

# 2a-Ethnobotany: The Basics

Focusing  
on the  
general  
aspects of  
ethnobotany



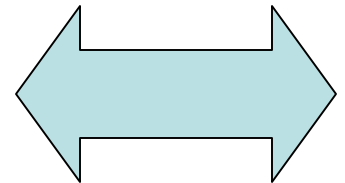
# What is Ethnobotany?

□ **Ethnoecology** studies the interactions of local people with the natural environment

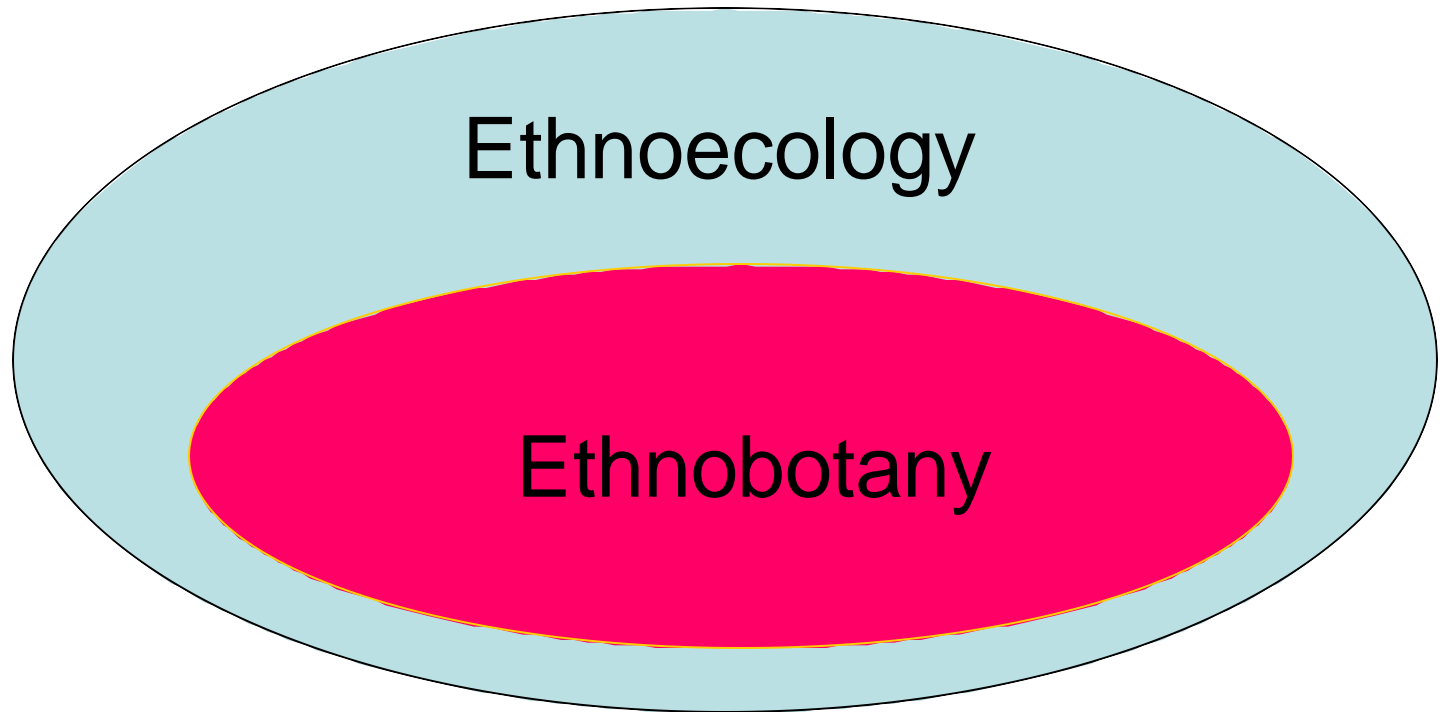
and

□ **Ethnobotany** is the part that studies the interactions of local people with plants (Martin 1995). Ethnobotany tries to get a holistic understanding of local knowledge on plants

– This is one way of looking at it



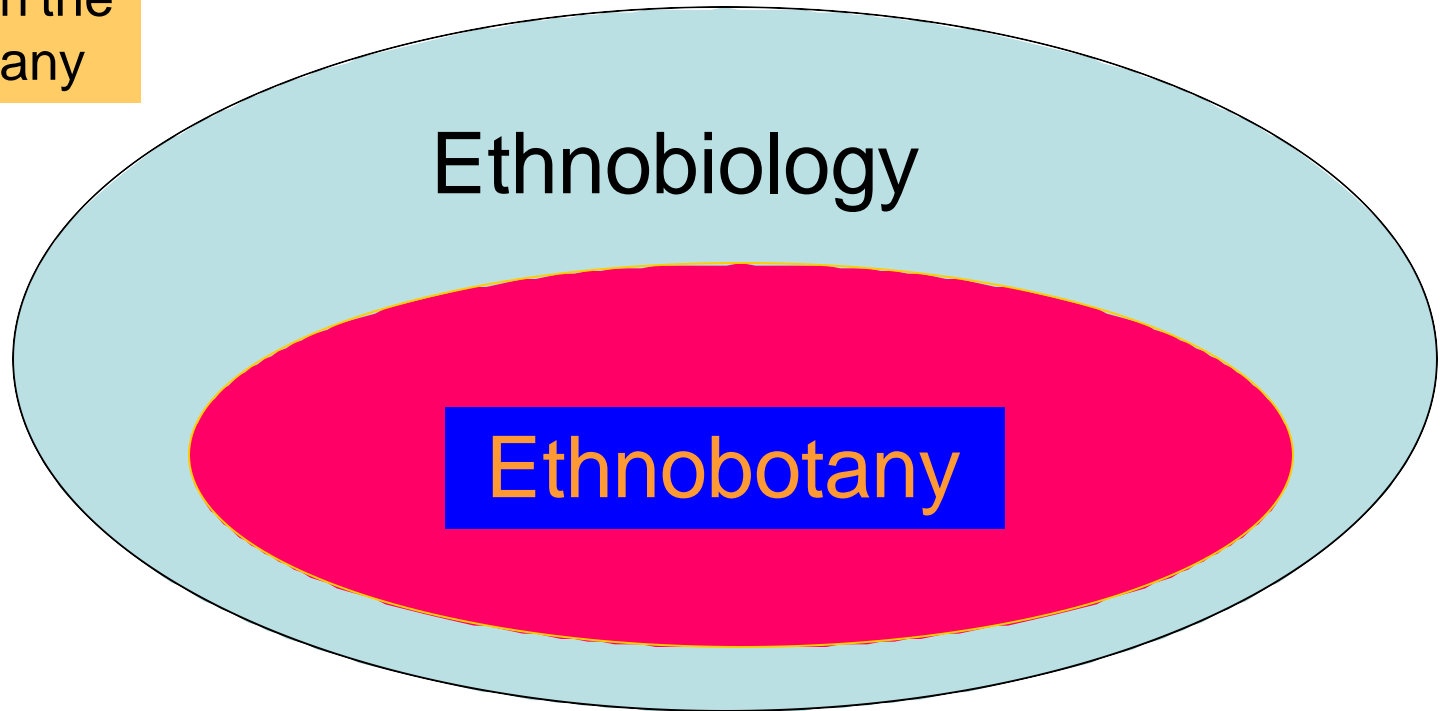
# Ethnobotany as a Subset of Ethnoecology



