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REVIEW OF WORK ON INVASIVE ALIEN SPECIES AND CONSIDERATIONS FOR FUTURE WORK

Note by the Executive Secretary

I. INTRODUCTION

1. According to Article 8(h) of the Convention, each Party shall, as far as possible and as appropriate, prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species.

2. Aichi Biodiversity Target 9 on invasive alien species states: “By 2020 invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment”.

3. In paragraph 25 of decision XI/28 the Conference of the Parties, recognizing that invasive alien species are one of the main drivers of biodiversity loss, and that their increasing impact on biodiversity and economic sectors has a negative effect on human well-being, emphasized the need to continue to work on this issue, in order to achieve Aichi Biodiversity Target 9, and in paragraph 26 it requested the Executive Secretary, in collaboration with partners to:

(a) Assess progress in implementing decisions of the Conference of the Parties on invasive alien species, including decisions that address gaps and inconsistencies in the international regulatory framework as identified in decision VIII/27;

(b) Prepare a preliminary list of the most common pathways for the introduction of invasive alien species, propose criteria for use at regional and subregional levels or other ways by which they may be prioritized, and identify a range of tools that may be used to manage or minimize the risks associated with these pathways; and to report thereon to a meeting of the Subsidiary Body before the twelfth meeting of the Conference of the Parties, in order to inform consideration of the need for future work.

* UNEP/CBD/SBSTTA/18/1.

4. Accordingly, this document provides information on progress in implementing decisions of the Conference of the Parties by Parties and relevant international organizations in section II. Information on pathways of introduction of invasive species, their prioritization and management is contained in document UNEP/CBD/SBSTTA/18/9/Add.1. In light of the information contained in that document and in section II below, section III provides considerations for further work. Section IV contains a draft recommendation that the Subsidiary Body may wish to suggest for consideration by the Conference of the Parties at its twelfth meeting.

5. The Conference of the Parties first addressed the issue of invasive alien species as a distinct agenda item at its fifth meeting and has addressed the issue at each of its meetings since, developing a large and quite comprehensive set of guidance.

6. On the basis of preparatory work initiated at the fifth meeting of the Conference of the Parties, the Conference of the Parties, at its sixth meeting, adopted in decision VI/23* the Guiding Principles for the Prevention, Introduction and Mitigation of Impacts of Alien Species that Threaten Ecosystems, Habitats or Species; acknowledged other relevant international instruments; recognized gaps and inconsistencies in the international regulatory framework from the perspective of the threats of invasive alien species to biological diversity and launched a programme to further elucidate and address these; and provided guidance on national strategies. The decision also included sections on international cooperation; assessment, information and tools; and on capacity-building activities.

7. Further progress was made at subsequent meetings of the Conference of the Parties. In particular, on the basis of the work of an Ad Hoc Technical Expert Group, the Conference of the Parties, at its eighth meeting, identified a list of gaps and inconsistencies in the international regulatory framework. The Conference of the Parties, at its ninth meeting, made specific invitations to the International Plant Protection Convention; the International Committee of the World Organisation for Animal Health (OIE); the Committee on Sanitary and Phytosanitary Measures of the World Trade Organization; the Committee on Fisheries of the Food and Agriculture Organization of the United Nations; and other bodies. It further identified one additional pathway for the introduction of invasive alien species: pets, aquarium and terrarium species, and live bait and live food, which should be addressed under the Convention.¹

8. The Conference of the Parties at its ninth and tenth meetings provided further guidance on the development of information and tools, capacity-building, and communication education and public awareness.

9. The next section considers progress in implementing the decisions of the Conference of the Parties on invasive alien species.

II. PROGRESS IN IMPLEMENTING DECISIONS OF THE CONFERENCE OF THE PARTIES ON INVASIVE ALIEN SPECIES

1. Guiding Principles

10. The Guiding Principles for the Prevention, Introduction and Mitigation of impacts of alien species that Threaten Ecosystems, Habitats or Species (the Guiding Principles, contained in the annex to

* One representative entered a formal objection during the process leading to the adoption of this decision and underlined that he did not believe that the Conference of the Parties could legitimately adopt a motion or a text with a formal objection in place. A few representatives expressed reservations regarding the procedure leading to the adoption of this decision (see UNEP/CBD/COP/6/20, paras. 294-324).

¹ The management of risks associated with invasive alien species introduced as pets, aquarium and terrarium species, and as live bait and live food is being examined under agenda item 5.1 of the provisional agenda (UNEP/CBD/SBSTTA/18/1)

decision VI/23*) provide all Governments and organizations with guidance for developing effective strategies to minimize the spread and impact of invasive alien species.

11. Parties and other Governments were urged, in implementing the Guiding Principles, and when developing, revising and implementing national biodiversity strategies and action plans, to review relevant policies, legislation and institutions in light of the Guiding Principles to identify gaps, inconsistencies and conflicts, and, as appropriate, adjust or develop policies, legislation and institutions (paragraph 10 (c) of decision VI/23*). The Conference of the Parties highlighted the relevance of the Guiding Principles to various aspects of work on invasive alien species in different decisions, for example to:

(a) Increase communication and public awareness about the environmental, social and economic impacts of the introduction of invasive alien species (decision VIII/27, paragraph 13);

(b) Achieve the objectives of the Convention, its Strategic Plan and the 2010 biodiversity targets, and other global goals such as the Millennium Development Goals (decision IX/4 B, paragraph 1);

(c) Apply the precautionary approach with regards to the introduction, establishment and spread of invasive alien species, for agricultural and biomass production, including biofuel feedstocks, and for carbon sequestration (decision X/38, paragraph 6); and

(d) Provide relevant guidance for addressing the risks associated with the introduction of alien species as pets, aquarium and terrarium species, and as live bait and live food (decision XI/28, paragraph 3).

12. The Conference of the Parties, in paragraph 15 of decision IX/4 A, invited Parties, other Governments and relevant organizations to submit case-studies, lessons learned and best practices for the implementation of the Guiding Principles, focusing on risk assessment procedures, monitoring and surveillance programmes, methods for assessing the socio-economic, health and environmental impacts of invasive species, management of pathways and restoration and rehabilitation of degraded ecosystems.

