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Item 5 of the provisional agenda**

REPORT OF THE EXPERT MEETING ON ALIEN SPECIES IN WILDLIFE TRADE, EXPERIENCES IN THE USE OF BIOLOGICAL CONTROL AGENTS AND DEVELOPMENT OF DECISION SUPPORT TOOLS FOR MANAGEMENT OF INVASIVE ALIEN SPECIES

INTRODUCTION

1. In its decision XII/16 the Conference of the Parties to the Convention on Biological Diversity adopted the voluntary guidance on devising and implementing measures to address the risks associated with the introduction of alien species as pets, aquarium and terrarium species, and as live bait and live food, as contained in the annex to this decision, noting that measures taken under the guidance were to be consistent with applicable national and international obligations. In the same decision, the Conference of the Parties requested the Executive Secretary, in collaboration with the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and relevant organizations, to explore ways and means to address the risks associated with trade in wildlife introduced as pets, aquarium and terrarium species, and as live bait and live food, including by enhancing cooperation with authorities responsible for the control of wildlife trade and to report to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) at a meeting prior to thirteenth meeting of the Conference of the Parties.
2. In its decision XII/17, the Conference of the Parties requested the Executive Secretary to develop, in collaboration with relevant organizations, and taking into consideration the proposed assessment of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) on invasive alien species, decision-support tools for assessing and evaluating the social, economic and ecological consequences of invasive alien species; cost-benefit analyses for eradication, management and control measures; and tools for examining the impacts of climate change and land-use change on biological invasions (para. 9(c)); and to explore with relevant partners, including the standard-setting bodies recognized by the World Trade Organization (WTO), the International Plant Protection Convention (IPPC), the World Organisation for Animal Health (OIE), and the Codex Alimentarius Commission) and other members of the inter-agency liaison group on invasive alien species, methods of alerting suppliers

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and potential buyers to the risk posed by invasive alien species sold via e-commerce,¹ and report on progress to SBSTTA prior to the thirteenth meeting of the Conference of the Parties (para. 9(d)).

3. In the same decision, the Conference of the Parties further requested to the Executive Secretary to compile, in collaboration with the International Union for Conservation of Nature and through the Global Invasive Alien Species Information Partnership, information from Parties, scientific institutions, and other relevant organizations, on experiences in the use of biological control agents against invasive alien species, in particular the release in the wild of alien species for this purpose, including positive and negative cases and cases of the application of appropriate risk assessment, and to submit a synthesis of this information to the Subsidiary Body on Scientific, Technical and Technological Advice prior to the thirteenth meeting of the Conference of the Parties, and to make this information available through the clearing-house mechanism (para 9(g)).

4. Accordingly, the Executive Secretary sent a series of notifications (2015-052,² 2015-079,³ 2015-096,⁴ 2015-097⁵ and 2015-109⁶) to collect information from Parties, other Governments and relevant organizations, and in preparation for the expert meeting to prepare for reporting on the subjects mentioned in paragraphs 1-2 above. Noting that some trade is unregulated, unreported or illegal, including by enhancing cooperation with authorities responsible for the control of wildlife trade the expert meeting reviewed broadly on national and regional import regulations related to CITES and other international agreements. The expert meeting took place in Montreal, Canada from 28 to 30 October 2015. The list of participants is shown in the annex. The meeting was facilitated through financial support from the Governments of Sweden and Germany.

5. Documentation for the expert meeting can be found on the meeting web site at [http://www.cbd.int/doc/?meeting=invasive alien speciesEM-2015-01](http://www.cbd.int/doc/?meeting=invasive+alien+speciesEM-2015-01). The information submitted by Parties, other Governments, experts and relevant organizations in preparation of the meeting can be found at <http://www.cbd.int/invasive/iasem-2015-01-submissions/default.shtml>.

OPENING OF THE MEETING

6. The meeting was opened at 9.15 a.m. on Wednesday, 28 October 2015, by the Executive Secretary of the Convention on Biological Diversity, Mr. Braulio Ferreira de Souza Dias.

7. In his opening remarks, he welcomed participants to the expert meeting, thanked the Governments of Sweden and Germany for their generous financial support, and emphasized the importance of the task before the participants: to elaborate on the scientific review of the practices for invasive alien species management submitted by Parties and other Governments in order to address the risks of introduction of alien species as biocontrol agents, pets and others with appropriate risk assessment and decision-making processes. Changing lifestyles of citizens and the growth of the Internet market had influenced the movement of alien species globally, and Parties were faced with a need to adjust regulatory or non-regulatory frameworks for managing international trade in wildlife, including e-commerce. In closing, he stressed that the contributions of experts, such as those present at the meeting, were critical in supporting Parties in the achievement of the Aichi Biodiversity Targets, in particular Target 9 on invasive alien species.

¹ See CPM Recommendation CPM-9/2014/2 - Internet Trade (E-Commerce) in Plants and other Regulated Articles. <https://www.ippc.int/en/core-activities/governance/cpm-recommendations/ippc-aquatic-plants-trade-commerce/>

² <https://www.cbd.int/doc/notifications/2015/ntf-2015-052-ias-en.doc>

³ <https://www.cbd.int/doc/notifications/2015/ntf-2015-079-ias-en.doc>

⁴ <https://www.cbd.int/doc/notifications/2015/ntf-2015-096-ias-en.doc>

⁵ <https://www.cbd.int/doc/notifications/2015/ntf-2015-097-ipbes-en.pdf>

⁶ <https://www.cbd.int/doc/notifications/2015/ntf-2015-109-ias-en.pdf>

ITEM 1. ORGANIZATIONAL MATTERS

8. Mr. Robert Hoft of the Secretariat of CBD invited the participants to introduce themselves. After the tour-de-table, the Group elected Mr. Andy Sheppard of the IUCN-Invasive Species Specialist Group (IUCN-ISSG) from Australia and Mr. Moustafa Fouda from Egypt as co-chairs to lead the discussions during the meeting.

