

From rotations to revolutions: Non-timber forest products and the new world of forest management

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Abstract

Non-timber forest resources (NTFRs) are increasingly recognized globally as important in supporting the livelihoods of forest-dependent, often Aboriginal communities, in fostering natural resource conservation, and in providing ecosystem services. As British Columbia faces forestry challenges related to factors such as the mountain pine beetle infestation, climate change, and global competition, NTFR development may benefit rural and Aboriginal communities as they diversify their economies and manage the impacts of changes affecting the forestry sector. This article highlights a number of British Columbia NTFR case studies using an adapted “production-to-consumption” approach with a particular focus on NTFRs in the context of sustainable forest management. Four general forest management scenarios are outlined and used to discuss the potential for incorporating NTFRs within forest management planning.

KEYWORDS: *Aboriginal communities; British Columbia; ecosystem services; forest economic diversification; forest tenures; non-timber forest products; non-timber forest resources; sustainable forest management.*

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Editor’s Note:

Extension notes in this issue of the *BC Journal of Ecosystems and Management* are based on a series of case studies that represent an attempt to document economic, social, cultural, and ecological aspects of important non-timber forest products in British Columbia. For more details on the case studies, please contact the Centre for Livelihoods and Ecology through <http://www.royalroads.ca/cle>. It should be noted that the socio-economic data was largely collected through non-random surveys of harvesters, from interviews with key informants (harvesters and buyers), from direct observation, and from a limited amount of published literature from areas outside the case study region. Survey results are based on the responses of a small number of respondents, and should not be taken as necessarily representative of the larger population. Despite these limitations, the extension notes and the case studies on which they are based present new information on little-known resource sectors and suggest a number of useful and important avenues for future research.

Please note that in 2010 the Centre for Non-Timber Resources at Royal Roads University was renamed the Centre for Livelihoods and Ecology.

Introduction

It is widely acknowledged that British Columbia's forest industry faces a number of major, progressive, and probably irreversible challenges. These include increasing competition in global commodity markets, diminishing wood supply from the forests, consequences of global warming such as higher losses due to forest fire and disease, increasing demand from commercial tourism and recreational users, and ongoing citizen demands for social and ecological sustainability, including strategies to stabilize and diversify resource-dependent communities (Kozak and Maness 2005; British Columbia Competition Council 2006; Ambus et al. 2007). The province's coastal forest industry is in decline as a result of the shift from high-value, old-growth timber to second-rotation timber along with limited investments to upgrade mill infrastructure. The temporary boom in harvest volumes in the British Columbia Interior generated by the mountain pine beetle infestation will be followed by a major collapse in timber harvests within the next few years. After many decades of legal action, First Nations communities are seeing some resolution of their claims to traditional territories and natural resources. As First Nations assume a larger role in the forest sector, it is likely that their participation will introduce a broader array of values and priorities to the industry.

Together, these factors present a compelling case for a more balanced and diversified "value-based" approach to the forest sector in British Columbia (Roberts et al. 2004). Such an approach does not preclude the continued production of traditional commodities such as dimensional lumber and pulp, but expands the focus of economic valuation of the forest to include not only secondary wood products, but also non-timber forest products (NTFPs) and ecosystem services such as carbon sequestration, water and air quality, nitrogen fixation, and aesthetic and spiritual values (Kozak and Maness 2005).

The purpose of this special issue of the *BC Journal of Ecosystems and Management* is to present and comment upon the results of a 3-year project funded by the Sustainable Forest Management Network and carried out by the Centre for Non-Timber Resources (CNTR) at Royal Roads University in partnership with the University of Guelph and in co-operation with numerous provincial, national, and international collaborators. This project undertook to adapt and apply in Canada a comparative case study methodology

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developed by the Centre for International Forestry Research (CIFOR) to identify the factors that are most critical to successful commercialization of NTFPs (Belcher and Ruiz-Perez 2001). For the purpose of this project, NTFPs are defined as all the botanical and mycological products of the forest other than timber, pulp, firewood, and other conventional wood products. In addition, ecosystem services are an expansion of the definition of NTFPs in what may be also termed generally as non-timber forest resources (NTFRs). In this context, NTFRs include ecosystem services that provide clean water, air, and soils, as well as carbon sequestration.

