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POLICIES AND PROGRAMMES OF RELEVANT INTERNATIONAL ORGANIZATIONS WORKING IN THE FIELD OF INVERTEBRATES FOR FOOD AND AGRICULTURE

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I. INTRODUCTION

1. This document provides an overview of policies and programmes of international organizations working in invertebrate diversity of relevance to food and agriculture.

II. INTERNATIONAL INITIATIVES FOR THE CONSERVATION AND UTILIZATION OF INVERTEBRATE DIVERSITY

2. The Convention on Biological Diversity (CBD) has taken a lead role in the development of two international initiatives relevant to invertebrate diversity for food and agriculture: the International Initiative for the Conservation and Sustainable Use of Pollinators and the International Initiative for Conservation and Sustainable Use of Soil Biodiversity.

3. Both the Initiative for the conservation and sustainable use of pollinators and the Initiative for conservation and sustainable use of soil biodiversity initiative are implemented as a cross-cutting initiative within the CBD's programme of work on agricultural biodiversity, and are excellent tools to harmonize work and enhance cooperation amongst international organisations for the conservation and sustainable utilization of invertebrates of relevance to food and agriculture. In addition, both initiatives provide a good opportunity for the application of the ecosystem approach.¹

The International Initiative for the Conservation and Sustainable Use of Pollinators

4. Considering the urgent need to address the issue of worldwide decline of pollinator diversity, the *International Initiative for the Conservation and Sustainable Use of Pollinators* was established by the Conference of the Parties to the CBD, who also invited FAO to coordinate and facilitate the initiative.

5. This *Initiative* aims to promote coordinated action worldwide to monitor pollinator decline, address the lack of taxonomic information on pollinators, assess the economic value of pollination; promote the conservation and the restoration and sustainable use of pollinator diversity in agriculture and related ecosystems. Accordingly, the *Initiative* also brings together organizations concerned with the conservation and sustainable use of pollinators.

6. A plan of action developed under the leadership of FAO was endorsed by the CBD in 2002 and has main four elements: assessment to analyse the status and trends of the world's pollinator diversity; adaptive management by identifying management practices, technologies and policies; capacity-building to manage pollinator diversity; and mainstreaming national plans or strategies for pollinator diversity in sectoral and cross-sectoral plans and programmes.

7. In 2008, FAO published the *Rapid Assessment of Pollinators' Status* as a major contribution to the implementation of the international initiative.² The rapid assessment includes chapters on: monitoring the status and trends of pollinators; economic valuation of pollination services; taxonomic impediment to pollinator conservation; state of ecological knowledge of pollination services; indigenous knowledge of pollination; promotion of pollinator-friendly practices; capacity building in conservation and management of pollination services; and mainstreaming conservation and management of pollination services.

8. At its Ninth Conference, Parties to the CBD welcomed the report on the rapid assessment. Parties invited FAO and others to continue the implementation of the *Initiative*, and in particular to establish a framework for monitoring declines of pollinators and compile information on best

¹ More information about the two CBD initiatives can be found at <http://www.cbd.int/agro/cross-cutting.shtml>.

² http://www.fao.org/agriculture/crops/news-events-bulletins/detail/en/item/8902/icode/?no_cache=1.

practices and lessons learned in the conservation and sustainable use of pollinators.³ FAO, in partnership with national and international organizations, is developing guidelines, tools and resources related to pollination, including for example the Pollination Information Management System, monitoring tools, economic valuation of pollinator services on a national scale, and best practice profiles for management of pollination services from around the world (Initial Survey of Good Pollination Practices).

