

African Pollinators Initiative

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**Workshop on Solitary Bees: Conservation, Rearing and Management
for Pollination**

Beberibe, Ceará April 26-30, 2004

History



Founded in 1999 in Stellenbosch

Plan of Action and governance structure developed in First African Pollinator Initiative Workshop in 2002 in Nairobi (funded by FAO).

Intention is to increase capacity by building on existing networks, institutions and initiatives:

**BioNET International's east, west and southern African networks
Global Taxonomy Initiative
Global Biodiversity Information Facility
Global Strategy for Plant Conservation**

**Rapid Assessment Exercise, 2003
Publication of case studies, 2004
GEF PDF-B, 2004-2006**

Publication of case studies, 2004

In:

**Special Issue of a new journal
International Journal of Tropical Insect
Science**

**(formerly ICIPE's journal
Insect Science and its Application)**

Now co-produced by ICIPE and CABI.

To be issued in first week of May 2004

**All citations in this presentation
come from this special issue of African
pollination case studies.**

Plan of Action: Four Components



- 1. Public Education and Awareness**
- 2. Placing Pollination in the Mainstream**
- 3. Conservation and Restoration**
- 4. Capacity Building**

Public Education and Awareness

- 1. No amount of scientific work will conserve pollinators unless there is public support and understanding**
- 2. Economic justification is very strong**
- 3. Many pollination syndromes in Africa are unique and fascinating**
- 4. Traditional practices with respect to bees are many, but are at risk of being lost.**

Public support requires greater awareness of pollination

Rachel Kagoiya's study in Kikuyu marketplaces in Kenya

Out of 20 farmers interviewed in Thika market:

Do you believe that pollination affects your crop yields?

i. Yes (11) ii. No (5) Don't know (4)

If yes, how does it affect it?

They add to the harvest, Increase in crop production/ yields,
Crops tend to be more healthier and beautiful

I think pollination helps but I attribute good yields to use of correct farming practice, good and strong seeds and well tending to my crops. We should be educated more about this.

If no, how does it affect it?

They destroy my crops

h). Can you do anything to make sure pollination takes place?

i. Yes (4) ii. No (7) Don't know (9)

Economic justification is very strong



Oil Palms

The import to Malaysia of indigenous pollinating weevils from West Africa resulted in a savings from the labour costs of hand pollination of \$150 million per year in the early 1980s.

Many pollination syndromes in Africa are unique and fascinating

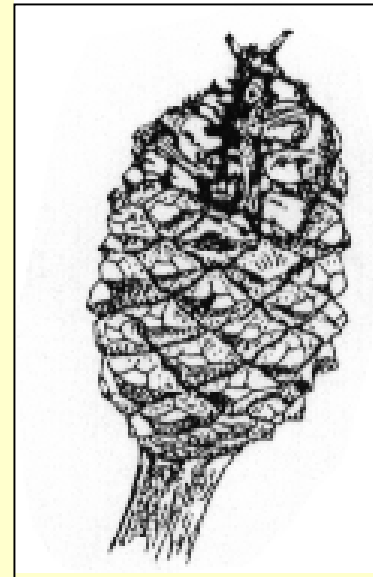
Cycads



Female cone



Male cone



Many pollination syndromes in Africa are unique and fascinating:

Some unique pollination systems of Africa



Long-tongued flies are nectar specialists. Within most geographical regions in South Africa, there are guilds of plants that rely on a single long tongued fly pollinator species- this level of specialisation is rare elsewhere.



50% of African orchids are moth-pollinated; Moths fly fast and far and make use of resources in many different habitats

From Johnson, 2004

Some unique pollination systems of Africa



Most beetle-pollinated flowers are thought to be pale in colour and fruity in odour.

In South Africa, most beetle-pollinated systems involve plants with bright (red, orange or yellow) odourless flowers, visited by monkey beetles.



Rodent pollination appears to be unique to Africa. Flowers adapted for rodent pollination are close to the ground, dull coloured and produce a yeasty scent during the evening, timed to the nocturnal activities of rodents.

From Johnson, 2004

Some unique pollination systems of Africa

Trap-flower fly pollination in *Ceropegias* of East Africa

Their complex and diverse floral morphology of the tubular flowers, external coloration....



From Masinde, 2004

Trap-flower fly pollination in *Ceropegias* of East Africa, con't.

