Development of market links for non-timber forest products harvested in Russian Far East
Development of market links for non-timber forest products harvested in Russian Far East

Summary

Report by Kerry Hughes & Tasha Goldberg
(March 2012)
# Table of content

High Priority Cluster ............................................................................................................... 7

1. Korean pine nuts- *Pinus koraiensis* ................................................................................... 8
   1.1 Overview .......................................................................................................................... 8
   1.2 Existing Regulatory Framework ...................................................................................... 8
   1.3 Barriers to Market .......................................................................................................... 9
   1.4 Quick Market Analysis .................................................................................................. 9
   1.5. SWOT Analysis: .......................................................................................................... 9

2 Schisandra berries- *Schisandra chinensis* ........................................................................ 11
   2.1 Overview ........................................................................................................................ 11
   2.2 Existing Regulatory Framework .................................................................................... 11
   2.3 Barriers to Market ......................................................................................................... 12
   2.4 Quick Market Analysis .................................................................................................. 12
   2.5. SWOT Analysis: .......................................................................................................... 12

3 Eleuthero, Siberian ginseng, roots & leaves- *Eleutherococcus senticosus* ......................... 14
   3.1 Overview ........................................................................................................................ 14
   3.2 Existing Regulatory Framework .................................................................................... 14
   3.3 Barriers to Market ......................................................................................................... 15
   3.4 Quick Market Analysis .................................................................................................. 15
   3.5. SWOT Analysis: .......................................................................................................... 15

4. Bilberry- *Vaccinium myrtillus* ........................................................................................ 17
   4.1 Overview ........................................................................................................................ 17
   4.2 Existing Regulatory Framework .................................................................................... 17
   4.3 Barriers to Market ......................................................................................................... 18
   4.4 Quick Market Analysis .................................................................................................. 18
   4.5. SWOT Analysis: .......................................................................................................... 18

5. Chaga mushrooms - *Inonotus obliquus* .......................................................................... 20
   5.1 Overview ........................................................................................................................ 20
   5.2 Existing Regulatory Framework .................................................................................... 20
   5.3 Barriers to Market ......................................................................................................... 21
   5.4 Quick Market Analysis .................................................................................................. 21
   5.5. SWOT Analysis: .......................................................................................................... 21

6. Honey .................................................................................................................................. 22
   6.1 Overview ........................................................................................................................ 22
   6.2 Existing Regulatory Framework .................................................................................... 22
   6.3 Barriers to Market ......................................................................................................... 23
   6.4 Quick Market Analysis .................................................................................................. 23
   6.5. SWOT Analysis: .......................................................................................................... 23

7. King Bolete- *Boletus edulis* Bull ..................................................................................... 24
7.1 Overview .................................................................................................................................................. 24
7.2 Barriers to Market .................................................................................................................................. 24
7.3 Quick Market Analysis ............................................................................................................................... 24
Medium Priority Cluster .................................................................................................................................. 25
Other Strategies for RFE NTFPs ..................................................................................................................... 25
Niche Export Markets for Sustainably-Produced RFE ‘Superfoods’ .................................................................. 25
Niche Export Markets for Sustainably-Produced TCM Botanicals ................................................................... 26

List of Acronyms

AHPA American Herbal Products Association
DSHEA Dietary Supplement Health and Education Act of 1994
EHIA European Herbal Infusions Association
EFSA European Food Safety Authority
FDA Food and Drug Administration (US)
FD&C Act Federal Food, Drug and Cosmetic Act (Canada)
FPLA Fair Packaging and Labeling Act
NHPD Natural Health Products Directorate (Canada)
NHPID the Natural Health Products Ingredients Database (Canada)
USDA United States Department of Agriculture
WWF World Wildlife Fund
Introduction to the market study, methodology and report summary

This summary condenses the report that investigated the development of market links for non-timber forest products (NTFPs) in the Russian Far East (RFE). Based on resource inventories and management plans completed in the RFE territories, there are indeed marketable materials available for sustainable harvest that can produce benefits for biodiversity conservation as well as the sustainable economic development of the local people including the indigenous Udege and Nanai communities. The basis for analysis is primarily rooted in the exploration of Russian export trade data, existing regulatory status for NTFPs, and market access requirements for food, dietary supplements, cosmetics and pharmaceuticals in the selected target markets of US, Canada, the European Union, China, Japan, and the Russian Federation. Additional layers of analysis consider indicative bulk pricing when available, the strengths, weaknesses, opportunities and threats (SWOT), private corporate perspectives through selective interviewing and surveying, and trend indicators.

Within the full market report, Chapter 1 provides a quick analysis and overview of the market potential for the identified NTFPs that can be commercially available from wild-harvesting and export trade from the RFE. Throughout Chapters 2 and 3 explain criteria for prioritization of NTFPs species for their market/trade potential are revealed; and in Chapter 4 the major potential destinations for international and national trade and their respective market requirements are suggested for these priority species. Chapter 5 provides information about potential priority buyers, summarizes interviews with over 15 potential buyers, with the focus on international priority markets, as well as analysis of the Russian market. Overall, this report provides recommendations for the development of key NTFP products as viable income generating alternatives for the local and indigenous communities. In this summary, following the brief explanation of the market study methodology, high and medium priority species for trade are identified, followed by a summary for each of the species. The summary will provide a brief description of market requirements for the priority markets, as well as a list of priority potential buyers for RFE NTFP products.

The report recommendations focus on species that already have an established regulatory framework for market access in the largest number of countries, and for which the quantities being collected in the RFE are high. There is high market interest for many of the NTFPs in Europe (mainly extraction houses and distributors in Germany, Italy, France, Spain and UK), USA, Canada, Australia, New Zealand and South Africa. The Asian/Chinese markets could be interesting for some of the lesser known NTFPs that are used in Traditional Chinese Medicine (TCM). NTFPs that could be marketed as TCM plants are listed within the report as well as a highlight on the niche export market for Sustainably-Produced TCM Botanicals: Schisandra, Siberian ginseng, and *Phellodendron amurense*. One significant factor in market development is competition by other NTFP material from unregulated harvesting and forests in the area. Another consideration is that some of the prioritized species may not be harvested in sufficient-enough quantities to consider an international approach. For some species, special regional products might be developed specifically for local and regional markets.

Based on the assumptions and methodologies, seven NTFPs are identified as high priority based on the existing regulatory framework and market success potential: *Korean* pine nuts; *Schisandra* berries; *Siberian* ginseng, roots and leaves; *Bilberry*; *Chaga* mushrooms; *Honey*; and *King Bolete*. The NTFPs categorized as medium priority are: *Cowberry*; *Viburnum* berries; *Hawthorn* berries; *Rosehips* berries; *Actinidia*; *Manchurian Hazelnut*; *Blue-berried Honeysuckle* and *Sweetbrier Honeysuckle*; *Manchurian walnuts*; *Panax ginseng*; *Arctium lappa*; *Solanum nigrum*; *Capsella bursa-pastoris*; *Paeonia albiflora*; *Typha orientalis*; *Rhodiola rosea*; *Rhododendron daphuricum*; and *Scutellaria baicalensis*. The medium priority ranking NTFPs show promise, yet have considerations that could limit market potential.

In the consideration of trends, the following species could be marketed as “superfoods”: *Cowberry*; *Hardy kiwi*; *Viburnum* berries; *Hawthorn* berries; *Rosehips*; *Barberries*; *Raspberries*; *Wild amur grape*; *Manchurian hazelnut*; *Currant berries*; *Mountain ash berries*; *Sweetbrier honeysuckle*; *Manchurian walnuts*; *Bog bilberry*; *Burdock*; *Dandelion*; *Bane* (black) nightshade; *Chaga*; and *King Bolete*. The NTFPs in bold text above have a limited volume of material available for harvesting. To overcome this challenge and still develop a feasible market strategy, the report recommends offering exclusivity or partial-exclusivity to certain buyers of superfood products that would agree to purchase minimum volumes of these NTFPs and be the only buyer allowed to have this agreement for a set time period and identified market.

Some of the NTFPs are not currently being traded in significant volumes, however they may have closely related species in trade. For new or novel ingredients it would be useful to start out by identifying companies in selected
destination markets who are already trading in ingredients that are available from the RFE and begin to introduce these new or novel ingredients. By approaching these companies first with natural ingredients that they are already familiar with (and already appear in their catalogues), the ability to bring new items later will be somewhat easier after a good trade relationship has been established over time.

In reviewing buyer profiles, the following conclusions were drawn: North American markets are well-known to have lower barriers to market, although this is changing rapidly; European companies tend to have an interest in plants where there is a supporting regulatory framework in various European countries, such as with Schisandra and Siberian ginseng; Asian companies represent markets that are highly price-driven and competitive and have little interest in legitimately sustainably certified material; and Russian buyers are skeptical of market development due to Chinese competition to Russian sustainably-produced material based on price competition with unregulated, and possibly adulterated, materials.

The report presents tables assembled to facilitate the identification of companies that are currently processing, distributing, importing and exporting natural ingredients. These lists, though not exhaustive, provide good examples of what processed forms of these ingredients are actively in trade. They can also serve as a short list of potentially interested companies to approach once a portfolio of Russian specialty products is defined and ready for market.

