ASIA AND PACIFIC COMMISSION ON AGRICULTURAL STATISTICS

TWENTY-SEVENTH SESSION

Nadi, Fiji, 19 – 23 March 2018

Agenda Item 10

Making NWFPs visible: Disentangling definitions and refining methodologies

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Outline of presentation

1. Brief history and overview
2. Disentangling definitions
3. Challenges to data collection & finding methods that work
4. Concluding remarks
What is an NWFP?

• “Non-wood Forest Products consist of goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests.” (FAO, 1999)

• NWFPs cover (1) wild products; (2) managed products; (3) cultivated products.

• Includes: mushrooms, fruits, nuts, herbs, aromatic plants, game, fibres (used in construction, clothing or handcrafts), resins, gums, saps, and products used for medicinal, cosmetic or cultural scopes.
I. Brief history and overview

→ For most of human history forest products other than timber were more valuable for nourishing, clothing, healing and for providing shelter

→ species like rubber, quinine, oil palm, and cocoa were brought into cultivation around the world, and NWFP species like Brazil nuts and rattan were harvested on an industrial scale.

→ most high value NWFPs became agricultural crops. Source: Shanley et al. 2016.
NWFPs still matter!

Brazil
Prod value (1,000 USD)

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Açaí</td>
<td>144,269</td>
</tr>
<tr>
<td>Cashew nuts</td>
<td>1,473</td>
</tr>
<tr>
<td>Brazil nuts</td>
<td>32,250</td>
</tr>
<tr>
<td>Erva-mate</td>
<td>118,949</td>
</tr>
<tr>
<td>Mangaba (fruto)</td>
<td>473</td>
</tr>
<tr>
<td>Palmito</td>
<td>4,324</td>
</tr>
<tr>
<td>Pinhão (fruto)</td>
<td>4,273</td>
</tr>
<tr>
<td>Pequi</td>
<td>6,360</td>
</tr>
<tr>
<td>Umbu (fruto)</td>
<td>3,048</td>
</tr>
</tbody>
</table>

Canada major food forest products

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maple syup, wild blueberry, wild ginseng, fiddlehead ferns</td>
<td>Maple products represent a $354 million dollar industry</td>
</tr>
</tbody>
</table>

China Export value (1,000 USD)

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pine nuts</td>
<td>272,206</td>
</tr>
<tr>
<td>Mushrooms</td>
<td>56,278</td>
</tr>
<tr>
<td>Bamboo shoots</td>
<td>315,050</td>
</tr>
</tbody>
</table>

Ghana forest-based food

<table>
<thead>
<tr>
<th>Product</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola nuts</td>
<td></td>
</tr>
<tr>
<td>Gum arabic</td>
<td></td>
</tr>
<tr>
<td>Edible leaves</td>
<td></td>
</tr>
<tr>
<td>Edible seeds</td>
<td></td>
</tr>
<tr>
<td>Honey</td>
<td></td>
</tr>
<tr>
<td>Snails</td>
<td></td>
</tr>
<tr>
<td>Mushrooms</td>
<td></td>
</tr>
<tr>
<td>Bush meat</td>
<td></td>
</tr>
</tbody>
</table>

European Wild forest product consumption

Wild mushrooms, truffles, berries, nuts, asparagus, medicinal and aromatic plants

91.5% households have consumed WFPs
25% households across Europe picked WFPs
18.83% household picked wild mushrooms

-25% households across Europe picked WFPs
-18.83% household picked wild mushrooms

NWFPs still matter!
Overview

• FAO estimates that NWFPs generated **US$88 billion** in 2011 (SOFO, 2014).
• **76 million tonnes** of food from the forest were consumed on average in 2011 (SOFO, 2014).
• **1 billion people** are thought to depend on *wild* foods (Burlingame, 2000).
• **80 percent** of the population of developing countries rely on traditional medicines, mostly plant drugs, for primary health care.
Contributions of forests & trees for food security and nutrition

• **Dietary diversity.** Recent studies from Asia and Africa (21 countries) suggest a **positive correlation between tree cover** and more diverse and nutritious diets. (Sunderland et al.,2106; Ickowitz et al. 2014).

• **Resilience.** NWFPs can enhance the resilience of forest dependent peoples particularly in times of climatic and economic uncertainty.