# Ethnobotany as a Subset/Branch of Ethnobiology

Ethnoecology and ethnobiology may be understood in the same way by many

This is another way of looking at it again



You might ask what the relation of Ethnobiology & Ethnoecology can be

```
graph TD; A[Ethnobiology] --- B[Ethnobotany]; A --- C[Ethnozoology]; A --- D[Ethnoecology];
```

Ethnobiology

Ethnobotany

Ethnozoology

Ethnoecology

# Basic Aspects of Ethnobotany

**Ethnobotany** is:

- The earliest
- Well developed and
- Currently fast expanding

**Branch of Ethnobiology**

# Ethnobotany

- ❑ From "ethnology" - study of culture and "botany" - study of plants
- ❑ Is the scientific study of the relationships that exist between people and plants.

# ETHNOBOTANY

- The study of the relationship between people and plants.
- An interdisciplinary field that includes studying plants as
  - wild foods and as agricultural crops;
  - Providers of materials for constructing houses and means of transportation; baskets and art; clothing and types of weaving; medicines and alternative methods for healing; and in the context of cultural myths and religious ceremonies.



# Definitions & Scope of Ethnobotany

## DEFINITIONS

### – Modern definition by Nancy Turner in 1996:

- “Ethnobotany is the Science of people’s interactions with plants”
- **The first person to define ethnobotany, John Harshberger in 1895; defined it as “the study of plants used by primitive & aboriginal people”**

– Problem with this definition:

» Many find this definition far too narrow

» Turner’s definition is thus preferred.

--- Do you feel anything is wrong with Harshbergers’ definition?

--- If so, what?

# SCOPE of Ethnobotany

- Ethnobotany is an interdisciplinary science, which includes aspects of both the sciences and humanities.
- Ethnobotany can serve as a gateway to many disciplines
- Ethnobotany can be entered to from many disciplines

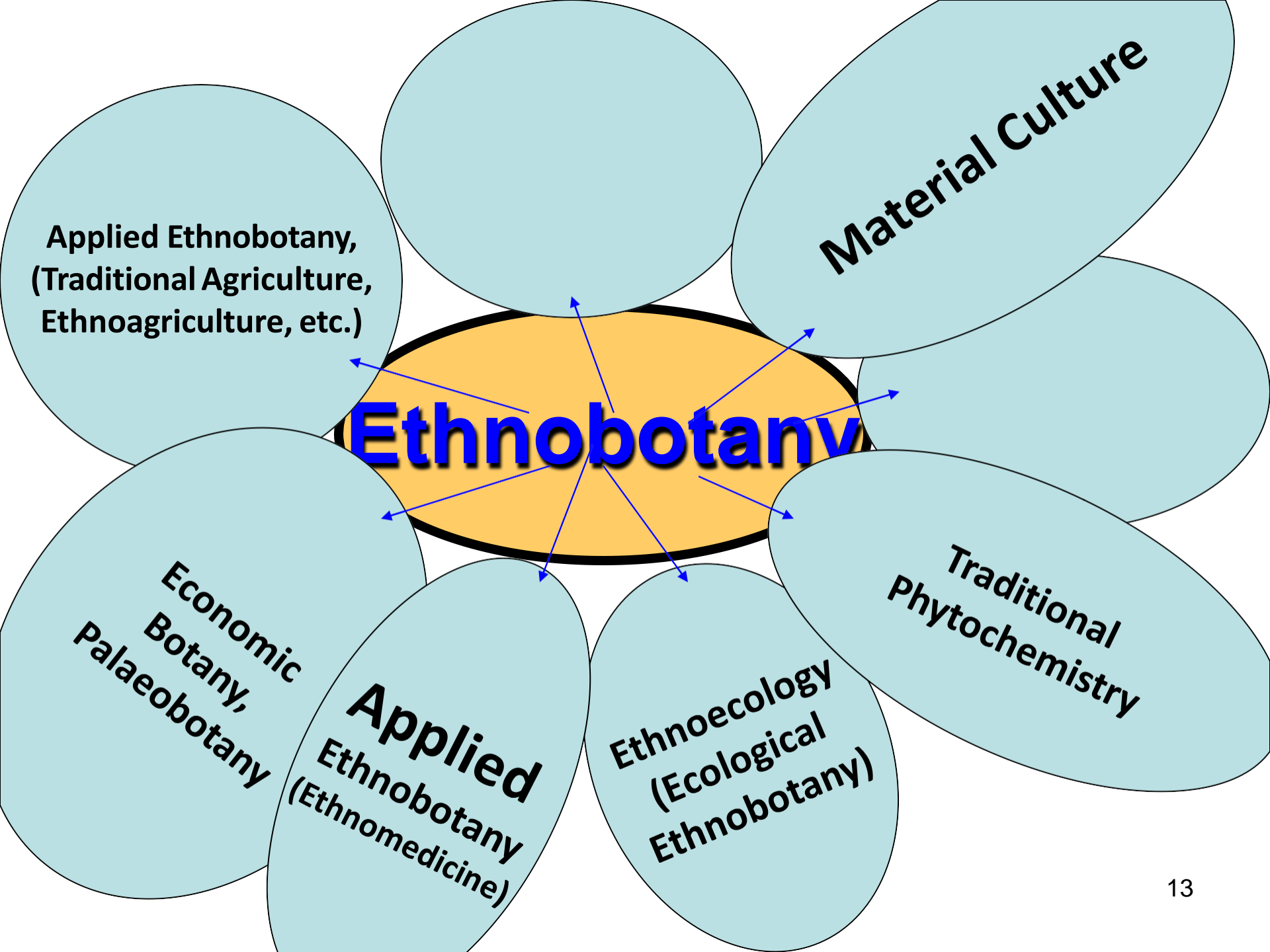
# Disciplines important in the study of ethnobotany

