



**Forest
Practices
Board**

Follow Up: Integrating Non-Timber Forest Products into Forest Planning and Practices in British Columbia

Special Report

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Executive Summary

Non-timber forest products (NTFPs), also known as non-wood forest products and botanical forest products, include all botanical and mycological resources of the forest, other than conventional timber products such as saw logs, pulp logs, shakes and firewood.¹ NTFPs are harvested by Aboriginal, recreational and commercial users.

In 2004, the Forest Practices Board examined the topic of NTFPs and opportunities for enhancing NTFPs while managing for timber, also known as “compatible management.” In that report, the Board made recommendations to improve knowledge and management of NTFPs in British Columbia.

The recommendations were to:

1. support further research into the economic contribution of the sector and compatible management of timber resources and NTFPs;
2. explore options to regulate the NTFP sector to ensure it can be managed in a fair and sustainable manner;
3. establish objectives for NTFPs under the *Land Act* to guide forest planning and practices; and
4. raise awareness of NTFPs among foresters and other resource management professionals.

Government responded to those recommendations in 2005, outlining some of the actions related to NTFPs that it was taking or supporting. Both the report and the government response document are available on the Board’s website. Also in 2005, Board members met with government agency representatives to discuss the recommendations and government’s response. Five years later, the Board decided to follow-up and find out what has happened with the recommendations.

The follow-up work found that the Board’s original recommendations regarding research and knowledge extension have been implemented to a fair degree, but exploration of regulatory options and development of objectives for NTFPs—with limited exceptions related mostly to cultural heritage resources—have not.

In the absence of government objectives for NTFPs, the *Forest and Range Practices Act* offers little protection or management guidance. This lack of objectives likely hinders any real incentive to explore regulation as a means of effective management of NTFPs. However, Community Forest

¹ While recognition of other non-timber resources and values provided by forests is growing (e.g., biodiversity spiritual values, tourism values and benefits, etc.), and in keeping with the original report, the Board is using the traditional definition of NTFPs, which is limited to tangible goods and products that can be gathered and harvested.

Agreements and the new First Nations Woodland Tenure both provide opportunities to begin testing management of botanical forest products.

The harvest of NTFPs continues to be largely unmanaged in BC, creating a whole range of issues—from lack of government revenue to potential over-harvesting of the resource.

Among the many unresolved issues relating to NTFP stewardship, one of the most important to address is that of Aboriginal rights and First Nations' traditional use of NTFPs. Work to address the many research and information gaps also needs to be continued.

Table of Contents

Executive Summary i

Introduction 1

Background 2

 Aboriginal Rights and NTFPs 2

Discussion..... 3

 1. What Has Been the Response to the 2004 Recommendations? 3

 2. What Actions Are Still Needed For Effective Management of NTFPs Today? 8

Conclusions10

Board Commentary.....11

References12

APPENDIX 117

Introduction

The Forest Practices Board (the Board) is the public's independent watchdog for sound forest and range practices in BC. The Board's mandate includes auditing forest practices, investigating public complaints and pursuing administrative appeals (see www.fpb.gov.bc.ca). The Board also has the authority to release special reports about forestry issues considered to be in the public's interest. The Board promotes stewardship of the full range of forest values in public forest lands in BC.

In 2004, the Board released a report² outlining some of the challenges and opportunities facing non-timber forest products (NTFPs) management in BC. The Board developed the report following the receipt of a number of complaints and concerns regarding sustainable management of NTFPs, both in terms of potential over-exploitation, as well as habitat maintenance for these resources. The report noted room for improvement in a number of areas, including knowledge and awareness, sector regulation and coordination of legislation, and concluded with four recommendations:

1. Government should conduct the research necessary to quantify the current economic contribution of the NTFP sector to the province, and its contribution to economic diversification of rural communities. Government should also continue to support and undertake research to develop knowledge about compatible management of timber and NTFP resources, and sustainable management of NTFPs.
2. Government should further explore the options for regulating the NTFP industry in light of:
 - its importance for income and employment;
 - the need for sustainable management of the NTFP resource; and
 - its cultural and economic importance to First Nations.
3. Government should establish objectives for NTFPs under the *Land Act*, through sustainable resource management plans, to guide forest planning and practices where NTFPs are an important local resource for economic and/or traditional uses.
4. Government, the forest industry and professional associations should promote awareness among foresters and other resource management professionals, the NTFP sector and First Nations, about the opportunities and challenges of integrating the sustainable management of timber with NTFPs.

In this report, the Board examines the responses to these recommendations, and identifies some significant issues with non-timber forest resources and products currently facing BC.

² The full report can be accessed at http://www.fpb.gov.bc.ca/SR19_Integrating_Non-Timber_forest_products_into_forest_planning_and_practices_in_BC.htm?_taxonomyid=178.