"Success" in this context includes not only short- and long-term profitability of an enterprise or economic sector but also positive environmental impacts and social and cultural benefits for families and communities.

The CNTR research team chose to model its approach on the CIFOR methodology because this approach encourages an evaluation of a changing forest sector and addresses salient questions in the current debate about "sustainable forest management" in British Columbia and across Canada. The methodology applied to NTFPs explicitly addresses economic, environmental, and social considerations with respect to products whose valuation is otherwise relatively straightforward, at least with respect to commercial values. In the case of NTFPs, the approach is complicated by problems of defining values of products and services for which markets are only now emerging, or for which no markets exist. At the same time, it is clear that recreational, aesthetic, and spiritual values of NTFPs are very significant, and possibly of greater importance to many "consumers" than conventional commercial values.

Collier and Hobby (2010; see pages 1–8 in this issue) note that for some (and perhaps many) First Nations in British Columbia, commercial use of NTFPs may represent not only a relatively unimportant objective, but a potential challenge to more important cultural values. This project presents, therefore, not only a major new contribution to our understanding of NTFPs and their role in both forest management and rural livelihoods, but also an approach that may be applied to other forest product or service sectors, particularly as markets become established and competition emerges between “conservation” and “development” objectives.

This synthesis article summarizes the international research that provided a foundation for the CNTR project; briefly discusses the major non-timber species, products, and product uses in British Columbia; presents the analytical framework and methodology used in the individual case studies; and summarizes the major findings of the cases as they relate to the role of NTFPs involving models of sustainable forest management. Our comments on the role of NTFPs in sustainable forest management are also informed by the growing body of research and consultation on ecology and autecology of NTFPs and the potential for compatible (joint) management of timber and non-timber species (Kerns et al. 2003; Cocksedge [editor] 2006; Cocksedge and Hobby 2006; Monserud [editor] 2003).

Non-timber forest products in forest conservation and rural livelihoods

In the mid-1980s, the proposition that commercial development of NTFPs could improve rural livelihoods while protecting forest ecosystems in tropical and sub-tropical regions began to gain considerable prominence among national and international conservation and development agencies (Belcher et al. 2003).

The underlying assumption behind the idea that NTFP exploitation can promote biodiversity is that people will ensure the reproductive capacity of products that are valuable sources of income. Thus, managed exploitation of NTFPs is seen as a means of combining the objectives of biodiversity conservation and economic development (Fisher and Dechaineux 1998:189).

Within a rather short period of time, expectations fostered by influential studies, such as by Peters et al. (1989), were modified and, from some perspectives (e.g., Godoy and Bawa 1993; Redford and Stearman 1993), heavily discounted. Sheil and Wunder (2002) summarized

the conclusions from these two conflicting perspectives as: “standing tropical forests can provide large incomes through sustainable NTFP extraction” (Peters) versus “standing tropical forests tend to provide low returns to local communities,” or “tropical forests can’t pay for themselves” (Godoy and Bawa 1993). While affirming that earlier enthusiasm required tempering, Sheil and Wunder (2002) suggested that the “pendulum has swung too far and too fast.” They questioned, in particular, whether duelling forest valuation studies adequately reflect a number of important factors that influence the decisions of forest users. Wollenberg (1998) noted that “valuation” of forest products by forest communities encompasses many dimensions including nutritional value, environmental services, and spiritual value that bear little or no relation to “market price,” a point emphasized by Collier and Hobby (2010; see pages 1–8 in this issue).

Similarly, Marshall et al. (2003) noted that assessment of whether NTFP commercialization is a “success” depends on values, perceptions, and measures, and proposed that definitions of “success” in NTFP development often fail to reflect the assessment of those most closely involved (e.g., local communities). The research of these authors in Bolivia and Mexico suggests that there is a very wide range of measures by which “success” is defined by local stakeholders, including improvements in social justice, community organization, and local culture, as well as economic status.