DISCIPLINE	RELEVANCE TO ETHNOBOTANY
<b>Botany</b>	The study of plants
<b>Anthropology</b>	The study of how different cultures use plants
<b>Sociology</b>	The study of plant uses in various societies
<b>Ecology</b>	How human interactions with plants and ecosystems affect plant ecology
<b>Medicine</b>	Study of medicinal uses of plants
<b>Chemistry</b>	Study of the composition of substances and active chemicals in plants, especially medicinal plants, natural products of various types
<b>Agriculture</b>	Study of human domestication and management of plants, especially traditional agriculture systems
<b>Horticulture</b>	Study of management of useful plants (fruits, vegetables, ornamentals) in home gardens or orchards
<b>Forestry</b>	Study of human management of forests and forest trees
<b>Agroforestry</b>	Study of land management for the simultaneous production of food, crops and trees
<b>Archeology/ Palaeoethnobotany</b>	How ancient cultures used plants
<b>Economics/ Economic Botany</b>	study of economic uses of plants
<b>Religious Studies</b>	Ritual uses of plants by different cultures and religions (Some ethnobotanists too much of this)
<b>Linguistics</b>	Study of linguistic terminology for plants and plant parts by people of different language groups
<b>Systematics</b>	Study of folk-taxonomy, how different people classify plants ( <a href="#">Ethnobiological classification</a> )

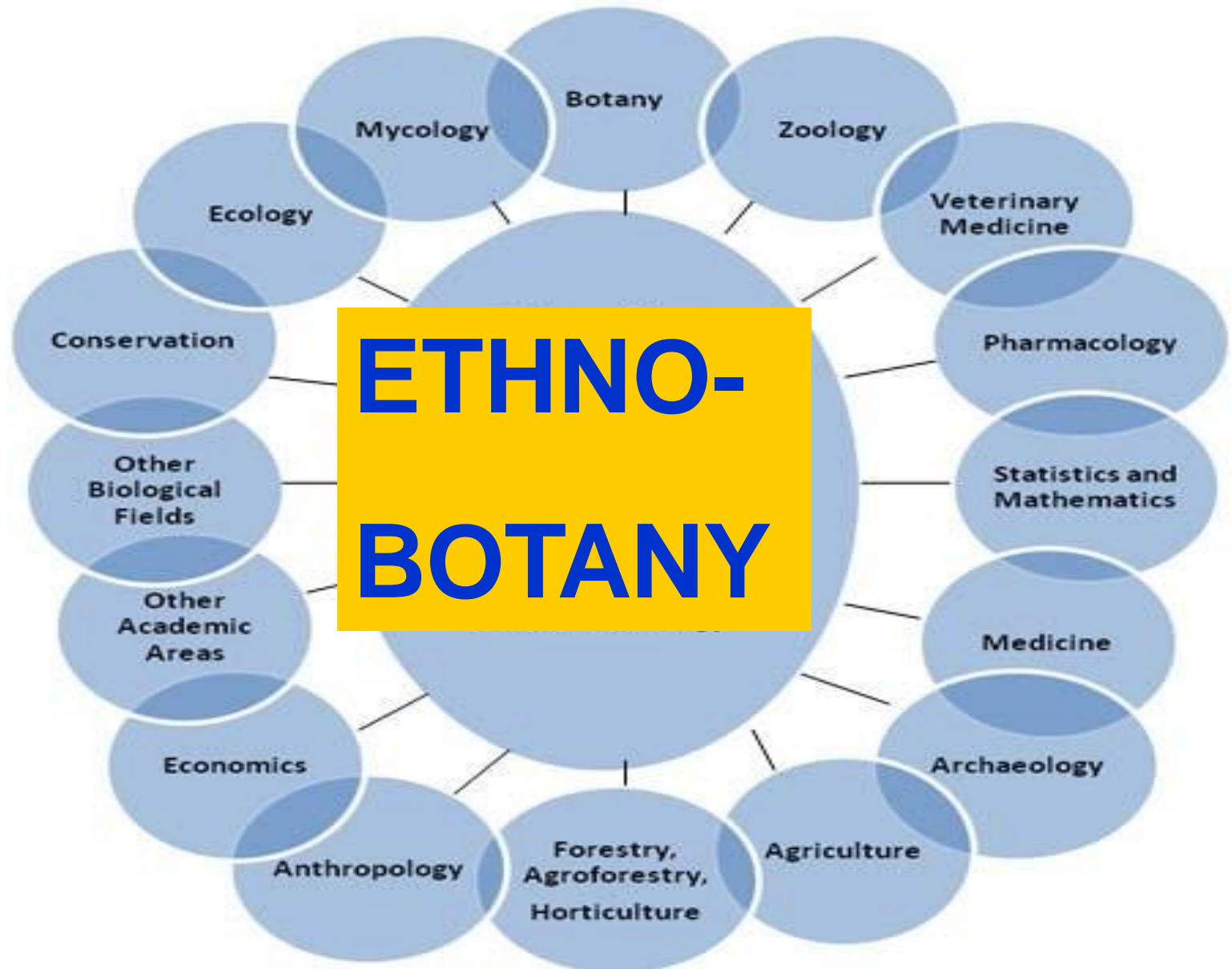
# Areas of Modern Ethnobotany

Main areas include:

1. Applied Ethnobotany (Traditional agriculture/  
Ethnoagriculture, Ethnomedicine)
1. Cognitive ethnobotany (Classification, ---)
2. Quantitative ethnobotany
3. Material culture/Plant objects (artifacts)
4. Traditional phytochemistry
5. Palaeobotany/archaeoethnobotany
6. Ecological ethnobotany (ethnoecology)
7. Economic botany



# Check your concept map of Ethnobotany



# Anecdotal Points on Plants & People

Flowers, fruits, seeds	Always been important
<b>One of the 1<sup>st</sup> hominids</b> (animals on the human line of evolution) – <i>Australopithecus africanus</i> (3 M yrs old teeth)	show adaptation for eating plants
– <i>Homo habilis</i> – (Handy-human lived)	Evidence of diet strongly dependent on plants
– <i>Homo sapiens</i> (our species appeared ~500,000 yrs ago)	Survived by hunting game & collecting fruits, seeds & edible roots
– <b>Small group of humans</b> (11,000 yrs ago, Middle East, Fertile Crescent-Iran, Iraq, Syria)	Started cultivating plants rather than just gathering (Common wild species wheat, barley, <sup>15</sup> peas, lentils, settlement and tending crops)