Background

Non-timber forest products (NTFPs), also known as non-wood forest products and botanical forest products, include all of the botanical and mycological resources and associated services of the forest other than conventional timber products such as saw logs, pulp logs, shakes and firewood. This diverse group of resources attracts multiple, often overlapping user groups, including: recreational harvesters, subsistence/cultural use harvesters, commercial harvesters and commercial businesses that deal in raw and processed NTFPs.

Although the economic value of NTFPs remains poorly understood, conservative estimates of the commercial trade value of NTFPs in the province put it in the tens of millions of dollars (Hobby et al. 2006). Thousands of people at least partly rely on harvest of these resources for their livelihood.

Currently, management of non-timber resources can be seen as occurring along a continuum, ranging from purely opportunistic harvesting, to varying degrees of enhancement, to agroforestry and even agriculture (Mitchell 2006). However, sustainable management information and action are lagging behind sector development, resulting in management gaps, mismanagement by overharvesting, lost revenue opportunities for the province, and an increased potential for conflict between NTFP harvesters.

As well, new demands on forest resources—biomass for biofuels, forest retention for carbon credits, fuel management for the wildland urban interface—also present implications for NTFP management. The multiple interests and potential competition for use and management of NTFPs indicates a strong need for coordination between provincial ministries and organizations that have interests or concerns related to the NTFP sector.

Besides economic benefits, NTFPs are also valuable in non-commercial ways; they make essential contributions to the maintenance of biodiversity and wildlife habitat, roles that are sometimes overlooked, but have received some recognition internationally through agreements such as the United Nations Convention on Biological Diversity.

Aboriginal Rights and NTFPs

About 80 percent of Aboriginal communities in Canada are surrounded by forests. NTFPs can provide for cultural and subsistence activities, including making medicines, harvesting berries, hunting and fishing. Also, commercial use of NTFPs by Aboriginal communities can provide economic opportunity and local employment.

Each community and First Nation has their own distinct social and cultural values and viewpoints, relative to their traditional territories and the use and management of NTFPs. Some Aboriginal groups continue to express concern over the promotion and/or development of non-timber resources. Their specific concerns are that these resources are being promoted or developed without recognizing their significance to Aboriginal rights and title; and cultural use

of NTFPs may be infringed upon by NTFP development, or by existing forest management practices. The current timber-based management focus on the land base is perceived as threatening NTFP/cultural heritage resources within First Nation territories, and economic-based approaches to NTFP management are seen as further complicating the issue of unresolved Aboriginal rights and title to these resources (Atkinson, pers. comm. 2009).

Discussion

More than 30 people were interviewed in the preparation of this report, including representatives of government agencies, forest and range licensees, sector participants, members of academic institutions and members of non-government organizations who hold an interest in NTFPs and related fields.³ The project team reviewed relevant literature, project databases, legislation and forest stewardship plans from 2004 to 2010. A draft of the report was also shared with key stakeholders and Aboriginal representatives, and their input and comments were also taken into consideration.

1. What Has Been the Response to the 2004 Recommendations?

Recommendation #1: Research

The 2004 report identified a dearth of knowledge about the NTFP sector, both in terms of contributions to provincial and local economies, as well as the basic ecology of the species involved and their response to harvest. The Board reviewed progress on this recommendation by looking both at the research support, or infrastructure, provided by government, as well as at the specific area of knowledge generation.


Research Support

The Ministry of Forests and Range (now called the Ministry of Forests Lands and Natural Resource Operations or MFLNRO) has been one of the main sources of funding for NTFP research. Although other sources have contributed funding to NTFP research in the province—including private companies, foundations, the federal government and partnership initiatives—much of the current knowledge about NTFP socio-economic contributions, ecology and compatibility with silvicultural regimes resulted from MFLNRO research support. Importantly, this support also provided a forum for academic research not tied to directives or expected outcomes, such as commercialization or, conversely, preservation.



2004 Recommendation #1

Government should conduct the research necessary to quantify the current economic contribution of the NTFP sector to the province and its contribution to economic diversification of rural communities. Government should also continue to support and undertake research to develop knowledge about compatible management of timber and NTFP resources, and sustainable management of NTFPs.



³ See Appendix 1 for a complete list.

Research has been undertaken by universities, non-government organizations, consultants and government. Government staff, such as MFLNRO regional ecologists and research ecologists, have collaborated with others, providing expertise on local ecosystems, helping integrate methods and results into a common language and supporting extension and use of results.

However, in the last couple of years, research capacity has been reduced as funding cuts and ministry staff reassignments have decreased opportunities for collaborative research. Beginning in 2008, the Forest Investment Account-Forest Science Program (FIA-FSP) funding was reduced. As well, as funding shrank and the governance model changed, an initiative to develop an “Indigenous Science Funding Stream” was not implemented. The lack of new projects interrupted the momentum of NTFP research, halting new initiatives. This interruption will slow the trend of increasing numbers of proponents and diversity of knowledge applied to this sector, and almost certainly will impact opportunities to enhance mid- to long-term management of NTFPs.