While still not a prominent topic in North American and European forestry and rural development circles, NTFPs are also emerging in the industrialized north as a consideration, if not a panacea, in sustainable forest management and the revitalization of resource-dependent communities. In Canada, virtually all resource-dependent communities are seeking alternatives to conventional sources of income, employment, and investment, and are facing numerous barriers in the transition to a more diversified and resilient economic base.

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Non-timber forest products in British Columbia

The non-timber forest products sector in British Columbia is relatively well developed compared with other parts of Canada; however, many questions remain about the volume and values of resources being harvested, and the number and characteristics of harvesters and others working in the industry.

Non-timber forest products in British Columbia may be categorized as:

- floral greenery;
- wild edibles;
- medicinals and nutraceuticals (also known as functional foods);
- landscaping and restoration products;
- crafts and art;
- miscellaneous products (essential oils, smoke woods, soaps, etc.); and
- forest-based cultural or ecotourism with an NTFP component.

Commercial harvesting

Although there is no definitive list of all the NTFPs harvested in British Columbia, de Geus (1995) estimated that over 200 products have been commercially harvested in the province. Wills and Lipsey (1999) estimated direct revenues at approximately US\$266 million (including ecotourism-related activities). These figures provide an indication of the economic importance of the sector, especially when its impacts on rural British Columbia are considered.

Wild mushrooms and floral greenery dominate commercial trade in NTFPs in British Columbia. Pine mushrooms (*Tricholoma magnivelare*), chanterelles (principally *Cantharellus formosus*), and morels (*Morchella* spp.) are the most commonly marketed wild mushrooms, whereas salal (*Gaultheria shallon*) and boughs of various coniferous species account for over 90% of the floral greens output. Work by the Centre for Non-Timber Resources (Cocksedge and Hobby 2006) estimates British Columbia's value of the trade in wild mushrooms at US\$9.5 million to \$40 million per year over the past decade with an annual average of \$27.5 million. The export value of the floral greens sector is estimated at US\$25.5 million to \$62 million per year from 2001 to 2006, with an annual average value of approximately \$38 million. The significant variations in values are attributable to both changing environmental

conditions and the impact of global production and prices, although the relative contribution of these factors is not well understood. The harvesting and sale of most NTFPs in most areas of the province is not licensed, monitored, or otherwise regulated, and there is no systematic collection of data by government.

Harvesting NTFPs for sale is a small-scale economic activity in many parts of the province, although tens of thousands of people engage in NTFP harvesting as an occasional, part-time, and sometimes full-time occupation across the province (Wills and Lipsey 1999). The potential income from NTFP collecting is fairly modest, perhaps in the range of US\$30 000 per year (Hobby et al. 2010; see page 62 in this issue). Nevertheless, this modest income may compare favourably with other opportunities available to individuals who wish to remain in rural communities, who lack education or formal job skills, and who may also face literacy challenges in English.

Buyers and distributors or wholesalers of some NTFPs (particularly floral greens and mushrooms) are well established as businesses in British Columbia. In recent years, businesses engaged in the floral greens trade based in the Pacific Northwest of the United States have expanded into coastal British Columbia, apparently in response to an increasing regulatory burden and perhaps to declines in product quality and quantity in Washington and Oregon (Lynch and McLain 2003).

Other uses of non-timber forest products

Subsistence, recreational, and cultural benefits of NTFPs are even more poorly documented than commercial uses. In British Columbia, these resources have traditionally played an essential role as sources of food, clothing, and medicines for Aboriginal peoples, and feature in their cultural and spiritual practices. Research has shown the extensive use of these products, and also the range of resource management strategies and ownership patterns First Nations employed to control, maintain, and enhance these resources (Turner and Jones 2000; Turner and Cocksedge 2001). Early European settlers failed to recognize many of these activities, probably because they did not correspond to European views of "management" or "ownership."

Although traditional knowledge held by First Nations of forest plants and fungi has diminished as a result of acculturation and other factors, the use of non-timber forest resources by First Nations remains widespread and their knowledge continues to be a rich source of

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information for NTFP management and use. In some communities, NTFPs and services are seen as tools for the revitalization of Aboriginal culture. People from youth to middle age are seeking to reverse loss of cultural knowledge, including the knowledge of plants and their uses. Some are exploring the potential for traditional and non-traditional NTFPs to form the basis for new community-owned businesses that can help address at least some of the challenges faced by Aboriginal communities (Mitchell 1998, 2004).