# Then, What Happened?

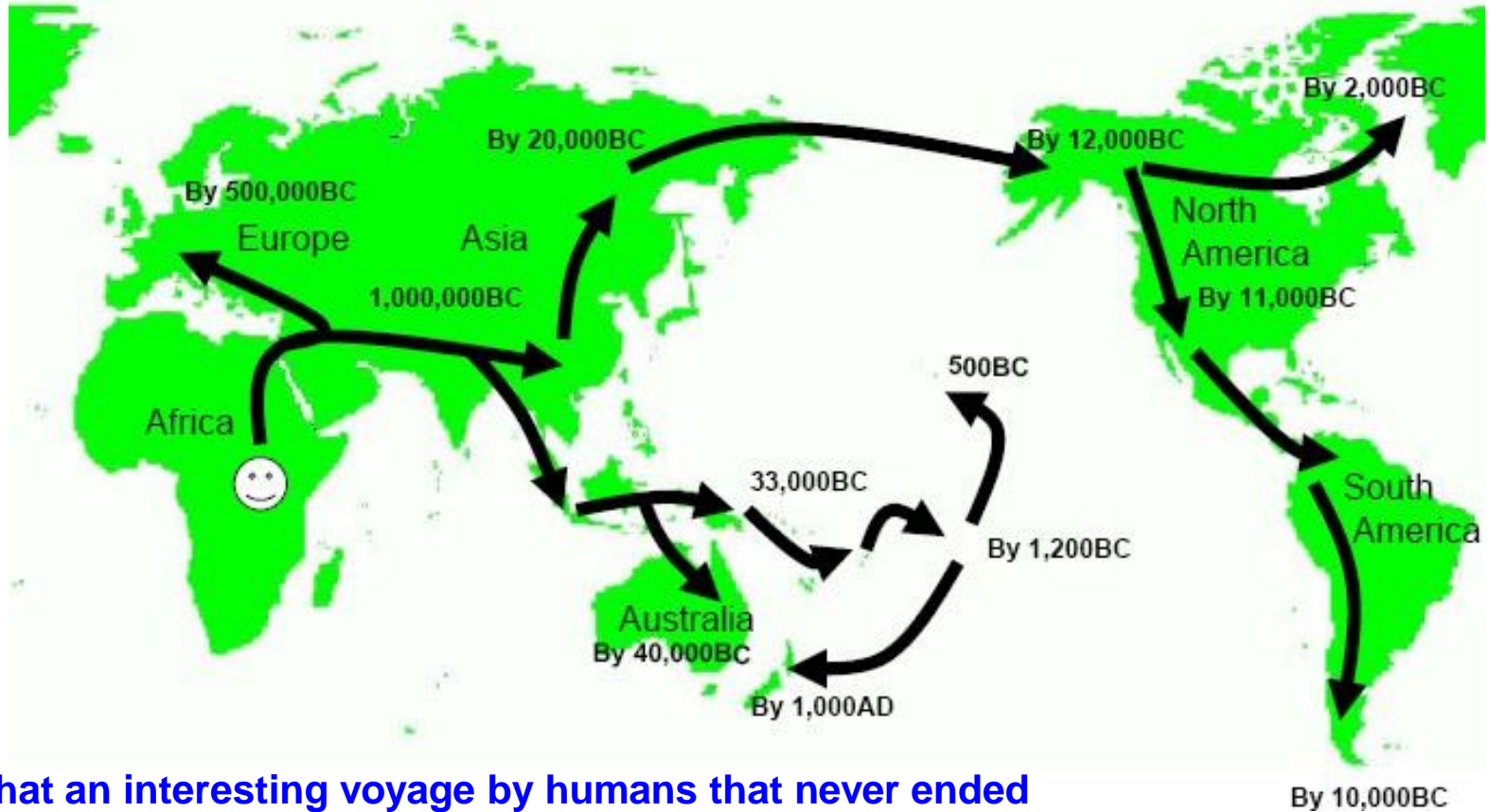
<p>6000 BC (Neolithic, new stone age)</p>	<p>Civilization advanced rapidly, Agricultural societies emerged</p>
<p>Early 4500 BC</p>	<p>Ox-drawn plow, new plants cultivated – olive, date palm, grapes for eating &amp; for wine</p>
	<p>Independently people of southeast Asia domesticated rice, soybeans;</p>
	<p>Incas, Mayans, Aztecs cultivated potatoes, corn, tomatoes, beans, squashes, cocoa, pineapple, peanuts</p>



# Then, what?

<b>Early Arts</b>	Fruits & seeds prominent position, shows importance in survival of individuals & societies
–Ancient Egypt (As early as 3000 BC)	Carved date palm, barley, wheat
– Other artists	Depicted other useful plants
– Societies became wealthier with time & resources (~2900 BC)	Leisure & pleasure gardens dedicated to beautiful fragrant flowers, expeditions in search of ornamental plants described in the oldest epic poems, prospectors sent by government (France, Spain)
–Today	Growing flowers for pleasure essential part of civilization, cultivating flowers on a window or having a potted plant maintains contact with the 17 past

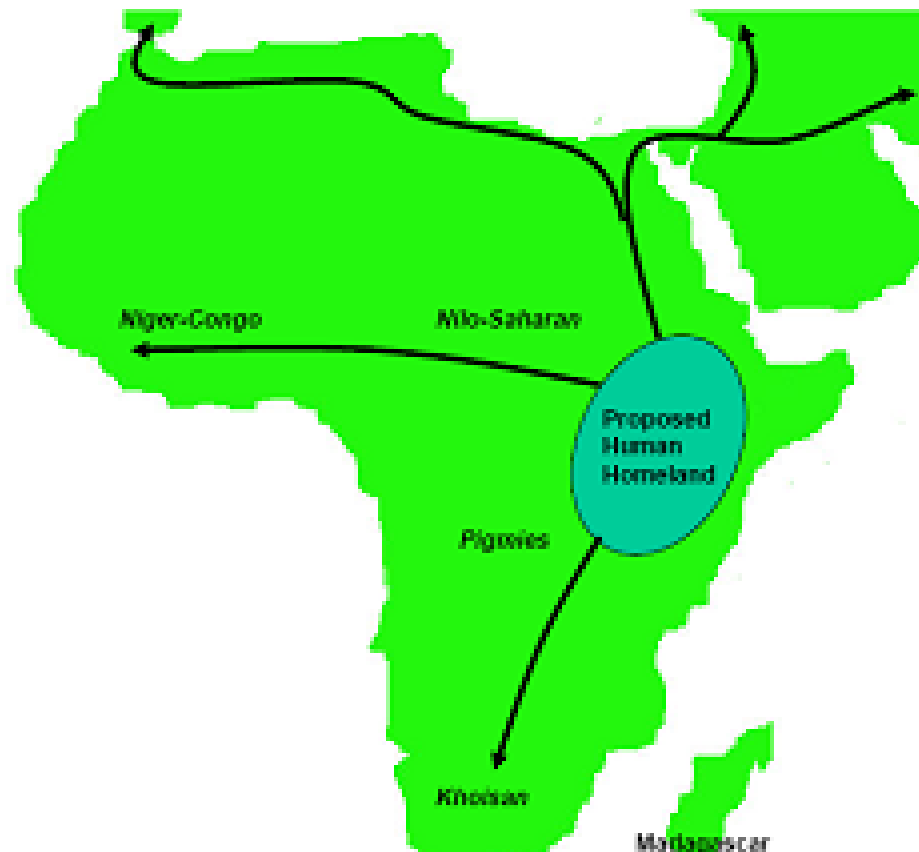
# MAJOR MOVEMENTS OF PEOPLE



What an interesting voyage by humans that never ended

Most of these movements had interests on plants

# MIGRATIONS IN AFRICA (Ancient)



Cultural differences relate to environmental experiences of societies

Many people have asked: "Why are there so many different cultures around the world?" & "Why are we not all the same?" Variations in human cultures & languages are the results of **different historical experiences with the environment & NRs.**