Knowledge Generation

Compatible management

In the 2004 report, the Board noted that there were few examples of compatible management of timber and non-timber resources, and even fewer with NTFPs as the primary focus. This remains true in 2010.

The majority of studies have focused on the effects of forest management on commercial mushrooms (e.g., Berch and Kranabetter 2010; Bravi and Chapman 2009) and berries (e.g., Keefer et al. 2007; Nielsen et al. 2004). There has also been some work done on overall stand productivity and NTFP response to different operational densities and fertilization regimes (e.g., Clason et al. 2008; Sullivan et al. 2008). Recent research has identified burning as a successful method for managing ecosystems and species (Pyke et al. 2010), and more research is being undertaken to quantify effects on NTFP species (e.g., Bryan 2009).

Sustainable management

Since the 2004 report, there has been a greater focus on understanding habitat suitability for NTFPs and their location on the landscape (e.g., Cocksedge 2009; Ehlers 2009; Keefer 2009; Ehlers et al. 2008; Budhwa 2007; Cocksedge 2006; Ehlers et al. 2004). Grizzly bear habitat suitability studies and mapping may also identify high abundance berry patches. More work is required to understand and predict the presence of a broader range of species and their response to management within a wider range of ecosystems.

MFLNRO has included standardized NTFP quality codes in the updated Land Management Handbook 25, Field Manual for Describing Terrestrial Ecosystems (in press). This standardized coding facilitates the incorporation of NTFPs into vegetation inventories, which in turn increases the ability to develop predictive habitat models for these species. More work is required to increase the number of species for which the coding criteria are available.

In 2006-07, FIA-FSP commissioned a series of synthesis reports—including for NTFPs—to help clarify research needs and objectives. The resulting report (Mitchell 2008) provides a synopsis of research findings, identifies the knowledge gaps that need to be filled in order to support the inclusion of NTFPs in forest management, and includes a database of literature relevant to the NTFP sector, pulled from a number of disciplines.⁴

Recommendation #2: Regulation

To date, no regulations specific to the harvest of NTFP have been developed in BC.⁵ However, policy and regulation both affect NTFPs and the sector indirectly through species at risk management, conservation in parks, damage to timber regulations in FRPA, etc.

Divergent opinions exist regarding the necessity and desirability of regulating this sector. A risk management approach highlights a number of concerns about resource use and development. For example, evidence of unsustainable harvesting practices is found in some areas of the province; lack of action may lead to greater harm to resources if markets continue to develop for certain products. There is unwillingness among entrepreneurs to invest in the sector when there are no clear rights over resources; lack of action may suppress sector development and the creation of additional economic opportunities for rural communities. Increasing conflicts amongst commercial harvesters, and between commercial harvesters and subsistence or cultural harvesters, are already a reality in some parts of the province; these conflicts may increase as markets develop in the absence of appropriate legislation that defines access rights.

2004 Recommendation #2

Government should further explore the options for regulating the NTFP industry in light of its importance for income and employment, the need for sustainable management of the NTFP resource, and its cultural and economic importance to First Nations.

Two forms of Crown land tenure currently enable management of NTFPs—Community Forest Agreements and First Nations Woodland Tenures. Tenure holders may be granted the right to harvest, manage and charge fees for botanical forest products, or other products defined by regulation, within their tenure area. However, these tenures do not grant exclusive rights to these resources (unlike timber resources), and the lack of ability to restrict access to the tenure area may make it difficult to exercise these rights. The lack of exclusive rights may also reduce the incentive to invest in NTFP management. On the other hand, these tenures do provide an opportunity to test management of botanical forest products and tenure holders may be able to successfully exercise their rights through the boundary configuration of their licence, signs, communication efforts with other pickers, etc.

There is much confusion among many organizations and industry practitioners regarding the legalities surrounding the harvest of NTFPs. Misinformation about access rights, permitting, and

⁴ Report: <http://cle.royalroads.ca/node/229>; Database: <http://cle.royalroads.ca/?q=NTFP-bibliography/>

⁵ Note that section 168 of the *Forest and Range Practices Act* allows for the regulation of botanical forest products, but has not been used to date.

harvest regulations is widespread, indicating the need for greater clarity on these topics from government.

