

Guidance Note for Pest Management Planning

A. Introduction

1. For the purpose of this Guidance Note pests are defined as “any species, strain or biotype of plant, animal or pathogenic agent injurious to humans, animals, plants, other organisms, native biodiversity, habitats, ecosystems, or materials, including vectors of parasites or pathogenic agents”. This definition of “pests” includes “invasive alien species¹” that threaten ecosystems, habitats or species.
2. For the purpose of this Guidance Note pest management is defined as the use of any technique to prevent the arrival or establishment of the pest (“prevention”), reduce the pest population or keep it at a reduced level (control), or completely remove the pest from a defined area (eradication). Pest management techniques include:
 - i. The practice of removal of conditions favourable to pests (though this does not trigger the adherence to this Guidance Note unless such removal involves the use of one or more other techniques as defined below);
 - ii. Physical control, i.e. manual or mechanical removal of the pest, such as uprooting, felling, burning, shooting or trapping;
 - iii. Use of baits and attractants including bait stations using food, hormones (pheromones), or other chemical-based, visual or audible lures;
 - iv. Biological control (or “classical biological control”) is defined as releasing or augmenting the population of an organism which attacks the pest specifically (also referred to as “natural enemies”), and which is expected to persist in eventual balance with the target pest. Such agents are most commonly insects or pathogens such as fungi;
 - v. “Natural” biocides or biopesticides are defined as including naturally occurring substances that control pests (biochemical pesticides), microorganisms that control pests (microbial pesticides), and pesticidal substances produced by plants containing added genetic material or plant-incorporated protectants (PIPs)². An example is the use of the micro-organism *Bacillus thuringiensis* against insect pest. Despite being derived from natural materials, such substances may be highly toxic.
 - vi. Synthetic biocides including pesticides, fungicides, herbicides, insecticides, algicides, molluscicides, miticides, rodenticides.
3. This Guidance Note is part of the IUCN’s Environmental and Social Management System (ESMS) and is hosted under the Standard on Biodiversity and Sustainable Use of Natural Resources.

B. Purpose and Principles of the Guidance Note

4. The purpose of the Guidance Note is to promote and support safe effective and environmentally sound pest management and to minimize health and environmental risks (including risks to

¹ See the Decision VI/23 of COP 6 for a definition of invasive alien species, available at:

<https://www.cbd.int/decision/cop/?id=7197>

² As defined by the United States Environmental Protection Agency. Available at <https://www.epa.gov/ingredients-used-pesticide-products/what-are-biopesticides>

terrestrial and aquatic ecosystems, non-target species and other important ecological resources) associated with the use of biocides and other pest management techniques.

5. IUCN encourages the use of ecologically sound pest management practices, following Integrated Pest Management (IPM)³ principles. The over-riding principle is that the choice of the pest management technique should be based on effectiveness at managing the pest while minimising the risks to health and the environment, including non-target or ecological damage.
6. This Guidance Note recognises that quite often, in particular when managing invasive alien species, a method such as biological control or biocides can – if used in an environmentally sensitive and effective way - cause less environmental damage than physical control. The choice of technique should be based on the overall balance of environmental costs and benefits, including the cost of leaving the pest unmanaged or less well-managed, and the environmental impacts of the chosen technique.

C. Scope of application

7. This document provides guidance for pest management planning for projects that intend or may be required to manage pests, with particular attention to the use of synthetic biocides, but with guidance also provided for projects applying other pest management techniques as defined in paragraph 2 (ii-vi.)⁴.
8. In adherence to the definition of pests provided in paragraph 1 the Guidance Note applies to any project that involves the use of biocides or other pest management techniques to manage any invasive alien species.
9. The Guidance Note is also applicable for projects that do not apply biocides but (only) include activities related to biocide handling (e.g. procurement and transportation of biocides, storage, disposal of biocides or of biocide contaminated materials etc.).
10. The Guidance Note is further intended to inform projects supporting policy reform and institutional capacity development to enhance implementation of IPM and/or regulate and monitor the distribution and use of biocides.