13. A number of Parties reported in general terms on measures that address the prevention, introduction and mitigation of the impacts of invasive alien species. One specific example of a Party which reported on the application of the Guiding Principles is Canada, which reported that its Invasive Alien Species Strategy aligns closely with the guiding principles and that they have been used as background information for the development of policies, practices and science advice by the Canadian Department of Fisheries and Oceans.

14. The Guiding Principles provide a framework for countries that have not developed comprehensive specific national legislation and management measures to address the risks associated with the introduction of invasive alien species.

2. *The international regulatory framework: addressing gaps and inconsistencies*

15. As noted above, the Conference of the Parties, in decision VI/23,* acknowledged the contribution of existing international instruments to the implementation of Article 8(h) of the Convention, such as the International Plant Protection Convention, the World Organisation for Animal Health, regional plant protection organizations, the Food and Agriculture Organization of the United Nations, the International Maritime Organization, the World Health Organization and other international organizations that develop relevant standards and agreements. However, the Conference of the Parties also noted gaps and inconsistencies in the international regulatory framework.

16. In the same decision, the Conference of the Parties invited some of the mentioned instruments and organizations to address the identified gaps and decided on a programme to further elucidate and address the gaps and inconsistencies. An Ad Hoc Technical Expert Group was established at the seventh meeting of the Conference of the Parties to further address the gaps and inconsistencies in the international regulatory framework relevant to invasive alien species (decision VII/13, paragraph 9), which reported to the eighth meeting of the Conference of the Parties.

17. Based on this report, the Conference of the Parties listed various gaps in the international regulatory framework on invasive alien species in decision VIII/27 and stipulated actions by international organizations as well as Parties and other Governments to address these gaps. At its ninth meeting, the Conference of the Parties specifically considered gaps in the regulatory framework with regard to: (i) invasive alien species which impact on aquatic biodiversity; (ii) animals that are not pests of plants under the International Plant Protection Convention; and (iii) a wider range of diseases of animals, including diseases that solely affect wildlife.

18. The next section describes progress in addressing these gaps, while the subsequent section discusses those gaps that still remain.

(a) *Progress on setting international guidance relevant to invasive alien species by members of the Inter-agency Liaison Group on Invasive Alien Species*

19. In decision IX/4 A, the Conference of the Parties invited relevant international organizations to address specific gaps and inconsistencies in the international regulatory framework relevant to invasive alien species. These organizations collaborate in the Inter-agency Liaison Group on Invasive Alien Species (the Liaison Group)² with the objective to address the requests in this decision, and the member organizations have undertaken a number of activities to fill the identified gaps:

(a) The International Plant Protection Convention (IPPC) included aquatic plants and invasive plants in its International Standard for Phytosanitary Measures no. 11 - Pest Risk Analysis for Quarantine Pests (ISPM 11);

(b) Within the mandate of the International Plant Protection Convention, a clarification is being discussed that “protection of plants” under this Convention also covers the protection of algae and fungi, consistent with the International Code of Nomenclature for algae, fungi, and plants. As a consequence, ISPM 5 (Glossary of Phytosanitary Terms), which is the basis for terminology in all International Standards for Phytosanitary Measures, will be updated;

(c) The World Organisation for Animal Health (OIE) developed and published “Guidelines for assessing the risks of non-native animals becoming invasive”;

(d) The World Organisation for Animal Health listed diseases that can infect wild animals and threaten biodiversity: Ranavirus and *Batrachochytrium dendrobatitis*; and updated its standards on these diseases; and

(e) The Food and Agriculture Organization of the United Nations (FAO) developed and published the following guidance relevant to invasive alien species: (i) a guide to the implementation of phytosanitary standards in forestry; and (ii) guidance on understanding and applying risk analysis in aquaculture.

² <http://cbd.int/invasive/lg/>.

20. With regard to specific guidance on pathways or causes of introduction of alien species indicated in decision VIII/27, the following activities have been conducted by member organizations of the Inter-agency Liaison Group on Invasive Alien Species:

Aquaculture and Fisheries

21. The Food and Agriculture Organization of the United Nations (FAO) published a number of technical guidance documents on aquaculture and fisheries. The full list of these guidance documents is contained in the annex to document UNEP/CBD/SBSTTA/18/9/Add.1.

Containers

22. Under the International Plant Protection Convention, the development of new International Standards for Phytosanitary Measures on Minimizing pest movement by sea containers (2008-001) and Safe handling and disposal of waste with potential pest risk generated during international voyages (2008-004) has been initiated.

23. In response to the work under the International Plant Protection Convention on an International Standard for Phytosanitary Measures on Minimizing pest movement by sea containers (2008-001), the International Maritime Organization, the International Labor Organization and the United Nations Economic Commission for Europe have prepared an updated version of their *Code of Practice for Packing of Cargo Transport Units* to include advice on how to help ensure that sea containers (cargo transport units) do not act as conveyance for the spreading of pests and invasive alien species. This code will be used by those responsible for the packing and securing of the cargo and by those whose task it is to train people to pack such units. The updated Code is expected to be approved in due course.

24. In 2013, the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora adopted guidelines for the non-air transport of live wild animals and plants.³ The Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora also adopted Resolution Conf. 10.21 (Rev. CoP16) on transport of live specimens, which was updated *inter alia* to include references to the new guidelines.

Ballast water

25. A number of tools are available to manage or minimize the risks associated with ship/boat ballast water. The main tool in this area is the International Convention for the Control and Management of Ships' Ballast Water and Sediments (the Ballast Water Management Convention), which, however, has not entered into force yet. Several articles and regulations of the Ballast Water Management Convention refer to guidelines to be developed by the International Maritime Organization (IMO), and its Member States have developed 19 sets of Guidelines from 2005 to 2014, including on ballast water reception facilities, ballast water exchange and ballast water management systems. The full list of these guidelines is contained in the annex to document UNEP/CBD/SBSTTA/18/9/Add.1.

Marine biofouling

26. The International Maritime Organization developed the 2011 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species, resolution MEPC.207(62), and the Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft (circular MEPC.1/Circ.792). The 65th session of the Marine Environment Protection Committee of the International Maritime Organization also adopted Guidance for

³ <http://www.cites.org/eng/resources/transport/index.php>.

evaluating the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species (circular MEPC.1/Circ.811).