There is a tradition of open access to NTFPs on Crown land, which many appreciate, including recreational and commercial harvesters. However, as demand increases, there is increasing risk and actual experience with overharvesting and/or damage to forest ecosystems. Uncontrolled and unsustainable harvesting practices may lead to long-term resource degradation. There are also risks and actual experience with conflicts among and between commercial, subsistence and cultural harvesters. Moreover, uncertainty discourages investment in the sector, at the cost of lost economic opportunities for rural communities. There are many technical and political questions that need to be addressed. The diversity of resources and resource users in the NTFP sector suggest that any regulatory development must reflect the needs of subsistence or cultural and commercial harvesters, the species and the locations where harvesting is taking place (Tedder 2008).

Recommendation #3: Create Legal Objectives for NTFPs

The 2004 report suggested that sustainable resource management plans (SRMPs) provide a very significant opportunity for establishing objectives for NTFPs (FPB 2004, p. 20) given they were intended to provide management direction for resources at a detailed level (Integrated Land Management Bureau Synopsis 2006, p. 3).

Land Use Plans and Agreements

A number of different forms of land use plans and agreements have been created to provide strategic direction for land use management,⁶ including land and resource management plans (LRMPs) and SRMPs.

As noted in the Board's 2004 report, objectives in LRMPs and SRMPs could become legal objectives under the *Forest and Range Practices Act* (FRPA), through designation under section 93.4 of the *Land Act*. One example of legal designation of botanical forest products is the ministerial order for the South Central Coast,⁷ which is part of ecosystem based management for that area. The order creates an objective for First Nations' traditional forest resources, which is to, "maintain traditional forest resources in a manner that supports First Nations' food, social and ceremonial use of the forest." First Nations traditional resource means, "monumental cedar and the other wild plant foods, botanical medicines and forest resources that are utilized by a First Nation for food, social or ceremonial purposes, and includes wildlife," and would include some NTFPs. Forest stewardship plans (FSPs) for this area include results or strategies that are consistent with this objective.

2004 Recommendation #3

Government should establish objectives for NTFPs under the Land Act, through sustainable resource management plans, to guide forest planning and practices where NTFPs are an important local resource for economic and/or traditional uses.

⁶ See FPB/SR/34, 2008 <http://www.fpb.gov.bc.ca/WorkArea/DownloadAsset.aspx?id=3414>

⁷ http://archive.ilmb.gov.bc.ca/slrp/lrmp/nanaimo/cencoast/docs/SCC_consolidated_order.pdf

Management objectives have been set under the *Land Act* through several land use plans⁸ for cultural places, botanical resources, cultural use for cedar, wild food for social or ceremonial purposes, including wildlife. In addition, government has established a couple of *Government Actions Regulation (GAR)* orders for cultural heritage resources and recreation that will address NTFPs. On southern Vancouver Island, cedar strategies have been developed⁹ to protect cedar for cultural use.

Thus, consideration of Aboriginal interests is leading to legal orders that include objectives for certain NTFP resources in some areas.

The Impact of Forest Stewardship Plans on Cultural Heritage Resources/NTFPs

The previous section identified that some FSPs provide results or strategies consistent with legal objectives created under the *Ministerial Order for the South Central Coast*. Under FRPA, FSPs must also contain management results and/or strategies for each of the 11 resource values identified in the legislation (except timber), one of which is cultural heritage resources (CHR). CHR is an overarching term that can include timber and non-timber forest resources (and related botanical forest products), as well as sites that are used for traditional purposes such as medicinal plants, culturally modified trees or traditional use sites that are specific to a given First Nations community or Nation. A CHR can be an NTFP, but an NTFP is not necessarily a CHR.

Examples of results developed for CHRs in different FSPs include retaining birch, medicinal/cultural plants and cultural cedars suitable for carving poles or canoes. An example of a strategy developed for CHRs is to plant western red cedar when it makes sense ecologically.

Recommendation #4: Awareness

The 2004 report identified that awareness of opportunities to practice compatible management needed to increase, and recommended that government, industry and professional associations work to increase awareness of the related opportunities and challenges.

Academic and government departments—including the Centre for Livelihoods and Ecology at Royal Roads University, the University of British Columbia, FORREX, MFLNRO, and the Canadian Forest Service—are actively initiating research and extension on timber-NTFP compatible management. Compatible management refers to managing the timber resource in a manner that is compatible with the harvest of non-timber resources on the same land.

While industry and professional associations have not explicitly



2004 Recommendation #4
Government, the forest industry and professional associations should promote awareness amongst foresters and other resource management professionals, as well as the NTFP sector and First Nations, about the opportunities and challenges of integrating the sustainable management of timber with NTFPs.



⁸ Including the South Central Coast, Morice LRMP, Nass-South SRMP, and Sea to Sky LRMP.

⁹ For example, the Pacheedaht Cultural Cedar Strategy.

promoted compatible management, it is important to recognize the increase in general awareness of NTFP resources that has occurred.

