



CoCE – Conservation and use of the wild populations of *Coffea arabica* in the montane rainforests of Ethiopia

Manfred Denich, Tadesse W. Gole, F. Gatzweiler,
Girma Balcha and P.L.G. Vlek

Biodiversity of Africa –
Observation and Sustainable Management for our Future!
September 29 – October 3, 2008
Spier / Stellenbosch / Republic of South Africa



Origin of *Coffea arabica* (Rubiaceae)

- Highlands of Southwest and South Ethiopia (part of the “eastern Afromontane biodiversity hotspot”)
- Undergrowth of the montane rainforests (1,000 – 2,100 m)









Ethiopian coffee production systems

Coffee forests (wild coffee)



Garden coffee



Coffee plantations



Management intensity

25% of Ethiopian coffee production

Importance of wild coffee

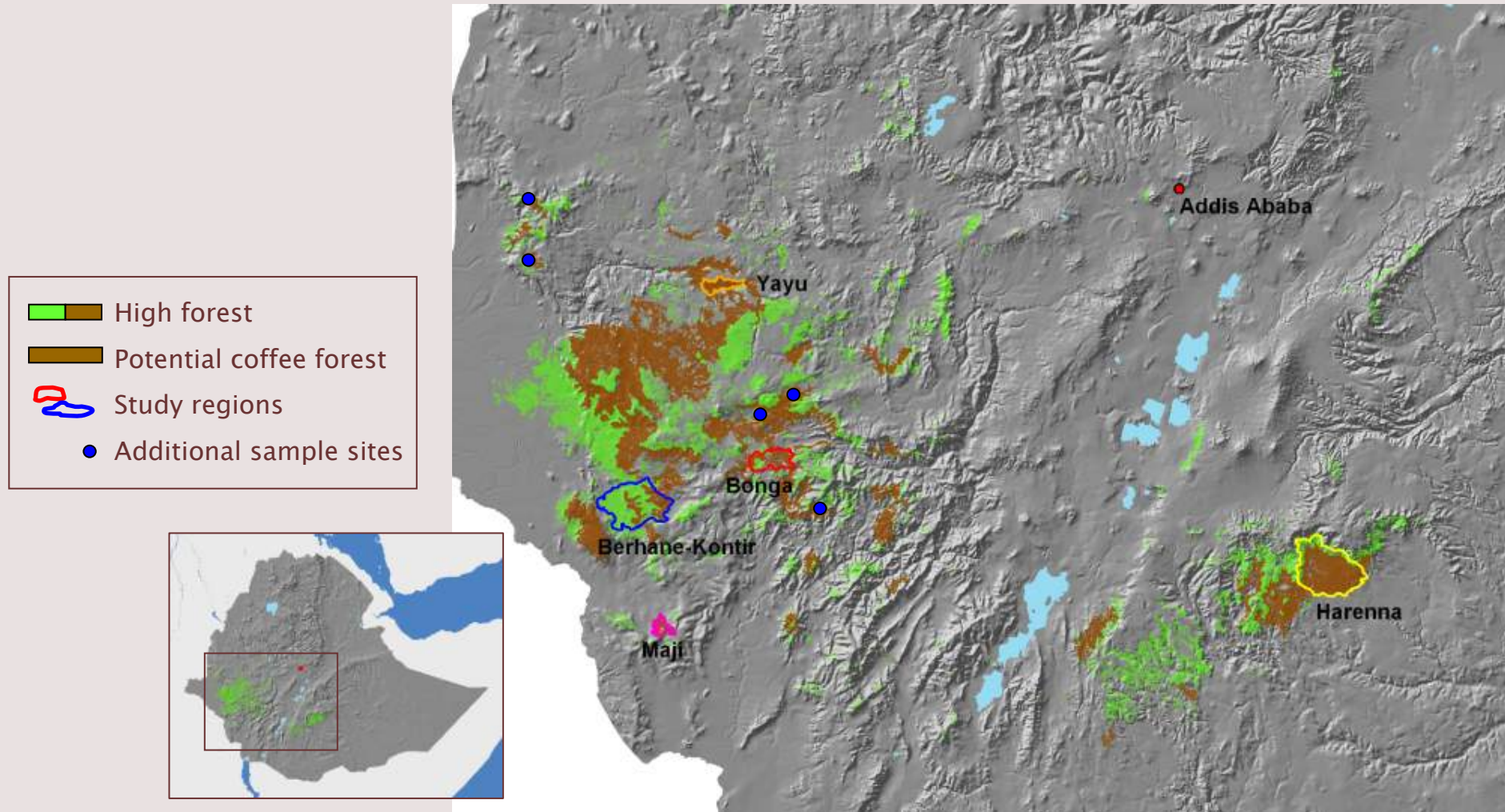
- Collected by the rural population for consumption
- Source of income for the rural population
- Specialty on the international coffee market
- Genetic resource for coffee breeding (national and international)





- Most of the montane rainforests have been converted into agricultural land.
- 25,000 km² (~2.5%) of forest fragments remain.
- The wild coffee disappears with the forest.