9. The co-chairs invited the Secretariat to take notes on the discussions during the meeting. The provisional agenda ([UNEP/CBD/IAS/EM/2015/1/1](#)) was adopted without amendment, and is as follows:

1. Organizational matters:
 - (a) Organization of work;
 - (b) Election of co-chairs and rapporteur;
 - (c) Adoption of the agenda;
2. Substantive matters:
 - (a) Use of biocontrol agent to control invasive alien species;
 - (b) International trade and e-commerce in wild life;
 - (c) Decision support tools;
3. Other matters.
4. Closure of the meeting.

ITEM 2. SUBSTANTIVE MATTERS

2.1 Use of biocontrol agents to control invasive alien species

10. On behalf of the Chair of IUCN-ISSG, Mr. Piero Genovesi, Mr. Andy Sheppard delivered a presentation on classical biological control of invasive alien species. He also introduced a plan to produce a comprehensive synthesis on the use of biological control agents for the control of invasive alien species, involving IUCN-ISSG, CABI and other partners for presentation at the IUCN World Conservation Congress to be held in Hawaii, United States of America, from 1 to 10 September 2016, and at the thirteenth meeting of the Conference of the Parties, to be held in Cancun, Mexico, from 4 to 17 December 2016.

11. Participants were then invited to discuss the contents of the background document on biological control issued by the Executive Secretary ([UNEP/CBD/IAS/EM/2015/1/2](#)). The co-chair suggested that the participants produce streamlined key messages on the use of biological control agents, based on the scientific evidence, as outputs of the session.

(a) History and context: Lessons from the history, experience and expertise of success and failure of biological control programmes

12. Participants recognized that classical biological control based on scientific principles had been in practice for more than 100 years. There were many well documented and useful case histories, with both successes and failures. Some early successful biological control programmes had generated sustained control of target species for up to 80 years. There was a great deal of understanding, experience and expertise in the application of classical biological control. Successes largely consisted of suppressing target invasive alien species populations. Lack of success or failure might include one or several of the following factors: lack of target suppression; direct anticipated harmful impacts on non-target native species; direct unanticipated harmful impacts against non-target native species; and indirect harmful impacts on non-target native species and ecosystems.

13. Participants recognized classical biological control:

(a) *As being when host-specific natural enemies from the country of origin of the pest or invasive alien species to be controlled are identified, and one or more are imported and released to control the pest or plant.* It is expected that the biological control agent will establish itself permanently and reproduce and spread;

(b) *As an approach which is specific to a targeted invasive alien species and effective on a large scale and over a long time.* It can be effective even in remote areas and in environments where chemical and physical control is not possible. The control measure is self-sustaining. Once released, biological control agents may spread and have impacts in a manner that prevents easy post-release control of such spread and impacts. By its very nature, classical biological control rarely leads to the complete eradication of a target species;

(c) *As an approach that is medium to long-term in focus.* The development of biological control agents has significant initial research and development costs, but if applied in a timely manner and if successful, it can be cost-effective in the long term. Whereas such investments include initially the search for, testing of, and release of suitable agents, the costs after release are generally less significant and focus on monitoring and evaluation of the effectiveness of the biocontrol measure;

(d) *As providing potential benefits in the long term.* It may take many years to identify and obtain approval to release a biological control agent, and often takes some more time after releases have been made before benefits or negative effects can be determined. Biological control agents are usually self-sustaining as long as the host is present. Benefits in controlling pests and invasive alien species can continue to accumulate long after releases have been made, as can possible harm. Biological control that has undergone proper risk assessment procedures is safe for human health.

14. Biological control agents that have been effective in one country may also be effective against the same target species in other countries. The investments in a biological control programme in one or a few countries may therefore enable more widespread and shared benefits.

15. The effectiveness of classical biological control and impacts of invasive alien species are often specific to the context in the sites where they are applied. Biological control agents may have different effects on biological diversity in other countries and environments. Releases of biological control agents should not take place until risk assessments have been undertaken specifically for the environment in which the release is planned.

16. It is important to manage social expectations by acknowledging that classical biological control may reduce, but not completely eliminate, the impacts of the targeted invasive alien species. Moreover, classical biological control is rarely the only possible approach and is often used as part of an integrated and adaptive approach to managing invasive species management.

17. It is important to set clear goals to be achieved through the application of a biological control measure. For example, suppression of the target species may not be sufficient to restore the negatively impacted biodiversity, ecosystem service or other environmental benefits. A broader focus on ecosystem management is usually required in which the biological control approach is among several factors or methods aimed at achieving the desired outcomes for the ecosystem.

18. It was recognized that there are examples of significant non-target impacts from biological control. Most of those cases were related to the uncontrolled releases of vertebrates on islands or continents without appropriate risk assessment and prior to any internationally accepted risk-based approach to biological control. There are also a few more recent examples of non-target impacts of biological control programmes which were the result of the acceptance by decision makers that certain recognized risks were acceptable, a lack of consultation between neighbouring countries, unsupervised releases, or the unintended movement of biological control agents between countries.