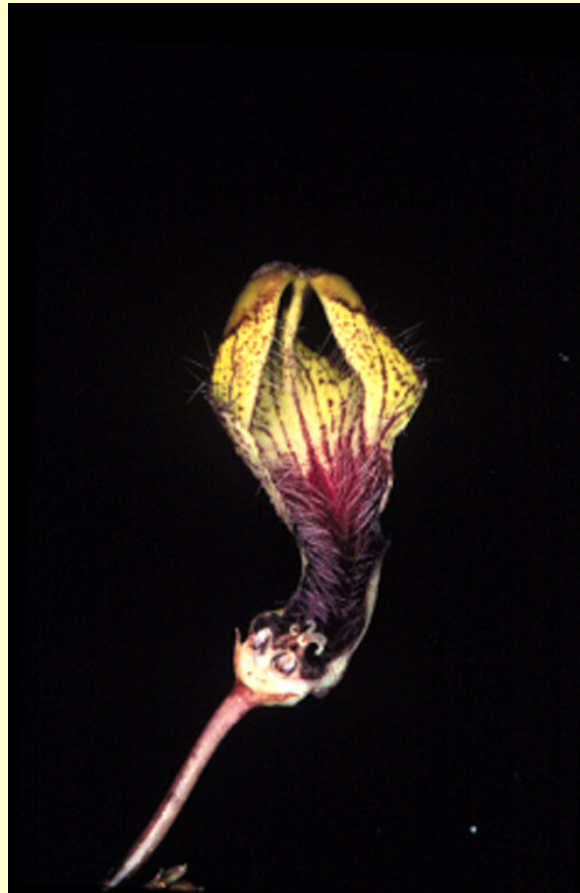
secretions such as nectar and water droplets,
vibratile corolla lobes and hairs..



From Masinde, 2004

Trap-flower fly pollination in *Ceropegias* of East Africa

...and specialised hairs, interior sculpturing, sliding zones and differential lighting within the flower are important mechanisms for attracting and detaining insect pollinators.



From Masinde, 2004

Traditional practices with respect to bees and pollination are many, but are at risk of being lost.

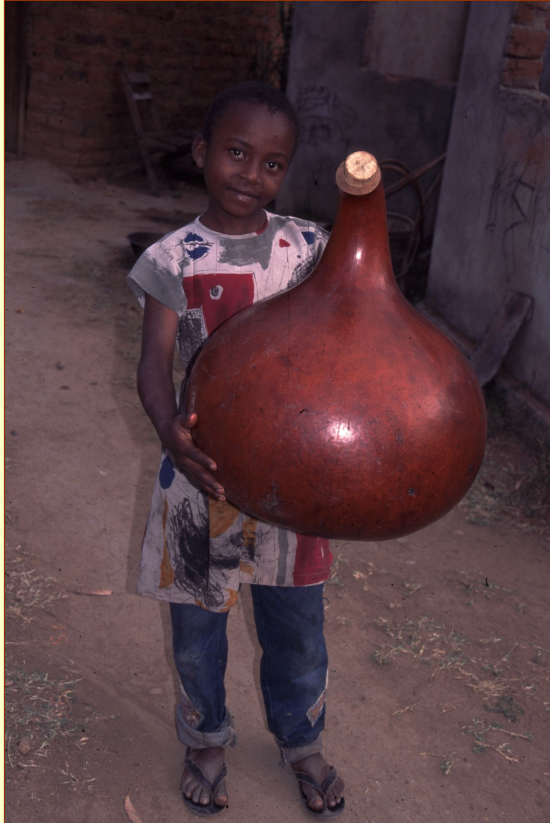


Ethnic groups in Africa have long traditions of harvesting the honey of stingless bees, but many have ceased practising these traditions.

The Batwa Pygmies of the Bwindi Impenetrable Forest in Uganda have a folk taxonomy for stingless bees in the Forest that corresponds to the scientific taxonomy of these bees, and still depend on the honey for their livelihoods.

From Byarugaba, 2004

Traditional practices with respect to bees and pollination are many, but are at risk of being lost.



The diversity in shapes and sizes of bottle gourd throughout Africa is amazingly high as well as the diversity in shell color, texture and thickness.

This rich diversity of bottle gourds is due to a combination of both to diverse cultural practices in selection of fruit and seeds, and (since *Lagenaria* depends upon animal vectors for pollination), on a suite of pollinators that must either change or adapt to the diverse human environments in which bottle gourds are grown.