For example, the Association of British Columbia Forest Professionals (ABCFP) offers its members a training program on how to work effectively with Aboriginals, indirectly increasing awareness of understory species that are used by, and important to, Aboriginal culture. Also, the ABCFP added to its strategic plan that its members ensure that Aboriginal values, interests and rights are part of their competency when they work with Aboriginals (ABCFP 2009). There has also been an effort to increase the coverage of NTFP topics in the ABCFP annual Forest Legislation and Policy Reference Guide (see <http://www.aBCfp.ca>).

Other networks and organizations within the forestry sector that have promoted awareness of NTFPs through literature or workshops include: the British Columbia Community Forest Association; the Omenica Beetle Action Committee; the Federation of British Columbia Woodlots; and the Southern Interior Silviculture Committee. NTFP Aboriginal businesses have also been active in increasing awareness of NTFPs, including Siska Traditions Society, First Nations Wildcrafters and Esh-Kn-Am Cultural Resource Management Services, to name just a few. A number of research reports and presentations have emerged from their work.

Another development since the original Board report is the potential for standardized NTFP inventory for a number of species included in the coding standards within the Land Management Handbook (LMH 25, revised edition anticipated in 2011). This coding enables the inclusion of NTFPs within conventional vegetation inventories and increases awareness of these species among forest managers.

2. What Actions Are Still Needed For Effective Management of NTFPs Today?

Aboriginal Concerns

In a 2008 briefing document on non-timber forest resources, the First Nations Forestry Council outlined four specific areas of concern, which they describe as:

1. Provincial forestry legislation fails to prevent infringement on Aboriginal rights and title, in relation to the use of non-timber forest resources. As long as policy gaps exist, First Nations may be excluded from meaningfully participating in some emerging NTFP-based commercial opportunities; further, there is inadequate protection for First Nations access to cultural resources which may overlap with commercially harvested NTFPs.
2. First Nations have been largely excluded from non-timber forest resource management discussions, decision making, and management. Precedent-setting legal cases indicate that First Nations must be included in decision making around non-timber forest resource management.

3. Uncertainty exists due to the lack of an appropriate regulatory framework. Although policies exist mandating the management of cultural heritage resources, no policies are in place to manage commercially harvested NTFPs, which may have the same resource base (i.e., berry crops). This sets the stage for conflict between members of each user group.
4. Proper monitoring of these resources is lacking and must be developed. Without an adequate monitoring regime in place, it will be impossible to assess the impacts of climate change, timber harvesting, or other factors on these resources, or obtain the necessary information to determine protection needs for cultural resources or the potential for commercial development.

The briefing document includes a number of short- and long-term recommendations for recognizing Aboriginal rights and title related to these resources. Among these is the recommendation to create "... long-term, area-based forest tenures available to First Nations to create greater investment certainty in the non-timber forest product sector." The new First Nations Woodland Tenure addresses a long-term and area-based tenure that includes the right to harvest, manage and charge fees for botanical forest products, practice Aboriginal stewardship and protect traditional use practices (MFLNRO 2010).

The resource industry, including community forest managers, recognize that it is increasingly important to collaborate and consult with First Nations before planning or managing NTFPs. Aboriginal perspectives in terms of their experiences and localized knowledge deserve equal consideration to western science techniques in understanding NTFPs and its sector/industry.

Continue Addressing the Lack of Information

Research on NTFPs has increased over the years, with arguably more research completed in the province over the past decade than during any previous comparable period. However, in spite of the progress made, significant gaps remain in our knowledge of NTFPs.

Examples of research gaps include the costs and benefits of different approaches for managing NTFP resources; the response of NTFP species to annual climatic variation and resulting habitat requirements, particularly in light of climate change; the potential contribution of NTFPs to livelihood values, both economic and non-economic; appropriate stand level compatible management techniques which enhance both NTFP and timber values; and many more areas related to the ecology, management, and appropriate development of these resources.

Forest managers interviewed expressed a need for more information, about where the species are located on the landscape, how stand manipulation will affect NTFPs, and the associated costs and benefits. Further, forestry practitioners need easy access to appropriate information; most do not have the time to actively seek information on anything not immediately pertinent, nor often even to identify relevant information out of the volume of materials that cross their desk.

Conclusions

The follow-up work found that the Board's original recommendations regarding research and knowledge extension have been implemented to a fair degree, but exploration of regulatory options and development of objectives for non-timber forest products (NTFPs), with limited exceptions related mostly to cultural heritage resources, have not.

In the absence of government objectives for NTFPs, *Forest and Range Practices Act* offers little protection or management guidance. This lack of objectives likely hindered any real incentive to explore regulation as a means of effective management of NTFPs. However, Community Forest Agreements and the new First Nations Woodland Tenure both provide opportunities to begin testing management of botanical forest products.

Objectives for cultural heritage resources, which can sometimes be defined as NTFPs, have successfully been established through the *Land Act* and *Government Action Regulation*, cedar strategies and results and strategies in forest stewardship plans. Monitoring of this work or how this affects these resources will be important.