19. Participants also recognized that it was important to be very careful in understanding where and when classical biological control might be a sensible approach to adopt for managing any given invasive alien species. There are, however, recognized processes for evaluating the feasibility of applying biological control and assessing the likelihood of success (see also [UNEP/CBD/IAS/EM/2015/1/2](#)). The long history of the application of classical biological control also provides much experience that is useful for prioritizing new targets for classical biological control.

Key message 1: Classical biological control is recognized as an effective management approach either by itself or as a component of integrated invasive alien species management for widespread invasive alien species. It may offer benefits, as well as pose risks, to biological diversity in the context of different ecosystems, including managed and natural terrestrial and aquatic environments.

Key message 2: There are past examples of non-target impacts of biological control. However, the long history and experience gained by using biological control has reduced the occurrence of non-target impacts and provided an in-depth understanding of costs versus benefits, risks to biodiversity and human well-being, applicability, feasibility and likelihood of success, likely timelines and sustained effectiveness of the control measure.

(b) Comprehensive risk assessment

20. Because the spread and impacts of biological control agents are largely uncontrollable following release, the high-risk nature of classical biological control requires rigorous risk analysis and independent review under government regulatory and decision-making processes prior to release being permitted by relevant government departments. The precautionary principle should be the basis for all decisions on release of biological control agents.

21. Participants recognized, however, that there are internationally accepted guidelines for risk assessment prior to the import and release of biological control agents and processes specifically relating to the assessment and release of potential biological control agents under the International Plant Protection Convention — International Standards for Phytosanitary Measures (ISPMs). Most notably, ISPM 3:2005, “Guidelines for the export, shipment, import and release of biological control agents and other beneficial organisms” relates specifically to the use of classical biological control. ISPM 2:2007, “Framework for pest risk analysis” and ISPM 11:2013, “Pest risk analysis for quarantine pests” are also relevant. These standards provide guidance on preventing impacts not only on the agricultural sector but also on the environment more generally. Such risk assessment protocols relate mostly to understanding potential direct non-target impacts by evaluating the host range of potential agents prior to their release. These international standards and guidelines have already been widely accepted and applied.

22. Additionally, the World Organization for Animal Health (OIE) has published the “Guidelines for assessing the risk of non-native animals becoming invasive”⁷ and *Scientific and Technical Review* Vol. 29 (1)⁸ (2)⁹ on Invasive Species, to provide a basis for addressing invasion risks posed by organisms under the kingdom Animalia and animal disease causative agents.

23. Participants noted, however, the existence of gaps in research, and therefore in international standards and guidance, that should address classical biological control used against vertebrates, invertebrates, freshwater animals and species in marine environments, as well as other organisms that are not considered plant pests.

⁷ <http://www.oie.int/doc/ged/D13931.PDF>

⁸ http://web.oie.int/boutique/index.php?page=ficprod&id_produit=811&fichrech=1&lang=en

⁹ http://web.oie.int/boutique/index.php?page=ficprod&id_produit=812&fichrech=1&lang=en

24. Participants noted that the existing risk assessment should not only consider ecological and biodiversity issues when assessing the likelihood of the spread of biological control agents within and across boundaries; and the potential consequences of direct and indirect non-target impacts. The required risk assessment should also consider risks on ecosystem services, social, economic and cultural issues, including the values and priorities of indigenous peoples and local communities.

25. Furthermore, participants recognized that full quantitative risk assessments could be costly and time consuming. There is a need for approaches of qualitative risk assessment that would better be applied by practitioners and relevant implementing bodies.

26. When considering the risks as well as the costs and benefits of a proposed release of a biological control agent, the risks and costs of inaction or comparative risks from other approaches, such as the use of chemicals or toxins to reduce invasive alien species population, should also be considered and assessed.

27. Risk analysis traditionally includes hazard identification, risk assessment, risk management and risk communication. In biological control, the risk analysis typically focuses on the biological control agents to be introduced. However, risks can also arise from social or environmental factors. Participants therefore recommended a comprehensive risk management approach. For example, the *United Process Practices Guide* on risk analysis published by the United States Centers for Disease Control and Prevention (CDC)¹⁰ would be useful for identifying potential management risks and possible solutions.

28. Participants recognized that capacity development is needed in many countries, in particular in developing countries, to enable the conduct of comprehensive risk analysis (risk assessment, risk management and risk communication) of classical biological control. This could be achieved through international technical and scientific cooperation.

Key message 3: A comprehensive risk assessment, including a monitoring plan, should be the basis for all biological control programmes so that there is clear understanding of the risks before and after programmes are implemented and to allow improvements to be understood and adopted. Internationally harmonized guidance, such as that provided in the International Standards for Phytosanitary Measures (ISPMs) pertaining to the pest risk analysis process (including ISPM 2, 3, 11), should be taken into consideration for this purpose.

Key message 4: Gaps in international standards and in guidance on biological control exist for vertebrates, invertebrates, freshwater animals and species in marine environments, as well as organisms that are not considered plant pests; these gaps should be addressed.

(c) Classical biological control as part of an integrated ecosystem management package

29. Participants recognized that classical biological control rarely achieves full ecosystem recovery and restoration on its own. Classical biological control should be a component of a recognized active adaptive management approach for invasive alien species and integrated with more short-term effective options, such as cultural, mechanical or chemical control within a benign range. Measures to promote habitat recovery, re-vegetation or full restoration should also be included in the control programme, as appropriate.

Key message 5: Biological control, where applicable, should be carried out in the context of clear environmental restoration goals and as part of an integrated management approach.

(d) Tools to support decisions on biological control

30. Participants reviewed the contents of ISPM 3:2005 and similar international standards in the context of the goals of the Strategic Plan for Biodiversity 2011-2020 and related Aichi Biodiversity

¹⁰ http://www2a.cdc.gov/cdcup/library/practices_guides/CDC_UP_Risk_Management_Practices_Guide.pdf

Targets, and examined the extent to which they might apply to the use of classical biological control against invasive alien species.