*From Morimoto et. al,
2004*

Public Education and Awareness Plan of Action:

- 1. Production of pollination documentaries for radio and television**
- 2. Production of quarterly newsletters among a network of pollination biologists, extensionists, farmer groups**
- 3. Demonstration “pollinator gardens”**
- 4. Development of extension material**
- 5. National level workshops to establish local pollinator initiatives**
- 6. Consumer campaigns for “pollinator friendly” commodities**

Note: September 2004 meeting of the Biodiversity committee of the International Federation of Organic Agriculture Movements in Nairobi



2. Placing Pollination in the Mainstream

A. Pollination must be addressed in environmental and biodiversity planning

B. Pollination should be integrated into agricultural policy

C. Economic valuation of pollinators is needed



A. Pollination must be addressed in environmental and biodiversity planning.

Every country that is signatory to the Convention on Conservation of Biological Diversity is obligated to develop a national biodiversity strategy and action plan....

Only a few countries (of which Brazil is one) have included pollination in these plans.

B. Pollination should be integrated into agricultural policy



Pollination has not yet gained recognition in agricultural policies in Africa...

But in China it is recognised in national policy as an agricultural input along with seeds, fertilisers and pesticides.

C. Economic valuation of pollinators is needed

Of all the incomplete data in relation to pollination, this is among the most essential.

There is a growing body of opinion that ecosystem services- usually referring to watershed services, but could include agrobiodiversity services such as pollination- should be included in national accounting practices.

Uganda has made a first good step in including the value of their natural wetlands- filtering runoff from human settlements before it enters the rich fishery of Lake Victoria- in their Poverty Strategy Reduction Paper.

Placing Pollination in the Mainstream Plan of Action

- 1. Develop guidebooks for policy makers on pollinator-supportive policy frameworks.**
- 2. Develop campaigns to introduce pollination into biodiversity and environmental planning regulations.**
- 3. Develop national campaigns to introduce pollination into agricultural policy.**
- 4. Develop national campaigns to include ecosystems services in national accounting practices.**

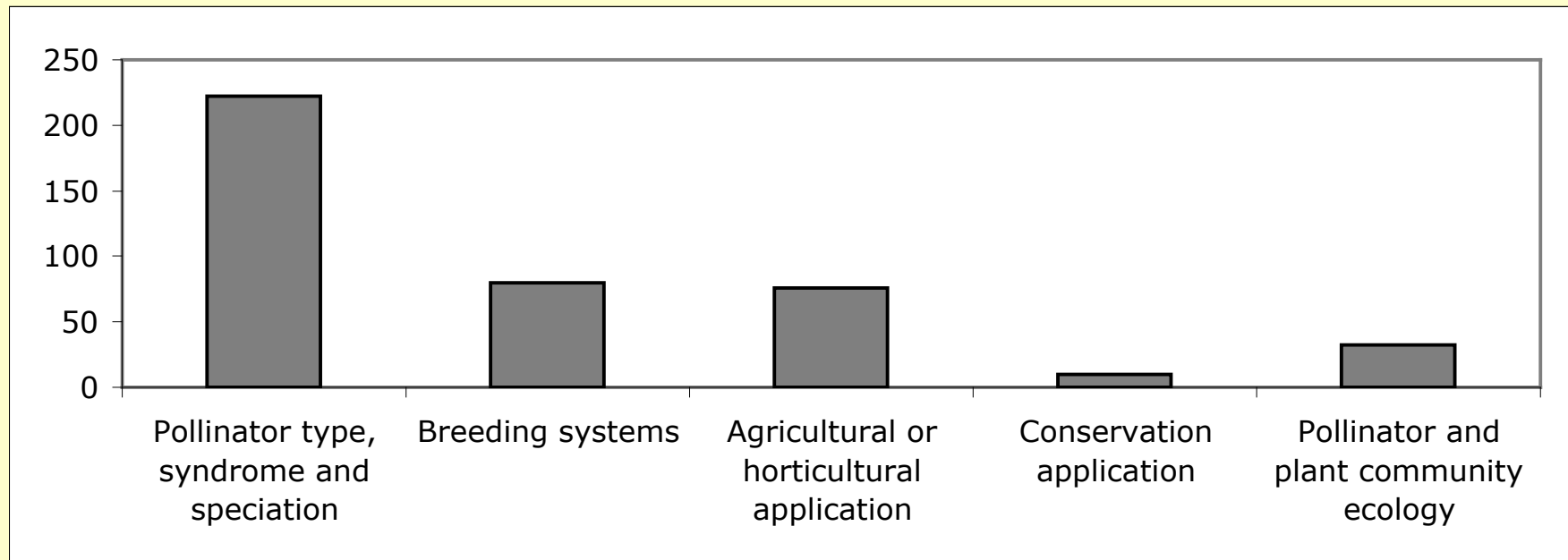
3. Conservation and Restoration



Grewia tenax

- A. Monitor the status and trends of pollinators in selected regions of Africa.**
- B. Assess the state of knowledge of pollination biology and taxonomy.***
- C. Identify key pollinator interactions and population dynamics in natural and agroecosystems.**
- D. Develop credible assessments of the economic value of pollination of specific crops.***
- E. Identify and implement key pollinator conservation and restoration activities.**
- F. Introduce meliponiculture.***