Civil air transport

27. The International Civil Aviation Organization in collaboration with the Global Invasive Species Programme drafted "Guidelines for preventing the transport and introduction of invasive alien species by air" in 2007. Formalization of these guidelines is still pending.

28. The List of Topics for Standards under the International Plant Protection Convention includes air containers as one topic, which will be further developed once the International Standard for Phytosanitary Measures on Minimizing Pest Movement by Sea Containers has been adopted.

29. As mentioned above, the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, in 2013, adopted Resolution Conf. 10.21 (Rev. CoP16) on transport of live specimens, which was updated *inter alia* to include references to the guidelines for the non-air transport of live wild animals and plants. The guidelines have been included as an annex to the International Air Transport Association's Live Animals Regulations.

Biocontrol agents

30. Guidelines for the export, shipment, import and release of biological control agents and other beneficial organisms are contained in the International Standard for Phytosanitary Measures no. 3 of the International Plant Protection Convention, which was originally adopted in 1996 and was revised in 2005.

Ex-situ animal breeding programmes

31. In Resolution Conf. 12.10 (Rev.CoP15), the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora urged its Parties to undertake an assessment of ecological risks prior to the establishment of captive-breeding operations for exotic species in order to safeguard against any negative effects on local ecosystems and native species. In the same Resolution, it urged CITES Management Authorities to work closely with captive-breeding operations to prepare the information to be provided to the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora for registration, or to establish a support group with members representing breeders and government to facilitate the procedure.

International web-based market places (e-Commerce)

32. In 2012, a document on "Internet Trade (e-Commerce) in Plants - Potential Phytosanitary Risks" was prepared under the International Plant Protection Convention; it presents preliminary findings of a desk study that explored the range of products being offered for sale through the Internet, and highlighted potential risks on plant health and the environment.

33. The Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora is developing an Internet portal as part of its website to compile, publish and disseminate information submitted by Parties and stakeholders related to e-commerce of CITES-listed species⁴ in accordance with decisions 15.57, 16.62 and resolution Conf. 11.3 (Rev. CoP15) on e-commerce.

⁴ <http://www.cites.org/eng/prog/e-commerce.php>.

(b) *Remaining gaps*

34. As described in the previous subsection, efforts have been undertaken to address gaps and inconsistencies in the international regulatory framework from the perspective of the threats of invasive alien species to biological diversity as contained in decisions VIII/27 and IX/4 A. While new guidance has been developed for a number of issues, some gaps still remain.

35. The Subsidiary Body, at its eighteenth meeting, will consider draft guidance on devising and implementing national measures to address the risks associated with introduction of alien species as pets, aquarium and terrarium species, and as live bait and live food, contained in document UNEP/CBD/SBSTTA/18/8.

36. With regard to civil air transport, the 2007 “Guidelines for preventing the transport and introduction of invasive alien species by air” still await formalization by the International Civil Aviation Organization.

37. In addition, pathways associated with conveyances, scientific research, tourism, *ex-situ* animal breeding, inter-basin water transfer and navigational canals have been addressed only partially. A major gap remains with regard to military activities; emergency relief, aid and response and international development assistance. The risks associated with the introduction of invasive alien species through such activities still remain to be addressed.

38. In addition, unintended protection of invasive alien species and inconsistencies in terminology further exacerbate risks associated with the introduction of invasive alien species. The International Plant Protection Convention updated its standard on phytosanitary terms (ISPM 5) in 2009 and 2013, and further harmonization of terminology is ongoing.

3. *National (and regional) strategies*

39. At its sixth meeting, the Conference of the Parties, in paragraph 10 of decision VI/23,* provided substantial guidance on the development of national invasive alien species strategies and action plans, as integral parts of national biodiversity strategies and action plans, to address the threats posed by invasive alien species. It urged Parties and other Governments, *inter alia*, to identify needs and priorities; to enhance coordination mechanisms; to review relevant policies, legislation and institutions and to adjust them as necessary; to enhance cooperation among sectors, including the private sector; to ensure communication between focal points of respective relevant international instruments; to promote awareness of the threats posed by invasive alien species and of the means to address such threats, including by quarantine, customs and other border officials, as well as the general public; to facilitate the involvement of all stakeholders; and to collaborate with trading partners and other countries, as appropriate, to address transboundary threats.

40. A review of available national biodiversity strategies and action plans suggests that over 50 per cent of Parties have developed national strategies on invasive alien species or equivalent programmes, and more than 20 per cent have developed both national strategies and coordination mechanisms. The proportions are higher among the countries that have updated their national biodiversity strategies and action plans since 2010.

41. The Secretariat of the Pacific Regional Environment Programme (SPREP) was commissioned by its member countries to develop an invasive species strategy for all countries and agencies in the Pacific region. A draft invasive species strategy was first produced in 2000. A revision of the strategy in

2006-2007 resulted in the development of the Guidelines for Invasive Species Management in the Pacific: A Pacific strategy for managing pests, weeds and other invasive species.⁵

42. Eleven Pacific island countries, including the Cook Islands, Fiji, the Federated States of Micronesia, Kiribati, the Marshall Islands, Niue, Palau, Papua New Guinea, Samoa, the Solomon Islands, Tonga and Vanuatu had developed invasive species strategies as part of the national biodiversity strategies and action plans by 2010 to provide a framework for invasive species management. The Marshall Islands developed a National Invasive Species Strategy and Action Plan.

43. Further to information provided in national biodiversity strategies and action plans, some notable strategies and regulations based on the risk assessment of alien species were developed by Australia, Belgium,⁶ Finland,⁷ Mexico,⁸ New Zealand, Norway,⁹ and South Africa.¹⁰

44. In some countries, such as Australia and New Zealand, biosecurity measures on pests, animal diseases and invasive species are undertaken in cross-sectoral collaboration among the relevant ministries to implement necessary measures. Similarly, coordination mechanisms among relevant Government sectors have been initiated and implemented, for example, in Canada, the Cook Islands, India, Indonesia, Japan, Namibia, Malaysia, and Samoa. Coordination mechanisms are primarily intended to harmonize border control measures on invasive species and pests, and to facilitate collaboration among central and local governments and other stakeholders with regard to measures to manage established invasive alien species.