Picking berries, mushrooms, and other wild foods are popular activities in rural communities throughout the province. As British Columbia has become more urbanized, hunting and gathering activities have generally declined as important contributions to household incomes. At the same time, urban residents are increasingly interested in nature-based tourism and recreational activities. Wild foods are developing a considerable cachet, similar to that of organic foods a few decades ago. British Columbia's directory of products from the wilds of British Columbia, *Buy BCwild*, includes listings for over 170 enterprises offering over 300 products and services (Centre for Non-Timber Resources 2007). Although no province-wide statistics are available, a 2006 survey of residents in the East Kootenay region of British Columbia found that 35% of this region's total population harvested NTFPs for mainly recreational but also commercial purposes (Cocksedge and Hobby 2006). These results indicate the non-commercial value of NTFPs as key resources for traditional and recreational purposes.

In light of the growing public recognition of non-timber values and ongoing challenges to the traditional forest economy in British Columbia and many other temperate and boreal jurisdictions, we may expect that non-timber values will become more important in forest

policy and use. Over time, the prospect of having both conservation (and associated non-consumptive uses and values) and economic development in the same "package" may become as attractive to decision-makers in "the north" as it has been to those in the tropics.

Analytical framework and methodology

The Centre for International Forestry Research model

Responding to the lack of comparative analysis that could help generate theories and models about the contribution of NTFPs to sustainable development, researchers from CIFOR developed a methodology to analyze divergent NTFP cases in order to address questions such as "to what extent, and under what conditions, can NTFP extraction, use, and marketing help the development of forest-related people and the conservation of forests?" (Ruiz-Perez and Byron 1999:3). The initial methodology, which Ruiz-Perez and Byron applied to comparison of nine cases from various countries in Asia, Africa, and Latin America, follows a production-to-consumption approach¹ and involves expert assessment of 30 biophysical, socio-economic, and institutional attributes. Each production analysis was rated from 1 to 5 for ecological sustainability, contribution to household economy, and political empowerment.

The production-to-consumption systems approach encourages a focus on the system as a whole, recognizing the relationships between activities and participants, and the importance of these linkages, rather than attempting to focus on different elements as if they were discrete parts of the system (Sellen et al. 1993:2,7). Taking a systems view moves research and policy analysis beyond technocratic models that often inform development thinking, towards an understanding of the political and economic context within which development planning must be situated.

In 2001, Belcher and Ruiz-Perez published a detailed guide to the methodology, which incorporates 114 nominal, ordinal, interval, and ratio variables, organized in the following 10 categories (Belcher and Ruiz-Perez 2001):

¹ A production-to-consumption systems approach attempts to integrate "... analysis across an entire commodity system—from the primary producer to the consumer. In doing so, it embraces the circumstances and incentives of each of the system's participants, and analyzes the relationships between them" (Sellen et al. 1993:1).

1. geographic setting
2. biological and physical characteristics of the product
3. characteristics of the raw material production system
4. ecological implications of production
5. socio-economic characteristics of the raw material production system
6. institutional characteristics of raw material producers
7. policies affecting raw material production
8. characteristics of the processing industry
9. characteristics of the trade and marketing system
10. outside interventions (such as assistance from non-governmental organizations)

Royal Roads University/University of Guelph case comparison project

The Canadian project has been conducted within a framework that encourages the collection of consistent and comparable data on a wide range of NTFP and bio-product development cases, following the guidelines provided by Belcher and Ruiz-Perez (2001). To support comparability between the project cases and the CIFOR database, the descriptors used are as similar as possible to the original CIFOR attributes.

The cases have been researched using conventional literature review methods and interviews with experts, along with survey information from harvesters, buyers, and processors. Unlike the CIFOR case study project, the CNTR project has not been able to draw upon a rich set of existing NTFP research in Canada and the United States. In many cases, we have had to start “from scratch” with extensive fieldwork by graduate students and research assistants. With the CIFOR methodology as a generic framework, each study also aimed to answer the descriptor variable questions about “production-to-consumption” for each particular NTFP in the British Columbian or wider Canadian context. The project managers decided in early 2005 to emphasize interviews with experts to generate enough cases to permit useful comparisons in this newly emerging research field.