The International Initiative for Conservation and Sustainable Use of Soil Biodiversity

9. At its Sixth Conference, Parties to the CBD decided to establish an *International Initiative for Conservation and Sustainable Use of Soil Biodiversity* as a cross-cutting initiative within the programme of work on agricultural biodiversity; they invited FAO, and other relevant organizations, to facilitate and coordinate this initiative.⁴ At its Eighth Conference, a framework for action was endorsed with a number of activities to share knowledge and build capacity on soil biodiversity management, and to strengthen collaboration and mainstream soil biodiversity into agricultural and land management programmes. The framework for this cross-cutting initiative was developed in close collaboration with FAO, and the *Initiative* is to be implemented with the technical and policy support of FAO.⁵

10. At its Ninth Conference, Parties to the CBD invited the FAO to continue to support Parties, other Governments, indigenous and local communities, farmers and pastoralists and other stakeholders, including regional initiatives to implement the International Initiative for the Conservation and Sustainable Use of Soil Biodiversity, including through capacity-building and dissemination of best practices and lessons learned, through the clearing-house mechanism and other relevant means.⁶

11. Parties further invited FAO, and other relevant organizations and initiatives to carry out further work and compile and disseminate information to improve the understanding of soil biodiversity, its interaction with above-ground biodiversity, and other soil functions, the various ecosystem goods and services that it provides, and the agricultural practices that affect it, and to facilitate the integration of soil biodiversity issues into agricultural policies.

12. The *Initiative* is also linked to other thematic programmes of work under the CBD, including the biodiversity of dry and sub-humid lands, mountain and forest biological diversity, the *Global Taxonomy Initiative*, and work on technology transfer and cooperation. Other international organizations, such as the Tropical Soil Biology and Fertility Institute (CIAT) are also involved in the implementation of the soil biodiversity initiative.

III. INTERNATIONAL ORGANIZATIONS WORKING ON INVERTEBRATE DIVERSITY, IN PARTICULAR BIOLOGICAL CONTROL

13. The African Insect Science for Food and Health (ICIFE) was established in Kenya in 1970 to better understand the functioning of insects in tropical agriculture ecosystems with the aim to improve the lives and livelihoods of African people. The organization examines the roles of invertebrates in ecosystem stability, including critical issues, such as, soil fertility and pollination. The establishment of ICIFE has meant an important step forward in promoting the use of biological control methods in developing countries, particularly in Africa.

³COP Decision IX/1, *International Initiative for the Conservation and Sustainable Use of Soil Biodiversity*, paragraphs 23 to 24.

⁴ COP Decision VI/5, paragraph 13.

⁵ COP Decision VIII/23, section B, *International Initiative for the Conservation and Sustainable Use of Soil Biodiversity: Framework for action*, paragraph 2.

⁶ COP Decision IX/1, *International Initiative for the Conservation and Sustainable Use of Pollinators*, paragraphs 20 to 21.

14. CAB International (CABI) is actively involved in field projects and programmes in the area of invertebrates. It for example has a Bio-pesticides team in place that focuses on fungi and nematodes to control insect and mite pests of plants and animals. They have extensive expertise in researching, developing and scaling up bio-pesticides to control agricultural and environmental pests on a large scale, in an environmentally benign manner. CABI has developed large electronic databases, including information up to 1994 on invertebrate biological control agents used to control weeds or other invertebrates. The organisation is in the process of putting their databases in the public domain. In addition, CABI periodically assesses the use of biological control agents across the regions of the world, the results of which are published in Regional Reviews.

15. The International Organization for Biological Control (IOBC) is a global voluntary organization of biological-control workers affiliated with the International Council of Scientific Unions (ICSU). Its mission is to promote environmentally safe methods of pest and disease control, and is the only professional organisation that covers classical biological control. IOBC has a particularly strong regional network with six regional sections. IOBC's independent status and regionalized organisation enables it to be an effective advocate for biological control worldwide, through many interactive activities such as conferences, meetings and symposia. It informs policy-makers and government agencies of the roles and benefits of biological control agents, and plays a key role in the harmonization and strengthening of international cooperation.

16. Since the 1970s, the International Institute of Tropical Agriculture (IITA), in collaboration with national programmes in Sub-Saharan Africa and other international organizations have been working on the biological control of several exotic pests, which have threatened the production of major commodities and the livelihoods of millions of people. IITA has been able to control devastating pests, which have inflicted damage on the major staple food crops of the poor, such as cassava. It has used innovative approaches to scale -up biological control technology in Africa and has enabled many countries to establish strong national biological control programmes.