31. Participants called for the development of additional decision-support tools as follows:

- (a) Methods to prioritize target species based on their impacts on ecosystems, habitats or (native) species;
- (b) Methods for cost-benefit or cost-effectiveness analyses;
- (c) Existing processes for the selection of biological control agents to minimize the risk of non-target effects (for example, ISPM 3) to be considered in the context of their increased use in natural ecosystems;
- (d) Post-release monitoring and evaluation protocols.

Key message 6: Biological control decision support tools based on existing ISPMs should be adapted or improved and could be expanded to better support Parties in the development of programmes against invasive alien species in the areas of target prioritization based on impact, the feasibility and likelihood of success of biocontrol, and the selection of the biological control agent. ISPM 3, “Guidelines for the export, shipment, import and release of biological control agents and other beneficial organisms” pertains directly to biological control, but it should be noted that other national and international guidelines might also be relevant (for example, ISPM 6, “Guidelines for surveillance”).

(e) Cost-effectiveness and cost-benefit analysis

32. All decision making for biodiversity conservation and ecosystem services requires some form of cost-benefit or cost-effectiveness analysis. The analysis should be undertaken through a collaborative process involving all relevant stakeholder groups. Recognized processes exist for each of these in invasive alien species management and systematic conservation planning. Participants recognized a need for standardized approaches or guidelines for cost-benefit or cost effective analysis on the use of classical biological control agents. Such analyses must be based on valid science, including spatially explicit information, with regard to any assumptions on: (a) establishment; (b) spread; and (c) likely impact and such information should be included in standard economic benefit-cost models. Rigorous analysis of potential sustained benefits from classical biological control would also be very important for ensuring long-term financial support for classical biological control programmes.

Key message 7: Biological control programmes require relatively high initial investments for risk analysis and testing, as well as a sustainable long-term resource commitment. Cost effectiveness and cost-benefit analyses should therefore inform any decision making

(f) Collaboration

33. Participants recognized that classical biological control activities require collaboration with all relevant stakeholders. These collaborations serve different purposes at different levels. For example, collaboration among the groups across jurisdictions, across individual sectors and across communities, including indigenous peoples and local communities are highlighted.

Across jurisdictions

34. At the international level, collaboration is important not only for sharing the benefits but also for sharing the costs and increasing awareness of any risks associated with the use of biological control agents. Classical biological control is very frequently conducted as an international collaborative activity with the participation of and support from multiple countries. Such collaboration is also important for sharing the know-how and needed capacities. Collaboration also provides the opportunities for sharing the public benefits. In addition, by its very nature, classical biological control often requires the sharing of

organisms isolated from biodiversity (the classical biological control agents) between the countries of origin of invasive alien species and the countries to which invasive alien species were introduced. Participants recognized that the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity could influence the potential to access and share biological control agents from other parts of the world. Such cases were discussed, and participants were concerned that restrictions on access to such agents under the Nagoya Protocol had impeded and might further impede the collaborative use of classical biological control agents for the management of invasive alien species globally.

35. Transboundary cooperation is essential when planning biological control programmes. Decisions on biological control programmes should be made in consultation with neighbouring countries that may be affected. Information exchange and consultations with neighbouring countries should be made at an early stage when planning programmes.

36. ISPMs and other relevant international standards and guidelines already represent international collaboration benefits, and participants identified further opportunities for these (see section E above and UNEP/CBD/IAS/EM/2015/1/2). Participants called on the Secretariats of the CBD and the IPPC to promote: (a) global public awareness; (b) information exchange; and (c) engagement of organizations at an international level towards a more effective management of invasive alien species using classical biological control agents. To improve international collaborations, participants called for open access and sharing of technical reports and relevant scientific publications, past and current, on classical biological controls. The need for consultation and regional decision making was also stressed. Consultation and collaboration between neighbouring countries about the risks associated with classical biological control prior to release of the agents, should take place. Therefore, informed decisions can be made in participation with countries that may receive benefits or potentially incur on environment management costs.

Cross-cutting and cross-sectoral collaboration

37. Consultation and collaboration across sectors, such as the agricultural, environmental, health sectors and border protection services and between the private and public sectors, is critical. Participants were of the opinion that this was particularly important between the agricultural and environmental/conservation sectors. It was stressed that invasive alien species management activities in the environment are generally less resourced than the agricultural sector for managing pests, weeds and diseases, and species introduced for agriculture can have negative impacts on the environment. There may also be greater opportunities for collaboration across these two sectors for invasive alien species and weed, pest and disease management in the aquatic environment and aquaculture.

Across stakeholders

38. Collaboration among stakeholders on biological control was considered to be important, when beneficiaries and risk bearers are in different stakeholder groups. These stakeholders may include sectoral authorities, practitioners, regulators, land managers and regional councils. at the national and community level. Collaborative activities among them build trust and understanding. Stakeholder engagement also improves governance within the community for collective decision making and continued engagement.

Key message 8: Biological control programmes require the engagement of all relevant stakeholders, at the cross-jurisdictional, cross-sector, and cross-stakeholder levels, regarding the collaborative sharing of goals, knowledge, experience, capacity development, benefits and costs and effective governance.

Key message 9: Countries planning to release biological control agents are urged to inform and consult with neighbouring countries prior to any releases.