45. The European Union is currently finalizing the development of a regulation on the prevention and management of the introduction and spread of invasive alien species. The proposed regulation provides for a list of invasive alien species of European Union concern. Species can be included on this list if they fulfil a number of criteria, including that they are alien to the territory of the Union, capable of establishment and spread in one biogeographical region shared by more than two Member States or one marine subregion excluding outermost regions, and likely to have significant adverse impacts on biodiversity or the related ecosystem services. The proposed regulation contains a risk-assessment procedure. Invasive alien species included on the list shall not be intentionally brought into the territory of the Union, be kept, bred, transported to, from or within the Union, placed on the market, used or exchanged, permitted to reproduce, grown or cultivated, or released into the environment. The regulation provides for a number of exceptions, but release into the environment will not be permitted. It is expected that the regulation will be adopted in May 2014.

46. An analysis of information on the status of implementation of national strategies as contained in the fifth national reports of Parties is being prepared.

4. International cooperation

(a) General

47. The Conference of the Parties invited cooperation on various issues in a number of its decisions. In paragraphs 15 to 23 of decision VI/23,* the Conference of the Parties urged Parties, Governments,

⁵ http://www.pacificinvasivesinitiative.org/site/pii/files/resources/publications/PII/pii_strategic_plan_2010_2015.pdf.

⁶ <http://ias.biodiversity.be/>.

⁷ www.mmm.fi/attachments/ymparisto/vieraslaajiseminaari9.12.2009/6AEAkMHw5/Finlands_national_strategy_on_invasive_alien_species.pdf.

⁸ www.biodiversidad.gob.mx/v_ingles/country/pdf/Invasive_species_Mexico_dec2010.pdf.

⁹ www.artsdatabanken.no/Article/Article/133437.

¹⁰ www.invasives.org.za/.

multilateral organizations and other relevant bodies to consider the potential effects of global change on the risk of invasive alien species to biodiversity, and related ecosystem goods and services.

48. In the same decision, the Conference of the Parties invited relevant organizations to promote further the implementation of Article 8(h) within their mandates, through, *inter alia*, the development of guidance, best practices and pilot projects that address the threats of invasive alien species to particular sites or habitats, including means to enhance the capacity of ecosystems to resist or recover from alien species invasions.

49. In particular, the Conference of the Parties invited relevant organizations to consider the potential risks associated with invasive alien species to biodiversity when addressing adaptation to and mitigation of climate change, the impacts of trade and trade liberalization, and impacts of land-use change, agriculture, aquaculture, forestry, health and development policies and activities. The Conference of the Parties also invited relevant organizations to address impediments to the management of marine alien species.

50. In anticipation of adoption of the new Ballast Water Management Convention, the International Maritime Organization joined forces with the Global Environment Facility and the United Nations Development Programme to implement the Global Ballast Water Management Programme (GloBallast) from 2000 to 2004. The GloBallast Partnerships project continued from 2004 to 2007. From 2008 to 2012, it focused on the implementation of the International Convention for the Control and Management of Ships' Ballast Water and sediments (BWM Convention) by assisting developing countries to enact legal, policy and institutional reforms to minimize the impacts of aquatic invasive species transferred by ships.

51. The Scientific and Technical Review Panel of the Ramsar Convention on Wetlands is currently developing, as part of its 2013-2015 work plan, a guide to available guidance on wetlands and invasive species, targeted at policymakers, wetland managers and local communities.

(b) *Collaboration with the International Plant Protection Convention*

52. In terms of collaboration between the Convention and the International Plant Protection Convention, the Interim Commission for Phytosanitary Measures, at its seventh session in 2005, adopted comprehensive recommendations regarding many possible actions in relation to plants that are invasive alien species and provided support to further collaboration (CPM Recommendation ICPM-7/2005). For example, it expressed its support for clarifying opportunities to address issues of invasive alien species that are pests of plants (including plants that are invasive alien species) within the context of the International Plant Protection Convention; for addressing concerns relating to threats to biodiversity and the environment from pests of plants (including plants that are invasive alien species) and their pathways in the development of new or revised International Standards for Phytosanitary Measures and related phytosanitary measures; for including potential pathways of invasive alien species that are pests of plants (including plants that are invasive alien species) as a criterion for the selection of topics and priorities for future standards; and for enhancing, in the context of technical assistance initiatives, the capacity of developing countries to address pests of plants (including plants that are invasive alien species) that threaten the environment and biological diversity.

53. With regard to collaborative activities at the national level, the Interim Commission for Phytosanitary Measures, at its seventh session in 2005, recommended that Parties to the Convention and national plant protection organizations, among others, undertake the following activities and report on progress:

- (a) Enhance plant protection laws and policies, where needed, to include the protection of wild flora and biodiversity from pests of plants, including plants that are invasive alien species; and establish or adapt existing pest alert systems to include all pests of plants;
- (b) Reinforce efforts to apply and utilize relevant ISPMs and related phytosanitary measures to address threats to biodiversity posed by invasive alien species that are pests of plants, including plants that are invasive alien species;
- (c) Give particular attention, when carrying out pest risk analysis, to the possibility that introduced plants could act as invasive alien species;
- (d) Enhance linkages between environmental, plant protection and agricultural authorities and related ministries;
- (e) Improve communication between national focal points and contact points of the conventions; and
- (f) Collect information on the alien invasions of pests of plants, including plants that are invasive alien species, and forward this to the national focal points of the Convention on Biological Diversity to assist in monitoring progress towards biodiversity targets.

54. While a joint work programme between the Secretariats of the Convention on Biological Diversity and the International Plant Protection Convention has been developed and cooperation is ongoing and has led to a number of results (see section 2 above), collaboration at the national level could be increased on the basis of the recommendations contained in CPM Recommendation ICPM-7/2005.

