

POLLINATION AND FOOD SECURITY



NATIONAL MUSEUMS OF KENYA

WHERE HERITAGE LIVES ON

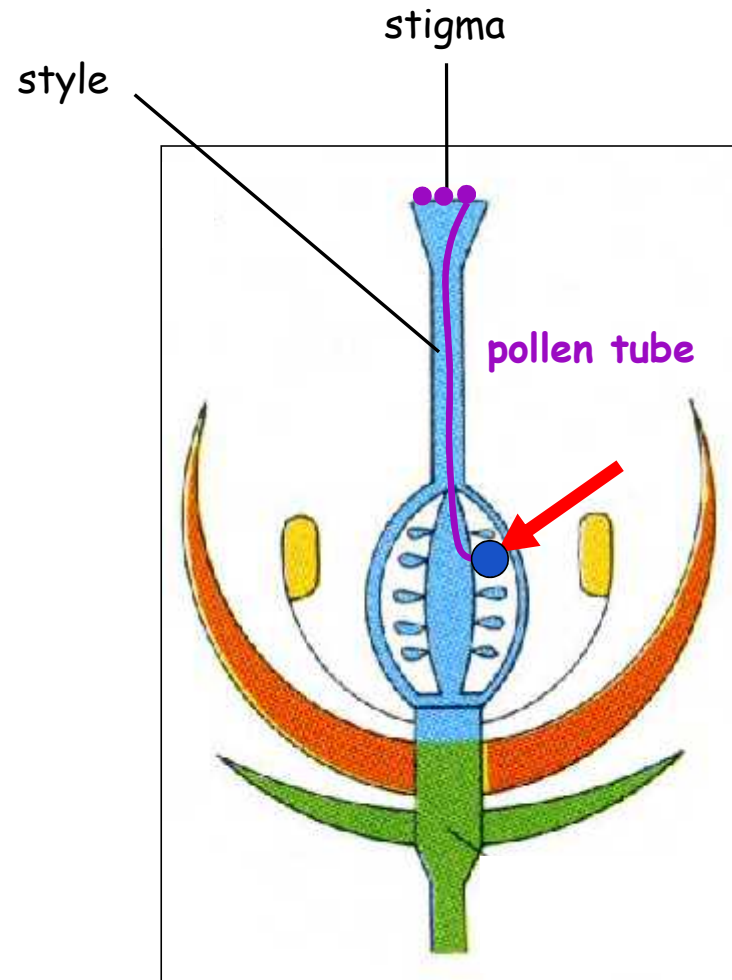


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Pollination service

- About 87.5 % of world's flowering plants are pollinated by insects and other animals.
- Among the animal pollinators, bees are the major pollen vectors or pollinators.
- **Three quarter** of the crops benefit from pollination globally while **one-third of global food volume** produced is as result of animal pollination.
- Pollinator abundance and diversity increases crop yields, quality and human nutrition.
- **NOT** considered as a key agricultural input in many communities.