### Current Russian market for natural ingredients

In 2008, the total global export market for all natural ingredients (including botanical raw materials, herbal extracts, essential oils and extracted oleoresins, exudes, balsams, natural gums, resins, saps, selected fatty oils, seaweeds and algae) in terms of reported customs value amounted to about USD $31.24 billion. This rather large market continues to grow. The overall main export market for Russian Federation botanical ingredients is presently the European Union (mainly Germany, Netherlands, Belgium, United Kingdom, France, Italy, Spain, and Poland). Next most important markets include neighboring Republics of the former Soviet Union like Kazakhstan, Moldova and Ukraine. The USA is also one of the main markets for Russian botanical ingredients.

The amount of Russian export trade with other larger Asian markets like China, Japan and India is surprisingly very low, almost negligible. Thus, it would seem that the most important markets to focus on and get right for the report would be the market access / regulatory framework and standards for exporting any of the listed species to the EU and US. But with that said, it is possible that the biggest opportunities for some of the listed species could be the eastern Asian countries where some of species (mainly Eleuthero root and Schisandra fruit) are used as active ingredients of medicines. A consistent concern that was shared by the Russian trader was rampant unregulated extraction and selling of Russian NTFPs to Chinese buyers. This could account for the low numbers reported in official export trade, and possibly disinterest from other Asian markets in sustainably harvest Russian NTFP material.

Other than Asian countries that use Eleuthero and Schisandra in medicine, the western countries most likely to be interested in those particular herbs would be EU-27 Member States (mainly extraction houses and distributors in Germany, Italy, France, Spain, and UK), US, Canada, Australia, New Zealand and South Africa. The Asian/Chinese markets could be interesting for some of the lesser known NTFPs (lesser known to the export markets of EU and US)—those that are used in Traditional Chinese Medicine (TCM)—however, one significant factor in their market development would be the competition of other NTFP material from unregulated harvesting and forests in the area.

### I. Priority NTFPs from RFE for market development

Based on the analysis, which assessed the potential for development and markets, of NTFPs available for harvesting from target areas of RFE, the present study puts species into various priority groups. The following methodology and assumptions were applied in order to come to our analysis and designation of priority for those NTFPs which have “high”, “medium” or “low” priority for development through WWF project or beyond this project:

- Company interviews were performed and their interest and feedback of knowledge of all the NTFP species was recorded. This information is reflected in Sections 1.0, 2.0 and 5.0 of the full report.
- The available volume of the NTFP was a deciding factor on determining priority, as very low volume NTFPs were normally given lower ranking.
- Strong threats that were identified by SWOT analysis were taken into consideration, as well as opportunities.
If the only apparent markets for a particular NTFP was in China or regionally, and if that NTFP had fairly wide distribution regionally, the NTFP would receive lower ranking. This is due to feedback from buyers and stakeholders in Russia who voiced concern about Chinese competition and unsustainable harvesting which is routinely done for the Chinese market. It is an assumption of this report that the RFE sustainably-harvested material would not compete well with the majority of Chinese-sourced material.

These assumptions and methodology have resulted in the ranking of seven NTFPs as “High Priority”, and an additional 17 as having “Medium Priority”, as illustrated by Table 1.

Table 1: Focus Cluster of High and Medium Priority RFE NTFPs

<table>
<thead>
<tr>
<th>NTFPs by Ranking</th>
<th>High Priority:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean pine nuts</td>
<td>Schisandra berries</td>
</tr>
<tr>
<td>Siberian ginseng, roots &amp; leaves</td>
<td>Bilberry</td>
</tr>
<tr>
<td>Chaga mushrooms</td>
<td>Honey</td>
</tr>
<tr>
<td>King Bolete</td>
<td></td>
</tr>
<tr>
<td><strong>Medium Priority:</strong></td>
<td></td>
</tr>
<tr>
<td>Cowberry</td>
<td>Viburnum berries</td>
</tr>
<tr>
<td>Hawthorn berries</td>
<td>Rosehips berries</td>
</tr>
<tr>
<td>Actinidia</td>
<td>Manchurian Hazelnut</td>
</tr>
<tr>
<td>Blue-berried Honeysuckle or Sweetberry Honeysuckle</td>
<td>Manchurian walnuts</td>
</tr>
<tr>
<td>Panax Ginseng</td>
<td>Arctium lappa</td>
</tr>
<tr>
<td>Solanum nigrum</td>
<td>Capsella bursa-pastoris</td>
</tr>
<tr>
<td><em>Paeonia albiflora (= P. lactiflora)</em></td>
<td>Typha orientalis</td>
</tr>
<tr>
<td><em>Rhodiola rosea</em></td>
<td><em>Rhododendron dahuricum</em></td>
</tr>
<tr>
<td><em>Scutellaria baicalensis</em></td>
<td></td>
</tr>
</tbody>
</table>

**High Priority Cluster**

The seven NTFPs listed as High Priority NTFPs—Korean Pine Nuts, Schisandra, Siberian ginseng, Bilberry, Chaga mushrooms, Honey and King Bolete—have strong market potential, with markets ranging from local/regional to major export markets, such as Europe and North America. These NTFPs should be the focus for certification schemes, such as FairWild or other Fair Trade or organic certifications. Below are the high priority species factsheets.
1. Korean pine nuts - *Pinus koraiensis*

1.1 Overview

Within the genus *Pinus*, the Korean pine gives pine nuts that are the most important pine species in international trade. About 20 species of pines have nuts large enough to be interesting as human food. In Asia, the Korean pine is the main pine that gives pine nuts, but there are other pines, such as the Chilgoza Pine in the western Himalayas, and the Siberian Pine, also from Russian forests. European pine nuts mostly come from stone pines, which are normally cultivated trees, and in North America the pinyon pines (three species) are the main species that give nuts of commerce.

Pine nuts have compounds that are thought to be analgesic, antibacterial, and anti-inflammatory. They are used in Korea to treat earache, epistaxis and to promote milk flow in nursing mothers.

1.2 Existing Regulatory Framework

**EU Food:** On the EFSA website, there is an article on the Scientific opinion on the substantiation of a health claim related to "pine nut oil from *Pinus koraiensis* Siebold & Zucc" and an increase in satiety leading to a reduction in energy intake (ID 551) pursuant to Article 13(1) of Regulation (EC) No 1924/2006. The European Commission, the Panel on Dietetic Products, Nutrition and Allergies was asked to provide a scientific opinion on a list of health claims pursuant to Article 13 of Regulation (EC) No 1924/2006. This opinion addresses the scientific substantiation of health claims in relation to "pine nut oil from *Pinus koraiensis* Siebold & Zucc" and increase in satiety leading to a reduction in energy intake. No references were provided from which conclusions could be drawn for the scientific substantiation of the claimed effect.

The nuts and nut oil from *Pinus koraiensis* are established as food ingredients in the EU, "preparations" from the oil (e.g. refined pine nut oil consisting of a mixture of the major fatty acid components) would be classified as a "Novel" food ingredient requiring pre-marketing authorization in the EU. Korean pine is not listed in the EHIA "Inventory List of Herbals Considered as Food", indicating that this ingredient is not currently used in herbal infusions in the EU market. The database also revealed that in the EU, the use of the nuts and oil form *Pinus koraiensis* as food or food ingredient is established.

**EU Cosmetic:** Cosmetic ingredients derived from Korean pine are listed in the CosIng database, including:

- Pinus Koraiensis Seed Extract which is an extract of the seeds that functions as a tonic or in perfuming.
- Pinus Koraiensis Seed Oil which is obtained from the seeds and that functions as a skin conditioner or perfume.

**US Food & Dietary Supplement:** Both a GRAS notification (for use in food products) and a 75-day New Dietary Ingredient (NDI) notification (for use in dietary supplement products) were submitted to FDA. The GRAS petition was permitted by the FDA. Therefore, oil from the seeds of the Korean pine are currently self-affirmed to beGRAS under specific conditions of use as a food ingredient in various foods, and therefore, is exempt from the premarket approval requirements of the Federal, Food, Drug and Cosmetic Act. Korean pine is not listed in the "Herbs of Commerce" which indicates that it did not appear in US commerce prior to 1994 and would therefore require the pre-marketing submission of a NDI notification to the FDA. The labeling of packaged products containing pine nuts are subject to the U.S. Regulation Guidance for Industry: the Food Allergen Labeling and Consumer Protection Act 2004 (Edition 4) (FALCPA).

**Canada Food:** Korean Pine is not a registered food in Canada, nor is it a food additive that is permitted in foods.

**Canada Cosmetic:** Korean pine is not listed in the Health Canada “Cosmetic Ingredient Hotlist” which is a list of restricted and prohibited ingredients for products in Canada. Korean pine is included on the list of substance in Cosmetics and Personal Care Products Regulated under the F&DA that were in commerce between January 1, 1987 and September 13, 2001.

---

Canada Medicine: There are no monographs for *Pinus koraiensis* in the NHPD, nor are there any registered natural products in Canada using this ingredient. It is listed in the Ingredient database for NHPID including Korean Pine Nut Oil and Pinus koraiensis.