Non-timber forest products in sustainable forest management

In this issue of the *BC Journal of Ecosystems and Management* the focus is primarily on the relevance of the project for forest management, and the extension notes presented here highlight this aspect of the research findings.

The CIFOR methodology was designed to facilitate case study comparisons, and quantitative analysis was produced on the set of 60 studies available to CIFOR researchers. In the current project, the number of studies completed is too small for such analysis. The Canadian studies do, however, represent the beginning of the development of a data set for North America, and provide the basis for qualitative observations that are of immediate importance in the field of forest management.

To gain a better understanding of the potential for compatible timber and non-timber forest management, four scenarios are offered that represent the forest management environments affecting the development of NTFP commercialization. One or more of these four management environments creates a context for each of the NTFPs discussed in extension notes in this issue.

A critical assumption in our presentation of the extension notes is that readers will have a basic understanding of the Biogeoclimatic Ecosystem Classification system (BEC) used in British Columbia. It is available for detailed review on the British Columbia Ministry of Forests and Range website at <http://www.for.gov.bc.ca/hre/becweb>. The BEC system is useful for pinpointing ecosystem types that provide suitable habitat for specific NTFPs. Several of the case studies give considerable detail about the BEC zones and specific sub-variants that provide typical habitat for the NTFP under consideration.

Four general forest management scenarios

We consider the benefits of fully incorporating NTFPs in forest planning and management under the following management scenarios, the first three of which are currently evident in various regions of British Columbia:

1. “traditional forest management”—principal focus is traditional forest commodities with no defined property rights for NTFPs.
2. “special management scenarios”—situations in which timber production is significantly constrained by environmental, social, or other factors, which are enforced through regulatory or other means; there are typically no specific property rights or regulatory regimes for NTFPs.
3. “NTFP management or rights”—situations in which forest owners or managers have customary, practical, or legal property rights to non-timber forest products.
4. “management for emerging values”—situations in which there is focus on emerging values (e.g., carbon credits, payment for environmental services).

Scenario 1: Traditional forest management

Many commercially harvested NTFPs are commodities whose value is not acknowledged by traditional forest companies. Most of these companies operate on Crown land where the majority of the province's forested regions are found. Crown land NTFPs are unregulated under the current law. Different types of NTFPs are currently harvested under this traditional forest management scenario. For example, salal, huckleberries, and all wild mushrooms are NTFPs harvested on Crown land in the absence of defined property rights, and are generally unmanaged by forest companies.

In this scenario, there is no way to protect the investment of any entity or individual that attempts to manage NTFPs. With current forest management practices, there is significant risk of NTFP habitat reduction in these forest areas and they may be unable to sustain the production of NTFPs in the future. For example, the black huckleberry is currently not managed by the B.C. Ministry of Forests and Range under the *Forest and Range Practices Act*, and there is evidence that current fire suppression and silviculture practices, which are managed by the Ministry, may be limiting huckleberry abundance. This, in turn, reduces the resources previously available to both harvesters and wildlife.

A serious constraint on ameliorating this situation is that even those timber companies with an interest in meeting broad sustainable forest management objectives would face unrecoverable costs if they limited timber production in the interests of sustaining NTFP production. In addition, under the current tenure system, there is no mechanism by which timber companies may be compensated for providing NTFP harvesters access to the resources. Timber licensees have not been assigned property rights, which would allow them to sell permits to interested harvesters for these resources. In short, a number of disincentives are in place for successful and sustainable

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Scenario 2 applies when certain environmental, social, and traditional use objectives and values are already established to support NTFP development even though property rights are not legally defined or assigned.

commercialization of NTFPs under the traditional management scenario that is in effect on most of the land base in the province. Under this scenario, harvesters have an incentive to pick as much of the resource as they can for fear that someone else will take any product they leave behind. This may result in overharvesting and unsustainable practices with regard to NTFPs, and may also contribute to damage of timber and forest ecosystems (Tedder et al. 2002).

