Food and Nutrition Security Implications

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Outline

• Definition of Food and Nutrition Security
• Assessment
• Case studies
• Nutrition Indicators for Biodiversity
• Conclusion
**Food security** exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.[1]

AGN proposes using the term **Food and Nutrition Security**

To make the distinction between quantity (energy) and quality (dietary diversity) unequivocal.[2]


Assessment of Food and Nutrition Security

Dietary Assessment

Food consumption/supply data
- global: FBS, FAOSTAT
- national: foods consumed/available through household or individual consumption surveys
- individual: FFQ, 24-hour recall, Diet history

Food composition data
- FCDBs
- reports
- scientific literature

Wild meat - a wildlife commodity - is defined as any non-domesticated terrestrial mammals, birds, reptiles and amphibians harvested for food (CBD, 2008)
Data availability

Food Consumption data on Wild meat, Game Meat, Bushmeat

No information available:
- at the level of Food Balance sheets (FBS), which provide information on a country’s food supply over a specified period
- at the level of Household Budget surveys (collected by FAO)

Few data are available
- individual food consumption surveys or market surveys

Food Composition data

In most Food Composition database, few data are available on the composition of wild meat compared to meat of domesticated animals
### Chinese FCT

**Meat and meat products (9/138)**
- Donkey meat (5 entries)
- Dog meat
- Camel
- Rabbit meat
- Hare meat

**Poultry and poultry products (2/59)**
- Pigeon
- Quail

**Other**
- Turtle, Crab,
- Frog (2 entries)
- Snake (6 different species),
- Silkworm,
- Scorpion, whole

### ASEAN Food Composition Tables

**Meat, meat products and other animals (8/195)**
- Cobra
- Dog (2 entries)
- Frog (3 entries)
- Quail

**Miscellaneous**
- Bamboo caterpillar (2 entries),
- Cricket, Giant water bug
- Hornet, June beetle,
- Locust (2 entries)
- Mole cricket
- Red ant (2 entries)
- Silk worm
- Spirulina (2 entries)
- True water beetle
<table>
<thead>
<tr>
<th>Food name</th>
<th>Energy (kcal)</th>
<th>Water (g)</th>
<th>Protein (g)</th>
<th>Fat (g)</th>
<th>Carbohydrate available (g)</th>
<th>Fibre (g)</th>
<th>Ash (g)</th>
<th>Ca (mg)</th>
<th>Fe (mg)</th>
<th>Mg (mg)</th>
<th>P (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Game meat, bear, raw</td>
<td>(155)649</td>
<td>71.2</td>
<td>20.1</td>
<td>8.3</td>
<td>0</td>
<td>0</td>
<td>0.7</td>
<td>3</td>
<td>6.65</td>
<td>151</td>
<td></td>
</tr>
<tr>
<td>Game meat, beaver, raw</td>
<td>(139)586</td>
<td>70.97</td>
<td>24.1</td>
<td>4.8</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>15</td>
<td>6.9</td>
<td>25</td>
<td>237</td>
</tr>
<tr>
<td>Game meat, boar wild, raw</td>
<td>(116)489</td>
<td>72.5</td>
<td>21.5</td>
<td>3.3</td>
<td>0</td>
<td>0</td>
<td>0.97</td>
<td>12</td>
<td>4.69</td>
<td>26</td>
<td>208</td>
</tr>
<tr>
<td>Game meat, caribous, raw</td>
<td>(121)509</td>
<td>71.5</td>
<td>22.6</td>
<td>3.4</td>
<td>0</td>
<td>0</td>
<td>1.14</td>
<td>17</td>
<td>4.69</td>
<td>26</td>
<td>208</td>
</tr>
<tr>
<td>Game meat, squirrel, raw</td>
<td>(114)480</td>
<td>73.8</td>
<td>21.2</td>
<td>3.2</td>
<td>0</td>
<td>0</td>
<td>1.16</td>
<td>2</td>
<td>4.7</td>
<td>24</td>
<td>172</td>
</tr>
<tr>
<td>Frog legs, raw</td>
<td>(68)290</td>
<td>81.9</td>
<td>16.4</td>
<td>0.30</td>
<td>0</td>
<td>0</td>
<td>1.40</td>
<td>18</td>
<td>1.50</td>
<td>20</td>
<td>147</td>
</tr>
<tr>
<td>Locust</td>
<td>(97)407</td>
<td>76.7</td>
<td>14</td>
<td>3.3</td>
<td>0.9</td>
<td>4</td>
<td>1.1</td>
<td>28</td>
<td>3.0</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

USDA Food composition database, Release 23.
ASEAN Food Composition Tables 2000. First Edition
Indigenous Peoples’ food systems

The Center for Indigenous Peoples’ Nutrition and Environment (CINE) developed methods to understand and document traditional food systems by working with several communities of Dene/Metis, Yukon First Nations, Inutis (in Arctic Canada), and of several Asian indigenous peoples.

This procedure helps to understand parameters of the food diversity within a broad geographical region, and to consider and plan food based interventions to improve health of indigenous peoples within the same culture and environment settings.