• **Income and employment.** Avg. 60 to 80 percent of income of forest-dwellers from natural resources; NWFPs account for an average 40 percent (Ingram et al.2016)

• **Energy.** Some 2.4 billion rely on woodfuel as main source of energy for cooking (764 million to boil and sterilize water)
Feelers out for insect fine dining in Bangkok

Insects have long been a staple in the countryside of Thailand. Now, a top chef is creating a buzz in Bangkok by putting this

Abstract: The current global food system must adapt to the expected growth of world population (about 9 billion individuals by 2050). This adaptation will probably include an increased consumption of edible wild foods, due to their richness in micronutrients and bioactive compounds, besides providing a cost-effective and sustainable way of improving caloric food security. A striking example of such natural munificence is the Quercus genus, which has the additional advantage of being widespread throughout the Northern Hemisphere. In a traditional sense, Quercus fruits (acorns) were mainly used in animal feeding, despite their potentially important role in the rural economy. But this misconception is changing. In fact, their nutritional value, high contents in phytochemical compounds, biological activity (such as antioxidant, anticarcinogenic, and cardioprotective properties) and use in the treatment of specific diseases (such as atherosclerosis, diabetes, or Alzheimer’s disease) have raised the interest in integrating acorns into the human diet.

Accordingly, this comprehensive overview was designed to provide an evidence-based review of the literature, with the objective to achieve useful conclusions regarding the nutritional properties, methodologies of extraction, identification, and characterization of a wide variety of bioactive compounds and scientifically validated bioactivities in Quercus species worldwide. The industrial by-products from acorn oil extraction or flour production are also included. Data regarding the analytical techniques, individual compounds, and their bioactivities, are organized in tables. The reported data is discussed and directions for further investigations are suggested, highlighting the use of acorns in food, nutraceutical, and pharmaceutical applications.

Keywords: acorns, biological activity, nutritional composition, phytochemicals, Quercus spp., sustainability
II. Disentangling definitions...and terminology!
## NWFPs consist of goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests. (FAO, 1999)

### Non-wood forest products

The term NTFP encompasses all biological materials other than timber which are extracted from forests for human use (DeBeer & McDermott, 1989)

### Wild forest products

"wild product" results from the "collection of edible plants and parts thereof, growing naturally in natural areas, forests and agricultural areas" (EU Art. 12, comma 2, Reg. 834/07 “organic law”)

### Minor forest produce

All non-timber forest produce of plant origin including bamboo, brush wood, stumps, cane, tussar, cocoons, honey, wax, lac, or kendu leaves, medicinal plants, and herbs, roots, tubers and the like. (Government of India)

### Secondary or side use of forests

All kinds of use in forests and forest lands not covered by forest, except for timber and minor forest materials, including: animal breeding, beekeeping, farming, processing of wood and wild fruits and berries, medicinal plants; placement of apiaries, collection of wild food resources, medicinal plants, technical raw materials and other; procurement of secondary forest resources (stumps, bark, etc.) Kyrgyzstan Forest Law

E.g. berries, mushrooms, herbs, decorative plants as well as hunting, bee-keeping and the grazing of cattle. Categories of forest use: wood production, resin production, secondary forest materials and technological

### Forest byproducts

"wild product" results from the "collection of edible plants and parts thereof, growing naturally in natural areas, forests and agricultural areas" (EU Art. 12, comma 2, Reg. 834/07 “organic law”)

### Wild meat (bushmeat)/game meat

All meat from animals hunted or trapped for meat that is available for consumption; meat from game that roams in farms (a farm has an enclosed space) is excluded (UNECE, 2017).

Current FAO definition and classification used for data collection is not sufficient to address some of the challenges with statistics.
## EU/FAO study

### Country examples of how NWFPs are defined/described in select policies, strategies, programmes on forests

<table>
<thead>
<tr>
<th>Country</th>
<th>Term</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiji</td>
<td>Non-wood forest products</td>
<td>all forest products except woody materials such as timber, fuel wood, charcoal, woodchips, wood pulp and small wood items such as carvings, including but not exclusively, fibres, leaves, fruits, nuts, roots, resins and latexes, honey, bees wax, all types of fungi, minerals, stones and clay;</td>
<td>Forest Bill, 2016</td>
</tr>
<tr>
<td>Nepal</td>
<td>Forest products</td>
<td>Timber, firewood, charcoal, catechu, rosin, wood-oil, bark, lac, pipla, pipli (piper longum), or; Tree, leave, fruit, flower, mahwa (bassia longifolia), chiraito (swertia chiretta), Kutki (picorhiza Kurroa) and all kinds of wild herbs, vegetation and different parts or organs thereof, or; Boulder, soil, stone, pebble, sand, or; Bird, wildlife and trophy thereof.</td>
<td>Forest Act 2049 (1993)</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Forest produce or forest product</td>
<td>Includes trees and other plants and the produce of trees and other plants, and also includes earth, rock, sand, shingle, and minerals when found in or removed from any forest land or any other land for the time being administered by the Minister</td>
<td></td>
</tr>
<tr>
<td>Bangladesh</td>
<td>Forest produce</td>
<td>Timber as well as a host of other products, including charcoal, wood-oil, resins, wild animals, honey, silk, rocks and minerals, among many others.</td>
<td></td>
</tr>
</tbody>
</table>