(c) *Inter-agency Liaison Group on Invasive Alien Species*

55. In paragraph 4 of decision VII/13, the Conference of the Parties requested the Executive Secretary to promote fuller consideration of issues relating to invasive alien species in other international forums, including through the Joint Liaison Group of the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and the United Nations Convention to Combat Desertification, and the Collaborative Partnership on Forests. It also requested further collaboration with the Food and Agricultural Organization of the United Nations; the World Health Organization; the International Maritime Organization; the Convention on International Trade in Endangered Species; the International Plant Protection Convention; the World Organisation for Animal Health; the International Civil Aviation Organization; the World Trade Organisation and relevant conventions and other organizations to develop biome-specific practical guidance for site managers.

56. In response to this decision, and taking into account decisions VIII/27 and IX/4 A, the Executive Secretary of the Convention initiated the establishment of the Inter-agency Liaison Group on Invasive Alien Species in 2010, building on successful cooperation between the Secretariats of the Convention on Biological Diversity and the International Plant Protection Convention. Initially, the Inter-agency Liaison Group on Invasive Alien Species focused on addressing gaps and inconsistencies in the international regulatory framework, but the Group is now also focusing on supporting capacity-building of Parties and members of the relevant agreements and implementation. Recently, the terms of reference of the Group were updated. Reports of the Inter-agency Liaison Group on Invasive Alien Species meetings are available on its website.¹¹

¹¹ www.cbd.int/invasive/lg/.

(d) *International programmes and partnerships in support of work on invasive alien species*

57. The Conference of the Parties also invited international organizations to develop financial and other measures for the promotion of activities aiming to reduce the harmful effects of invasive alien species; and acknowledged the contributions of a number of initiatives, including the Global Invasive Species Programme. The Global Invasive Species Programme (GISP) was a partnership, founded in 1997, with a mission to conserve biodiversity and sustain human livelihoods by minimizing the spread and impact of invasive alien species. The Global Invasive Species Programme undertook focused assessments of the global invasive species problem and developed guides and toolkits for policy, regulation, prevention and management. Due to lack of funds, the Global Invasive Species Programme closed in 2011. The organizations which participated in the GISP continue to collaborate and to exchange information; many member organizations are now part of the Global Invasive Alien Species Information Partnership (see section 6 below).

5. *Information and tools*

58. The Conference of the Parties, in particular in decisions at its sixth and eleventh meetings, identified needs for information and tools, including information systems. In decision VI/23,* the Conference of the Parties called for research and assessments on, among others: the characteristics of invasive species and the vulnerability of ecosystems and habitats to invasion by alien species, and the impact of climate change on these parameters; the impact of alien species on biological diversity; an analysis of the importance of various pathways for the introduction of invasive alien species; the socio-economic implications of invasive alien species; the costs and benefits of the use of biocontrol agents to control and eradicate invasive alien species; criteria for assessing risks from introduction of alien species to biological diversity at the genetic, species and ecosystem levels; development of environmentally benign methods to control and eradicate invasive alien species; means to enhance the capacity of ecosystems to resist or recover from alien species invasions; priorities for taxonomic work; and the use of the traditional knowledge of indigenous and local communities. The Conference of the Parties also requested a compilation of information on these topics.

59. In the same decision, the Conference of the Parties urged Parties, Governments and relevant organizations to develop and make available technical tools and related information to support efforts for the prevention, early detection, monitoring, eradication and/or control of invasive alien species and requested the Executive Secretary to support the development and dissemination of such tools through, *inter alia*: compilation and dissemination of case-studies; compilation and making available lists of procedures for risk assessment/analysis and pathway analysis; identification and inventory of existing expertise relevant to the prevention, early detection and warning, eradication and/or control of invasive alien species, and restoration of invaded ecosystems and habitats; development of databases and facilitated access to information for all countries including repatriation of information to source countries, through, *inter alia*, the clearing-house mechanism; and development of systems for reporting new invasions of alien species and the spread of alien species into new areas. A compilation of case-studies, lessons learned and best practices for implementation of the guiding principles on specific topics was requested in paragraphs 15 and 16 of decision IX/4 B.

60. At its eleventh meeting, the Conference of the Parties requested the Executive Secretary in collaboration with relevant international organizations to develop a practical, non-prescriptive toolkit for Parties on applying existing international standards, guidelines and recommendations for addressing the risks associated with the introduction of alien species, and to managing pathways to prevent their introduction and spread, in order to achieve Aichi Biodiversity Target 9. It also welcomed the work of the Global Biodiversity Information Facility to improve the interoperability of online databases and networks and facilitate the use of information necessary to conduct risk and/or impact assessments.

61. In addition, in decision XI/6 (section E on collaboration on biodiversity and tourism development, paragraph 48), the Conference of the Parties decided to review the application of the Guidelines on Biodiversity and Tourism Development at its twelfth meeting. With regard to review of this guideline, the United Nations World Tourism Organization, the International Air Transport Association, and other relevant international organizations were encouraged to promote education and public awareness, for example through development of codes of practice, regarding the role of tourism as a pathway for introduction and spread of invasive alien species (decision VIII/27, paragraph 51).

62. A number of mechanisms for sharing information have been developed, which address the above requests. The Executive Secretary, in collaboration with invasive alien species database providers, initiated activities on the Global Invasive Alien Species Information (GIASI) Partnership. Since the eleventh meeting of the Conference of the Parties, the Natural History Museum (London), with support from the IUCN Invasive Species Specialist Group, and with feedback from users, a Technical Workshop held in 2013 and from members of the Information Gateway Working Group, has fully operationalized an Information Gateway to support Parties in their efforts to meet Aichi Biodiversity Target 9. The Gateway provides access to: Web-based resources from members of the GIASI Partnership and others; scientific literature; ecological, biological, nomenclatural and other information about species known or suspected to be invasive; and a forum facility to enable discussion between users and Partners. A compilation of case-studies, lessons learned and best practices is currently being made available through the Gateway.

63. The GIASI Partnership has collated information on invasive alien species from over 100 countries and data from country experts maintained by the IUCN Invasive Species Specialist Group. An interoperable system to search a global registry of introduced and invasive species (GRIIS) and direct access to partner databases will be launched at the twelfth meeting of the Conference of the Parties in October 2014. Currently, the Global Biodiversity Information Facility (GBIF) coordinates the Partnership.