## **Important dates in the development of Ethnobotany as a discipline (Source: Cotton,1996)**

- 1492:** The discovery of the New world initiates the identification of several plants of considerable economic value and is based on observation of native people.
- 1663 :** John Josselyn begins his study of the natural history of New England, later publishing his text on native herbal medicine, *New England realities Discovered*.
- 1871-78:** Seminal works by botanists Palmer and Powers is published. A period of 25 years dominated by economic botanists
- 1893 :** Anthropological interest in aboriginal botany lays more emphasise on cultural significance
- 1895 :** Harshberger introduces the term "**ethnobotany**"
- 1896 :** Fewkes introduces the term ethnobotany in Anthropological literature
- 1898 :** Ethnology Department of US National Museum endeavours to document all useful plants of North American Indians

# Important dates

- 1900** : The first PhD in Ethnobotany is awarded to David Barrow for his doctoral dissertation in ethnobotany.
- 1919** : Gilmore pioneers into research in traditional peoples resource management
- 1930-50** : Castetter establishes a masters programme in ethnobotany at the University of New Mexico
- 1950-1970**: Ethnobotany, linguistic classifications ,folk classification paleoethnobotany emerges lead by, among others, Conklin is firmly established.
- 1980s** : The Society of ethnobiology publishes the first issue of its journal of Ethnobiology in 1981
- 1990s** : Both post graduate and undergraduate programmes in ethnobotany become increasingly available, while many research projects focus on practical applications of plant knowledge.

# Pioneers in Ethnobotanical Study

Linnaeus	1737	Northern Sweden
John W Harshberger	1895	USA
R E Schultes	1936, 1941	Mexico, Amazon
J Bruce N I Vavilov Getahun Amare Aklilu Lemma	? ? ? ?	Ethiopia

## Ethnobotanists of today

- G J Martin
- T Cunningham
- Will McClathey
- Michael Balick (winner of 2009 Economic Botany Award)
- A Hamilton
- A Cox

# Respect & Appreciation of Culture: Linnaeus in Retrospect

## Early Ethnobotanical Works

Linnaeus in  
Sami clothing, Lapland  
in northern Sweden, 1737



# Linnaeus pioneered techniques that are basic for ethnobotanists practicing today

1. He went to Lapland & studied the ethnobotany of the Lappish people
2. He did this long before (1733) the term ethnobotany was introduced
3. He studied the vegetation, plants & other biotic components together with the associated IK
4. He pioneered the technique of participant observation
5. In the field
  - Linnaeus ate indigenous foods & learned to use plants as the indigenous people used them
  - He traveled with only a few companions to distant lands with a minimum of gear – a participant observer
6. Linnaeus developed a deep rapport with the people he lived with and studied
7. He brought so much new things
  - Plants new to science - > 100 species
  - New knowledge from IK
  - Considered the father of Ethnobotany



# What is Ethnobotany? To this gentleman

John W. Harshberger 1895



- **Ethnobotany is the study of plants used by primitive and aboriginal people.**

# What is Ethnobotany?



- **Ethnobotany** is the study of the interactions of plants and people, including the influence of plants on human culture.
- Derived from *ethno* (people) & *botany* (science of plants).
- Study of how people of particular cultures and regions make use of the plants in their local environments.

# The Two Broad Aims of Ethnobotany Are:

- 1) To document facts about plant use and plant management
- 2) To elucidate the ethnobotanical text by defining, describing and investigating ethnobotanical roles and processes

# **Ethnobotanists need to ask the following questions:**

- What are the fundamental ideas and conceptions of people living in a particular place about the plant life surrounding them?
- What effect does a given environment have on the lives, customs, religion, thoughts, and everyday practical affairs of the people studied?

# ---More questions of ethnobotanists

- In what ways do the people make use of the local plants for food, medicine, material culture, and ceremonial purposes?
- How much knowledge do the people have of the parts, functions, and activities of the plants?
- How are plant names categorized in the language of the people studied, and what can the study of these names reveal about the culture of the people, about their knowledge and views on the plants that they use?

# **Ethnobotany**

**will let you**

- **Explore the following**

# Plants that Made History

- Historically, plants have been known to make or break a culture
- Plants That Stand between Survival & Starvation
  - In addition to plants being food staples in societies
  - Some plants are integrally linked to a culture b/se they improved or adversely affected its history
  - The tea tree (*Camelia sinensis*) [Theaceae] has huge cultural significance in many Asian cultures
  - Elaborate methods to cultivate & prepare tea began in China & later spread to Japan, where the ceremony got linked to Zen Buddhist beliefs

# The Making of Paper was a major turning point in history

- Egyptians are credited with inventing paper by pressing together strips of papyrus (*Cyperus papyrus*) [Cyperaceae]
- Real paper was made by separating plant fibers and matting them together in a thin sheet, was invented by the Chinese using paper mulberry (*Broussonetia papyrifera*) [Moraceae]



# Plants in History

- This can be seen in many parts of the world
- Plants had & have a big place in history!
- They were & are the movers of society and individuals

# Egyptians

- Used plants & resins from plants for embalming/preserving
- Made paper from papyrus (Species of the Cyperaceae family)



# Romans

- Romans had a great role in the study of plants (one of the most famous treatise is the “*Naturalis Historiae*” – *about the useful plants* )
- They were also responsible for the diffusion of various plant cultivations (Example - the grapes & olives) all around the Mediterranean

# Arabs

- Arabs were important merchants of spices from the East regions of Asia (cloves, pepper, nut meg, etc.)
- Arab physicians introduced many new aspects & upgraded the knowledge about herbs & their potential medical efficacy & safety



Nut meg

(Gewz  
*Myristica  
fragrans*)



Cloves

(Kirnfud  
*Syzigium  
aromaticum*)



(Various)

# Greeks

- In the Greek culture, plants were so important
  - Many of them were associated to different gods
- Greek philosophers & physicians studied plants:
  - Hippocrates, Aristotle, Theophrastus