(g) Public consultation (risk communication)

39. The legitimacy of classical biological control should be built upon wide public acceptance. Public participation should be relatively high in a classical biological control programme at least before agent releases begin. Public consultation also builds trust, expectation and understanding, and acceptability that some countries with a long history of classical biological control (for example New Zealand) have already achieved. There are widely held misconceptions that classical biological control generates more risk than benefits or that it delivers benefits in the short term or may lead to complete eradication of an invasive alien species.

40. Public understanding about biodiversity conservation is changing as more people become largely urban-based and city focussed. Effective public consultation requires reaching the right audience, but can also lead to broader community understanding of the need and acceptance for long-term public investment in classical biological control and more general facts and principles around invasive alien species. Public consultation is particularly important for classical biological control because the approach is for public good rather than commercial gain.

Key message 10: Biological control legitimacy requires effective public consultation, participation and support to ensure the costs, benefits, and timelines of delivery are widely recognized and alternative views are fully considered.

(h) Systematic monitoring and evaluation in post release phase

41. Participants recognized the vital importance of monitoring and evaluation of classical biological control programmes after releases have been made. Assessing the programme relative to its invasive alien species and biodiversity conservation goals, and assessing whether the agents are causing any direct or indirect non-target impacts are both important.

42. Monitoring is also important for demonstrating benefits to help build acceptance and support. Monitoring is vital in all forms of integrated invasive alien species management and the management should take an adaptive approach so that monitoring results help foster understanding and improve the whole package during application. Monitoring will also help foster understanding of the resilience of classical biological control based approaches adopted in the face of climate variability, fluctuations and change as invasive alien species management in the future will increasingly require resilient classical biological control-based management systems. Post-release monitoring should therefore be considered mandatory.

43. The ISPM 6:1997, “Guidance for surveillance” may be usefully adapted to classical biological control programme monitoring. Novel tools and automated technologies are also increasingly available to assist with effective monitoring. Encouraging citizen science observations with online portals for public data capture is another way of engaging public interest and involvement and keeping costs down.

44. Understanding the success and failure of classical biological control programmes is vitally important to improve the approach and to more effectively apply classical biological control against invasive alien species. Such analyses need to be published in the scientific or grey literature (particularly the failures, which generally attract less interest). Such assessments can also help foster understanding as to whether the decision made to release a classical biological control agent was justified or correct and could lead to improvements in future classical biological control risk analyses, in particular risk management.

Key message 11: All biological control programmes need to be supported through long-term monitoring and evaluation of impacts (positive or negative) using standardized and cost effective methodologies.

(i) Capacity development

45. It was widely recognized that technical and scientific cooperation is needed to develop capacities in classical biological control, from scientific understanding, through the regulatory process, to the training of skilled staff. The secretariats of the CBD, IPPC and OIE and experts from IUCN, the International Organization for Biological Control and CABI should promote, support and contribute to technical and scientific cooperation related to the use of biological control against invasive alien species.

(j) Information sharing

46. Information sharing is essential in carrying out a successful biological control programme. There is a need to develop international, regional and national mechanisms to encourage and enable information sharing:

(a) Between countries that have carried out or are planning the release of biological control agents. Notification and consultation with neighbouring countries and other countries that may be affected by a release is necessary in order to inform them of potential benefits and risks, and to promote consultation and the participation of potentially affected neighbouring countries, other sectoral authorities and stakeholders in the decision processes, as well as to ensure the development of effective and beneficial biological control methods;

(b) Within the scientific community to inform, share and gather information on experienced successes and failures, so as to improve safety and efficacy of biological control agents and programmes;

(c) Between the sector or sectors responsible for biological control programmes (often environment or agriculture) and other sectors and stakeholders to ensure participation and support for the programmes.

2.2 The risks associated with trade of alien species, including e-commerce

47. Mr. Moustafa Fouda, co-chair of the expert meeting, invited Mr. Bruno Paris and Ms. Christine Villegas to present Canada's approach to invasive alien species management at pre-border, border and post-border areas, noting the cross-sectoral and seamless approach. Participants were introduced to the Single Window Initiative implemented in Canada and collaboration with subnational governments (Canadian provinces and territories).

48. Mr. Fouda then invited the Secretariat to introduce the background documents on "Addressing risks in wildlife trade as pets, aquarium and terrarium species, and as live bait and live food" ([UNEP/CBD/IAS/EM/2015/1/3](#)) and "Methods of alerting suppliers and potential buyers to the risk posed by invasive alien species sold via e-commerce" ([UNEP/CBD/IAS/EM/2015/1/4](#)). The documents focused on the practical implementation of methods to address risks at the national level as well as with regard to the role of stakeholders, noting a combination of regulatory and voluntary measures.

49. Participants reviewed the documents and discussed ways and means to address the risks associated with trade in wildlife as pets, aquarium and terrarium species, and as live bait and live food. Participants reaffirmed the view that the risk of biological invasions of alien species as introduced as pets, aquarium and terrarium species, and as live bait and live food had been addressed by the Guidance on Devising and Implementing Measures to Address the Risks Associated with the Introduction of Alien Species as Pets, Aquarium and Terrarium Species, and as Live Bait and Live Food annexed to decision XII/16.

50. All alien organisms that are introduced have the potential to be invasive, causing a potential hazard to biodiversity unless they are proven to be safe through appropriate risk assessments.

51. After detailed discussion on the international regulatory framework related to invasive alien species, participants noted that the framework provided by CITES aims to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild in the

source country, including by monitoring the international movement of species listed in its Appendices. The CITES regulatory framework is for the purpose of preventing or restricting exploitation, and it does not apply measures to reduce the risk of biological invasion.