Asia: South Korea has a legal regulatory framework established that defines the quality of the substance for use as an herbal medicinal product component. There is a monograph included in the Korean Herbal Pharmacopoeia as PINI KORAIENSIS SEMEN.

Table 2: Indicative Bulk Pricing for Korean Pine Nut – *Pinus koraiensis*

<table>
<thead>
<tr>
<th>Form</th>
<th>Standard</th>
<th>Origin</th>
<th>Price USD/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nut</td>
<td>Wild</td>
<td>Russia</td>
<td>12.6-13.3</td>
</tr>
</tbody>
</table>

1.3 Barriers to Market

Shelled pine nuts can go rancid within a few weeks or even days if they are in warm conditions. It is best to preserve them frozen until the point of consumption to keep them from going rancid.

There is some interest in very small niche markets in products from Siberian pines due to the Ringing Cedar series. Whether the Korean pine nuts (*Pinus siberica*) and oil can be considered equal in their properties is a possible barrier to these niche markets.

Competing pine nuts are produced in other markets and may be cheaper. Since there is little awareness of need for sustainability or certification of this species, this may not be a big enough incentive to give value added status or market for these nuts.

1.4 Quick Market Analysis

There is an existing regulatory framework for Korean pine nut as a food and cosmetic ingredient in the EU. In the US oil from the pine nut has GRAS approval, yet no approval as a dietary ingredient. The quality standards are defined in the KHP indicating a market in South Korea. Mainstream market product that requires little education or market development. High priority for this RFE project.

1.5. SWOT Analysis:

<table>
<thead>
<tr>
<th>Strengths:</th>
<th>Weaknesses:</th>
</tr>
</thead>
</table>
| -strong market already exists  
- mainstream market | -mainstream markets may not see value of sustainable production or certification |

<table>
<thead>
<tr>
<th>Opportunities:</th>
<th>Threats:</th>
</tr>
</thead>
</table>
| -possible relationship for niche markets developing around “Ringing Cedars” folklore/trend.  
- the nut oil shows promise if extracted and stored fresh in nutritional health markets.  
- opportunity in “super food” markets for nuts of good quality and sustainable certification. | -can go rancid if not stored or handled well.  
- price competition in rest of Asia |

Overview: Korean pine nuts have a good mainstream market potential, and are solidly ranked as having a ‘High Priority’ for this RFE project. There may also be good markets for Korean pine nuts that are certified to a sustainable certification, and which can carry the RFE NTFP story of sustainability. Interest in nuts of this quality was expressed by buyers, such as Essential Living Foods, but it will be a lower volume demand than cheaper non-certified material. Mass market brands, such as Diamond Brands in the US, will sell high volume, but none of the nuts they carry are certified. It is through lower volume, but higher added value channels, such as Whole Foods Market, that the certified nuts may find a market. This may help the nuts to get a better price (eg, conventional pine nuts (no shell) sell for US$89.95/5 lb bag; whereas for organic quality they sell for US$129.95/5 lb bag on nuts.com) on the market and differentiate the RFE WWF supply. There may also be some potential to associate

---


5SWOT Analysis - A SWOT analysis is a commonly employed marketing analysis or strategic planning tool whereby the objective of the business venture is identified and then the internal and external factors are identified which are favorable or unfavorable to achieve the objective. SWOT stands for “Strengths, Weaknesses, Opportunities and Threats.”

6 Pine nuts are sold in mass market retailers, such as CostCo and supermarket chains, with mainstream brands such as “Diamond” in the US.
the pine nuts from the RFE region with Russian folkloric culture and beliefs that they may have special nutritional function that can increase health. The nut oil especially shows promise as an alternative “good fat” or oil that is currently being promoted in certain niche markets for its natural appetite suppressant (due to pinolenic acid) activity, as well as improving metabolism and digestion. Siberian pine nut oil can be found for sale by several retailers; on the web at sites such as www.siberiantigernatural.com (US$29.95/8.5 oz), www.gourmetfoodworld.com (US$25.25/8.45 fl oz), and www.gourmetfoodstore.com (US$29.75/8.5 fl oz).
2 Schisandra berries - *Schisandra chinensis*

2.1 Overview

Schisandra berries are considered in the top 50 fundamental herbs in TCM. The fruit is used in the Japanese Kampo system of Traditional Medicine. The berries are used as a tonic and restorative, adaptogen and to increase ‘zest for life’. Schisandra, although mostly known in TCM, also has a lot of good clinical substantiation that is building and therefore expanding market opportunities in other western markets. The berry is borderline as a food, as well as a medicine, there could be opportunities in the functional food or food markets as well as herbal medicine markets worldwide. The primary use is as an adaptogen, and it is a very safe herb, it has a lot of potential for expanding its market presence and popularity among several markets in both the West and Asia.

Schisandra from this RFE project was also already tested by one interested company (Traditional Medicinals), and found to be mostly compliant to a high level standard (Chinese Pharmacopeia), with exception to its cleanliness. It is estimated by the RFE Forest Management Plan that there are 342.9 tonnes per year of Schisandra berries available to harvest.

2.2 Existing Regulatory Framework

**EU Food**: Schisandra fruit is listed in the EFSA Compendium of botanicals that have been reported to contain toxic, addictive, psychotropic or other substances of concern. Schisandra fruits are also listed in the EHIA Inventory List of Herbals Considered as Food, indicating that this ingredient is currently employed in the herbal infusions trade in the EU as a food plant.

**EU Cosmetic**: Cosmetic ingredients derived from *Schisandra chinensis* are listed in the CosIng database, including:

- Schizandra Chinensis Fruit is the fruit and functions as a skin conditioner;
- Schizandra Chinensis Fruit Water is the aqueous solution of the steam distillates obtained from the fruit and can function as either flavoring, masking, perfuming or skin conditioning;
- Schizandra Chinensis Fruit Powder is the powder obtained from the dried, ground fruit and functions as a skin conditioner;
- Schizandra Chinensis Fruit Extract is an extract of the fruit and functions as a skin conditioner;
- Schizandra Chinensis Fruit Powder is the powder obtained from the dried, ground fruit and functions as a skin conditioner;
- Schizandra Chinensis Fruit Extract is an extract of the fruit and functions as a skin conditioner;
- Schizandra Chinensis Fruit Oil is the volatile oil expressed from the fruit and functions as a skin conditioner; and
- Schizandra Chinensis Seed Extract is the extract of the seeds and functions as a hair and skin conditioner.

**EU Medicine**: There is a monograph in the PhEur 7.0 indicating use as a medicinal ingredient with appropriate standards for quality and safety.

**US Food and Dietary Supplement**: Schisandra berries are listed in the “Herbs of Commerce”, which indicates that it was in U.S. commerce prior to 1994 and therefore should be permitted for use in herbal dietary supplement products and should not require the submission of a NDI submission. Additionally, as per federal regulation 21 Code of Federal Regulations (CFR) 101.4, the FDA requires that the common or usual name of botanical ingredients used in dietary supplement products must be consistent with the names standardized in the “Herbs of Commerce”, copies of which may be obtained from the American Herbal Product Association (AHPA).

**US Medicine**: The American Herbal Pharmacopeia and Therapeutic Compendium have an official monograph for Schisandra berry indicating use as a medicinal ingredient with standards for quality and safety.

**Canada Food**: Schisandra berries are not registered as food items in Canada, nor is it a food additive permitted in foods.

**Canada Cosmetic**: Schisandra is not listed in Health Canada “Cosmetic Ingredient hotlist” which lists ingredients that are restricted and prohibited to use in health products in Canada.

**Canada Medicine**: Schisandra is listed in the NHPID, indicating acceptable use as a medicinal and non-medicinal ingredient in natural health product (NHP). There are over 100 registered natural products in Canada contain Schisandra berry.

---

7 Schisandra and Schizandra appear interchangeably in literature. This report has adopted the spelling as Schisandra.
Asia Medicine: There is a monograph for Schisandra in the Pharmacopeia’s of North and South Korea as well as Russia. In the Pharmacopeia of Russia, the monographs cites that there has been research in the former Soviet Union since the 1950’s on this ingredient and its potential as an adaptogen. Schisandra has been adopted into medical literature for physicians and pharmacists in Russia.

There is an official monograph for Schisandra berries in the Pharmacopeia of the People’s Republic of China under the name Fructus Schisandraceae Chinensis. The drug in TCM made from this ingredient is “Bei Wuweizi” and is used to astringe, replenish qi, promote production of body fluids, tonify kidneys, and induce sedation. Schisandra fruit also has an official monograph in the 15th edition of the JP, indicating its inclusion in the Kampo system of Traditional healing in Japan. The Latin name is *Schisandra chinensis* Baillon, the Pharmacopieial name is *Schisandraceae Fructus*, and the Japanese name is ゴミシ. Schisandra berries have official quality standards monographs in both the Pharmacopeia of the People’s Republic of China (PPRC) and JP due to inclusion in both TCM and Kampo system of Traditional Medicine. Additionally, there is a monograph in the European Pharmacoepeia and the World health Organization’s Monographs on Selected Medicinal Plants.

