as a broad training for many other careers. The long-term nature of the planning and thinking, the mix of science and social elements prepare a rounded graduate, with skills that can be applied in many areas besides forestry. We are not quite in this situation in the UK or

Ireland, but there is certainly a need to engage and attract people who more accurately reflect the society we serve. Forestry still recruits for a relatively narrow base, and so a major challenge is to reach to the wider community and promote the opportunities that forestry education and forestry careers present.

Opportunities in Forestry Education

Although we work with constraints, the current dynamism in the forestry sector and the focus on nature-based solutions, provides us with new opportunities. Again I will only highlight three that appear to be important to me. These are:

1. Tools and resources to advance the forestry curriculum and develop more learner-focused teaching and learning strategies. This involves a blended model of face-face, online and field-based education. Also, the opportunity to promote transferable graduate skills, such as statistics, drones, GIS, and more. Added to this is the potential for greater inter-disciplinary working, reflecting the nature of forestry as part of a team of land managers and planners.
2. Networking and collaboration. We live in an increasingly connected world. There is an untapped potential for forestry schools and programmes to work together. The pioneering apprenticeship formed between Cumbria and the Forestry Commission is just one example, and something to consolidate and build on. Forestry is growing, and according to the Institute of Chartered Foresters there is a significant skills shortage. This in itself should create new opportunities for forestry education, working with a range of employers, stakeholders and institutions, including international opportunities for staff and students.
3. Finally, engagement. Here I mean engagement with the wider community, but also more specifically the needs of the forestry sector. The goals of any undergraduate programme in my view must be twofold. First to support student foresters to be work-ready at the point of graduation. They should have a basic set of technical, scientific and professional skills so that they can rapidly assimilate to a team and contribute to the organisation that engaged them. But engagement with the forestry community also means life-long learning, so we must support a love of learning and provide the tools for achieving this. Forestry is fast moving and dynamic, and knowledge-intensive. We need to develop the systems and structures for life-long learning, through CPD and degree progression. This represents an important opportunity, and a positive challenge, for the future.

So, there are many challenges, but these are balanced with opportunities in professional forestry education. I believe the National School of Forestry is well positioned to address each of these.

Key to success in moving forward is engagement with stakeholders, partnerships and listening – especially to our student foresters.

There are two additional factors that place the National School of Forestry in a strong position to take advantage of opportunities. First, the existing staff. There is a strong cohort of specialists across forestry, conservation and ecosystem sciences to deliver a modern and attractive curriculum. Second, the location of the National School of Forestry has enormous potential. I would go as far as suggesting that the Lake District is the crucible of forestry in

England. There are representatives of all types of woodland, and many pioneering endeavours in forest conservation have taken place here. It is a living laboratory, and of significance across the UK and beyond.

Personal Reflection

Finally, I would like to end with a personal reflection from my own career.

I graduated in 1989 with a degree in forestry from the University of New Brunswick. I look back on this as one of the most wonderful periods in my life. I was lucky to get a job immediately on graduation, working in the forestry division of the Ontario Ministry of Natural Resources. First I was involved in forest soil surveys, then as a forester in training and then as a district management forester. Within a year of graduating I was responsible for woodland establishment projects. My very first project, where my name was on the paperwork, was a farm forestry scheme in Crieff, Ontario. I helped the owner plant 20 acres of old field, putting in a plantation of pine, spruce and larch. This was a mixed woodland, and it was designed to provide a range of forest products into the long term.

Roll forward 25 years and I had the opportunity to revisit Crieff, Ontario in 2015. It was very emotional for me. The forest had changed ownership, was looking awesome, but its purpose was very different. The new owners were a faith group, and the forest was now part of a country retreat for spiritual well-being. What started as a plantation, was now a young forest “wilderness”. Trees had been thinned and removed, not in a regular pattern like I would have imagined, but in a way to create paths and vistas that rolled with the features of the land. It was a place where people came to engage with “nature”.

What did this teach me, now over 30 years into my career as a forester and forestry educator? First, I was pleased to know that my project had succeeded. I had a lot of mentoring, so important, but I was indeed work-ready when I graduated and able to take on quite responsible assignments. Second, we have no idea what the future holds and what our forests might become. We can teach foresters for today, but the future they grow into requires constant learning from experience and new evidence that support decision making and best practices. As Proust says, the one certainty is change.

And finally, perhaps more important than anything right now, we want to pass on to the next generation an environment and habitat that is more diverse than before. We want to give future generations of foresters more options and choices, so that they can adapt the forest in response to the conditions they find at that time. This is the essence of resilience.

Conclusions

So, in closing, I would like to suggest that forestry offers a wonderful career that can make a difference to individuals and communities. It is dynamic and forward looking, part of our collective response to the environmental threats we are all experiencing. Through training and life-long learning, forestry offers a career that is rich and rewarding. As a forestry educator, it is my privilege and honour to contribute to the development of my profession; to help individual foresters fulfil their own hopes and ambitions for the future.