- The treatise **De Materia Medica**

- Written by Dioscorides
- An assemblage of information about the properties of >1000 natural product drugs
- Derived mostly from the plant kingdom
- Considered the **Bible of medical botany for centuries.**
  - *Myrtus communis* (Aedes) - considered sacred plant



# A darker side in plants of historic significance

- Two plants integrally linked to slavery:
  - Big money crops in the Americas and required significant labor, resulting in the enslavement of many Africans and their transport to the USA & C America
    - Cotton (*Gossypium* sp.) [Malvaceae]
    - Sugar cane (*Saccharum officinarum*) [**Poaceae**]
  - Others
    - Apple tree (*Malus domestica*) [Rosaceae]
    - Intoxicating drug derived from the opium poppy (*Papaver somniferum*) [Papaveraceae]
    - Christopher Columbus's search for a new spice trade route to India, resulted in his discovery of the Americas in 1492
- Many other useful plants came to be known in early years

# Aztec physicians used many species of *Datura*

- Almost all species of *Datura* produce the narcotic stramonium
- Stramonium is made up of:
  - **Atropine** – effects on heart rate
  - **Scopolamine** – large doses cause disorientation, delirium, foaming at the mouth, great thirst, visions, dreamless sleep followed by amnesia
  - **Hyoscyamine** – reduces muscle spasms, sweating



**Do you know this plant?**

**Jimson weed**

**-*Datura stramonium***  
**(*Solanaceae*)**

***Atefaris, Astenagir***

# Aztec cautioned about *Datura*

- “It harms one, takes away one’s appetite, maddens one, makes one besotted. He who eats it will no longer desire food until he shall die. And if he eats it moderately, he will forever be disturbed, maddened; he will always be possessed, no longer tranquil.” - ca. 1540
  - Think of a similar belief in Ethiopia



***“Ethnobotanists must record  
not  
only lists of plant uses but  
must look at a  
vision of life itself...”***

***They study the ethical  
worldviews/cosmovision***

# Plants in Human Life beyond Material Use

- Since ancient time, people used and are still using plants in manifold ways:
  - For food, fibers, tools, houses, etc.
  - As assets, in rituals
  - For communicate with each other, with nature & with the spiritual world
- **Plants come in many ways in human life (Think of some)**

# Food plants



[35]

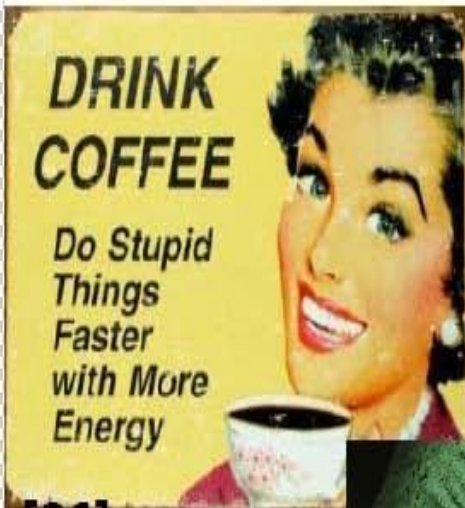


[38]



*Cocoa and  
chocolate*

[39]



[36]



# **Economic Botany**

- As originally conceived, was a branch of applied botany that arose during the colonial period to identify and characterize economically important plants and the products derived from them.**
- Currently, it is a scientific endeavor that seeks to document the properties of useful plants through agronomic, archaeological, ecological, ethnobotanical, genetic, historical, phytochemical and other empirical approaches.**

# Economic Botany

- **Overlaps broadly with ethnobotany, as both fields have witnessed a similar development in theory and methodology, but some conflicting lines of thinking-**

**Issue for debate**

# Ethnobotany

- Has been defined several times by different scholars
  - Study of interactions between people, plants and environment.
  - Since the time it was introduced for the first time by Harshberger, it has expanded in its scope
  - Initially it was more of qualitative using methods of recording local names and uses of plants
  - Later in its history the quantitative approach started featuring

# Ethnobotany

- Gradually moved into understanding of the knowledge system through use of elaborate anthropological methods in combination with biological and mathematical methods employing the etic and emic approaches
- Followed by development of quantitative methods of estimating
  - Amount of products present, used
  - Quantifying the different values of products
  - Verification of data

# Some Reminder on Areas of Modern ethnobotany

- Traditional agriculture
- Cognitive ethnobotany
- Quantitative ethnobotany
- Material culture
- Traditional phytochemistry
- Paleobotany/Archaeoethnobotany
- Ecological ethnobotany (ethnoecology)

Each field uses theory & techniques from other disciplines.

**N.B. *Ethnobotany is an interdisciplinary/transdisciplinary field best treated/studied in a multidisciplinary approach for success***



# **It is possible to look at Modern Ethnobotany under different fields**

- Basic Ethnobotany**
- Quantitative Ethnobotany**
- Applied Ethnobotany**
- Experimental Ethnobotany**
- Ecological Ethnobotany**
- Economic Botany (Some what related)**
- Socioethnobotany – Equitability (IPR & BS)**

# Socioethnobotany

- The study of the social aspects of the use of plants –motivated by a desire to understand how to best compensate the societies from which information about plant uses was obtained

# Read: The New Socioethnobotanist

- “I keep thinking that the best ethnobotanist would be a member of a cultural minority and, trained as a botanist and as an ethnologist, would study, from within and as part of it, the traditional knowledge, the cultural significance, and the traditional management and use of the flora. And it would be even better if his/her studies could bring economic and cultural benefit to his own community.”

**Is this different from what we want an ethnobotanist to be?**  
Ethnobotanists can study other cultures but they have to be honest

# These days:

- Ethnobotany has moved into a wider approach, to analyze human interactions with the overall environment including the impact on local environment and life

# We Note that

- In the past, ethnobotanical studies were largely descriptive and had little significance to local people, who provided the information
- Ethnobotanical information has largely been used for academic exercises; otherwise has been serving the interest of outsiders neither benefiting the local people nor conservation

# Over the last decades, however:

- Ethnobotany tended to become
  - More analytical
  - More quantitative
  - More Multidisciplinary
  - More technological
  - Geared towards
    - Local people problem solving
    - Concern for rural communities
    - Community development agenda
    - Focused to environmental health
    - Management of resources
    - Concerned to preservation of local bio-cultural knowledge

# Features of Modern Ethnobotany

- The field of ethnobotany experienced a shift from the **raw compilation of data** to a **greater methodological and conceptual reorientation.**
- This marked the beginning of academic ethnobotany, as seen in the works of **Richard Evans Schultes** (1936, 1941----).