Scenario 2: Special management situations

This scenario applies when certain environmental, social, and traditional use objectives and values may be already established to support NTFP development, even though property rights are not legally defined or assigned. In scenario 2, much like scenario 1, there is lack of a property rights framework, which brings with it many of the disincentives and barriers previously discussed, but NTFP production in scenario 2 is seen to be compatible with various ecological objectives. For example, the morel mushroom harvest may be enhanced in specific areas as other important ecosystem restoration objectives are met through thinning and prescribed burning. Huckleberries may also have ecosystem restoration compatibility as they are valuable to the sustenance of wildlife, and maintaining their natural abundance meets wildlife management objectives. Mushroom management and (or) preservation of critical mushroom habitat may also fit very well in sensitive watershed areas where timber production is already constrained.

These examples highlight opportunities for expanding NTFP production in concert with other objectives, but they have yet to be incorporated into strategic management practices that specifically enhance NTFP production in the province. With ongoing research into possible compatible objectives for timber and non-timber uses, future land use planning may be

able to incorporate NTFP management opportunities on a consistent basis. One key lesson from the case studies was the evidence from harvesters' surveys showing that from a harvester's perspective, timber production itself is not necessarily a hindrance for NTFP production. The majority of respondents saw limits to NTFP production resulting from a general lack of awareness of the opportunities for compatible management, combined with a lack of appropriate tenure options as the limiting factors. With this in mind, making foresters and other professionals aware of the possibilities in this scenario could help to realize its potential advantages.

Scenario 3: Non-timber forest product management or rights

Although over 90% of forested land in British Columbia is Crown land, there are significant tracts of private land, which may prove to be the best ground for testing the management of NTFPs. The clear property rights on private land ensure that compatible forest management may be tested and applied with appropriate ownership incentives for NTFP management investment in place. There are many instances where appropriate NTFP management strategies may produce additional revenues for landowners. For example, selling exclusive permits to NTFP companies or harvesters could potentially offset the costs of timber production. With such permitting in place, NTFP producers may also be able to perform specific silviculture operations, such as thinning and spacing, to enhance NTFP production while also reducing silvicultural costs for the landowner (Cocksedge and Titus 2006).

Among the case studies presented in this issue, the salal study serves as an example of how an NTFP may generate additional revenues for a landowner (Hobby et al. 2010; see pages 62–71 in this issue). There are several instances in which private timber companies are selling area-based permits to NTFP buyers and harvesters on Vancouver Island. On the basis of these exclusive permits, NTFP producers have a vested interest in

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In the future, the management of NTFPs over large areas of forest lands will likely be undertaken less for the market value of NTFPs than for the contribution such management strategies make towards environmental services for which markets are now emerging.

patrolling the licenced area to prevent trespassing. Permittees also have an incentive to manage the resource and prevent overharvesting. In addition, there are cases where salal harvesters have been trained to thin and space the canopy and fertilize plantations to maintain and enhance salal production while benefiting timber production and quality.

Other areas that could potentially be managed for NTFPs include First Nations Treaty lands, First Nations Reserves, Community Forest Tenures (which have rights to manage and benefit from NTFPs), and land managed by provincial Crown woodlot licensees. With the appropriate property rights in place, the deliberate management and protection of NTFP investments would make sense. Continuing research into compatible management opportunities in these areas would help to realize the opportunities for commercial development of NTFPs and their associated benefits. It is the opinion of the researchers that with the proper management strategies in place, a higher and better use of some of these private lands can be achieved when economic and environmental objectives expand beyond timber production on a per-hectare basis.

Scenario 4: Management for emerging values

As this scenario is only just beginning to emerge in British Columbia, this discussion can only explore future possibilities that are in the formative stages. It seems likely that NTFP management over large areas of forest lands will be undertaken less for the market value of NTFPs than for the contribution such management strategies make towards environmental services for which markets are now emerging. For example, the sale of carbon credits may provide an incentive for timber companies to extend timber rotations to maximize sequestration, and this in turn would benefit the natural production of NTFPs like pine mushrooms

and chanterelles. In jurisdictions such as Costa Rica, payments for maintaining biodiversity have been implemented, and enhancing NTFPs is potentially one way to meet such objectives (Zuniga 2003). As a final example of how environmental benefits can be linked with NTFPs, it should be noted that many NTFPs have the potential for enhancing water quality by providing streamside soil stabilization and general water filtering mechanisms making them beneficial in maintaining water quality in watersheds (Schultz et al. 1995; Taccogna and Munro [editors] 1995).