D. Requirements

11. Projects that include the application of biocides and other pest management techniques as defined in paragraph 2 (ii–vi) trigger the application of this Guidance Note. The minimum requirement is that (i) the project document provides a description of the proposed technique. Further requirements are (ii) undertaking an assessment of the risks of applying the chosen technique (hereafter called “technique risk assessment” or TRA) and (iii) the development of a pest management plan (PMP). Requirement (ii), however, applies only for projects where the proposed pest management technique could potentially cause more than very minor and temporary risk and requirement (iii) only for projects with potentially significant impacts, including beyond the immediate site of application. While the level of risk and applicability of these

³ FAO defines Integrated Pest Management (IPM) as “an ecosystem approach to crop production and protection that combines different management strategies and practices to grow healthy crops and minimize the use of pesticides”
<http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/ipm/en/>

⁴ It does not cover gene drive technology to control pests or invasive species – as IUCN cannot undertake any work in this area as per recent IUCN Resolution on Synthetic Biology (WCC-2016-Res-086-EN) “Calls upon the DG & Commissions (...) refraining from supporting or endorsing research, including field trials, into the use of gene drives for conservation or other purposes until this assessment has been undertaken”.

requirements will be established case-by-case during the ESMS Screening⁵, Table 1 provides a general orientation.

12. A technique risk assessment evaluates the potential for negative impacts of the use of the technique on the environment (including impacts on non-target species and on habitats and ecosystems), human health, or other human values. It sets these risks against the benefits to be obtained from use of the proposed technique and, where appropriate, compares these costs and benefits with those that might result from using alternative management techniques. The TRA should also propose measures to avoid, minimize or mitigate risks.
13. A pest management plan involves a more rigorous and comprehensive analytical process than a TRA. It is a concise implementation plan for the pest management aspects of the project, which is used to communicate with relevant stakeholders to ensure that they are informed about important details of the pest management strategy and are given the opportunity to react. The PMP includes the results of the TRA but also describes the full rationale of and justification for the application of biocides or other pest management techniques, and the respective institutional and regulatory framework. It provides a comprehensive description of the proposed technique, associated risks and appropriate measures to minimize or mitigate those risks. The detailed content is outlined in Annex A.
14. Relevant stakeholders should be involved in the development of the PMP, in particular local communities who may be affected by the application of the biocide or other pest management technique (e.g. by proximity, through hydrological systems, by the use of treated areas for free-ranging livestock or non-timber forest product collection, etc.).
15. The PMP needs to be disclosed and discussed in at least two steps. A draft version of the plan must be shared at the earliest possible stage with potentially affected parties and other stakeholders, in a form and language understandable to them, and their views must be taken into account during revision of the draft. The final version of the plan must be publicly disclosed prior to project approval, including on the IUCN website.
16. The TRA and the development of the PMP are undertaken subsequent to the ESMS Screening. The appraisal of the TRA and/or the PMP forms part of the ESMS Clearance which takes place prior to IUCN-internal approval of the full project proposal.⁶ The PMP will become an integral part of the contractual agreement between IUCN and the executing entity.
17. The above requirements also apply to projects where a decision about the use of biocides or other pest management techniques is taken only during the course of project implementation. Where a TRA and/or PMP are required, they need to be submitted to IUCN for approval prior to any use of the proposed technique.

⁵ Chapter 4 of the ESMS Manual describes the ESMS review procedures along the project cycle - the ESMS Screening is the first of the ESMS review steps with the intention to identify risks. The manual is available at www.iucn.org/esms.