Pricing: Schisandra prices from China have skyrocketed over the last year. Factors that could contribute to this price instability include *inter alia*: severe droughts that occurred in China from 2006-2009; the great Sichuan earthquake; the 2010 floods which affected 400 million people; rising labor costs and labor shortages; and the rising strength of the Yuan currency and speculation.

Table 3: Indicative Bulk Pricing for Schisandra Berries – *Schisandra chinensis*

<table>
<thead>
<tr>
<th>Form</th>
<th>Standard</th>
<th>Origin</th>
<th>Price USD/kg by Volume</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-4 lb (0.45-1.8kg)</td>
<td></td>
</tr>
<tr>
<td>Whole fruit</td>
<td>Conventional</td>
<td>North China</td>
<td>25.4</td>
<td>FOB CA</td>
</tr>
<tr>
<td>Fruit</td>
<td>Wild</td>
<td>Southern China</td>
<td>19.8</td>
<td>FOB SF</td>
</tr>
<tr>
<td>Fruit</td>
<td>Wild</td>
<td>Northern China</td>
<td>48.5</td>
<td>FOB SF</td>
</tr>
<tr>
<td>Fruit</td>
<td>Organic</td>
<td>China</td>
<td>48.29</td>
<td>FOB CA</td>
</tr>
<tr>
<td>Fruit</td>
<td>Organic</td>
<td>China</td>
<td>14</td>
<td>FOB CA</td>
</tr>
<tr>
<td>Dried fruit</td>
<td>Organic</td>
<td>China</td>
<td>50.7</td>
<td>FOB CA</td>
</tr>
<tr>
<td>Fruit, powdered</td>
<td>Conventional</td>
<td>China</td>
<td>65.94</td>
<td>CIF</td>
</tr>
<tr>
<td>Fruit powdered</td>
<td>Conventional</td>
<td>China</td>
<td>16.5</td>
<td>FOB CA</td>
</tr>
</tbody>
</table>

2.3 Barriers to Market

Product needs to be cleaned better to reach high quality markets.

2.4 Quick Market Analysis

In consideration that Schisandra is part of TCM and has monographs in several Pharmacopoeias, all countries where TCM is recognized will have a market for this ingredient. There is evidence of an existing regulatory framework for Schisandra: as a food, cosmetic and medicinal ingredient in the EU; a dietary and medicinal ingredient in the US; and a medicinal and non-medicinal ingredient in Canada. This indicates that there is an existing market for the ingredient as well an existing pathway for market entry. Most supply currently comes from China where, in the last ten years, there have been certain geopolitical causes for price flux. Companies currently using the ingredient may consider opening to a new supply to help spread risk, therefore creating a market for material from RFE. Great potential in several markets. High Priority.

2.5. SWOT Analysis:

<table>
<thead>
<tr>
<th>Strengths:</th>
<th>Weaknesses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-strong market demand already exists</td>
<td>-need to improve the postharvest cleaning to meet Chinese Pharmacopieal specification.</td>
</tr>
<tr>
<td>-material tested by one interested company and it appears to be good quality!</td>
<td></td>
</tr>
<tr>
<td>-An interesting species with lots of good science and also possible use in foods in some countries.</td>
<td></td>
</tr>
</tbody>
</table>

Overview: Schisandra is ranked as having “High Priority” for this project. This RFE Schisandra has been tested already and shown to be of high quality. Schisandra in general has strong market demand in several markets, such as Asia, European markets and in North America, according to several buyers, such as Gaia Herbs, Aveda and Traditional Medicinals. Part of the reason for this is that Schisandra has a large amount of clinical and scientific substantiation, which seems to continue to get stronger, confirming its many purported health benefits, including cardiovascular health, as an antioxidant, and to reduce the effects of physical and emotional stress. Interestingly, this fruit also has culinary potential, and it is known as the ‘five flavor fruit’ in Chinese medicine because it has all basic flavors in TCM: salty, sweet, sour, pungent (spicy), and bitter. Prices for Schisandra have been increasing over the past several years. For example, in the December 2009 issue of the Medicinal Plant Market News Service (published by the International Trade Centre), Schisandra was reported to sell at $19.82/kg (FOB SF) from China; whereas only a year later, in the 2010 issue it was reported at US$48.50 (FOB SF) from Northern China. As many companies have a policy to procure botanical material from more than one origin source (to make sourcing more sustainable), a strategy for this botanical may be to target known large buyers of other high quality Schisandra material.

<table>
<thead>
<tr>
<th>Opportunities:</th>
<th>Threats:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Chinese material commonly adulterated—mixed with two species of Schisandra, and also reports of already extracted (mark) material being sold as ‘dried berries’. Could be a differentiating factor for this RFE material.</td>
<td>- Adulteration on the market</td>
</tr>
</tbody>
</table>
3 Eleuthero, Siberian ginseng, roots & leaves - *Eleutherococcus senticosus*

### 3.1 Overview

Siberian Ginseng, or Eleuthero, has a well-developed market in western countries. It is used as an adaptogen, like other ginsengs, and is not appropriate for food use in most markets.

There is a monograph for Radix *Eleutherococci* (dried roots and rhizomes of *Eleutherococcus senticosus*) in the WHO monographs on Selected Medicinal Plants Vol. 2. It is cited in this monograph that the medicinal uses (supported by clinical data) are as a prophylactic and restorative tonic for enhancement of mental and physical capacities in cases of weakness, exhaustion and tiredness, and during convalescence. The monograph cites uses described in pharmacopoeias and in traditional systems of medicine to treat rheumatoid arthritis, insomnia and dream-disturbed sleep. Medicinal uses, not supported by clinical data, are a carminative in the treatment of acute and chronic gastritis, as a diuretic, to treat impotence and to regulate blood pressure.

The RFE Forest Management Plant estimates that there is 1,654.9 tonnes of Eleuthero per year for harvest. There is an estimated additional 5 tonnes available of leaves per year.

### 3.2 Existing Regulatory Framework

**EU Food**: According to EU Food Safety novel food catalogue, Eleuthero was used only as or in food supplements before 1997, therefore any other food uses of this ingredient have to be authorized pursuant to the Novel Food Regulation. *Eleutherococcus senticosus* roots are listed in the EHIA Inventory List of Herbals Considered as Food, indicating that this ingredient is currently employed in the herbal infusions trade in the EU as a food plant.

**EU Cosmetic**: Eleuthero is listing in the CosIng database as *Eleutherococcus Senticosus Root Extract* which is an extract of the roots and functions as an astringent.

**EU Medicine**: Preparations of Eleutherococcus are regulated as THMP requiring premarketing authorization and issuance of a traditional herbal registration for ITC human use. The quality must comply with the PhEur monograph.

**US Food and Dietary Supplement**: The FDA has made a ruling that the term ginseng can only be applied to ingredients that come from the genus *Panax* and only labeling of or advertising for food, food ingredient, or dietary supplement classified within that genus may include the term “ginseng”. This means that the term Siberian ginseng can not be used for *Eleutherococcus senticosus*.


**Canada Food**: Eleuthero is not a registered food in Canada, nor is it permitted as a food additive.

**Canada Cosmetic**: Eleuthero is not listed in Health Canada “Cosmetic Ingredient Hotlist” which lists ingredients that are restricted and prohibited to use in health products in Canada. Eleuthero is included on the list of substance in Cosmetics and Personal Care Products Regulated under the F&DA that were in commerce between January 1, 1987 and September 13, 2001.

**Canada Medicine**: Eleuthero is a NHP active ingredient that requires premarketing authorization and product license issuance for over the counter (OTC) use. The quality must comply with the monograph for Eleuthero in NHPD9. Several ingredients listed in NHPID. There are currently 197 natural products licensed in the NHPD that contain the ingredient Eleuthero.

**Asia Medicine**: Eleuthero root, rhizome and stem are active ingredients in Chinese medicinal preparations. These active ingredients must comply with the PPRC monograph. Eleuthero is included in the JP, PPRC, and Pharmacopoeia of the Russian Federation and the USP. Eleuthero is included in the 15th edition of the JP thus indicating that this botanical is used in the Kampo system of Traditional Medicine of Japan. The Pharmacopeial name is *Eleutherococi senticosi Rhizoma*, and the Japanese name is シゴカ．

Russia Medicine: Eleuthero dried root and rhizome are active ingredients in the Russian medicinal products and must comply with the quality standards provided in the State Pharmacopoeia of the Union of the Soviet Socialists Republics.

