The Brazilian Pollinators Initiative: challenges and opportunities.

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In October 1998 the Brazilian Ministry of Environment held an international workshop of experts - the "Workshop on the Conservation and Sustainable use of Pollinators in Agriculture, with Emphasis on Bees", to propose a framework for an International Initiative on Pollinators as a key element in this program. It was attended by 61 scientists from 15 countries and 5 International organizations.

As a consequence of this meeting a document was created in Brasilia entitled "The Sao Paulo Declaration on Pollinators", that was endorsed in May 2000 by the fifth Conference of the Parties of the Convention of Biological Diversity, held in Nairobi (section II of the decision v/5, that reviewed the implementation of decisions III/11 and IV/6 on the program of work on agro biodiversity). COP5 established an International Initiative for the Conservation and Sustainable Use of Pollinators, hereafter referred to as the International Pollinator Initiative (IPI).

A Plan of Action was then prepared by FAO and the CBD Secretariat, endorsed by SBSTTA7, and recommended for adoption by CBD COP6. The Plan of Action of the IPI was accepted by member countries and adopted at COP 6 (decision VI/5).

Since then, most regions of the world have established or are in process of establishing wide-ranging pollinators initiatives. The core objectives of IPI are also kept by the regional Initiatives. They are:

- Monitor pollinator decline, its causes and its impact on pollinator services
- Address the lack of taxonomic information on pollinators
- Assess the economic value of pollination and the economic impact of the decline of pollination services
- Promote the conservation, the restoration and sustainable use of pollinator diversity in agriculture as well as in related ecosystems

Brazilian Activities

Although Brazilian government had the leadership in proposing pollinators sustainable use and conservation as a program for Convention of Biological Diversity, as well as the country have a tradition in bee research, it should be necessary to address the national attention around the International Pollinators Initiative possibilities and its plan of action. Around the world the regional pollinators initiatives are taking shape, considering the local knowledge on the main points related to the IPI, that provided the strategic direction for pollinators conservation planning.

In Brazil, a technical committee was proposed for this first phase, and acted on behalf of the Brazilian Pollinators Initiative (BPI) from 2000 to 2004. Some points were considered:

- The invitation for all scientific community related to pollinators study and application for a joint discussion, held in related workshops or in other events;
- The focus on the pillars of IPI, beginning with taxonomy impediment and possibilities of a broader discussion on checklists, developed inside the Forum Trend in Biodiversity Informatics, under the support of NAPPC;
- The choice of special themes that deserved attention and could benefit from additional approaches, such as the *Sao Paulo Declaration on Pollinators plus 5 Forum* with two workshops (*Standard methodology workshop* and *Pollinators initiatives and the role of information technology: building synergism and cooperation*), in Sao Paulo, October 2003, and the *Solitary Bee Workshop* held April 2004, in Ceara;
- The development of Information Technology tools for the Pollinators Initiatives both for data acquisition and for information management was considered essential for the BPI components;
- Meanwhile, we also worked on a global proposal coordinated by FAO, that was submitted to GEF for financial support and was recently approved (*Conservation and management of pollinators for sustainable agriculture, through an ecosystem approach*).

The local insertion: BPI in IPI trends

The strategy used to construct the BPI in its first phase was to present the IPI in meetings. The success of the biannual meetings called "Encontro de Abelhas de Ribeirão Preto", that put together around 300 bee researchers from all country, indicated the first forum for the development of the BPI. Dr. Braulio F. S. Dias presented the IPI in September 2000 (*IV Encontro de Abelhas de Ribeirão Preto*), and in 2002 (Pollinators Symposia at the *V Encontro de Abelhas de Ribeirão Preto*); the book from S. Paulo Workshop (*Pollinating bees: the conservation link among Agriculture and Nature*) was delivered to the public in this meeting and a broader discussion on the pollinators program evolved. The main themes for a GEF proposal were already chosen, and in the technical committee on BPI were represented the core objectives of IPI.

Next step was to put pollinators, an important theme approved as a priority by CBD, in the main meetings with related subjects. The World Bee Checklist Project, for instance, was financed by NAPPC in 2002 but did not receive any support from Brazilian government; a workshop on the topic was held as part of the Trends in Biodiversity and Informatics Forum, in Indaiatuba, SP, in 2002. Main results are on line, and focused:

- The Colletinae of the World- Version 1,0
- Collections database- First draft
- Experts database
- Website
- On-line Staging area for world checklist

- Integration of existing checklists: Apoidea for Afro-tropics, North America, Australia, Brazil, Colombia, Mexico, Central America

The S. Paulo Declaration on Pollinators plus 5 Forum, held in S. Paulo in October 2003, also put together the regional pollinators initiatives (European, North American, African, Icimod and Brazilian) and explained their development in the last 5 years. A total of 77 participants from 12 countries were present and discussed the proposed issues. FAO was also present, and supported the workshop with MMA.