64. At the regional level, a number of initiatives compile and share through the Internet information on introduced alien species and known invasive alien species. Information networks in the Americas (e.g., the IABIN Invasives Information Network, I3N¹²), the Asia and Pacific region (e.g., Asia Pacific Forest Invasive Species Network, APFSIN¹³, or the Pacific Island Ecosystems at Risk, PIER¹⁴), and Europe (e.g., Delivering Alien Invasive Species Inventories for Europe, DAISIE,¹⁵ the European Network on Invasive Alien Species, NOBANIS¹⁶) are continuously working to update invasive alien species information.

65. At the global level, the CABI Invasive Species Compendium¹⁷ covers over 1,500 species that are alien and invasive. The Global Invasive Species Database¹⁸ of the IUCN Invasive Species Specialist Group currently stores 37,970 occurrence records of 890 invasive species which impact particularly on biodiversity. The DAISIE has shown that 12,122 alien species have already been introduced and about 15 per cent of these alien species cause economic damage and 15 per cent cause harm to biological diversity within the region of wider Europe. These statistics may suggest that the number of alien species that are already outside natural range and distributed around the world could likely be estimated in the order of some tens to hundreds of thousands of taxa. The open-access regional and global datasets

¹² www.i3n.org.

¹³ <http://apfisn.net>.

¹⁴ www.hear.org/pier.

¹⁵ www.europe-aliens.org.

¹⁶ www.nobanis.org.

¹⁷ <http://www.cabi.org/isc>.

¹⁸ <http://www.issg.org/database/welcome>.

mentioned above show that invasive alien species in many taxonomic groups have already been introduced via international trade, including e-commerce.

66. Under the GIASI Partnership, a categorization of pathways of introduction and spread has been developed using data derived from the Global Invasive Species Database, the CABI Invasive Species Compendium, NOBANIS and DAISIE; as well as a list of species and their pathway information for selected pathways. This information resource is maintained by the IUCN Invasive Species Specialist Group. The Executive Secretary, taking into account this information, has prepared a preliminary list of the most common pathways for the introduction of invasive alien species, proposed criteria for their prioritization, and has identified a range of existing tools that may be used to manage or minimize the risks associated with these pathways in document UNEP/CBD/SBSTTA/18/9/Add.1.

67. In addition, experts in invasion biology have developed a conceptual framework for classifying alien species according to the magnitude of their environmental impacts.¹⁹ This classification framework is applicable at different levels of ecological complexity and different spatial and temporal scales. The framework can serve as a tool to prioritize the results of the mapping of the most common pathways of introduction and spread of invasive alien species described in the previous paragraph.

68. With regard to tools for describing the invasion process, a recent study²⁰ provides a unified framework for biological invasions that integrates the key features of the most commonly used invasion frameworks into a single conceptual model that can be applied to all human-mediated invasions.

69. In response to paragraph 14 of decision XI/28, the Secretariat has collected best practices of Parties; international standards and guidance relevant to invasive alien species; risk assessment tools; and training materials that have been developed by the Global Invasive Species Programme and other organizations. The information has been made available at capacity-building workshops organized by the Secretariat and at an information kiosk at the venue of the seventeenth meeting of the Subsidiary Body and is accessible from the website of the Convention. However, further work is required to fully address many of the issues listed in paragraphs 59 and 60 above.

70. By the twelfth meeting of the Conference of the Parties, a practical, non-prescriptive toolkit for Parties on applying existing international standards, guidelines and recommendations for addressing the risks associated with the introduction of alien species, and to managing pathways to prevent their introduction and spread, will be developed based on the information collected. It will be made available in various forms, including e-learning module in due course.

6. *Communication, education and public awareness.*

71. In paragraph 26 of decision VI/23,* the Conference of the Parties requested the Executive Secretary to identify the key scientific, technical and public awareness impediments to implementation of priority actions at the national and regional levels and to develop, in partnership with relevant Parties, countries and relevant organizations, solutions to those impediments.

72. The Conference of the Parties encouraged Parties and other Governments, in paragraph 13 of decision VII/13, to increase communication and public awareness about the environmental, social and economic impacts of the introduction of invasive alien species according to Guiding Principle 6. In

¹⁹ Blackburn, T.M., Essl, F., Evans, T., Hulme, P. E., Jeschke, J. M., Kühn, I., Kumschick, S., Markova, Z., Mrugala, A., Nentwig, W., Pergl, J., Pysek, P., Rabitsch, W., Ricciardi, A., Richardson, D. M., Sendek, A., Vila, M., Wilson, J. R. U., Winter, M., Genovesi, P., and Backer, S., A Unified Classification of Alien Species on the Magnitude of their Environmental Impacts, forthcoming 2014.

²⁰ Blackburn, T. M., Pzsek, P., Bacher, S., Carlton, J.T., Duncan, R. P., Jarosik, V., Wilson, J. R. U. and Richardson, D. M., A proposed unified framework for biological invasions, Trends in Ecology and Evolution 26 (2011), 333-339.

decision IX/4 B, it invited Parties, other Governments and relevant organizations to support awareness-raising programmes at all levels for decision makers and practitioners in freshwater, marine and terrestrial environment sectors, in particular agriculture, aquaculture and forestry, and in the horticulture trade and pet trade, and more generally, in the transportation, trading, travel and tourism sectors.

73. In the same decision, the Conference of the Parties requested the Executive Secretary in collaboration with relevant organizations, to develop training materials in support of awareness-raising. Further, in paragraph 18 of decision XI/28, the Executive Secretary was requested to explore methodologies for fostering awareness, promoting education and generating information on invasive alien species for a broad audience, including indigenous and local communities, the public and other stakeholders.

74. In response to this decision, the Executive Secretary has invited various networks and experts of the Global Invasive Alien Species Information Partnership to share information and good practices. The information has been made available at some of the capacity-building workshops organized by the Secretariat and at information kiosks at the venue of the eleventh meeting of the Conference of the Parties and the seventeenth meeting of the Subsidiary Body.

75. Little progress has been made in the implementation of decisions of the Conference of the Parties with regard to communication, education and public awareness on the risks associated with the introduction of invasive alien species. Additional efforts may be required to increase the awareness of the general public and relevant sectors. As section 2 above indicates that the risk of introduction of invasive alien species through emergency relief, aid and response and international development assistance remains to be addressed, these activities could also be the focus of further measures to increase communication, education and public awareness.