Table 4: Indicative Bulk Pricing for Eleuthero – *Eleutherococcus senticosus*

<table>
<thead>
<tr>
<th>Form</th>
<th>Standard</th>
<th>Origin</th>
<th>Price USD/kg by Volume</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-4 lb (0.45-1.8kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5-24 lb (2.3-10.9kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>25-99 lb (11.3-44.9kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;100 lb (&gt;45.4kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;3500 kg</td>
<td></td>
</tr>
<tr>
<td>Dried root, sulfite free</td>
<td>Organic</td>
<td>China</td>
<td>23.2</td>
<td>FOB CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18.52</td>
<td></td>
</tr>
<tr>
<td>Dried root, sulfite free</td>
<td>Wild collected</td>
<td>China</td>
<td>20.9</td>
<td>FOB CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>19.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16.3</td>
<td></td>
</tr>
<tr>
<td>Roots</td>
<td>Organic</td>
<td>China</td>
<td>3.5</td>
<td>FOB CA</td>
</tr>
<tr>
<td>Root, coarse cut</td>
<td>Conventional</td>
<td>NK</td>
<td>3.57</td>
<td>CIF</td>
</tr>
<tr>
<td>Root, c/s</td>
<td>Conventional</td>
<td>China</td>
<td>9.9</td>
<td>FOB CA</td>
</tr>
<tr>
<td>Powdered root</td>
<td>Conventional</td>
<td>China</td>
<td>7.50/kg</td>
<td></td>
</tr>
<tr>
<td>Powdered root</td>
<td>Conventional</td>
<td>China</td>
<td>8.6</td>
<td>FOB CA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.7-8.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7.3</td>
<td></td>
</tr>
<tr>
<td>Powdered root</td>
<td>Conventional</td>
<td>NK</td>
<td>4.48</td>
<td>CIF</td>
</tr>
<tr>
<td>Powdered root, sulfite free</td>
<td>Organic</td>
<td>China</td>
<td>25.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>23.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20.7</td>
<td></td>
</tr>
<tr>
<td>Powdered root, sulfite free</td>
<td>Wild collected</td>
<td>China</td>
<td>23.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>21.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>Extract</td>
<td>0.8 Eleutherosides</td>
<td>57.32/kg</td>
<td></td>
<td>FOB CA</td>
</tr>
<tr>
<td>Leaves</td>
<td>Organic</td>
<td>China</td>
<td>10.89</td>
<td>FOB CA</td>
</tr>
</tbody>
</table>

3.3 Barriers to Market

There are concerns about quality and adulteration with this ‘ginseng’, as there is with other ginsengs. There are also reports that a large amount of Siberian ginseng that was planted in the Manchurian area will become available to harvest soon, resulting in low prices for Eleuthero—perhaps this will make it hard for RFE material to compete.

3.4 Quick Market Analysis

Inclusion in TCM indicates that any country that recognizes TCM will have a market as the practitioners rely in this material in their practice. There is evidence of existing regulatory framework for Eleuthero as a food, medicinal and cosmetic ingredient in the EU, as a food or dietary supplement in the US, and as a NHP active ingredient in Canada. These existing channels indicate a viable market demand as well as an ease in entering the market. The Eleuthero material in commerce is mainly collected from wild populations in the PPRC and the Russian Federation. Due to certain geopolitical challenges in the PPRC, it may be a good consideration for company’s currently purchased Eleuthero to consider the supply available in RFE to help spread risk. Good potential in several markets. High Priority, especially if quality/sustainable source.

3.5. SWOT Analysis:

<table>
<thead>
<tr>
<th>Strengths:</th>
<th>Weaknesses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- strong market already exists</td>
<td>- adulteration on the market, and also confusion with use of leaf material.</td>
</tr>
<tr>
<td>- rumor on market that Russian Eleuthero is the highest quality</td>
<td></td>
</tr>
<tr>
<td>Opportunities:</td>
<td>Threats:</td>
</tr>
<tr>
<td>- possible opportunities for this ginseng, especially among buyers that like the RFE story and if there is certification (and of course, reasonable price).</td>
<td>- a large volume of material is now coming onto the market from Manchurian area—may result in low prices for this RFE ginseng material.</td>
</tr>
</tbody>
</table>

15
Overview: Siberian ginseng is solidly ranked as having ‘high priority’, especially for the roots but there is also a market for the leaves. Certification (such as Fair Wild) could open up markets for this ginseng, and this could be appropriate, as it will fetch a higher price on the market, and be a smaller market than conventional material, but since quantity is limited anyways in the RFE area, this is probably a good strategy. Markets for certified ginseng, such as organic and FairWild, woudl be located in the western markets, such as Europe and the US. Like Schisandra, demand for this herb is not going to go down, as there seems to be increasing scientific substantiation into the health benefits of this herb. One buyer rumored that a large amount of Siberian ginseng material is predicted to come available to the market in the Manchurian region, and this could affect pricing of this RFE material, and be competition. However, as the Manchurian material is cultivated, there could be an opportunity to differentiate the RFE material as being sustainably wild-harvested.
4. Bilberry - *Vaccinium myrtillus*

4.1 Overview

Found in acidic, nutrient-poor soils throughout temperate and subarctic regions of the world. Bilberries are closely related to blueberries and huckleberries, usually darker in colour, and with a fuller taste. The fruit pulp is red or purple compared to the light green colour of blueberries. European dentists have used the juice to show children if they brushed their teeth properly, as those improperly brushed will be heavily stained. The fruits can also be eaten dried.

Bilberries are difficult to grow and are rarely cultivated. Typically, fruits are collected from the wild. They can be collected with a berry-picking rake, but are damaged easily, as they are softer than blueberries and difficult to transport—so they are usually only sold fresh on local markets. In European gourmet markets, they can cost up to 25 Euro per pound. Bilberries can be eaten fresh, frozen, or made into jams, juices, or pies. They are also used as a base for liqueurs, a flavouring for desserts in France and Italy.

Berries are rich in anthocyanin pigments that are used as potent antioxidants. Bilberry is often most noted for their possibility for improving night vision, but scientifically they have shown promise to have a positive effect on certain eye disorders, such as macular degeneration.

The RFE Forest Management Plan estimates that there is 42.9 tonnes of berries available for harvest per year.

4.2 Existing Regulatory Framework

**EU Food:** Bilberry fruits and leaves are listed in the EHIA Inventory List of Herbals Considered as Food, indicating that this ingredient is currently employed in the herbal infusions trade in the EU as a food plant. Bilberry is listed in the EU novel foods database.

**EU Cosmetic:** Cosmetic ingredients derived of *Vaccinium myrtillus* are listed in the CosIng database, including:
- Vaccinium Myrtillus Bud Extract which is an extract of the buds and function as an antioxidant;
- Vaccinium Myrtillus Fruit Extract which is an extract of the fruit and functions as a skin conditioner;
- Vaccinium Myrtillus Fruit Juice which is the juice expressed and functions as a skin conditioner;
- Vaccinium Myrtillus Fruit Water which is the aqueous solution of the steam distillates obtained from the fruit and functions as a skin conditioner;
- Vaccinium Myrtillus Fruit/Leaf Extract which is an extract of the fruit and leaves and functions as an astringent, refreshing, skin conditioner, and tonic;
- Vaccinium Myrtillus Leaf Extract is an extract of the leaves and functions as an astringent, hair conditioner, nail conditioner, and skin conditioner;
- Vaccinium Myrtillus Seed Oil which is the oil expressed from the seeds and functions as a skin conditioner; and
- Vaccinium Myrtillus Stem Extract which is the extract of the stems and functions as an antioxidant and astringent.

**EU Medicine:** According to the Herbal Remedy Safety document, *Vaccinium myrtillus*, Bilberry, has been recorded for medicinal use, food use and cosmetic use but not in aromatherapy.

**US Food and Dietary Supplement:** It is listed in the “Herbs of Commerce”, which indicates that it was in U.S. commerce prior to 1994 and therefore should be permitted for use in herbal dietary supplement products and should not require the submission of a NDI submission. Additionally, as per federal regulation 21 CFR 101.4, the FDA requires that the common or usual name of botanical ingredients used in dietary supplement products must be consistent with the names standardized in the “Herbs of Commerce”, copies of which may be obtained from the AHPA. The FDA acknowledges this ingredient as a food. There are regulations on Brix value of bilberry juice—a fruit juice regulation. Bilberry juice should have an average Brix value of 13.4.

---


US Medicine: There is evidence that ingredients derived from Bilberry are used as medicinal ingredients in the US.

Canada Food: Bilberry juice is a registered ingredient in the NHPID.

Canada Cosmetic: Bilberry does not appear in Health Canada’s “Cosmetic Ingredient Hotlist” indicating that it is not currently restricted or prohibited for use in NHPs in Canada. There are several licensed NHPs using Bilberry ingredients in the LNHPD.

Canada Medicine: There are two monographs for *Vaccinium myrtillus* in the NHPD Compendium of Monographs indicating there are standards for quality and safety for use as a medicinal ingredient.