The dynamics for the *Standard Methodology Workshop* was to prepare a discussion group around the selected themes (Survey and monitoring pollinators in natural landscapes and cultivated fields; Pollinator-mediated gene-flow; Bee management for pollination purposes: solitary bees, bumblebees, honeybees and stingless bees) and also to provide expert presentations to show the abilities and to help in the discussion. Two points were considered as essential for discussions:

- the establishment of standard methodologies for bee surveys on crops and in natural habitats;
- the establishment of methodologies for assessing management practices for large scale breeding and use of pollinators.

This effort was necessary for the establishment of standardized methodologies for pollinators status assessment and declining assessment.

The workshop *Pollinators initiatives and the role of information technology: building synergism and cooperation* was the first effort to promote a discussion on the use of IT tools and techniques- databases, analysis, modeling and decision support systems—within and among the initiatives (WebBee, 2004). It also stressed the importance of integrated efforts for the development of those tools and for fund raising. Some ideas briefly discussed were:

- *Databases*: the need for development of local electronic databases, mainly but not restricted to biological collections, considering their interoperability with other related complementary initiatives on biological data. Database should provide basic information for further analysis tools. They must be constantly updated.
- *Analysis* and *Modeling*: the use of appropriate methodology to develop models to help understand pollinators biodiversity and its distribution, to predict change in biodiversity (diversity of other groups) considering the pollinators local abundance, interactions with abiotic and biotic factors, as well as global change effects on pollinators abundance. It is a tool used to identify the possible causes for the changes and conservation strategies.
- *Decision support systems*: develop systems that build upon those databases to support conservation and the sustainable use of pollinators. Those systems should be aimed at policy makers and biodiversity managers.
- *Outreach* and *capacity building*: the use of IT, especially the Internet, for the development and distribution of information for different audiences in order to increase their awareness on the importance of pollinators.

The *International workshop on solitary bees and their role in pollination* held in

Ceara in April 2004, brought together updated knowledge on solitary bees, especially their use for crop pollination and insertion in the regional pollinators initiatives (European, North American, African, Icimod and Brazilian). A total of 86 participants from 15 countries were present and discussed selected issues:

- Monitoring and population dynamics of solitary bees;
- Conservation and economic valuation of solitary bee pollination services;
- Rearing and managing solitary bees;
- Solitary bees in agriculture systems;
- Wild pollination systems involving solitary bees.

MMA and other institutions supported the workshop and FAO was also present.

The book *Solitary bees: conservation, rearing and management for pollination* bringing 26 chapters contributed by world specialists on solitary bees covering sessions on the regional pollinator initiatives and the subjects listed above were released during the workshop.

The final report with conclusions and recommendations is being prepared and will be soon released both as printed matter and at the webbee (http://www.webbee.org.br). The presentations and book chapters are already on line.

In April 2004 the steering committee for GEF-FAO project was established, as well as the schedule for their PDF B phase. Concerning the approved project, we selected some parts to be presented here in order to clarify the main points, challenges and opportunities.

SUMMARY: PROJECT OBJECTIVES AND DESCRIPTION

….Despite their tremendous importance, little is known about wild pollinator populations, pollinator interactions with other elements of crop and crop associated biodiversity, the ecology of pollinators, or the ultimate consequences of their decline.

…. In order to secure sustained pollinator services in agricultural ecosystems, far more understanding is needed of the extent of the multiple goods and services provided by pollinator diversity and the factors that influence their population fluctuations. Where there is a lack of pollinators, food security and economic repercussions can be felt (e.g. decreased crop yields). Therefore, it is necessary to identify management practices that minimise negative impacts by humans on pollinators, promote the conservation and diversity of native pollinators, and conserve and restore natural areas necessary to optimise pollinator services in agricultural systems.