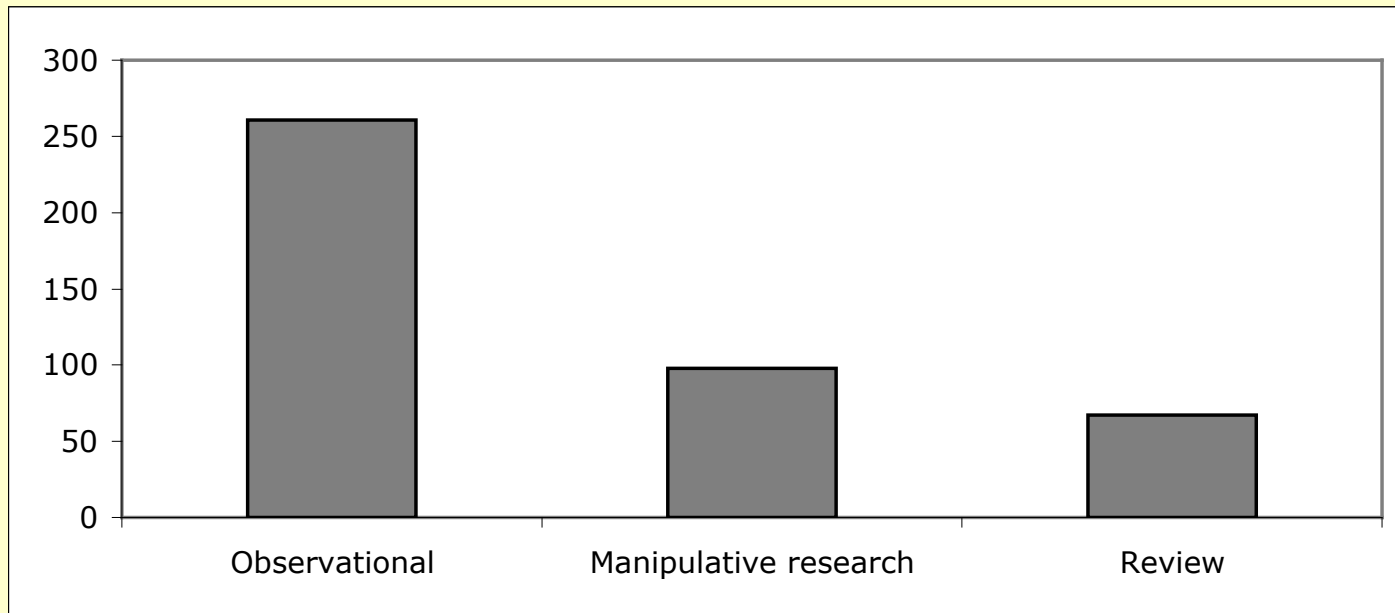
**B. Assess the state of knowledge of
pollination biology and taxonomy.**