Study design

Traditional food lists were gathered, including famine foods, little-used or unused foods through interviews or focus groups.
<table>
<thead>
<tr>
<th>Case studies</th>
<th>Gwich’in community (Canada)</th>
<th>Awajun (Peru)</th>
<th>Igbo community (Nigeria)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gwich’in traditional food for health: Phase 1</strong></td>
<td>Animal and fish species dominated the traditional diet. Analysis of adult diets from Gwich’in communities showed that caribou (various parts) was the most important food source of daily energy, protein, vitamin A, iron, and zinc, and within the top ten contributors of fatty acids (saturated and unsaturated). Although children’s diets had much less traditional food as a percentage of daily energy, caribou was still within the top ten contributors to intake of energy, protein, iron and zinc. Mothers were asked for reasons for selecting traditional and market foods for the family. The most was considered healthier than store-bought meat, it tastes better and it is less expensive.</td>
<td>Intake of animal source foods, particularly meat and fish, were generally low and infrequent and depended on seasonal availability.</td>
<td>The availability of wild/bush animals was limited because of deforestation and urbanization. The termite is a cheap source of protein, which is cherished by children and some adults.</td>
</tr>
</tbody>
</table>

| **Land mammals** (Moose, Beaver, Caribou, Muksrat, Bear, Amphibians and Reptiles (Frog, turtle, lizard)) | **Insects** (Palm larva, Wasp larva, Ant) Birds (wild turkey, wild pigeon, parrot, ..) | **Meat, poultry** (Snail, Antelope, Bush dog, Alligator, Deer, Snake, Squirrel, wild pigeon, grass cutter, monkey) | **Insects** (Beetle, Termite, Larvae) |
| Land mammals (Monkey, Spider monkey, Squirrel) | | | |
In order to monitor biodiversity and nutrition, two indicators were developed: one for food composition and another for food consumption.
To **monitor biodiversity** over time by measuring the composition and consumption of food and medicinal plant and animal genetic resources

To **encourage researchers** to generate and compile more food consumption and compositional data for food biodiversity

To **enable more research** on food biodiversity and nutrition and health

To **raise awareness** of the population, researchers and governments on food biodiversity and their impact on dietary adequacy

To **understand the impact** of food biodiversity (including wild and underutilized foods) on food and nutrition security
• **Two Nutritional Indicators for Biodiversity** in English, French and Spanish:

1. on **food composition** (FAO, 2008) ➔ yearly reporting (in 2010 over 3600 foods (cultivar/breeds/wild food) reported in FCDB, scientific literature etc.

2. on **food consumption** (2010 and 2011) ➔ reporting every second year (in 2010 over 3000 food reported in food consumption surveys on food biodiversity)

• **Food Composition Database on Biodiversity**: first edition in December 2010 with 2400 foods, in December 2011 second edition with expected 5000 foods

➔ Available at INFOODS website for biodiversity:
Method
Literature research on the consumption of wild species was conducted in August 2010
Terms used ‘wildlife utilization’ and ‘wildlife consumption’

Objective
To collect studies and count the number of foods contributing to the Nutrition indicator for biodiversity 2

Results
- 19 reports on market surveys/observations, 2 reports captured consumption data
- Relevant data collection has been conducted in Ghana, Botswana, Nigeria, Liberia, Cameroon, Central African Republic, Rhodesia, Zambia, Myanmar, Peru, Mexico
- Most data found were from 1970-1990, little information up to date
- Scattered information on the importance of wild meat, no comprehensive, country wide surveys
- Market surveys provided mainly data on prices and weight of species of wild meat/bushmeat
- Most reports did not investigate the dietary habits, but assessed that bush meat plays an important role for income generation and/or protein intake
<table>
<thead>
<tr>
<th>Type and scope of the survey</th>
<th>Reference</th>
<th>Time/date of survey</th>
<th>Geographic/ethnic coverage</th>
<th>Number of subjects/short description</th>
<th>Instrument used</th>
<th>List of foods contributing to the indicator (nr. of foods according to criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of available prices and weight of bush meat;</td>
<td>Asibey, 1974</td>
<td>December 1968 to June 1970</td>
<td>Ghana/Accra</td>
<td></td>
<td>Market survey</td>
<td>Grasscutter, Grey duiker, Bushbock, Royal Antelope, Black Duiker, Green Monkey, Bay Duiker, Red River-hog, Bush tail Porcupine, Pouched Rat, Monitor lizards, Two spotted Palm-civet, Togo Hare</td>
</tr>
<tr>
<td>Assessment bushmeat sales</td>
<td>Jeffery, 1977</td>
<td>July 1974 to August 1975</td>
<td>Liberia</td>
<td></td>
<td>Market survey</td>
<td></td>
</tr>
<tr>
<td>Assessment of number of net hunt captures</td>
<td>Noss, 1999</td>
<td>Central African Republic/Mossapoula</td>
<td></td>
<td>Observations</td>
<td></td>
<td>net hunt cappers: Atherusus africanus, Cephalophus callipygus, Cephalophus dorsalis, Cephalophus monticola, Cephalophus sylvicultor, Cricetomys emini, Herpestes naso, Hyemoschus aquaticus, Kinixys eros, Loxodonta africana, Neotragus batesi</td>
</tr>
<tr>
<td>Assessment of prices of traded wildlife parts</td>
<td>Rao et al., 2010</td>
<td>South-East Asia/Myanmar</td>
<td></td>
<td>Interviews at village/household and individual level (Socio economic surveys at household level); 164 interview in 13 villages</td>
<td></td>
<td>Bear, Macaque, Muntjac, Red goral, Sambar, Serow, Takin, Tortoise, Wild pig</td>
</tr>
</tbody>
</table>


Conclusion

• Information on food consumption and food composition data is required for all nutrition related work

• Food consumption and food composition data on WILD MEAT are few and fragmented

• The existing consumption/ market surveys show that wild meat plays an important role for income and/or source of protein in various countries/regions

• However, more data on food consumption data of wild meat at national level are needed in order to assess the impact of wild meat on food and nutrition security

• As with plant food biodiversity, we promote the conservation of wild meat through sustainable use
THANK YOU FOR YOUR ATTENTION