52. However, [CITES Resolution 13.10 \(Rev. CoP14\)](#) recommended that Parties to CITES and CBD explore appropriate cooperation and collaboration between the two conventions on the issue of introduction of alien species that are potentially invasive. In that context, some countries and regions have included selected invasive alien species in their wildlife trade regulations in connection with the implementation of the CITES framework. Participants pointed out that, even under such wildlife trade regulations, the recording of or reporting on all of the live organisms in trade is beyond of the mandate of CITES.

53. With regard to recording of trade in wildlife, it is mandatory for government authorities of CITES Parties to issue relevant import and/or export permits, as appropriate, on specimens of the species that are listed in CITES Appendices. In addition, countries control the import or export of other species regulated by their national laws, for example under an invasive alien species act or sanitary and phytosanitary legislation. In the absence of national legislation on the import of alien species, countries are unable to control their entry at the border. To prevent unrecorded or illegal trade in wildlife that carries a risk of biological invasion, the existence of, and compliance with, relevant national import requirements is essential. In this context, participants reaffirmed the importance of national legislation on the import of live organisms to include invasion risk assessments and border controls.

54. In most countries, the necessary documents and permits are issued by different government agencies, and the submission of required documents is mandatory for traders. Participants recognized that the Single Window approach that has been implemented at the national level in some countries, such as Singapore, Guatemala and Malaysia, could be an effective and appropriate approach to improve monitoring of the cross-boundary movements of regulated species, and to prevent the import of problematic species if the national legislation sets import requirements.

55. Participants highlighted important points to address the biological invasion risks associated with trade in wildlife as follows:

(a) Wildlife trade as a pathway for introduction of invasive alien species should be considered, including the risk of hitchhiking organisms and contaminants;

(b) The “Guidance on devising and implementing measures to address the risks associated with the introduction of alien species as pets, aquarium and terrarium species, and as live bait and live food” annexed to decision XII/16 provides measures to be taken by Parties, organizations and all relevant stakeholders, and its implementation should be promoted at various levels;

(c) National regulation on the import of wildlife species and associated materials (such as packaging material and food) with appropriate risk analysis is crucial to address the risk of biological invasion associated with trade in wildlife;

(d) Labelling on consignments of live organisms as a potential hazard to biodiversity and proper identification of species with the scientific names/taxonomic numbers represent appropriate measures, as indicated in the guidance annexed to decision XII/16;

(e) Commodity-specific international standards for live organisms, including those transported as pets, aquarium and terrarium species, and as live bait and live food, could potentially be developed under the standard-setting process of IPPC;

(f) Ways and means to change peoples’ behaviour and to encourage social responsibility with a view to reducing the risks to biodiversity associated with both legal and illegal trade in wildlife, should be explored;

(g) Cooperation with trade organizations is needed to engage them in the risk assessment and decision-making process, promote compliance with regulations, as well as to gather information and experience on ways other than restrictions on trade to avoid the impacts of invasive alien species introduced through trade;

(h) Horizon scanning considering the parameters of drivers of trade, future trade patterns and potentially invasive alien species that may come into trade is needed in order to reduce future risks by applying preventative measures;

(i) Although CITES is a relevant source of information on trade in some invasive alien species, other trade systems, organizations, trade databases and information systems related to trade, such as the Trade Control and Expert System (TRACES)¹¹ in European countries and plant protection services, should be considered as a source of information and when developing measures for reducing risks from invasive alien species spread through trade.

56. Participants noted the information provided by the IPPC Secretariat that there is a possibility, based on the recommendation of their Standing Committee, the Commission on Phytosanitary Measures, at its 11th session, in April 2016, would consider accepting the “Guidelines for the export, shipping, handling, import and disposal of live organisms as pets, aquarium and terrarium species, and as bait and food” as a commodity-specific standard-setting process. The topic had been submitted by the Executive Secretary of CBD to the Secretariat of IPPC pursuant to paragraph 11 of decision IX/4 A and paragraphs 8 and 13 of decision XI/28, and in collaboration with the Secretariat of IPPC in accordance with paragraph 2 of decision XII/16.

Key message 12: A potential risk of biological invasions derived from trade in wildlife arises from all organisms. The potential risk of invasions posed by alien species introduced as pets, aquarium and terrarium species, and as live bait and live food is covered by the Guidance annexed to decision XII/16. This Guidance is voluntary in nature and focuses on promoting best practices.

Key message 13: The CITES regulatory framework aims to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild in source countries. It does not apply measures to reduce the risk of biological invasion as a result of this trade. However, information from the CITES trade database could enable the identification of international pathways and vectors of potential invasive alien species at the national or regional levels.

Key message 14: For the purpose of minimizing the potential risk of invasions, countries should have a regulatory framework in place to control the import and spread of wildlife species and associated materials (such as packaging material and food) that can be pathways of introduction of invasive species. This should be complemented by appropriate risk analysis processes that can help prevent the introduction of invasive alien species through trade.

Key message 15: National sanitary and phytosanitary measures developed in compliance with the provisions of the WTO-SPS Agreement contribute to reducing the risks from invasive alien species.

Key message 16: Governments and relevant organizations should explore ways and means to change peoples’ behaviour to reduce the risks to biodiversity associated with both legal and illegal trade in wildlife, including through the engagement with social sciences and social media in targeted awareness campaigns, and through cooperation with wildlife trade organizations.

¹¹ <https://webgate.ec.europa.eu/sanco/traces/>

Key message 17: Reiterating the Guidance annexed to decision XII/16 (paras. 19 and 20), proper labelling, on consignments containing wildlife specimens, could be a valuable tool for identifying invasive and potentially invasive species as a hazard to biodiversity.