17. Biological control is an essential part of agriculture and falls exactly within FAO's mandate. Since the mid 1960s, FAO has actively promoted the use of biological control agents in the context of IPM programmes to increase the sustainability of farming systems by improving the resilience of agro-ecosystems. IPM programmes have proven to be economically and socially sustainable as they have reduced farmers' dependence on procured inputs, and have been institutionalized at the farm community and local government levels. Within the IPM programme, FAO:

- Raises questions about unsustainable pest management practices and helps increase awareness of IPM alternatives to strengthen the ecological and policy foundations of national IPM programmes;
- Stimulates dialogue to encourage policy reform;
- Advises governments, international organizations, NGOs and donors on pest management programmes and policies, and
- Promotes IPM through farmer field schools; a concept that can also be used to address other farming situations and extension problems.

18. The major normative output of FAO, in the context of the International Plant Protection Convention, in the area of biological pest control activities over the past 15 years, has been the approval and review of an international standard, or Code of Conduct for the export, shipment, import and release of biological control agents and other beneficial organisms (ISPM No. 03).

19. The International Plant Protection Convention (IPPC) is an international treaty that has been dealing with the introduction and release of biological controls agents for many years. The Convention provides mechanisms by which countries can "prohibit or restrict the movement of

biological control agents and other organisms of phytosanitary concern claimed to be beneficial into their territories". Within this framework of the IPPC, an international standard on the transboundary movement of biological control agents was developed in 1995 and revised in 2005.

20. In 2005, the contracting parties to the IPPC adopted the International Standard for Phytosanitary Measures (ISPM) No. 3 (Guidelines for the export, shipment, import and release of biological control agents and other beneficial organisms). ISPM No. 3 was developed to ensure that biological control agents can be used safely and that the risks of undesirable effects are minimized. It offers a risk assessment framework to integrate information on the potential of a biological control agent to establish, its abilities to disperse, its host range, and its direct and indirect effects on non-target organisms. Initially, ISPM No. 3 was reviewed and provides guidelines for risk management related to the export, shipment, import and release of biological control agents and other beneficial organisms.

21. The standard addresses biological control agents capable of self-replication (including parasitoids, predators, parasites, nematodes, phytophagous organisms, and pathogens such as fungi, bacteria and viruses), as well as sterile insects and other beneficial organisms (such as mycorrhizae and pollinators), and includes those packaged or formulated as commercial products. Provisions are also included for import for research in quarantine facilities of non-indigenous biological control agents and other beneficial organisms. Although the primary context of this standard relates to phytosanitary concerns, "safe" usage, as mentioned in the standard is intended to be interpreted in a broader sense, i.e. minimizing other non-phytosanitary negative effects. Phytosanitary concerns may include the possibility that newly introduced biological control agents may primarily affect other non-target organisms, causing harmful effects on plant species, or plant health in habitats or ecosystems. Pollinators (such as alien bumble bees) and sterile insects have purposely not been included in this standard as they either cannot be considered plant pests or they are not capable of self replication.

22. Other existing ISPMs such as ISPM No. 2 (Framework for pest risk analysis, 2007), ISPM No. 11 (Pest Risk Analysis for quarantine pests including analysis of environmental risks and living modified organisms, 2004) and ISPM No. 5 (Glossary of Phytosanitary Terms: Supplement No. 2 Guidelines on The Understanding of Potential Economic Importance and Related Terms, Including Reference to Environmental Considerations) provide the methodology for carrying out pest risk assessments for biological control agents and other beneficial organisms, including provisions for environmental risks; this aspect covers environmental concerns related to the use of biological control agents.