**The numbers of papers on pollination biology in Africa,
published in different sub-fields of pollination biology.**

*From Rodgers, Balkwill
and Gemmill, 2004*

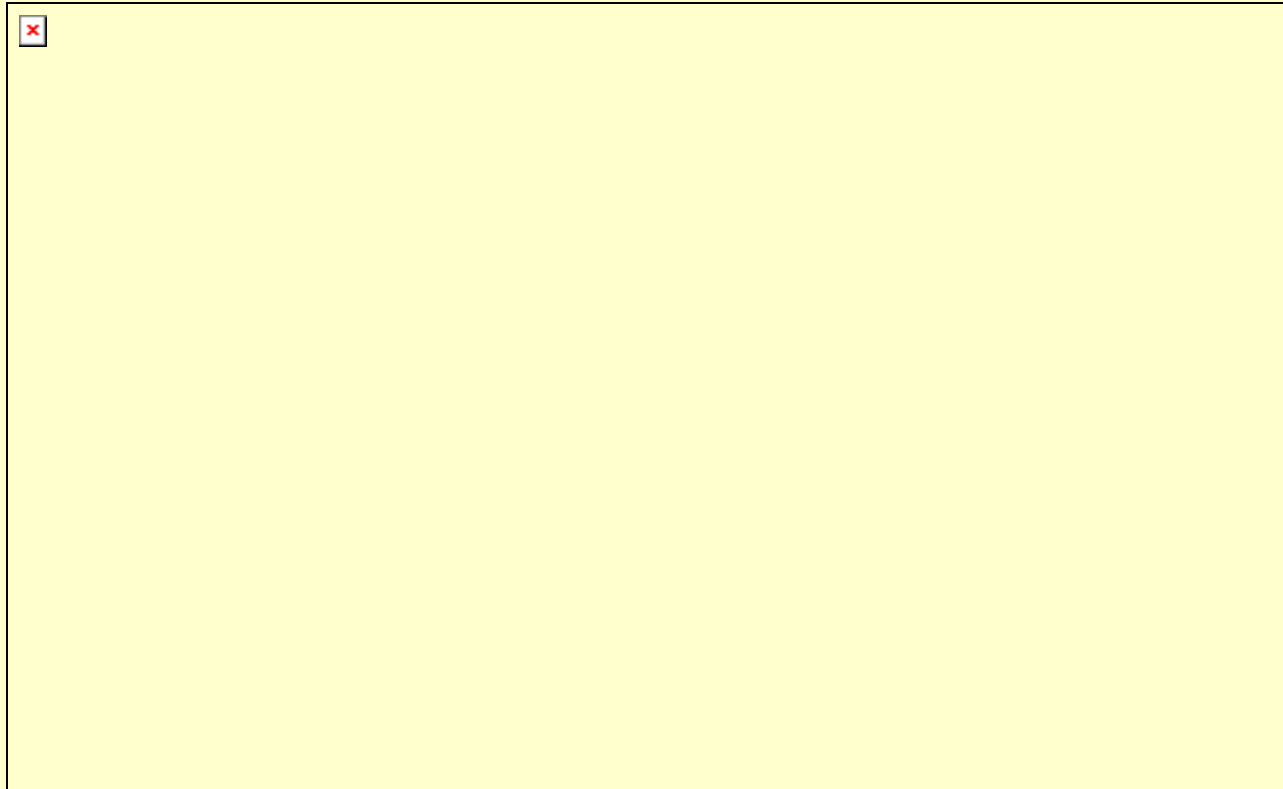
**B. Assess the state of knowledge of
pollination biology and taxonomy.**



**The types of pollination biology studies in the literature of
pollination biology in Africa**

*From Rodgers, Balkwill
and Gemmill, 2004*

**B. Assess the state of knowledge of
pollination biology and taxonomy.**



**Geographic areas and countries in which African pollination studies
have been conducted.**

*From Rodgers, Balkwill
and Gemmill, 2004*

**B. Assess the state of knowledge of
pollination biology and taxonomy.**

**Searchable database of the African pollination literature will be available
on the API website:**

www.elci.org/api

**We will try to continually update it and
welcome any suggested citations.**

D. Develop credible assessments of the economic value of pollination of specific crops, tailored to the conditions of each country.



Example from Kenya:

Overproduction of low-quality coffee around the world is seriously affecting Kenyan producers of coffee; thus increasing productivity is not the issue.

There is indication that pollination may contribute to quality of coffee; thus pollination research on coffee would most profitably look at increasing quality and the niche markets for high quality, fair trade and/or organic coffee trade.

F. Introduce meliponiculture and culturing of other indigenous bees



**Culturing of non-honeybee bees is little known in Africa;
But there is a strong interest in learning from other countries that have developed techniques.**

4. Capacity Building



- A. Skills to identify and conserve pollinators do not exist in Africa, and need to be built.**
- B. Training at many different levels is needed: farmers, scientists, technicians, extension agents, formal educationa conservationists.**
- C. Partnerships and networks will most effectively build capacity; rather than creating a new organisation, existing institutions that build capacity must be strengthened.**

Capacity building Plan of Action

- 1. Build country-level interest and capacity assessment**
- 2. Training: goal is one taxonomist in each of western, eastern and southern Africa; postgraduate pollination biologists and numerous short courses for land use planners, national agricultural researchers, extension personnel, non-governmental organisations and others in related positions.**
- 3. Institutional strengthening: of national museums, botanical gardens, and agricultural research institutions**
- 4. Access to Information. API can serve as a repository of information on bee taxonomy and pollination data in Africa.**
- 5. Curriculum and publication development**
- 6. Developing tools for identifying pollinators**
- 7. Networking with continental and international expertise.**

In the Immediate Future

- 1. Some of these activities will be supported in a pilot phase coordinated by FAO through the Global Environment Facility, over the period 2004-2005.**
- 2. Most of them will require co-financing and localised sources of support to be realised.**
- 3. Many similar questions on methodology and assessment are facing all the regional pollinaiton initiatives. Sharing approaches and ideas can help all initiatives to be more effective.**