…There are two important and intricately inter-connected aspects to pollinator services, those required for successful agriculture and those required for maintenance of natural biodiversity. Both depend on the survival of natural habitats and, in the case of agriculture in particular, on the spatial relationship between natural habitats and crops

…. The development goal of the project is to conserve, sustainably use and manage pollinators. The project has three principal objectives. First, to develop and implement tools, methodologies, strategies and best management practices for pollinator conservation and sustainable use. Second, the project will build local, national, regional and global capacities to enable the design, planning and implementation of interventions to mitigate pollinator population declines, and establish sustainable pollinator management practices. This would also include raising awareness and strengthening existing networks dedicated to conservation of pollinators. Lastly, the project will promote the co-ordination and integration of activities related to the conservation and sustainable use of pollinators at the international level to enhance global synergies. All told, these objectives are expected to address current policy and institutional barriers to sustainable pollinator management, and contribute to increasing agricultural production and supporting sustainable livelihoods.

… The four project components are:

- **Development of a Knowledge Base**; *The objective of this component is to improve the understanding of pollinator decline from scientific, ecological and socio-economic perspectives.*
- **Extension and Promotion of Pollinator-friendly Best Management Practices**; *The objective of this component is to identify, document and disseminate innovations, technologies and best practices of farmers, including indigenous and local communities, for sustaining pollinator diversity, agro-ecosystem services and appropriate natural resources management*
- **Capacity Building and Awareness Raising**; *The objective of this component is to* ***build capacity*** *at the local/field, national and international levels to sustainably manage and conserve pollinators and to* ***increase awareness*** *about the value of pollinator diversity and the multiple goods and services pollination provides with a view to promoting and supporting sustainable and "pollinator-friendly" best management practices*
- **Sharing of Experiences and Dissemination of Results**. *The objective of this component is to share experiences and disseminate results of the project related to the conservation and sustainable use of pollinators. Results of demonstration activities, best management practices, dissemination of information on tools and methodologies, and information on other relevant studies will be disseminated within the regions, but also globally*

What does it mean for the Brazilian research the approval of FAO/GEF proposal, and what changes are expected to occur?

Although Brazil has a developed bee research and agricultural research communities, the concerned groups work isolated, with their own projects according to financial or local constraints. The participation of some members of the technical committee in other discussion in international scenario were already very useful for future policy making. Among these participations, could be mentioned the workshop on *Pollinators Conservation Policy and Practices*, held in South Africa in 2003; the meetings in GCIAR, (in Kenya, 2003), *Managing Agricultural Biodiversity for Sustainable Development*; and in Costa Rica, 2004, *Tropical beekeeping: research and development for pollination and conservation in Costa Rica*. In specific workshops we have deep discussions on common subjects; in general workshops the pollinators appear as a transversal subject to be present as a key element. But a common, nationwide project still has to be constructed until June 2005. The technical committee finished their tasks, and this report showed what was done until now. Brazilian government also developed additional partnerships and legal initiatives related to the insertion of pollinators in government plans for the next years (Imperatriz-Fonseca & Dias, 2004). The next steps for the BPI are under the responsibility of the project focal point, Dr. Braulio F. S. Dias.

Challenges

The definitions of priorities in an integrated research with new approaches and standard methodologies are important in our local scenario. The main point is that the mega biodiversity must be considered for sustainable development policies. Many Brazilian regions were never studied, and we should evaluate the local fauna, its relation with plant families (visitors, pollinators) and their breeding systems, as well as their sustainable use for local people. This indicates that, besides short term projects, we also have to plan long term activities, with the insertion of pollinators issues in the mainstreaming.

Opportunities

The Brazilian Ministry of Environment (MMA) already made public calls for pollination, given opportunities to Brazilian researchers to fill some gaps and work in bee management for pollination purposes. Now a general call is under preparation, in order to invite all concerned people to participate in the GEF PDF B phase. The opportunities of a join project are opened.

Acronyms

API - African Pollinators Initiative
BPI - Brazilian Pollinators Initiative
CBD - Convention on Biological Diversity
COP - Conference of Parties
EPI - European Pollinators Initiative
FAO - Food and Agriculture Organization of the United Nations
GEF - Global Environmental Facility
ICIMOD - International Center for Integrated Mountain Development
IPI – International Pollinators Initiative
IT- Information Technology
MMA – Brazilian Ministry of Environment
NAPPC- North American Pollinators Protection Campaign
PDF B - Project Development Facility phase B
SBSTTA - Subsidiary Body on Scientific, Technical and Technological Advice
USP- Sao Paulo University

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Additional documents on line:

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(3) Pollinating Bees: the Conservation link between Agriculture and Nature. Brasília, Ministry of the Environment, 313 p. Assess: June 30th 2004.
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(5) The Sao Paulo Declaration on Pollinators Plus 5 Forum. Assess: June 30th 2004.
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