### Table 5: Indicative Bulk Pricing for Bilberry Fruit – *Vaccinium myrtillus*

<table>
<thead>
<tr>
<th>Form</th>
<th>Standard</th>
<th>Origin</th>
<th>Price USD/kg by Volume Note: lb quantity ranges converted to kg</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit</td>
<td>Conventional</td>
<td>NK</td>
<td>1-4 lb (0.45-1.8kg)</td>
<td>50.71</td>
</tr>
<tr>
<td>Fruit</td>
<td>Organic</td>
<td>Bulgaria</td>
<td>5-24 lb (2.3-10.9kg)</td>
<td>54.3-57.5</td>
</tr>
<tr>
<td>Fruit</td>
<td>Organic</td>
<td>Eastern Europe/Asia</td>
<td>25-99 lb (11.3-44.9kg)</td>
<td>16.5</td>
</tr>
<tr>
<td>Fruit</td>
<td>Organic</td>
<td>Albania</td>
<td>&gt;100 lb (&gt;45.4kg)</td>
<td>50.7</td>
</tr>
<tr>
<td>Fruit</td>
<td>Conventional</td>
<td>Albania</td>
<td>&gt;700 lb</td>
<td>20.9</td>
</tr>
<tr>
<td>Leaf</td>
<td>Conventional</td>
<td>Albania</td>
<td>5-24 lb (2.3-10.9kg)</td>
<td>20.9</td>
</tr>
<tr>
<td>Leaf</td>
<td>Organic</td>
<td>Albania</td>
<td>25-99 lb (11.3-44.9kg)</td>
<td>20.9</td>
</tr>
<tr>
<td>Leaf</td>
<td>Wild</td>
<td>Europe</td>
<td>&gt;100 lb (&gt;45.4kg)</td>
<td>20.9</td>
</tr>
</tbody>
</table>

### 4.3 Barriers to Market

Possible competition from cheap Chinese adulterated material.

### 4.4 Quick Market Analysis

There is evidence for an existing regulatory framework for Bilberry as a food, cosmetic and medicinal ingredient in the EU, a food and dietary supplement and medicinal ingredient in the US, and a food and medicinal ingredient in Canada. This indicates there is a large market for ingredients derived from Bilberry. There may be a good opportunity for value-addition and finding markets for this material by developing the RFE story and sustainable certification. There also may be an opportunity for developing “superfood” market in the US in dried, powdered or frozen form. High Priority.

### 4.5. SWOT Analysis:

<table>
<thead>
<tr>
<th>Strengths:</th>
<th>Weaknesses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-good existing market</td>
<td>-probably too hard to transport to market fresh</td>
</tr>
<tr>
<td>-good tasting berry</td>
<td>-maybe competition from China with cheap adulterated material</td>
</tr>
<tr>
<td>-uses both for foods and herbal medicines</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities:</th>
<th>Threats:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-since there is a well-established market, may be easy to differentiate this material by developing RFE story and sustainable certification.</td>
<td></td>
</tr>
<tr>
<td>-may be opportunity for dried, fresh or frozen form for developing “superfood” market in the US.</td>
<td></td>
</tr>
<tr>
<td>-fresh material fetches very high price in Europe.</td>
<td></td>
</tr>
</tbody>
</table>

Overview: Bilberry has been solidly ranked as a RFE NTFP with ‘high priority’. As bilberries are normally collected from the wild, there could be a good market for sustainably wild-harvested material from the European and US markets. Non-certified berries may also find a market, however, this material will have to be able to compete in
price from other regions which do not harvest sustainably. Bilberries have several potential markets, including fresh, dried and extracts, and this can help diversify the production out of the RFE. It is likely that there will be tough competition from China, so this is also to be considered, and the quality of the RFE material should also be assessed for distribution into European markets with Pharmacopeial standards.
5. Chaga mushrooms - *Inonotus obliquus*

5.1 Overview

Chaga is found in very cold climates and grows very slowly, therefore attempts at cultivation have continued, but the cultivated product is much different than the wild product. Chaga is not an actual mushroom fruiting body, but a mass of mycelium—like a conk—that appears on trees and is black due to the large amounts of melanin it contains. It is considered a medicinal mushroom with histories in folk medicine in both Russian and Eastern Europe. Chaga is used in traditional medicine mostly as a remedy for cancer, gastritis, ulcers, and tuberculosis of the bones.

Chaga is often used as a beverage that resembles coffee, as it is ground into a powder and brewed. It is used in Asia (China, Japan, and South Korea) in mushroom blends used as anti-cancer supplements (usually as hot-water extracts).

Investigations on chemical constituents have found the presence of a diverse range of secondary metabolites, including phenolic compounds, melanins and lanostane-type triterpenoids. Betulin and betulinic acid are found naturally in Chaga, as they are commonly found on Birch trees, and whereas they are indigestible from Birch, the Chaga reportedly convert these compounds into usable forms.

The RFE Forest Management Plan estimates that there is 5.3 tonnes of Chaga available for harvest per year.

5.2 Existing Regulatory Framework

**EU Food**: Chaga is not listed in the EHIA Inventory List of Herbals Considered as foods therefore not currently in the EU trade of herbal infusions as a food plant to make tea infusions.

**EU Cosmetic**: Chaga is listed as a cosmetic ingredient in the CosIng database including:

- Hydrolized *Inonotus Obliquus* Extract which is the hydrolysate of the Mushroom derived by acid, enzyme or other method of hydrolysis and functions as a skin conditioner and a skin protector.
- *Inonotus Obliquus* Extract which is an extract of the whole mushroom and functions as a skin conditioner.

**EU Medicine**: In the preparation of a community monograph for *Betula pendula* and/or *Betula pubescens*, the Committee on Herbal Medicinal Products (HMPC) made a note that Chaga, a fungal growth, appears on the outer bark of the birch. The draft continues to share that the famous Russian author Aleksandr Solzhenitsyn popularized the Chaga in his novel Cancer Ward. Some clinical investigations into Chaga in Poland, former U.S.S.R. and USA showed that a decoction of Chaga made hard tumors softer, smaller and less painful, with patients sleeping, eating and feeling a lot better than they did before (Heinerman, 1996).12

**US Food**: Chaga is not currently listed in the GRAS substances database for use in food products or in the Everything Added to Food in the United States (EAFUS) database. Chaga is listed in the “Herbs of Commerce”, which indicates that it was in U.S. commerce prior to 1994 and therefore should be permitted for use in herbal dietary supplement products and should not require the submission of a NDI submission. Additionally, as per federal regulation 21 CFR 101.4, the FDA requires that the common or usual name of botanical ingredients used in dietary supplement products must be consistent with the names standardized in the “Herbs of Commerce”, copies of which may be obtained from the AHPA. Several American manufacturers have successfully filed notifications for use as a dietary supplement.

**Canada Food**: Chaga extract is included as a non-medicinal ingredient in the NHPID.

**Canada Cosmetic**: Chaga is not listed in the Health Canada Cosmetic Ingredient Hotlist and is therefore not on the list of restricted and prohibited substances for use in cosmetic products in Canada.

**Canada Medicine**: There is no monograph for Chaga in the NHPD nor are there any licensed health products containing Chaga as an ingredient listed in the LNHPD database. In the NHPD, there are two listings for Chaga including: *Inonotus obliquus* in a dry or fresh preparation and *Inonotus Obliquus* Extract of the whole plant as a dry extract, dry extract standardized or liquid extract standardized.

Table 6: Indicative Bulk Pricing for Chaga – *Inonotus obliquus*

---

<table>
<thead>
<tr>
<th>Standard</th>
<th>Origin</th>
<th>Price USD/kg by Volume</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic</td>
<td>US</td>
<td>20</td>
<td>FOB CA</td>
</tr>
</tbody>
</table>

5.3 Barriers to Market

Not very well known in the western market, but seems to have niche following.

5.4 Quick Market Analysis

There is evidence for an existing regulatory framework and market for Chaga derivatives in the EU (cosmetic and medicinal), the US (dietary supplement and medicinal) and in Canada (dietary supplement. Since wild harvested material is better than cultivated, could be good market for wild harvested mushroom that is also sustainable. High Priority.

5.5. SWOT Analysis:

<table>
<thead>
<tr>
<th>Strengths:</th>
<th>Weaknesses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- good potential market</td>
<td>- not very well known in western markets, but small niche following</td>
</tr>
<tr>
<td>- interesting folklore and science</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities:</th>
<th>Threats:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- not very well known in US, but seems to be growing recently, according to several key botanical companies, such as Gaia herbs, Aveda, Mountain Rose Herbs, and local herb centres interviewed</td>
<td>- cultivated product of poor quality as competition and could affect perception</td>
</tr>
<tr>
<td>- the competing material that is cultivated is comparatively poor in quality and would not compete with wild material for buyers that are interested in quality, according to buyer interviews</td>
<td></td>
</tr>
</tbody>
</table>

Overview: Chaga mushrooms have been ranked with a ‘high priority’. Overall, mushrooms fetch high prices, and are good NTFPs for development if supply is relatively abundant. Although Chaga is not very well known in western markets, there is a growing medicinal mushroom market in the west that is interested in Chaga (according to buyer interviews), and this could be a good potential market for the RFE Chaga material. As cultivated material is known to be of inferior quality, it also indicates that the development of a higher-value sustainably harvested source of wild harvested material may be of interest to the market. This mushroom would have a good market opportunity even for non-certified material, as there is a lack of good wild material on the market currently, according to buyer interviews.
6. Honey

6.1 Overview

Honey is a product with well-developed markets worldwide as a food, sweetener, and also ingredients in cosmetics/body care. The EU imports half the honey traded internationally. Beeswax also has well-developed markets worldwide for numerous uses, such as candles and in body care products (such as salves and lip balms). Compared to the market for honey, the market for beeswax is minor. Propolis is the substance collected by bees from the buds and leaves of plants resembling a resin. Several health claims have been made for propolis. Royal jelly is another product derived from honey, the white secretion from certain glands of the nurse bees and thought to increase stamina and performance, although these claims have not yet been substantiated.