Why is it so difficult to agree on a term & definition? Differing opinions on:

1. Drawing a line between wild/domesticated
2. Inclusion/exclusion of wood
3. Products vs services
4. Animal versus plant-based products
5. What is a forest?
6. In some countries, they have become legal/fiscal terms: (Minor Forest products (India); Wild Forest Products (Italy/Europe?))
Diversity of NWFPs compounds...
III. Challenges to data collection . . .

1) Vast **differences in terminology and definitions** make it difficult to assess trends.
2) **Data is incomplete** as in most cases NWFP use and trade are confined to the **informal sector**.
3) Where and when data is available, it is often **partial and incomparable** across countries and over time;
4) **unclear boundary** between NWFPs and products from agriculture or horticulture.

⇒ as a result, NWFPs are **poorly represented in international statistics** ➔ role of NWFPs for food and nutrition security and their economic contribution **underestimated**.
& finding methods that work

[Interpretative] case studies
Analysis of single, bounded unit provides important insights into real-life situations

Individual, household and market surveys
Refining questionnaires to include NWFPs and sources of products

National data on production, consumption and trade
Harmonizing terminology and definitions; improving classifications systems

Regional example: EU Star Tree Project

1. Household surveys - consumption and gathering
2. Delphi method – (production)
   ✓ huge potential for improving the information along the different NWFP supply chain, particularly with regards to informal market
3. Refining terminology, classification and definitions (production, trade)

What are we (FAO HQ) doing?

FAO Forestry Department and Office of the Chief Statistician working together to improve NWFPs representation in international statistics through:

- Analysis of existing information and development of a global report “Non-wood forest products in international statistical systems”

- Joint activities with international partners:
  - Review international classifications with WCO and UNSD
  - Pilot survey on game meat with UNECE
March 2017

- systematic review of NWFPs in international classification systems used for data collection and dissemination with the aim to improve data collection on NWFPs
NWFPs in international statistical systems

Major findings

Information is available in national reporting to varying degrees, with countries reporting on products that have value them.

<table>
<thead>
<tr>
<th>Statistic code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>003</td>
<td>House cricket (kgm)</td>
</tr>
<tr>
<td>004</td>
<td>Grasshopper (kgm)</td>
</tr>
<tr>
<td>005</td>
<td>Bamboo caterpillar (kgm)</td>
</tr>
<tr>
<td>006</td>
<td>Other insect (kgm)</td>
</tr>
</tbody>
</table>

11-digit HS codes – Source Custom Thai

Evidence from reporting: lack of convergence on terminology and definition

Thailand codes for insects trading:

- Bamboo wood
- Paulonia wood
- Charcoal
- Fuelwood
- Shiitake mushrooms
- Oyster mushrooms
- Bunashimeji mushrooms
- Nameko mushrooms
- Enokitake mushrooms
- Maitake mushrooms
- Matsutake mushroom
- Chestnuts
- Bamboo shoots
- Wasabi horseradish
- Crude urushi lacquer

Korean Statistical Information Service

- Bamboo shoots
- Bamboo shoots
- Landscaping material
- Nuts and fruits
- Wild edible green
- Mushrooms
- Sap
- Resin
- Medicinal plants

Japan “minor forest products”
NWFPs in international statistical systems

Major findings

- NWFPs are **classified under agricultural categories** without any distinction between wild and farmed produce (especially food items);
- Impacts on measurement of forest value, contribution to poverty alleviation and livelihoods, food security
- National statistics on NWFPs refer to marketed production and do not include the quantity used for self-consumption or sold/exchanged through informal sector transactions
- The amount of harvested production will be much higher than the existing data sources show
<table>
<thead>
<tr>
<th>HS Classification</th>
<th>Central Product Classification</th>
</tr>
</thead>
</table>
Mushrooms of the genus *Boletus*, Mushrooms of the genus *Cantharellus*, Mushrooms, shiitake (*Lentinus edodes*) (fresh), Mushrooms, matsutake (*Tricholoma matsutake*), Truffles (*Tuber* spp.), Shiitake, (*Lentinus edodes*) (dried), Pine nuts in shell, Pine nuts shelled, Edible insects (fresh), Edible insects (salted, in brine, dried or smoked), Bark of African cherry (*Prunus africana*). [CITES appendix II]

