GUEST EDITORIAL

CAN TROPICAL FOREST SCIENCE CONTRIBUTE TO INTERNATIONAL DEVELOPMENT AGENDAS?

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The *Journal of Tropical Forest Science* (JTFS) has recently celebrated its 20th anniversary. Some thoughts regarding the motivation for such a journal were shared in the last issue of 2008 (volume 20, number 4). Whilst some of the fundamental forest science questions of 20 years ago are still important today, few can doubt that the context in which forest scientists operate has changed remarkably over the last 20 years. This observation alone dictates that forest scientists the world over need to constantly examine the context in which they do their work. This relates to both the scientific and the social/developmental environments in which they frame their research questions and provide answers.

Within the last 20 years there have been many fundamental shifts in science and how it is practised. For example, the increasing demand for interdisciplinary teams, systems approaches, accountability and applicability to funders and stakeholders, increasing statistical complexity, the competitive nature of publishing results, appreciation of the multiple scales at which biological phenomena operate, and engagement with implementers so that science is seen to make a difference, are just a few that most of us have experienced.

The social or developmental context has also changed. Key issues or debates that affect forest science more so now than ever before relate to (1) forest conservation (both systems and species), (2) payment for ecosystem services (PES), (3) effective governance institutions at all scales, and (4) the role of forests in poverty alleviation. On the last issue, the Millennium Development Goals (MDGs) are particularly pertinent. Some may argue that forestry and forest science are about trees, their breeding and management. Yet most definitions of forestry include a social dimension. For example, the Britannica Concise Encyclopaedia defines forestry as

"Management of forested land, together with associated waters and wasteland, primarily for harvesting timber but also for conservation and recreation purposes". The ever useful Wikipedia provides a more detailed definition, but contains the same elements: "Forestry is the art and science of managing forests, tree plantations, and related natural resources; modern forestry generally concerns itself with assisting forests to provide timber as raw material for wood products; wildlife habitat; natural water quality management; recreation; landscape and community protection; employment; aesthetically appealing landscapes; biodiversity management; watershed management; erosion control; and a 'sink' for atmospheric carbon dioxide". Thus, forestry, and by implication forest science, needs to address and include the social and economic dimensions, including the people who use and abuse forests and forest species. It includes natural forests as well as plantations, degraded as well as intact systems, tree products as well as non-timber products, tree yields and use as well as conservation, and urban forests and agroforests as well as natural ones. Consequently, for forest science to take its rightful place within the scientific disciplines, and for the opinions, knowledge and wisdom of forest scientists to be heard to better manage these various types of forest, it needs to engage and interface with the full range of disciplines and human development challenges that affect both forests and humanity as a whole. Humans and their impacts are the foundation of many of the challenges facing the conservation and productivity of natural and plantation forests. Consequently, the human dimension of forest science needs to be recognized and in this day and age, elevated.

The MDGs are a good example. They represent a comprehensive statement on the state of the world and humanity, they offer an

overarching framework on how to achieve the agreed goals and, more importantly, they have attracted significant global commitment and associated funding. Are they relevant to forest science? Many have attested they are. Not only is the overarching goal of the MDGs, i.e. to half global poverty by 2015, pertinent to forestry, so too are several of the individual goals and the 21 quantifiable targets. In many instances it is the poor who are most dependent on forest products and forest lands. Consequently, any easing of poverty will offer alternative livelihoods for some, thus potentially easing pressures on the forest and its resources. More specifically MDG 7 focuses on environmental sustainability. This is to be achieved through adoption of the principles of sustainable development, and a marked reduction in the rate of biodiversity loss. Both of these are at the core of conservation forestry, but surely must also become mainstreamed into plantation forestry on all continents. Forest scientists have a role to play, not just in determining the best sites for the best yields, but to actively promote the adoption of strategies such as certification and reduced impact logging. Similarly, MDG 3 seeks to promote gender equality and empowerment of women. It is well documented that communities living adjacent to forests are frequently amongst the poorest. Additionally, female-headed households are amongst the poorest in such communities, and women are overlooked when seeking employment and training of skills. Forestry is a dominant economic force in such rural areas and consequently it is beholden to contribute to gender equality and empowerment of women because there are so few other productive activities and employment sectors that could take the lead. One could go on.

Payment for ecosystem services seeks to integrate forest services into the market economy and in so doing provide compelling financial reasons to conserve forests whilst benefiting local people. Consequently, it is high on international development agendas. Thus, a focus on just utilisable timber species is insufficient. Indeed, in many situations the economic value of non-timber forest products and ecosystem services is far greater than the timber operations. But bringing these products and services to market, which benefits the forest and local peoples, requires a new suite of management tools and governance options, built upon greater interaction with stakeholders at increasing spatial scales from local communities to downstream water extractors, to regional authorities, to international governments and NGOs. This requires social and economic skills to develop consensus and resolve trade-offs or competing demands on forests. The traditional forest scientists will find themselves increasingly underestimated if they do not engage with these issues.

Lastly, the research implementation gap is an age old phenomenon and is perhaps closer to the average forest scientists' comfort zone than the MDGs or PES. It was around and recognized when JTFS was launched. However, although recognized, relatively little incentive (or pressure) was put on scientists to address it. This is changing. There is ongoing debate in several major ecological and conservation journals. There are several recent seminal texts on how to improve the communication and uptake of scientific results so they have impact on the ground. Interestingly, many of the proposed strategies to reduce the research implementation gap come from other disciplines, such as education and psychology. Thus, once again, for forest scientists to have impact, they need to interact with and learn from social disciplines. If they fail to do so, perhaps they will surrender their influence on how forests and forest resources are used within the 21st century.

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