Key message 18: The IPPC Commission on Phytosanitary Measures at its 11th session, in April 2016, may potentially consider the “Guidelines for the export, shipping, handling, import and disposal of live organisms as pets, aquarium and terrarium species, and as bait and food” as a commodity-specific standard-setting process.

57. Participants further discussed emerging risks associated with e-commerce of alien species, noting the wide range of providers and potential buyers.

58. The following points were raised in addition to the contents covered in the background document ([UNEP/CBD/IAS/EM/2015/1/4](http://www.unep.org/cbd/ias/em/2015/1/4)):

(a) E-commerce is the trade in commodities through the Internet. E-commerce in live specimens is particularly relevant to biological invasions because it is increasing in importance and significantly increases the volume and availability of species in trade, as well as involving many actors that may have little knowledge of the risks or the regulations related to the import, export and use of alien species;

(b) With the growth of e-commerce, mail and courier services have become a more frequent way of importing live specimens and constitute an increased risk of introduction of invasive species into a country;

(c) However, the communication media on the Internet provides an opportunity to educate actors of e-commerce, including the public and the operators of major e-commerce sites, about the risk of biological invasions;

(d) The “Guidance on devising and implementing measures to address the risks associated with the introduction of alien species as pets, aquarium and terrarium species, and as live bait and live food” annexed to decision XII/16, includes measures that apply to e-commerce as much as any other form of trade.

Key message 19: E-commerce is the trade in commodities through the Internet. E-commerce involves new actors that may have little knowledge of risks and regulations pertaining to the export, import and use of alien species. The risk of introduction of invasive alien species is increasing with the use of mail and courier services. There is a need to consider measures to reduce this risk.

Key message 20: Governments are encouraged to investigate the sanitary and phytosanitary risks and risks to biodiversity of biological invasions posed by all forms of distance selling and, if necessary, to address their management in appropriate national legislation and, as appropriate, in national biodiversity strategies and action plans.

Key message 21: Consumers and e-commerce traders need to have a greater awareness of the risks of biological invasions and regulations related to invasive alien species. Governments and relevant organizations are urged to provide information through diverse platforms, including social media. Authorities are encouraged to collaborate with e-commerce market places to reduce the risk of non-compliance with existing regulations and to promote awareness on the issue of invasive alien species.

Key message 22: The Single Window approach allows the lodging of standardized information and documents with a single entry point to fulfil all import, export and transit-related regulatory requirements. Its implementation at the national level may facilitate reporting on regulated articles (including live organisms with phytosanitary and sanitary risks and risks to biological diversity).

Key message 23: The “Guidance on devising and implementing measures to address the risks associated with the introduction of alien species as pets, aquarium and terrarium species, and as live bait and live food” annexed to decision XII/16 includes measures that apply to e-commerce as much as any other form of trade.

2.3 Decision support tools

59. Mr. Moustafa Fouda, co-chair of the expert meeting, invited the Secretariat to introduce the background document on “development of decision support tools” ([UNEP/CBD/IAS/EM/2015/1/5](http://www.unep.org/cbd/ias/em/2015/1/5)). Participants reviewed the tools identified in the document and provided suggestions.

60. Participants stressed that the purpose of developing such tools should be: (a) to ensure increased transparency in decision-making processes; (b) to increase the effectiveness of measures; (c) to guide how to prioritize measures; and (d) to reduce bias and to support objective decisions.

61. Participants further highlighted the importance of a participatory decision-making process based on evidence, such as the results of appropriate risk assessments, the social and economic costs and the benefits of taking measures. All stakeholders that might be impacted by the decision need to have access to the evidence underlying the decision.

62. Decision support tools are important in order to do the following:

- (a) Increase the transparency of decisions and provide a systematic framework for decisions;
- (b) Help to systematically prioritize measures that are to be taken, such as which alien species have the highest potential to become invasive or which invasive species are the most feasible to manage;
- (c) Aid in the screening for the best use of limited resources and ensure the cost-effectiveness of measures that are taken;
- (d) Enable timely and efficient cooperation and joint decision-making between authorities, organizations and stakeholders.

63. The importance of existing international standards and information sharing to develop decision support tools under the Convention on Biological Diversity was reiterated. Participants referred to the discussion on the use of risks analysis for biological control agents, as well as decision tools to prevent invasions of alien species whether introduced by trade or accidentally. Participants provided additional information, including risk assessment protocols on the impact of alien species, some regionally developed decision support tools, and communication tools:

- (a) A Decision Support Framework for Forest Invasive Alien Species (Forest Pest Working Group of the Canadian Council of Forest Ministers);
- (b) GloBallast Monograph Series No. 8, No. 10, No. 11 and No. 12, International Maritime Organization, London, United Kingdom, on ballast water risk assessments;

- (c) Generic Impact Scoring System (GISS) to assess impacts of alien species on environmental, economic, social and well-being;¹²
- (d) Environmental Impact Classification for Alien Taxa (EICAT);¹³
- (e) Análisis de riesgo y propuesta de categorización de especies introducidas para Colombia;¹⁴
- (f) Catálogo de la biodiversidad acuática exótica y trasplantada en Colombia: moluscos, crustáceos, peces, anfibios, reptiles y aves;¹⁵
- (g) Use and exchange of biological control agents relevant for food and agriculture (A report prepared for the FAO Genetic Resources Commission by the IOBC Global Commission on Biological Control and Access and Benefit Sharing, 2009);
- (h) The reality of risk-cost-benefit analysis;¹⁶
- (i) An Essential Biodiversity Variable Approach to Monitoring Biological Invasions: Guide for Countries (GEO BON).¹⁷

64. Decision support tools need to be further developed in order to do the following:

- (a) Carry out cost/benefit and cost/effectiveness studies of invasive alien species to underpin decisions;
- (b) To further develop horizon scanning methods and incorporate them in risk assessments and decisions;
- (c) Further develop risk assessment methodology including methods for optimizing and dealing with expert opinions, and to better quantification of the economic and social value of ecosystem services;
- (d) Develop pre-import screening processes;
- (e) Further develop multi-criteria decision analysis;
- (f) Assess the appropriateness, risks and benefits of new tools and methods in the management of invasive alien species.