The RFE Forest Management Plan estimates that there is over 70 tonnes of honey available for harvest per year from the RFE.

6.2 Existing Regulatory Framework

EU Food: There is a honey standard in the EU (Council Directive 2001/110/EC) which defines the characteristic of honey and the requirements, including labeling, for placement in the market. To enter the EU market, honey must be categorized either by origin (blossom honey obtained from the nectar of flowers or honeydew honey obtained from the secretions of plants) or by type of processing (comb honey that still contains the comb, chunk honey that contains one or more pieces of comb, drained honey, extracted honey or pressed honey). The EU regards honey as an animal product requiring the EU Commission to approve each individual export country before honey can be exported to the EU. The list of selected countries is laid down in Commission Decision 2002/337/EC.

The Panel on Dietetic Products, Nutrition and Allergies was asked to provide a scientific opinion on a list of health claims in relations to honey (relating to respiratory health, immune system, metabolism and energy levels). The Panel concluded that the cause and effect relationship had not been established for these claims.

EU Cosmetic: There are several cosmetic ingredients listed in the CosIng database that are derived from honey including:

- Hydrogenated Honey which functions as a humectant and a skin conditioner;
- Hydrolyzed Honey which is the hydrolysate of honey derived by acid, enzyme or other method of hydrolysis and functions as a humectant;
- Hydrolyzed Honey Protein which is the hydrolysate of honey derived by acid, enzyme or other method of hydrolysis and functions as a hair and skin conditioner;
- Mel which is a naturally occurring substance, a saccharin secretion gathered and stored by honey bees and functions as an emollient, humectants and moisturizer;
- Mel Extract which is an extract obtained from honey and functions as a moisturizer; and
- Mel Powder which is the powder obtained from dehydrated, ground honey and functions as an abrasive, binding agent, bulking agent, depilatory, or flavoring.

EU Medicine: There is a monograph for Honey in the PhEur 7, indicating standards for quality and safety.

US Food: Products derived from honey that are included in the GRAS database include Beeswax, Dextrin and Sucrose. The USDA has published standards for grades of extracted honey for marketing.

US Medicine: There is a monograph for purified honey in USP 34, indicating the standards for quality and safety.

Canada Food: Honey is a registered food in Canada. Beeswax, Honey, Honey extract, Honey flavor, Propolis Wax Extract and Royal Jelly are all listed as non-medicinal ingredients in the NHPID.

Canada Cosmetics: Honey, the essential oil of honey, and alcoholic extract for Honey is included on the list of substance in Cosmetics and Personal Care Products Regulated under the F&DA that were in commerce between January 1, 1987 and September 13, 2001.

Canada Medicine: In the NHPID, Honey and Honey Extract and Honey Flavor are included. Propolis has monographs to serve as a guide to industry for the preparation of Product License Applications (PLA) and labels
for natural health care market approval\(^2\). There are 298 licensed products registered that use Honey as an ingredient.

**Asia Medicine:** There is a monograph in the JP for Honey indicating that this ingredient is part of the Kampo Traditional system of health care in Japan.

**India Medicine:** In the Ayurvedic Pharmacopoeia of India Part II (Formulations), Honey is used in many preparations in making a semi-solid preparation of drugs, prepared with the addition of jiggery, sugar or sugar-candy and boiled with prescribed juices or decoctions.

**Table 7: Indicative Bulk Pricing for Organic Honey from December 2010**

<table>
<thead>
<tr>
<th>Origin</th>
<th>Type</th>
<th>Price USD/kg</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>Polyflora</td>
<td>3.75</td>
<td>FOB</td>
</tr>
<tr>
<td>Cuba</td>
<td>Polyflora</td>
<td>3.70</td>
<td>FOB</td>
</tr>
<tr>
<td>Mexico</td>
<td>Color ELA. White</td>
<td>4.16</td>
<td>FOB</td>
</tr>
<tr>
<td>China</td>
<td>Polyflora</td>
<td>3.80</td>
<td>CFR</td>
</tr>
<tr>
<td>Romania</td>
<td>Polyflora</td>
<td>3.50-3.75</td>
<td>DDP NL</td>
</tr>
<tr>
<td>Romania</td>
<td>Acacia</td>
<td>6.25</td>
<td>DDP NL</td>
</tr>
</tbody>
</table>

*Source: MNS Organic Ingredients December 2010*

6.3 Barriers to Market

High competition from other markets for honey of various qualities.

6.4 Quick Market Analysis

There is evidence of a well established market for honey internationally. The price of honey and beeswax is determined by changes in vegetation, climatic conditions, disease among the bees, and government policies. Also impacting price is the quality and type of honey and availability of competitive products. Due to these factors, importers of honey may be interested in spreading risk and opening up sourcing from RFE. This honey needs to be better characterized to really know what its potential is. Could be good markets for material that carries sustainable/fair trade certification (ex Fair wild or Fair Trade), not only for honey but also for beeswax. High Priority.

6.5. SWOT Analysis:

<table>
<thead>
<tr>
<th>Strengths:</th>
<th>Weaknesses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-strong markets for honey world-wide</td>
<td>-need to differentiate what makes this honey special and what are characteristics</td>
</tr>
<tr>
<td></td>
<td>-may be watery like other wild honey</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities:</th>
<th>Threats:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-good potential to use the RFE story and sustainable certification (such as Fair Trade) to attract buyers</td>
<td>-lots of competition from honey around world</td>
</tr>
<tr>
<td>-possibly also a market for beeswax</td>
<td></td>
</tr>
</tbody>
</table>

Overview:

This honey from the RFE is ranked as ‘high priority’. There are strong markets for honey throughout the world, and that includes honey of different flavors and characteristics. Wild honey is often thought of as less-desirable as regular cultivated honey, as it is usually more watery in nature, so it will be important to characterize this honey to have a better sense of which buyers would be interested. Also, even if it is more watery, it still can find buyers for its use in beverages and foods, or it may be possible to process to make it less watery. Gaining a sustainable certification, such as Fair Trade, could also be important to help garner market interest and value addition, as well as to help buyers to relate the RFE story in the marketing of their products. Additionally, the beeswax could find some interested buyers, especially in the cosmetic sector, if the material was to be certified.

7. King Bolete - *Boletus edulis* Bull

7.1 Overview
An edible and delicious mushroom used in cuisine in various foods. One buyer quoted prices to be approx $40/lb dry.

7.2 Barriers to Market
Distributed in other areas of world.

7.3 Quick Market Analysis
Potential market in EU and US and elsewhere, and fetches high price with low investment in technology/processing. High priority.
Medium Priority Cluster

The Medium Priority NTFPs have different characteristics, as all are deemed to be promising for marketing for certain reasons, but also have important considerations which could limit market potential. If FairWild certification was obtained focused on the high priority NTFPs, perhaps including these medium priority NTFPs in the certification could also help to open up market opportunities without much extra investment than what is already planned for high priority species (assuming it doesn’t cost more to add them to the Forest management plan and certification focus). Below are the medium priority species factsheets.

Other Strategies for RFE NTFPs

Beyond the ranking for markets for individual NTFPs, another two strategies may be employed for successful development of RFE NTFPs. Both strategies might be best executed if a buyer from each major export market could be found with which to form exclusivity in supply.

Niche Export Markets for Sustainably-Produced RFE ‘Superfoods’

One trend that is a growing niche-market in the North American and European markets is the “superfood” trend. Examples of super foods include Spirulina, Chlorella, cacao, blueberries, pomegranate, pine nuts, and the Manchurian hazelnut. There is no legal definition of a superfood, but it is a term that generally describes foods with high phytonutrients contents that may give health benefits. They are much like functional foods, but functional foods would include those foods that have been fortified by ingredients to give them health functionality, whereas super foods are foods by their nature and are not fortified.

Super foods are particularly popular among the younger generations (those 18-29 in the US), who also currently have a lot of discretionary income, and who have remained the most optimistic about the future of the economy throughout the recession. They are also more likely than other generations to say they like to try out new foods and drinks. Compared to other age segments, consumers in the 18- to 29-year-old age group are more likely to say they like to try out new drinks. Generation-Yin the 25- to 29-year-old age group are more likely than any other age group, including 18- to 24-year-olds, to try out new food products. The super food market may also have products that occupy other market channels, such as pine nuts, which beyond being found in the food market, could also be considered a functional food/superfood for its content of pine nut oil that has functional health-giving properties, and perhaps also as a dietary supplement providing a standardized extract or oil focused at weight loss.