# Modern Ethnobotany

- The field of ethnobotany requires a variety of skills:
  - botanical training for identification & preservation of plant specimens;
  - anthropological training to understand the cultural concepts around the perception of plants and the methods of social science;
  - May be language and linguistics to transcribe local terms and understand the morphology, syntax (grammar, rules), meanings, stories, etc



# Modern Ethnobotany

- Considerable information on the traditional uses of plants is still intact with the local people
- It is the Methodological rigour that makes modern ethnobotany what it is today

**R.E. Schultes, Kiowa Roadman Belo Kozad,  
and Weston La Barre  
– 1936, Oklahoma**



# Richard Evans Schultes

- One of the best-known modern ethnobotanists
- Schultes identified ethnobotany as an:
  - Interdisciplinary field, combining botany, anthropology, economics, ethics, history, chemistry, and many other areas of study.
  - Studied the **miracle** cactus



RICHARD EVANS SCHULTES  
*January 12, 1915–April 10, 2001*



*Lophophora williamsii*

***Lophophora williamsii* – peyote cactus**

# Peyote – *Lophophora williamsii*



- Plant was rubbed on cuts to prevent infection
- Found to have antibiotic properties – even against penicillin resistant *Staphylococcus*

What is he  
doing? Voucher  
specimen  
collection and  
documentation

Key  
Activity in  
Ethno-  
botany



**Richard Schultes – Amazonia, late 1940's**

Author of the **“Healing Forest”** - **Teacher** of Balick & Cox, Harvard<sup>6d2</sup>

# Applied Ethnobotany

## --A branch of ethnobotany

In the year 1992

- The people and plant world initiative coined the name “**applied ethnobotany**”

Then.....

- Apart from its theoretical significance it emerged as a science of great practical value

# Ethnobotanical Applications

## 1. In Rescue Mission

- When cultures are either extinct, or undergoing rapid change, so that a significant proportion of ethnobotanical knowledge will be lost unless systematically recorded

## 2. In Industrial Investigation

- Looking for plants which can be developed commercially

## 3. In Cultural Enhancement

- Looking at ways to revive or strengthen traditional uses

## 4. In Qualitative Evaluation of the Use & Management of Botanical Resources

- Looking at ways communities use and manage plants

These categories are not exclusive from each other, and any applied ethnobotanical project is usually a mixture of several of these



# Applications

- Currently, interest in ethnobiology and its branches is rising as a result of its important applications:
  - In **rural development** – by identifying and promoting **useful plant resource** for local use.
  - In **natural resource management and conservation** identifying and promoting **good conservation practices** from among many local practices.
  - In **biodiversity prospecting**
    - Selecting plants for drug development
    - Identifying medicinals, edibles, other useful plants including climate genes

# Applied Ethnobotany

- Applied ethnobotany is ethnobotany applied to conservation, sustainable development, agriculture, medicine, other fields
- ethnobotany is considered to be a key to conservation and sustainable development
- Ethnobotany today is an applied subject
  - We study ethnobotany to be able to apply it in various areas
  - It is the objective of this course to explore the various areas in which ethnobotany has been and

could be **applied**

# Areas of Applications of Ethnobotany

- Ethnobotany touches various areas including:
  - Biodiversity conservation
  - Ecotourism
  - Community development projects
  - Resource management
  - Agroethnobotany
  - Ecoagriculture
  - Homegardening
  - Natural product chemistry
  - Drug discovery, etc.
  - Economic botany/bioprospecting

It is good to note

- Since ethnobotany is an applied subject rather than a theoretical one, a dichotomy between ethnobotany and applied ethnobotany is not well appreciated
- This course tries to give more emphasis on the aspects of applications of ethnobotany

# **Ethnobotany and Conservation**

Read: Allan Hamilton, *et al.* 2003; Martin, 1995: Pp 224-251; Balick & Cox, 1996, Pp 179-206

- 1. Applying traditional ecological knowledge**
- 2. Ethnobotanical research & community development**
- 3. Forests**
  - **Agroforestry & agroecosystems**
  - **Social forestry/community forestry**
  - **Ethnobotanical forest reserves**
  - **Protection & sustainable use of NTFP**
- 4. Conservation of wild crop relatives & endangered useful plants**
  - **Botanic gardens**
  - **Community herbaria**
- 5. Conservation of traditional crops & landraces (farmers' varieties)**
  - **Traditional farming systems (traditional field cropping, traditional homegardening, agroforestry)**
  - **Application in ethnobotanical gardens**

# Challenges for Ethnobotanists Today

1. Cataloging what is known about plants, documenting which plants are important to a society, and recording the beliefs about different plant species.
2. An even more difficult task is to understand not just how a particular group uses plants but **how that group perceives plants**, how it interprets those perceptions, how those perceptions influence the behavior of that society, and how those activities and behaviours influence the plants & ecosystems upon which the society depends.