Concluding comments and recommendations

Over the past two decades, NTFPs have been the subject of increased interest and awareness by governments, researchers, and forest managers in British Columbia. More recently, economic, environmental, and socio-political trends have focussed greater attention on both the fragility of conventional forestry and the potential for other products and services to be produced in conjunction with, or instead of, traditional forest commodities. The project discussed in this issue of the *BC Journal of Ecosystems and Management*, as well as other research and policy work that has been conducted in British Columbia over the past few years, suggests that while NTFPs will rarely be a primary focus of forest management many have good potential for production alongside other forest goods and services. Effective property rights are important for management, so the best options may be for wild or managed production in private woodlots, community forests, and First Nations Reserves, as well as cultivated production in agroforestry systems. With reference to the four scenarios outlined above, we suggest that the largest volumes of NTFP commodities, such as floral greens and wild mushrooms, will continue to be extracted from scenario 1 lands, at least for the foreseeable future. These lands constitute the greatest proportion of forested areas in the province. Except where more pronounced incentives emerge, it seems unlikely that either public or private interests would be willing to make significant investments in stewardship and adding value. At the same time, there are many simple, inexpensive steps that could be taken to enhance non-timber production, with either neutral or beneficial impacts on timber production, several of which are discussed in Cocksedge (editor, 2006). In many cases, simply improving communication and co-ordination

By examining the various actual and possible scenarios for forest management, it should be possible to produce more value by aligning NTFP use with other management objectives and by recognizing that there is no “one size fits all” for NTFP management and policy in British Columbia.

among harvesters, and between timber and non-timber interests, could generate significant benefits.

To effectively apply scarce resources on NTFP research and development, we believe the greatest short- to mid-term impact will likely occur in scenarios 2 and 3, with a focus on long-term planning and development related to scenario 4. In scenario 2, managing for NTFPs is (or can become) compatible with protection of many other (often non-commercial) values, and may assist in offsetting the costs of activities such as riparian management, enhancement of wildlife habitat, or fire prevention. In scenario 3, forest owners and managers already have practical or legal rights to manage and benefit from NTFPs. In these cases, investment should focus on market research and development, product development, and production techniques—preferably as joint investments with agroforestry/horticulture research and development. In both scenarios, lessons learned can be extended to the broader forest management community and can help define a research and planning context for the “next wave” of emerging forest products and services in scenario 4.

As Belcher and others (2003) have observed, development and conservation objectives for NTFPs are not “naturally” compatible, although these objectives may offer more potential for compatibility than industrial-scale extraction of forest commodities. By examining the various actual and possible scenarios for forest management, it should be possible, however, to produce more value in many instances by aligning NTFP use with other management objectives and by recognizing that there is no “one size fits all” for NTFP management and policy in British Columbia.

Note

This series contains information on the ecology and management of non-timber forest products. In promoting implementation of this information, the user should recognize the importance of equitable sharing of any benefits derived from the management and use of this resource as addressed in Article 8(j) of the United Nations Convention on the Conservation of Biological Diversity.

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Test Your Knowledge . . .

From rotations to revolutions: Non-timber forest products and the new world of forest management

How well can you recall some of the main messages in the preceding Discussion Paper?

Test your knowledge by answering the following questions. Answers are at the bottom of the page.

1. Successful development of NTFPs is measured by their commercial and non-commercial values to a community.
 - A) True
 - B) False
2. What are the most commercially traded NTFPs in British Columbia?
 - A) Mushrooms and wild berries
 - B) Wild game and mushrooms
 - C) Mushrooms and floral greenery
3. The production-to-consumption systems approach is useful only for analyzing the technical and financial aspects of production chains.
 - A) True
 - B) False

ANSWERS

1. A 2. C 3. B