The harvest of NTFPs continues to be largely unmanaged in BC, creating a whole range of issues—from lack of government revenue to potential over-harvesting of the resource.

Among the many unresolved issues relating to NTFP stewardship, one of the most important to address is that of Aboriginal rights and Aboriginals' traditional use of NTFPs. Work to address the many research and information gaps also needs to continue.

Board Commentary

Non-timber forest products (NTFPs) are important to the cultural and economic interests of many Aboriginal and rural communities in British Columbia.

The potential benefits of a more developed NTFP industry to some rural economies may be substantial. In fact, some regions are counting on this. The real economic potential may depend on markets, which could vary greatly by product and region.

In the past, the Board has expressed the need for government to better understand, manage and potentially regulate the NTFP sector. The wide variety of potential products and their uneven geographic distribution make this a challenge. Historically, free access to Crown land has existed for small-scale commercial and non-commercial users of NTFP resources, with little or no intervention by government.

Complicating these biological and social circumstances is the need to resolve issues of Aboriginal rights in relation to NTFPs. Aboriginals' continued cultural and subsistence use of NTFPs has only limited recognition in current legislation, and this is a concern for many. Even though regulation is slow to develop, resource development and extraction industries are finding it increasingly important to collaborate, consult and make partnerships with Aboriginals, and are proceeding to do so.

This follow-up to the Board's 2004 recommendations found that progress has been made toward awareness and understanding of NTFPs as a component of forest and range ecosystem services, and that legislation is just beginning to incorporate them into the regulatory framework.

In the Board's view, where the commercial harvest of NTFPs on Crown land is expected to exceed an incidental low-impact level, measures will be required to:

1. Ensure the cultural and legal interests of Aboriginal people are addressed.
2. Assert the public's interests (including financial interests) in benefits derived from its resources.
3. Integrate or coordinate NTFP harvests with other resource management objectives and uses.
4. Ensure the productive capacity of forest and range ecosystems is adequately protected.
5. Consider the impacts, if any, on historical non-commercial uses.
6. Incorporate the NTFP sector into regional economic development strategies.

References

- B.C. Integrated Land Management Bureau. 2009. Nass South Sustainable Resource Management Plan (draft for public review). Int. Lan. Man. Bur., Smithers, B.C.
- B.C. Ministry of Agriculture and Lands. 2006. A new direction for strategic land use planning in BC: Synopsis. Integrated Land Management Bureau, Victoria, B.C.
- B.C. Ministry of Agriculture and Lands. 2007. Morice Land and Resource Management Plan. B.C. Min. Agr. & Lan., Integrated Land Management Bureau, Victoria, B.C.
- B.C. Ministry of Environment and B.C. Ministry of Healthy Living and Sport. 2010. Open Burning Smoke Control Regulation; Policy Intentions Paper for Consultation. Intentions Paper. Victoria, B.C. http://www.env.gov.BC.ca/epd/codes/open_burning/index.htm
- B.C. Ministry of Forests and Range. 2008. FREP Report #18 – A Review of Forest Stewardship Plan Results and Strategies for the Cultural Heritage Resource Value. B.C. Ministry of Forests and Range, Forest Practices Branch, Victoria, B.C. <http://www.for.gov.BC.ca/hfp/frep/publications/index.htm>
- Bennett, Bradley C. 2002. Forest products and traditional peoples: Economic, biological, and cultural considerations. *Natural Resources Forum* 26, (4) (11/30): 293-301.
- Bennett, J.N., B.M. Laphorne, L.L. Blevins and C.E. Prescott. 2004. Response of *Gaultheria shallon* and *Epilobium angustifolium* to large additions of nitrogen and phosphorus fertilizer. *Canadian Journal of Forest Research* 34: 502–506.
- Berch, S. M. and J.M. Kranabetter. 2010. Compatible management of timber and pine mushrooms. Land Management Handbook 64. B.C. Ministry of Forests and Range, Victoria, B.C.
- Bourgeois, W.W. 2008. Ecosystem-based management: Its application to forest management in British Columbia. *BC Journal of Ecosystems and Management* 9(1):1–11.
- Bryan, B. 2009. Quantifying the effects of silvicultural techniques, wildfire and forest stand attributes on black huckleberry abundance and productivity. FIA-FSP Project Y091160. Executive Summary. Cranbrook, B.C.
- Budhwa, R. 2007. The importance, traditional use and locations of various berry species within the Gitxsan traditional territory. Crossroads Cultural Resource Management, Smithers, B.C.
- Byrne, W. and K. Dow. 2006. Market and product development for birch timber and non-timber products: Current status and potential in British Columbia. Centre for Non-Timber Resources, Royal Roads University, Victoria, B.C.
- Chapman, B. K. and B. Bravi. 2008. Developing molecular tools to help determine the effect of natural disturbance on pine mushroom (NTFP) distribution and sustainability. FIA-FSP Project Y082310. B.C. Ministry of Forests and Range, Williams Lake, B.C.