National and international Initiatives

SDG 1: No poverty

SDG 2: No Hunger-Nutrition and Food Security

African Agenda 2063- Nutrition and Food security

Kenya Big Four No. 2: Nutrition and Food security

Nigeria: Diversification of oil based economy

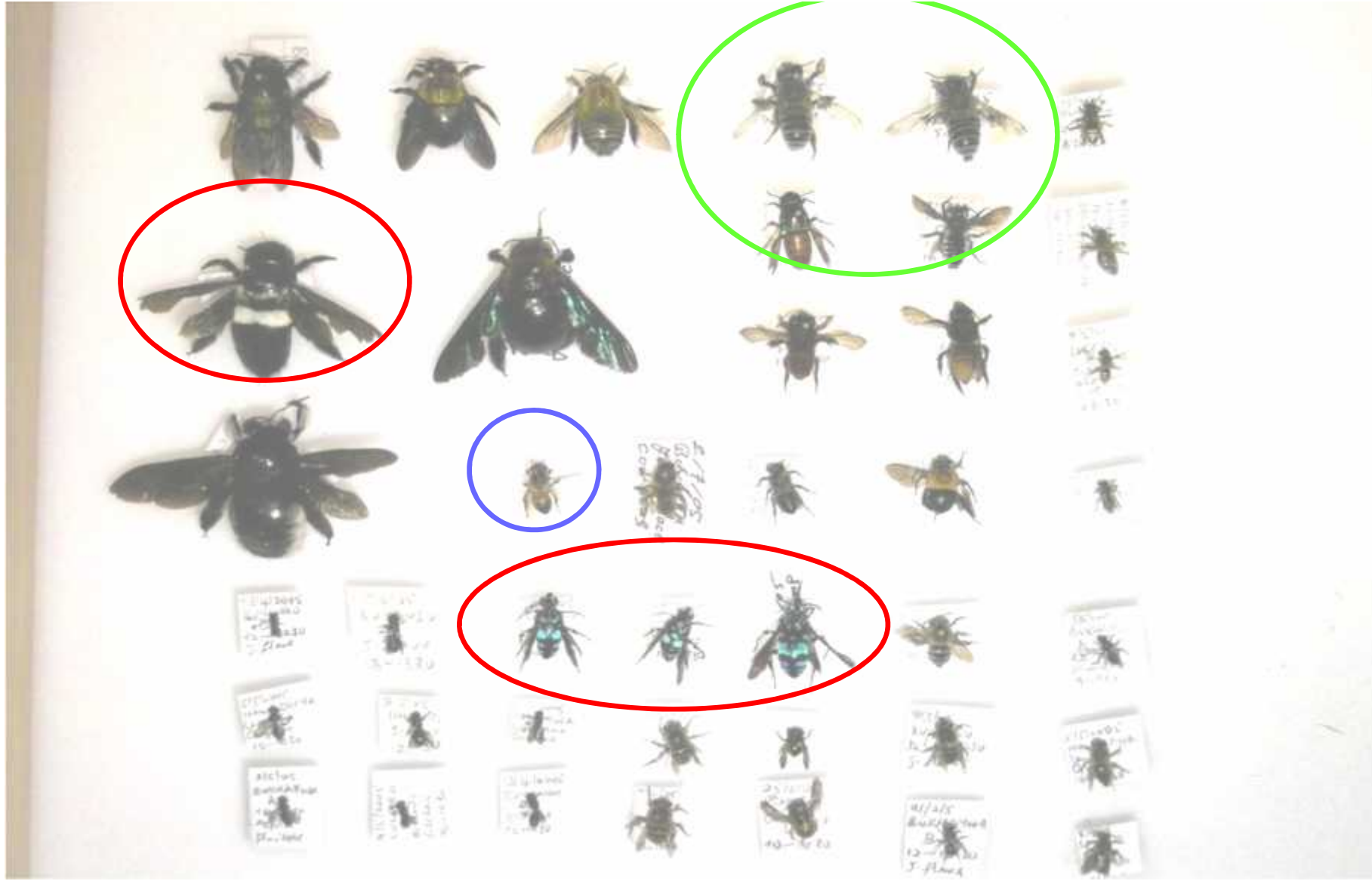


Diversity of pollinators

- Bees....20, 0000 species worldwide...3000 in Africa
- Flies, butterflies, beetles, moths, wasps, thrips, birds, bats and other vertebrates



BEEES???