The RFE NTFPS that could hold potential as “superfoods” include:

- Cowberry
- **Hardy kiwi**
- Viburnum berries
- Hawthorn berries
- Rosehips
- **Barberries**
- Raspberries
- **Wild amur grape**
- **Manchurian hazelnut**
- **Currant berries**
- **Mountain ash berries**
- Sweetberry honeysuckle
- **Manchurian walnuts**
- Bog bilberry
- Burdock
- Dandelion
- Bane (black) nightshade
- **Chaga**
- King Bolete

As many of these NTFPs (those in bold and underlined text above) have been identified as only having a low volume of material available, it is conceivable that a strategy could be devised which gives exclusivity or partial-
exclusivity to certain buyers of superfood products (such as with Essential Living Foods, see Annex 1 and Section 5 of full market report) that would agree to purchase minimum volumes of these NTFPs and be the only buyer allowed this agreement for an agreed time period and agreed market.

One aspect that might be very important for this strategy is some sort of certification or potential for the "superfood" buyer to market the story of the sustainable production of RFE NTFPs by the WWF. An obvious way to do this would be through FairWild or "Tiger Friendly" certification.

### Niche Export Markets for Sustainably-Produced TCM Botanicals

As China has become well-known to have a problem with economic adulteration of exported plant material for the food, functional food, and dietary supplement markets, there are small markets in both Europe and North America of companies that would be interested in alternative sources of plants used in TCM. This RFE NTFP list contains a significant number of plants used in TCM, and so one strategy for market development of these NTFPs would be to target buyers in Western markets who are interested in sustainable and/or unadulterated TCM plants. The markets for these plants would be greater for the main TCM plants, such as Schisandra, Siberian ginseng, and *Phellodendron amurense*, but there are sustained markets for all the TCM plants, especially with TCM healing centers or practitioners.

The TCM plants on the NTFP list that could have market potential in export markets are as follows:

- Schisandra
- Amur cork tree
- Siberian ginseng
- Chaga
- Viburnum
- Hawthorn
- Manchurian Aralia
- *Phellodendron amurense*
- Mountain ash berries
- *Dioscorea nipponica*
- *Lespedeza*
- *Aquilegia oxycepala*
- *Geranium dahuricum*
- *Polygonum* spp.
- *Xanthium sibiricum*
- *Panax ginseng*
- *Epilobium amurense*
- *Sanguisorba officinalis*
- *Arctium lappa*
- Chinese moonseed
- *Taraxacum mongolicum*
- Chinese mistletoe
- *Solanum nigrum*
- Chinese peony
- *Plantago* spp.
- *Artemisia annua*
- *Agropyron repens*
- *Agrimonia pilosa*
- *Typha orientalis*
- *Rhododendron dahuricum*
- *Sorbaria sorbifolia*
- *Chloranthus japonicus*
- *Corydalis gigantean*
- *Bidens* sp.
- *Prunella vulgaris*
- *Philadelphus tenuifolius*
- *Scutellaria baicalensis*
II. Potential market for priority RFE NTFPs

Chapter 4 of the full market report presents the regulatory framework in destination markets for identified priority clusters of NTFPs (above). The following regions are analyzed: North America (USA and Canada), European Union, Asia (China, Japan) and Russian Federation. Analysis includes brief overview of the current market and follows with details to accessing the food, dietary supplement, cosmetic ingredient and pharmaceutical markets. For details of the regulatory framework for trade in NTFPs, see full report.

III. Priority buyers for RFE NTFPs

Chapter 5 of the full market report presents the detailed feedback of companies that expressed specific interest in RFE NTFPs. Most of these companies are North American companies, or international companies with strong North American markets. This is due to a few factors. First of all, since the consultants preparing this report have stronger relationships in the US, this factor cannot be ignored as a potential bias of information. However, there are other important considerations that may help to inform the business plan of the RFE project. The first is that the North American markets are well-known to have lower barriers to market (although this is changing rapidly). European companies tend to have interest only for plants for which there is supporting regulatory framework in various European countries, such as Schisandra and Siberian ginseng. Asian companies represent markets that are highly price-driven and competitive and have little (but growing) interest in legitimately sustainably certified material. Additionally, these markets already have local access to many of the similar plant materials through unregulated forests or production. Russian buyers voiced much skepticism that if a market would develop for any of these plants that quickly Chinese competition would drive the Russian sustainably-produced material out of the market due to price competition with unregulated and possibly adulterated material. They say this is the case currently with the Russian NTFPs with Chinese buyers obtaining Russian material through possible illegitimate and definitely unregulated channels.

Another observation of these ‘priority’ buyer profiles is that there tends to be two main types of companies expressing interest: the small, fast-moving company, and the larger multinational company with a strong market in the US. It is clear that the smaller companies are excited to find ways to innovate in the market and appreciate the RFE story and potential of gaining access to sustainably-produced material in which they did not have to invest in the development (such as certification fees and process, assuming the WWF will do this). The smaller companies, like Harmless Harvest and Essential Living Foods, even said they would like to travel in the next few months to the RFE area to develop access and begin building relationships as they were very excited in the prospects of this project and would like to begin building their RFE product lines. The other main type of company showing interest was the larger multi-national company. This type of buyer may have shown interest, but will take a much longer period of time in order to result in orders of material, as generally they have an in-house process in which concession-holders would have to pass their “supplier qualifications”. Samples of products would also need to be sent to these buyers so they could evaluate material to drive product development. This whole process can often take at least 2-3 years even if the company has a sustained interest from the start.

See Annex 1 for the summary of interviewed companies’ contacts, their NTFPs interest and follow-up carried out to date.

IV. Conclusions

Analysis of the potential of NTFPs from the RFE indicates high market interest, especially in the more regulated European and North American markets. Markets for sustainable harvested RFE NTFPs in local and regional areas seemed to have a much lower potential (companies’ interviews – see Chapter 5, e.g. Integra Medical, Martin Bauer Russia), mainly due to competition from RFE NTFP material of unregulated origin. Buyers in export markets showed great interest in finding reliable sources of RFE botanicals and were very receptive to the objectives of WWF and their involvement in creating stable, sustainable, and verifiable business relationships in the region. Most buyers expressed interest in having either sustainable certification for the RFE NTFP material or, at least, being able to make a claim on the product that it was ‘sustainably wild-collected’ and with a Forest Management plan in place.

The ‘highest priority’ NTFPs identified from the RFE NTFP lists were Korean pine nuts, Schisandra berries, Siberian ginseng roots & leaves, Bilberry, Chaga mushroom, Honey and King Bolete. It is recommended that these botanicals be the focus of marketing efforts and sustainable development activities for the region.
There were 17 other NTFPs that were ranked as ‘medium priority’, with many of these having several questions yet to be resolved (such as on volume available, quality, species, etc.), which could result in them finally being ranked lower or higher. The low priority NTFPs were ranked as low, often because only local or regional markets are currently known to exist. However, if NTFPs from the project areas could be collected in a manner which was efficient relatively low cost, then those NTFPs could conceivably compete with other RFE and Chinese material in the region at local or regional markets.

Responses resulted from the Russian company surveys, those that did reply mentioned that several of the high and medium priority NTFPs are important and already in trade (e.g. Eleuthero root, Schisandra berries). Beyond the already identified priority NTFPs, the survey results suggested that a few others could be added to the medium priority plants, such as *Phellodendron amurense*, *Aralia elata*, mountain ash and raspberries.

Also confirmed by these few interviews was the sentiment that the Russian black market poses a difficult obstacle to the marketing and sale of sustainably harvested NTFP material within Russia. Interviews also revealed that the Asian markets were not good prospects (except possibly Japan) for the sale of sustainably harvested material, unless those products cost the same on the market as other conventional material or material without provenance. For this reason, developing certification for export of NTFPs into European, US and Canadian markets would be the best strategy due to the existing, and possibly increasing, consumer base in these areas that are concerned about, and are educated on, certification labels which aim to uphold sustainability and biodiversity.

In addition to the ‘medium priority’ list of NTFPs, two strategies were identified that should be considered for informing the business plan for the region and to realise the potential of the various NTFP species. One of these strategies is to focus on buyers in export markets that sell into the high-value, relatively low-volume “super food” market (and possibly form semi-exclusive relationships with them). “Super foods” are botanicals that are essentially like functional foods, but are often in a more ‘whole’ form, such as dried berries, juices, and powders. As there are a number of NTFPs identified from the RFE region that could fit into the super food definition, and since many of these also have very low volumes available, this could be an answer to how best to utilize a sustainable supply of these NTFPs. The second strategy that should be considered is to try to identify key buyers in export markets who would be interested in obtaining sustainably-harvested, verified, and relatively pure (without the threat of high heavy metals or adulteration that often accompanies Chinese material) NTFP raw materials to be used in the traditional Chinese medicine (TCM) market.

Overall, buyers that were interviewed showed very high interest, especially since there do not seem to be many opportunities to make good supply relationships with producers of RFE NTFPs. The buyers who did have experience in the region were weary of trying to make these relationships on their own as they had either tried and failed in the past, or they did not have access to information on what NTFPs were available, as it is rare for Russian producers to attend tradeshows in the key export markets of Europe and North America. As the RFE NTFP project moves forward, one consideration could then be to help fund a RFE Pavilion at key tradeshows in export markets. As this report comes to a conclusion, many of the key buyers identified are waiting now for follow-up information and interaction that will be sure to inform the direction of future resources in NTFP RFE development.