These challenges are more pertinent for Ethiopia today

– **Debate why**

# Education

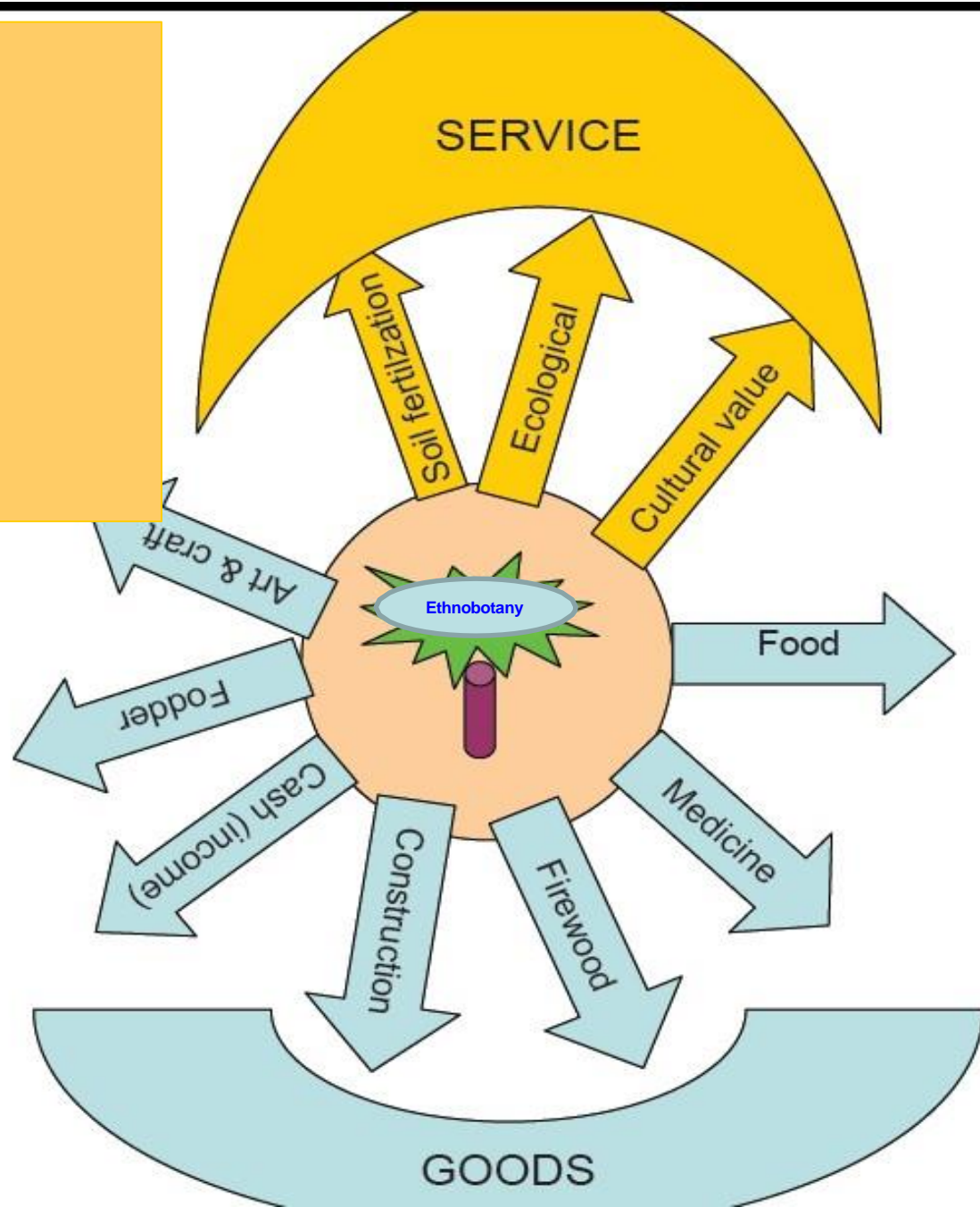
- Active Teaching and research underway
  - Some universities have undergraduate courses
  - Many universities have postgraduate courses and programmes
  - Research is undertaken in universities and research centers
  - Variable contents and quality of research and academic programmes much influenced by institutional tradition
  - AAU is currently offering two courses in Ethnobotany, one of them Applied Ethnobotany<sub>70</sub>

# ETHNOBOTANY

Takes you to many areas

And to many uses of plants

Providing  
Goods  
Services



# Considering what a plant is good for leads to other questions

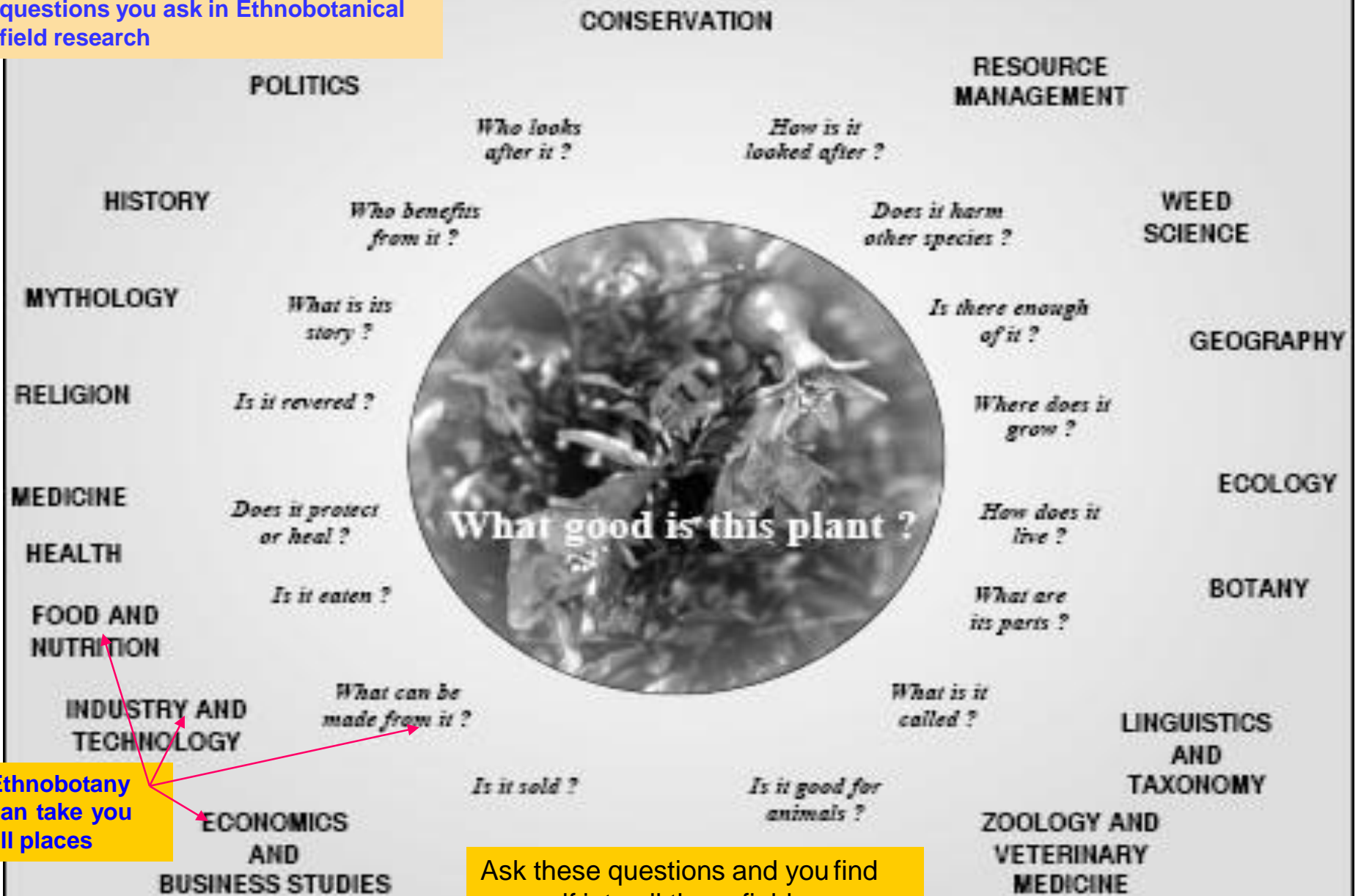


- Where does the plant normally occur?
- How is the plant cultivated?
- Can we combine natural occurrence and cultivation in a mutually beneficial system?



Figure 2. Some key questions and disciplines relevant to Applied Ethnobotany. A simple question provides a practical way to enter the 'ethnobotanical matrix'. Developed from an idea of Janice Alcorn (Alcorn, 1995).

**Hamilton et al. (2003):** The questions you ask in Ethnobotanical field research



Ethnobotany can take you all places

Ask these questions and you find yourself into all these fields