65. Access to correct and updated information is crucial in all decision-support tools. Information sources and databases on invasive alien species at the national, regional and international levels need to be continually updated, maintained and developed.

¹² Kumschick S, Bacher S, Evans T, Marková Z, Pergl J, Pyšek P, Vaes-Petignat S, van der Veer G, Vilà M, Nentwig W. 2015. Comparing impacts of alien plants and animals in Europe using a standard scoring system. *Journal of Applied Ecology* 52: 552-561.

¹³ Hawkins CL, S Bacher, F Essl, PE Hulme, JM Jeschke, I Kuhn, S Kumschick, W Nentwig, J Pergl, P Pyšek, W Rabitsch, DM Richardson, M Vilà, JRU Wilson, P Genovesi & TM. Blackburn 2015. Framework and Guidelines for Implementing the Proposed IUCN Environmental Impact Classification for Alien Taxa (EICAT). *Diversity & Distribution*. DOI: 10.1111/ddi.12379.

¹⁴ Baptiste M.P., Castaño N., Cárdenas D., Gutiérrez F. P., Gil D.L. y Lasso C.A. (eds). 2010. Análisis de riesgo y propuesta de categorización de especies introducidas para Colombia. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt. Bogotá, D. C., Colombia. 200 pp.

¹⁵ Serie Editorial Recursos Hidrobiológicos y Pesqueros Continentales de Colombia. Instituto de Investigación de los Recursos Biológicos Alexander von Humboldt (IAvH). Bogotá, D. C., Colombia, 335 pp. 2012.

¹⁶ Fischhoff B. *Science* 350 527 (2015).

¹⁷ <http://geobon.org/essential-biodiversity-variables/ebv-for-invasion-monitoring/>; <http://invasionevs.com/wp-content/uploads/2015/08/MonitoringBiologicalInvasions.TechnicalReport.pdf>.

Key message 24: There is a need for further efforts to make use of suitable decision-support tools for assessing and evaluating the social, economic and ecological consequences of invasive alien species.

Key message 25: Decision-making should be a participatory process. Stakeholders, including risk bearers and risk makers, should be identified and should be engaged from early decision-making process. Participatory decision-support tools would help to increase transparency in decision making, reduce bias and support objective decisions, and enhance the effectiveness of measures taken to manage invasive alien species.

Key message 26: Biological invasion risk analysis with evidence-based assessments, such as GISS, EICAT, ISPMs and OIE standards on animals, plants and other organisms becoming invasive, are key support tools for decision-making on introduction.

Key message 27: Decision-making on introduction, eradication, containment, mitigation or control should consider the balance between the environmental, social and economic benefits and costs related to biological invasion and remedial actions.

Key message 28: Information sharing among stakeholders and countries is key for successful decision-making.

ITEM 3. OTHER MATTERS

66. The Secretariat invited participants to continue communicating with each other in order to facilitate better management of invasive alien species. A discussion forum specifically on invasive alien species management would be set up on the CBD website.

ITEM 4. CLOSURE OF THE MEETING

67. The representative of Canada thanked the co-chairs for excellent chairmanship and the participants for sharing their experiences enabling science-based discussions. He also thanked the Secretariat for organizing the expert meeting. The participants supported the remarks made by Canada.

68. The representative of the Secretariat thanked the co-chairs and all participants for active participation and acknowledged with gratitude that the meeting had been enabled by generous financial support from the Governments of Sweden and Germany, and supported by the scientific and technical advice of Mr. Andy Sheppard, experts from IUCN-ISSG and the Secretariat of IPPC, as well as the review of some background documents by the secretariats of CITES and the World Trade Organization.

69. The meeting was closed at 1.30 p.m. on Friday, 30 October 2015.

*Annex***LIST OF PARTICIPANTS****Africa**

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Egypt
Ethiopia
Mauritania
Togo

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Philippines
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Carmelita Villamor
Ateliate Lupe Matoto

Central and Eastern Europe

Belarus

Oleg Borodin

Latin American and Caribbean Group

Colombia
Mexico
Saint Lucia

Maria Piedad Baptiste
Francisco Navarrete Estrada
Adam Toussaint

Western European and Others Group

Australia
Israel
Canada
France
Norway
Spain
Sweden
United Kingdom of Great Britain and Northern Ireland

Andy Sheppard
Simon Nemtzov
Bruno Paris
Serge Muller
Esten Odegaard
Montserrat Vilà
Melanie Josefsson
Vincent Fleming

Agencies and organizations

International Plant Protection Convention (IPPC)
Canadian Food Inspection Agency (CFIA)
CABI
World Organisation for Animal Health (OIE)
International Organization for Biological Control
International Union of Forest Research Organization
Concordia University, Canada

Marie-Pierre Mignault
Christine Villegas
Sean T. Murphy
Frederick Leighton
Jacques Brodeur*
Andrew Leibhold
Peter Stoett*

*Participated the expert meeting partially in its duration.