- Charnley, S., A. P. Fischer, and E. T. Jones. 2007. Integrating traditional and local ecological knowledge into forest biodiversity conservation in the Pacific Northwest. *Forest Ecology and Management* 246, (1): 14-28.
- Clason, A.J., P.M.F. Lindgren, and T.P. Sullivan. 2008. Comparison of potential non-timber forest products in intensively managed young stands and natural/old-growth forests in south-central British Columbia. *Forest Ecology and Management*. 156: 1897-1909.
- Cocksedge, W. (editor). 2006. Incorporating non-timber forest products into sustainable forest management. An overview for forest managers. Centre for Non-Timber Resources, Royal Roads University, Victoria, B.C.
- Cocksedge, W. 2009. Assessing cultural use species in mountain pine beetle affected areas. FIA-FSP Project Y093318. Centre for Non-Timber Resources, Royal Roads University, Victoria, B.C.
- Cocksedge, W. and T. Hobby. 2006. Critical information for policy development and management of non-timber forest products in British Columbia: Baseline studies on economic value and compatible management (executive summary). FIA-FSP Project Y061065. Centre for Non-Timber Resources, Royal Roads University, Victoria, B.C.
- Davidson-Hunt, I.J., L.C. Duchesne, and J.C. (eds) Zasada. 2001. Changing resource management paradigms, traditional ecological knowledge, and non-timber forest products. USDA Forest Service.
- Ehlers, T.D. 2007. Chanterelle mushroom habitat modelling and inventory. FIA-FSP Project Y071163. Executive Summary. Tysig Ecological Research, Winlaw, B.C.
- Ehlers, T.D. and M.E. Keefer. 2007. Non-timber forest products (NTFP) review for the invermere TSA. FIA-FSP Project 4591008. Final Report. Prepared for Canadian Forest Products. Winlaw, B.C.
- Ehlers, T., S. Fredrickson, and S.M. Berch. 2007. Pine mushroom habitat characteristics and management strategies in the west Kootenay region of British Columbia. *BC Journal of Ecosystems and Management*, 8(1), 76-88.
- Ellen, Roy F. and Holly H. Harris. 1996. *Concepts of indigenous environmental knowledge in scientific and development studies literature: A critical Assessment* . Canterbury: http://lucy.ukc.ac.uk/Rainforest/SML_files/Occpap/indigknow.occpap_TOC.html
- Federation of British Columbia Woodlot Associations. 2010. Agroforestry Industry Development Initiative. www.woodlot.BC.ca/agroforestry/whatis.htm (Accessed July 13 2010).
- FIA-FSP Forest Science Board. 2009. Synopsis of FIA-FSP research projects (2004-2009). Produced for Produced for Sustainability Program Advisory Committee (SPAC) and Timber Growth and Value Program Advisory Committee (TPAC). Victoria, B.C.
- First Nations Forestry Council. 2008. Non-timber forest resources for First Nations in BC. Briefing Document prepared for BC Forestry Roundtable. British Columbia, Canada.

Forest Practices Board. 2008. Provincial Land Use Planning: Which way from here? Special Report FPB/SR/34. <http://www.fpb.gov.BC.ca/WorkArea/DownloadAsset.aspx?id=3414>

Hobby, T., Mitchell, D., Tedder, S., McBeath, A., & Wang, S. (2006). Economic-SubComponent – Current Estimates for NTFP Values in BC, Information Gaps and Recommendations for Future Management and Policy. In: Critical Information for Policy Development and Management for Non-Timber Forest Products in British Columbia: Baseline Studies on Economic Value and Compatible Management. FIA-FSP Project Y061065. Centre for Non-Timber Resources, Royal Roads University. Victoria, B.C.

Janke, Terri. 2005. Managing indigenous knowledge and indigenous cultural and intellectual property. *Australian Academic & Research Libraries* 36, (2) (Jun): 99-111.

Kearns, A. and Halseth, G. 2009. Future forest products and fibre use backgrounder: Non-timber forest resources in the OBAC region. Omineca Beetle Action Coalition Report. Community Development Institute, University of Northern British Columbia, Prince George, B.C.

Keefer, M. 2010. Quantifying the effects of silvicultural techniques, wildfire, and forest stand attributes on black huckleberry. FIA-FSP Y102160. Keefer Ecological Services, Cranbrook, B.C.

Keefer, M. E. 2008. *Synthesis of knowledge and development of huckleberry management recommendations*. FIA Project S084006. Final Report. Keefer Ecological Services, Cranbrook, B.C.