7. *Capacity-building and implementation activities*

76. Besides Guiding Principle 9 on cooperation, including capacity-building, the Conference of the Parties mandated capacity-building activities in paragraphs 31 to 34 of decision VI/23,* paragraphs 4 to 6 of decision VIII/27, paragraph 11 of decision IX/4 A and paragraph 19 of decision XI/28. While capacity-building measures should, in general, aim to support Parties in achieving Aichi Biodiversity Target 9, particular requests addressed the development of tools to strengthen the capacity of border control authorities and other competent authorities to identify invasive alien species or potentially invasive alien species, for assessing risks and taking steps to manage or minimize the risk of establishment and spread, for rapid response and implementation of management measures, including to control and eradicate prioritized invasive alien species.

77. Capacity-building was requested to take place at subregional, regional and global levels to promote consistency and mutual supportiveness of measures. Members of the Inter-agency Liaison Group on Invasive Alien Species were asked to support capacity-building activities.

78. In response to these requests, the Executive Secretary, in collaboration with partners, organized a series of regional capacity-building workshops to support Parties in achieving Aichi Biodiversity Target 9. Workshops were held between November 2011 and December 2013 in Montreal, Canada, for the Group of Latin American and the Caribbean; Nairobi, Kenya, for an English-language African subregional workshop; Bangkok, Thailand, for East and South East Asia; Dubai, United Arab Emirates, for the Arab Region; Dakar, Senegal for West and Central Africa; and Sarajevo, Bosnia and Herzegovina for Central and Eastern Europe.

79. Relevant capacity-building activities by partners include a programme for capacity development on ballast water management (GloBallast Programme in 2000-2007) by the International Maritime Organization, the United Nations Development Programme and the Global Environment Facility; a seminar on international trade and invasive alien species (Geneva, Switzerland, July 2012), with a related study²¹ and briefing²² available online; and a capacity-building workshop organized by the Ramsar Convention on Wetlands, in collaboration with the Ramsar Regional Center in October 2014 in Changwon, Republic of Korea, for National Focal Points and Scientific and Technical Review Panel National Focal Points, which will address, among others, guidance used in Asia for the prevention, eradication, control and management of invasive alien species

80. In Ethiopia, Ghana, Uganda and Zambia, a four-year project on “Removing Barriers to Invasive Plant Management in Africa” was implemented by the United Nations Environment Programme with funding from the Global Environment Facility (GEF) in 2005-2009.

81. The Government of the New Zealand, the Invasive Species Specialist Group, the Global Invasive Species Programme and other partners developed an international cooperative initiative on invasive alien species on islands. The initiative was launched in 2002 following calls from island countries and countries with islands for more efforts to manage invasive species. It aims to facilitate cooperation and enhance capacity to prevent and manage invasive species on islands and has made progress in strengthening invasive species networks through engagement and supporting activities, information sharing through the Global Invasive Species Database (GISD), provision of technical support, including peer review, to projects on the ground and raising awareness of the impacts of invasive species on island biodiversity and livelihoods and opportunities for their management, among others.²³

III. CONSIDERATIONS FOR FURTHER WORK ON INVASIVE ALIEN SPECIES

1. *Overview of status, trends and challenges*

82. The draft technical document on Aichi Biodiversity Target 9 underlying the fourth edition of the Global Biodiversity Outlook, summarizes that very few ecosystems are currently free of alien species and invasions are continuing at an unprecedented rate. It states, for example, that the number of invasive alien species in Europe (e.g., Mediterranean marine, mammal and freshwater) increased by 76 per cent between 1970 and 2007, that numbers in China and North America have also been increasing, and that the rate of invasion success of vertebrates in Europe and North America has been estimated at 50 per cent of all introduced alien species established, and 50 per cent of established species spread.

83. Globally, no improvement has been found regarding the pressure of invasive alien species since the previous Global Biodiversity Outlook report. Although notable progress has been achieved in some areas (for example, over 784 successful alien vertebrate species eradications have been conducted on islands worldwide compared to only 88 failures), rapid development and increase in trade and transportation bring more invasive alien species into new biogeographic region if no measures are taken. Therefore, activities undertaken are still insufficient to ensure the full achievement of Aichi Biodiversity Target 9, in particular regarding the implementation of actions against invasive species.

84. The draft technical document noted that while tens of thousands alien, and thousands of invasive ones have been identified, some issues appeared about the definition of the characteristics of invasive alien species and time lag issues between introduction of alien species and impacts also require more

²¹ www.standardsfacility.org/Files/IAS/STDF_IAS_EN.pdf.

²² www.standardsfacility.org/Files/Briefings/STDF_Briefing_No9_EN_web.pdf.

²³ www.issg.org/cii.

attention. It was recommended that new efforts should be focused on traits, impacts and risk assessments at a global scale.

85. It was further reported that the identification of pathways has been significantly improved over the last years, although much of existing literature is generally focused on some region, taxa, or markets.

86. The draft technical document summarized that there are examples of biosecurity policies adopted based on quarantine measures at the borders. However, the high numbers of invasive alien species and the cost of introducing stringent biosecurity measures have led many countries to adopt policies focused on regulation or banning of priority invasive alien species, selected on the analysis of the possible risks of their establishment and their consequence on biodiversity. Other criteria which are used to select measures for the control or eradication of species include feasibility, durability and cost effectiveness but others factors need also to be included (e.g., climate change exposure).

87. It was also reported that control or eradication measures to manage invasive alien species have increased significantly over time, including for species that were until recently deemed impossible to eradicate, but there are still significant data gaps. The increase in the number of new introductions is still significantly larger than the number of eradications, pointing towards a need for further efforts in measures to prevent introduction and establishment. The increasing establishment rates of invasive alien species are widely attributed to the increased rate of species introductions associated with increasing international trade and human density.

88. The following actions were recommended in order to facilitate the achievement of Aichi Biodiversity Target 9:

(a) Developing freely accessible global invasive alien species information resources to prioritize invasive species and their pathways to manage through a partnership among experts and Governments;

(b) Prioritizing main pathways for management such as live plants and animals trade, transport vectors/vessels and stowaways to prevent and minimize the risks of establishment and spread of invasive alien species;

(c) Developing and implementing measures for early detection and rapid response;

(d) Developing decision support tools, such as risk analysis and cost benefit analysis on invasive alien species to efficiently apply management measures, taking into account the complexity with climate change and land use change that may exacerbate biological invasions; and

(e) An integrated approach in application of measures on invasive alien species, pests and diseases at pre- and post-border areas is urged.