Forests and potential coffee forests





Objectives

- To assess the diversity and economic value of the wild coffee gene pool and the montane rainforest.
- To develop a concept for conservation and use of wild coffee populations and its forest habitat.

The idea behind...

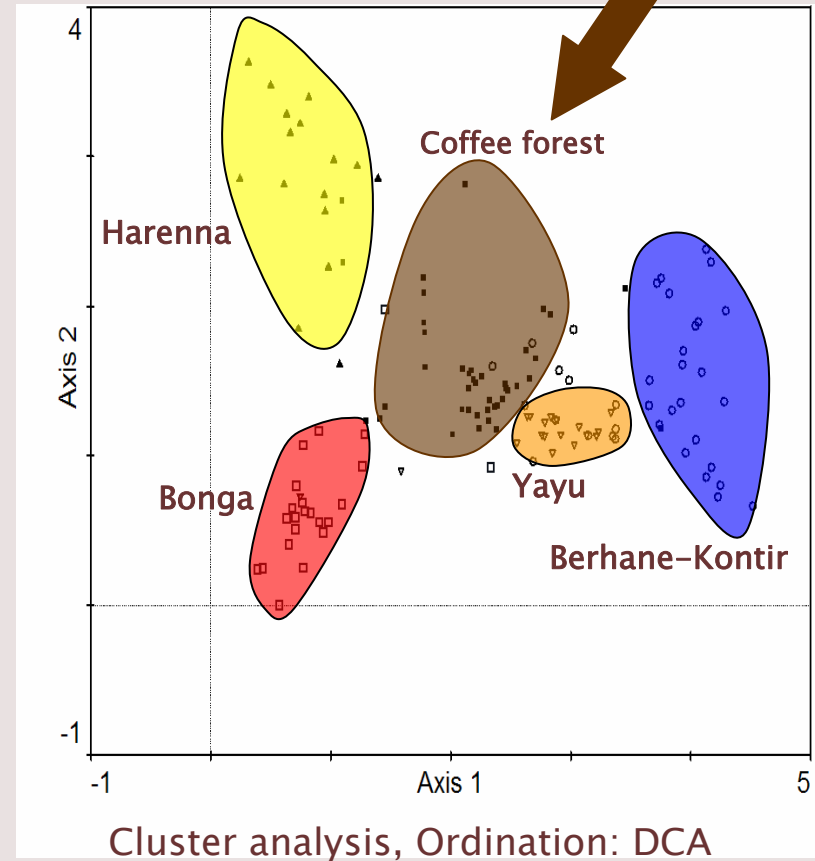
Rainforest conservation becomes conservation of the coffee gene pool and vice versa.





Species composition of the montane rainforests

- 745 plant species (10%)
- Forests show regional differences in their species composition
- “Coffee forests” are similar across regions
- Species composition and structure of the coffee forests depend on the management of wild coffee



Diversity of wild coffee

Molecular–genetic analyses show...

- regional differences among wild coffee samples and differences within regions (Kassahun Tesfaye)

The genetic diversity of wild coffee is reflected in...

- its variability regarding drought tolerance and quality features (Abebe Yadessa)



...its high variability regarding the tolerance to fungal diseases.



Coffee leaf rust



Coffee berry disease

Economic value of coffee forests

- **Forests from the farmer's perspective:** Conversion into arable land is more profitable than sustainable forest management.
- **Forests from the society's perspective:** Taking all values into account (incl. coffee, timber, ecosystem services, etc.), then sustainable forest management achieves higher net benefits.
- **Value of the wild coffee gene pool as a potential resource for coffee breeding:** 0.4 – 1.5 billion US\$.





Summary

- Montane rainforests and wild populations of *Coffea arabica* are characterized by high diversity.
- Forests are threatened by conversion into arable land, which is more profitable to the individual farmer.
- Sustainable forest management is the most beneficial scenario from the society's perspective.
- The genetic diversity of wild coffee has a high economic value for breeding.



What needs to be done ?

Transformation of the potential value of the coffee–genetic resource into real benefits for the rural population.

- Participatory development of conservation concepts (protected area) which include management guidelines for the use of coffee forests
- Certification of the coffee forest and of the wild coffee (Till Stellmacher)
- Conservation education and public awareness raising
- Development of international fund–raising approaches for financing the conservation activities



Establishment of the Ethiopian Coffee Forest Forum (ECFF)

...to bridge the gap between research and practice

...to make our research sustainable

(Tadesse W. Gole)



Public and private partners

Institute of Biodiversity Conservation (IBC), Ethiopia
Addis Ababa University

Ethiopian Institute for Agricultural Research (EIAR)

University of Bonn

- Center for Development Research (ZEF)
- Nees Institute for the Biodiversity of Plants
- Institute of Plant Nutrition
- Institute for Plant Diseases

University of Wageningen, The Netherlands

peter moll & ute zander, consultants

ROBERA Coffee, Amber Foundation

KRAFT Foods

GEO schützt den Regenwald e.V.

Thank you !