FAO proposal for HS 2022 version currently under WCO examination

Proposal to expand the **0323** and improve the explanatory text of the current:

**03** - Forestry and logging products
**031** - Wood in the rough
**032** - Non-wood forest products
  **0321** - Natural gums and resins, gums-resins and oleoresins
  **0322** - Natural cork, raw or simply prepared
  **0323** - Other wild edible products
    **0324** - Parts of plants [...] used primarily for dyeing or tanning; vegetable products n.e.c.

**0323** defined as:

“edible products that *exist only in the wild*” excluding “edible products that exist in the wild and are also grown (controlled), cf. the corresponding subclass of division 01”.

Explanatory text “edible products that exist only in the wild excluding edible products that exist in the wild and are also grown (controlled), cf. the corresponding subclass of division 01 (Products of agriculture, horticulture and market gardening)

1) Harmonize criterion to classify forest products either wood and non-wood, all products from the forest (natural or managed) to be treated as forest products and not as agricultural products:

Proposal: replace the term “wild” with “forest”, covering both planted/managed and natural forest

Reference to Forest definition in SEEA land use classification, based on FAO FRA
Includes: primary, naturally regenerated, planted forest
Excludes: land that is predominantly under agriculture, urban use, and maintenance and restoration of environmental function

Explanatory note: “edible products that exist only in the wild” excluding edible products that exist in the wild and are also grown (controlled), cf. the corresponding subclass of division 01 (Products of agriculture, horticulture and market gardening)

2) only a very few species nowadays exist in the wild exclusively worldwide, while the majority can also be cultivated

identify as NWFPs in 0320 - Other wild edible products those species that exist “only or mainly” in the forest

leave in Division 01 products that are predominantly grown in agriculture

Example: add detail under 032 for:

Forest nuts, with detail for:

- Brazil nuts (01377)
- Chestnuts (01373)
- Pine nuts (01379*)
- Areca nuts (01379.01)
- Kola nuts (01379.02)
- Karite nut (01499.01)
- Other forest nuts (01379*)

FAO HQ work on improving statistics about non-wood forest products:

- Analysis of existing information and development of a global report “Non-wood forest products in international statistical systems”

- Joint activities with international partners:
  - Review international classifications with WCO and UNSD
  - Pilot survey on game meat with UNECE
Pilot surveys

UNECE/FAO joint enquiry on game meat

Objective: improve knowledge and foster a better understanding of game meat production and trade in the UNECE region.

• Assessed available data sources for UNECE countries and identified problems:
  • FAO’s Forest Resource Assessment (FRA) program collects information on NWFPs as a minor part questionnaire on global forest resources once every five years. Problem: low data quality and availability for game meat
  • FAOSTAT data on game meat are collected through an annual comprehensive questionnaire on agricultural production sent to national statistics bureau of a country. Problem: data on game meat are normally collected and compiled by the forestry or wildlife agency of a country in the region. This mismatch in subject and correspondents may affect the quality of data on game meat in FAOSTAT.
  • By making the survey specific and addressed to the right authority, availability and quality of data on game meat production could be improved.

Results coming soon
Concluding remarks:
Be a part of the next steps!

1. Household surveys/individual consumption surveys and expert surveys
   ➢ get in touch with us for a sample questionnaire on NWFPs

2. Improve collaboration with national statistical agencies, trade associations, CITES national management authorities to improve harmonization of terms & definitions for data collection

3. Strengthen collaboration with FAO regional offices to capture values of local NWFPs
Questions? Comments? Suggestions?

Thank you!!!
Please get in touch with us!

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Simona.Sorrenti@fao.org

FURTHER READING:

• UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
  STATISTICS DIVISION Meeting of the Expert Group on International
  Statistical Classifications New York, 6-8 September 2017
• Non-wood forest products in international statistical systems (FAO, 2017)
• HLPE. 2017. Sustainable forestry for food security and nutrition. A report
  by the High Level Panel of Experts on Food Security and Nutrition of the
  Committee on World Food Security, Rome.