2. *Progress in the implementation of decisions of the Conference of the Parties on invasive alien species*

89. As discussed in section II above, the Conference of the Parties has provided ample guidance on addressing the risks associated with the introduction of invasive alien species for biodiversity. In addition, a number of relevant tools and standards have been developed by other instruments and organizations, notably the International Plant Protection Convention and the World Organisation for Animal Health. However, the existing guidance and standards may not appear readily usable for all Parties. Therefore, the development of a guide to existing decisions of the Conference of the Parties on invasive alien species

and the relevant guidance and standards developed by other relevant organizations, as requested in paragraph 17 of decision IX/5, could be a priority for future work.

90. In addition, the different pathways associated with military activities; emergency relief, aid and response and international development assistance need to be better understood and efforts undertaken to address them. To date, insufficient efforts have been undertaken to address these risks.

91. With regard to international cooperation, the Inter-agency Liaison Group on Invasive Alien Species is providing an effective forum for facilitating the closing of gaps and inconsistencies in the international regulatory framework on invasive alien species. However, potential for increased cooperation on the international level remains with regard to the other Rio Conventions, in particular in the context of adaptation measures to climate change and ecosystem restoration. In addition the Liaison Group could give more attention to invasive alien species in aquatic environments, including marine ecosystems.

92. Increased cooperation between national focal points of the Convention on Biological Diversity and national plant protection organizations on activities recommended in CPM Recommendation ICPM-7/2005 could be promoted in order to realize the full potential of available mechanisms under the International Plant Protection Convention.

93. With regard to specific tools and measures, Parties could be encouraged to make full use of available tools to identify priority species for control, management and eradication, of available standards for risk analysis, of available measures for *in-situ* monitoring, control and eradication, including biocontrol, with appropriate precautions. Labelling live organisms containers as potential hazard to biodiversity could be used as a tool to display the outcome of a risk-assessment.

94. New tools could be developed for assisting decision-making and prioritization, such as tools for cost-benefit analysis for management measures with appropriate guidance on biogeographic conditions and national circumstances. In addition, rapid species identification services (e.g., DNA barcoding for selected taxa) could support border control authorities and stakeholders in the field with the early detection of invasive alien species. Further, as more emphasis is placed on ecosystem restoration under the Convention to support Aichi Biodiversity Target 15 and in line with decision XI/16, additional tools and guidance may be necessary to integrate the control and eradication of invasive species into strategies, plans and programmes for ecosystem restoration.

95. Major efforts are required with regard to raising awareness of the risks associated with the introduction of invasive alien species. Efforts need to be undertaken to further educate the general public about these risks. Campaigns could, for example, demonstrate impacts of invasive alien species on flagship or charismatic species and places. Indigenous and local communities and citizen scientists could be encouraged to more systematically report on the occurrence of alien species in order to facilitate early detection, rapid response and eradication.

96. In addition, awareness raising activities should target the development community in order to support the prevention of the introduction of invasive alien species through emergency relief, aid and response and international development assistance.

97. Further, increased collaboration between taxonomic institutes and the environment sector may help to address the risk of unintended protection of invasive alien species and inconsistencies in terminology, which further exacerbate risks associated with the introduction of invasive alien species.

IV. SUGGESTED RECOMMENDATION

98. The Subsidiary Body on Scientific, Technical and Technological Advice recommends that the Conference of the Parties, at its twelfth meeting, include the following elements in its decisions on further guidance to support the implementation of Aichi Biodiversity Target 9:

The Conference of the Parties

1. *Urges* Parties, and *invites* other Governments and relevant organizations, to recognize alien species as potential hazards to biodiversity, human health and sustainable development;

2. *Welcomes* the establishment of the Global Invasive Alien Species Information Partnership and *recognizes with appreciation* the contributions of its members towards free and open access to standardized invasive alien species and pathway information globally;

3. *Invites* the IUCN Invasive Species Specialist Group and other technical partners to continue and complete the work on pathway analysis, and to develop a unified classification of alien species based on the magnitude of their impacts;

4. *Calls upon* Parties and other Governments, when developing or updating their national or regional invasive alien species strategies, to consider:

(a) Making effective use of communication strategies, tools and approaches to raise awareness of the risks associated with the introduction of invasive alien species, including through targeted messaging towards different sectors and audiences;

(b) Making use of existing guidance on risk analysis relevant to invasive alien species, including guidance developed by the International Plant Protection Convention, the World Organisation for Animal Health, and the Food and Agricultural Organization of the United Nations;

(c) Making use of the categorization of pathways of introduction of invasive species, considerations for their prioritization and overview of available tools for their management as contained in document UNEP/CBD/SBSTTA/18/9/Add.1, including with a view to enhancing interoperability of databases;

(d) Identifying and prioritizing pathways of introduction of invasive alien species, taking into account, *inter alia*, information on the frequency of introduction and magnitude of impacts;

(e) Identifying, prioritizing and sharing information about invasive alien species for control, management and/or eradication based on cost-benefit analyses, drawing upon information available through the GIASI Partnership;

(f) Making use of the full range of measures for control and eradication with appropriate risk analysis, including biocontrol, and of decision-support tools and guidance, including in the context of ecosystem restoration efforts;

(g) The creation of national invasive species partnerships involving experts from relevant agencies and institutions, including academia, indigenous and local communities and private sector entities, with a view to ensuring a coherent approach towards invasive alien species; and

(h) The risk associated with the inadvertent introduction of alien species through programmes related to development aid, restoration, scientific research and other gaps identified in previous decisions on invasive alien species.

5. *Requests* the Executive Secretary:

(a) To facilitate capacity-building on alien species identification, including on rapid approaches, in support of the Capacity-building Strategy for the Global Taxonomy Initiative;

(b) To develop, in collaboration with relevant organizations, tools for assessing the economic consequences of invasive alien species, and tools for cost-benefit analyses for eradication and control measures.