Keefer, M., E. Hamilton, F. Sampson and P. Burton. 2007. The development of guidelines for the management of BC's wild berries. Presentation at the 6th Annual North America Forest Ecology Workshop, June 18 – 22, 2007. University of British Columbia, Vancouver, B.C.

Krcmar, E., G. C. van Kooten, and I. Vertinsky. 2005. *Managing forests for multiple tradeoffs: Compromising on timber, carbon and biodiversity objectives*. University of Victoria, Victoria, B.C.

Krishnaswamy, A., L. Joseph, E. Simmons, G. Thomas and J. Passmore. 2009. First Nations, Forestry, and Natural Resource Information Needs in British Columbia. FORREX Forum for Research and Extension in Natural Resources, Kamloops, BC. File Report 09-01. www.forrex.org/publications/other/FileReports/fr09-01.pdf

Lepofsky, Dana and Ken Lertzman. 2008. Documenting ancient plant management in the northwest of north america. *Canadian Journal of Botany* 86, (2) (February): 129-45.

McCarney, G. R., G. W. Armstrong and W. L. Adamowicz. 2006. Implications of a market for carbon on timber and non-timber values in an uncertain world. Paper presented at Canadian Agricultural Economics Society Annual Meeting, Montreal, Quebec.

Miller, V. 2003. Filling in the gaps: Amalgamating and applying indigenous and western science. Paper presented at Natural Resources Information Management Forum: Putting knowledge to work. FORREX Series No.8, Kamloops, B.C.

Mitchell, D. 2008. Co-production of non-timber forest products with timber and other non-timber goods and services: research findings and knowledge gaps. FIA-FSP project S084007. Final Report. Centre for Non-Timber Resources, Royal Roads University, Victoria, B.C.

Osorio, F. G. and W.H. MacKenzie. 2009. Effects of climate change on high-elevation plant communities and their ecological processes. FIA Forest Science Program Project Y091076. Final Report.

Pinkerton, E. 2009. Evaluating the ecological, economic, and social trade-offs of managing for valued plants and other non-timber forest products. FIA-FSP Project Y092271. Executive Summary. Simon Fraser University, Vancouver, B.C.

Powell River Community Forests Ltd. Forest Stewardship Plan. 2008. Sunshine Coast Forest District, British Columbia, Canada.

http://www.prcommunityforest.ca/PDFs/ForestStewardshipPlan_Jun08.pdf

Powell, G. 2009. *British Columbia agroforestry industry strategic plan: Appendices*. Consulting for Natural Resource Management Solutions. Quesnel, B.C.

Pyke, D.A., M.L. Brooks and C.D. D'Antonio. 2010. Fire as a restoration tool – A decision framework for predicting the control or enhancement of plants using fire: *Restoration Ecology*, v. 18, no. 3, pp. 274-284.

Small Woodlands Program of British Columbia. 2001. A Guide to Agroforestry in BC. Forest Renewal BC, Smithers, B.C.

Sullivan, T.P., D.S. Sullivan and P.M.F. Lindgren. 2008. Influence of variable retention harvests on forest ecosystems: Plant and mammal responses up to 8 years post-harvest. *Forest Ecology and Management* 254: 239-254.

Suring, Lowell H., Michael I. Goldstein, Susan Howell and Christopher S. Nations. 2006. Effects of spruce beetle infestations on berry productivity on the kenai peninsula, alaska. *Forest Ecology and Management* 227, (3) (6/1): 247-56.

Tedder, S. Non-Timber Forest Products: Collaborative Stewardship Project. Draft Report, Version 2. Unpublished Report. Report prepared for the B.C. Ministry of Forests and Range.

Tedder, S. 2008. Tenure and the management of non-timber forest products in British Columbia. Sustainable Forest Management Network Research Note Series No. 34. University of Alberta. Edmonton, AB.

Titus, B.D., B.K. Kerns, W. Cocksedge, R. Winder, D. Pilz, G. Kauffman, R. Smith, S. Cameron, J.R. Freed and H.L. Ballard. 2004. Compatible (or co-) management of forests for timber and non-timber values. CD of Proceedings of Canadian Institute of Forestry/Institut forestier du Canada and the Society of American Foresters Joint 2004 Annual General Meeting and Convention "One Forest Under Two Flags – Une Forêt Sous Deux Drapeaux," Oct. 2-6, 2004, Edmonton, AB. p. 27.

Turner, Nancy J. 2001. "Doing it right: Issues and practices of sustainable harvesting of non-timber forest products relating to first peoples in British Columbia." *British Columbia Journal of Ecosystems and Management* 1, (1): 1-11

Vyse, A. and S.W. Simard. 2009. Broadleaves in the interior of British Columbia: Their extent, use, management and prospects for investment in genetic conservation and improvement. *Forestry Chronicle*, 85, 528-537.

APPENDIX 1

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