23. In the 1990s, FAO was particularly active in classical biological control programmes. Through its Technical Cooperation Project rapid-response mechanism, FAO implemented biological control projects with a national, regional and global scope. Examples of such projects include, combating the pink hibiscus mealybug (*Maconellicoccus hirsutus* Green) in the Caribbean, the brown peach aphid (*Pterochloroides persicae* (Cholodkovsky) in Yemen, the mango mealybug (*Rastrococcus invadens* Williams) in Togo, and the introduction of specific insects for the control of water hyacinth in more than 14 countries across Africa, Asia and Latin America. Considering FAO's extensive experience and activities in classical biological control, the Organization's involvement may particularly be important in cases that require an emergency response.

24. In 2003, the OECD published *Guidance for information requirements for the regulation of invertebrates as Biological Control Agents* within OECD countries. Through a largely checklist-based approach, the OECD aims to ensure the safe and best possible management of biological control. This document was developed to ensure appropriate consideration of environmental risks posed by invertebrate biological control agents (IBCA), such as the possible negative impacts of their establishment on biodiversity and non-target species. The document aims to promote and support the use of biological control by providing lists of IBCAs that have

been used successfully for five or more years without environmental or other problems, to harmonize information requirements for the release of IBCAs within OECD countries and to ensure efficacy of IBCA products.

25. In 1991, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Union of Biological Sciences (IUBS) and the Scientific Committee on Problems of the Environment (SCOPE) launched *Diversitas*, the International Program of Biodiversity Science. *Diversitas* promotes and provides the scientific basis for an integrative approach towards the conservation and sustainable use of biodiversity. It also investigates policy implications of biodiversity science, and communicates these to policy fora, including international conventions. Their agroBIODIVERSITY network has identified a science agenda for biodiversity use in agricultural landscapes, to inspire and facilitate a new generation of research on this topic. Key focal areas of the science agenda are: determining the factors that increase biodiversity in agricultural landscapes and anticipating the impacts of social and environmental change; using biodiversity in agricultural landscapes to enhance the provisioning of ecosystem goods and services; and ensuring that society supports the use of biodiversity for sustainable agriculture and equitable sharing of the benefits of conservation of agrobiodiversity.

26. Researchers around the world established the Barcode of Life Initiative (BOLI) in 2003. The initiative focuses on species identification based on barcoding, which improves the monitoring of population size, growth and use, and enables resource managers to gain understanding of the existing diversity of relevant organisms, including micro-organisms and invertebrates, and on the different functions that they perform within ecosystems. Improved understanding will assist governments to develop appropriate policies for sustainable food production.

27. A number of international networks have been set-up to enhance the exchange of information on the roles and functions of biodiversity in food and agriculture. International organizations such as IOBC and FAO are particularly active when it comes to promoting information flows between international institutions, using a variety of means, including publication of scientific papers, journals and newsletters; organization of workshops and seminars; and electronically accessible databases. Two information global biodiversity networks are:

- BioNET, a strong global network of institutions and individuals dedicated to capacity building in taxonomy to meet sustainable development needs. BioNET is organized as a series of regional networks ("locally organized and operated partnerships", LOOPs) of developing country institutions, supported by a consortium of developed country institutions. It provides a forum to enhance taxonomic collaboration in relation to sustainable development and conservation of biodiversity. This network is particularly important in the field of invertebrates, where there is a considerable shortage of taxonomic information.
- The Data Portal of the Global Biodiversity Information Facility (GBIF). GBIF is an international organisation that aims to make the world's biodiversity data globally accessible. GBIF and its many partners work to mobilise relevant data, to improve search mechanisms, establish data standards, provide web services, and other components of an Internet-based information infrastructure for biodiversity.

28. A number of informal networks also contribute to raising awareness and promoting the use of invertebrates to the benefit of food and agriculture. The International Symposium on Biological Control of Weeds enables relevant international organizations and interested scientists to meet to discuss the trends of biological control of weeds, including its failures and successes, is organized every four years. In the field of pollinators, two important informal networks include the International Bee Research Association, which promotes the value of bees by providing information on bee science and beekeeping worldwide, and Apimondia, the International

Federation of Beekeepers' Associations, that aims to facilitate the exchange of information and discussions. It does so by organising congresses, conferences and seminars where beekeepers, scientist, honey-traders and legislators meet discuss and learn from one another.