Flower visiting vertebrates

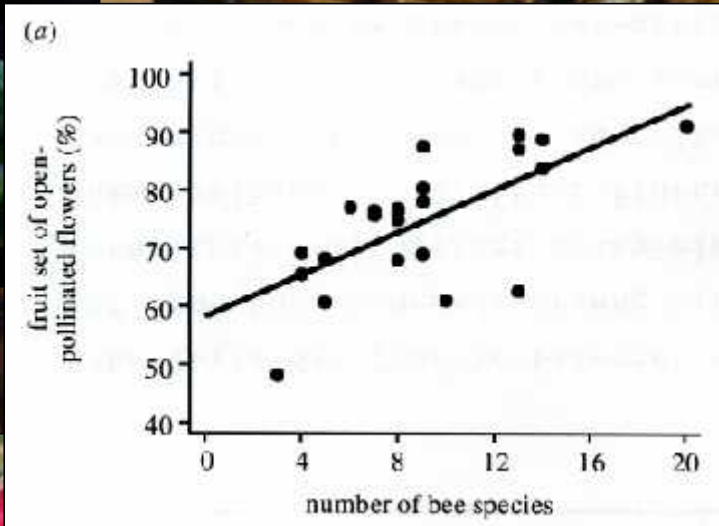


Example: *Brassica oleracea* (Brassicaceae) - Cabbage

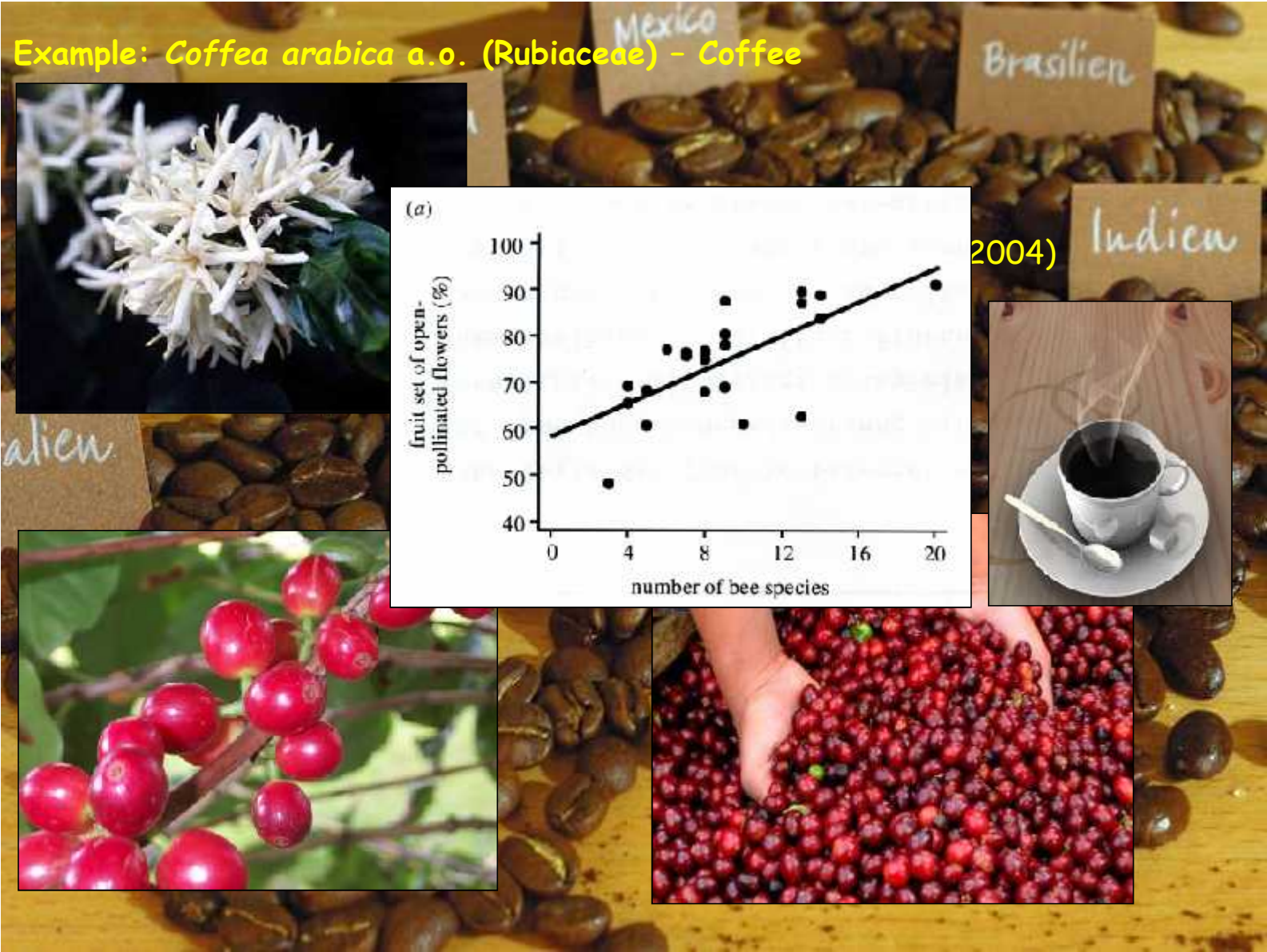
(white cabbage, red cabbage, kohlrabi, savoy, Brussels sprouts, cauliflower, a.o.)



Example: *Coffea arabica* a.o. (Rubiaceae) - Coffee



2004)



Pollination of Theobroma cacao (Sterculiaceae) - Cocoa



- Sticky pollen
- Flowers producers very little nectar
- Pollinated by midges -flies



Threats to pollination services

- Habitat modification and fragmentation
- Pesticides and herbicides
- Pests and diseases
- Invasive species
- Climate change
- Environmental pollution



Challenges facing delivery and utilization of pollination services in Africa

- Knowledge gap in pollinator taxonomy and pollination ecology
- Lack of well curated reference collections
- Lack of data on pollinator trends over the years-level of pollinator decline not well known
- Lack of pollination ecology in education curricula in many African countries
- Pollination service not considered as a key agricultural input
- Pollen deficit and efficient pollinators of many wild and domesticated crops remain unknown
- Limited assessment of economic value of pollination due to data gaps
- Increase of pollinator dependent crops
- Insufficient research funding from National governments
- Lack of policies on pollinator protection

Pollinator dependent crops

- Volume of pollinator dependent crops has increased worldwide by 300 per cent.
- Most livelihoods dependent on pollination service-increased horticulture.
- Examples of pollinator dependent crops in Africa include, coffee, nuts, Cacao, cucurbits, indigenous vegetables, Crotalaria spp, Amaranth and Solanum species
- Variability in yields has been observed per hectare unlike in pollinator independent crops.
- Market value of pollinator dependent crops worldwide is \$235 bn-\$577bn
- Contribution of pollination services in Ghana is estimated as \$7million – contributing to 11.1% of agricultural productivity

Actions needed/Interventions

- Capacity building in taxonomy and pollination ecology at all levels
- Mainstreaming pollination ecology in education curriculum
- Infrastructural development of pollinator collections storage and preservation
- Conducting national surveys of pollinators including short-term and long-term monitoring programs
- Development of regional centres of excellence in pollinator taxonomy
- Development of national/regional pollinator networks- e.g. KPI, API
- Assessment of pollen deficit of various African Crops
- Reduction of chemical use, embracing ecological intensification—IPM, IPPM
- Funding pollinator research by national governments
- Development and implementation of pollinator protection policies

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Biomonitoring of Bees by school children in Kenya.



- Restoration of pollinator habitats and nesting habitats



Pollinator garden



Bee Hotel

Acknowledgments

- AU-IBAR
- ApiExpo Africa 2018 organizers
- National Museums of Kenya