⁶ See chapter 4 of the ESMS Manual for a description of the ESMS review procedures along the project cycle, available at www.iucn.org/esms

Table 1: Pest management techniques and respective requirements

Requirements	Description of applied technique	Technique Risk Assessment (TRA)	Pest Management Plan (PMP)	Guidelines that must be adhered to
Physical methods , including manual and mechanical removal of the pest, such as such as uprooting, felling, burning, shooting or trapping	Required	If major habitat disturbance is likely to be caused (such as felling an invasive tree species over an extensive area)	If major habitat disturbance is involved (to be determined by the ESMS Screening)	
Use of baits and attractants , including bait stations using food, hormones (pheromones), or other chemical-based lures	Required	To be determined by the ESMS Screening	Not required.	<ul style="list-style-type: none"> • Technical guidelines provided by the manufacturer of the product used in baits/attractants
Application of biological control (i.e. "classical biological control")	Required	Required; including specificity testing based on standards/best practices	Required	<ul style="list-style-type: none"> • IPPC, 2016. Guidelines for the export, shipment, import and release of biological control agents and other beneficial organisms: International standard to deal with the importation and release of biocontrol agents (ISPM3). Available at http://tinyurl.com/IPPC-Guidelines-adopted-2005; • OECD, Guidance to the environmental safety evaluation of microbial biocontrol agents. Available at https://tinyurl.com/oecd-2014-microbial-biocontrol
Application of small amounts of synthetic biocides or natural biocides (or bio-pesticides) in limited or controlled areas	Required; public disclosure of pest management technique and mitigation measures	To be determined by the ESMS Screening		<ul style="list-style-type: none"> • Technical guidelines provided by the manufacturer of the biocide
Application of natural biocides (or bio-pesticides) as the major or a major component of the project.	Required	Required	If major use of a toxic substance or bio-pesticide is planned	<ul style="list-style-type: none"> • Technical guidelines provided by the manufacturer of the biocide
Application of synthetic biocides as the major or a major component of the project.	Required	Required	Required	<ul style="list-style-type: none"> • Technical guidelines provided by the manufacturer of the biocide; WHO and FAO, 2014. <i>International Code of Conduct on Pesticide Management</i>. Available at: http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/; • WHO and FAO, 2016. <i>Guidelines on highly hazardous pesticides</i>. Available at: http://www.fao.org/3/a-i5566e.pdf

18. For projects that involve the use of synthetic or natural biocides (or bio-pesticides) adherence to the following requirements should be demonstrated:

- i. Evidence that available options to avoid the use of biocides have been rigorously considered, such as biological or physical means, and that none is viable for the specific context and objective. The Guidance Note recognizes that for some pest management operation such as eradication of rats, biocides are generally accepted as the best method; in such cases there may be no need to prove that biological or mechanical means are not effective. If this is the case, seek preliminary confirmation as part of ESMS Screening.
- ii. Any use of biocides or bio-pesticides must be guided by the associated technical guidelines provided by the manufacturers of the respective product and the respective national regulatory authority and comply with recommendations and minimum standards as described in the WHO and FAO (2014) and associated guidelines⁷; this includes ensuring the use of suitable protective and application equipment and that biocides are handled only by appropriately trained operators.
- iii. Preference should be given to products that are less hazardous and persistent in the environment, and to methods of application and equipment that minimize the risks to users, local communities and the environment, and which maximise efficiency (i.e. requiring smaller quantities of biocide). Synthetic and natural biocides should have a lifespan in the field that does not exceed the project needs; for example, bio-pesticides should not remain active in the soil for long periods after the use of the agent. The technique risk assessment needs to demonstrate that risks are within acceptable thresholds (according to national or international standards, whichever is stricter) in normal operating conditions as well as in abnormal situations (including leaks, spills and emergencies).
- iv. The procurement or use of formulated products that are in World Health Organization (WHO) Classes IA (extremely hazardous) and IB (highly hazardous), or formulations of products in Class II, are not allowed in IUCN projects unless there are restrictions in place that deny or prevent use or access of substance by lay personnel and others without training or proper equipment.⁸ The use of IA and IB should strictly adhere to the FAO/WHO guidelines on highly hazardous pesticides.⁹ Chemicals specified as persistent organic pollutants (POPs) under the Stockholm convention are not to be used in any IUCN project.

19. Where projects involve the application of biological control, traps or hormone lures, the following requirements apply:

- i. The technique risk assessment needs to demonstrate that risks to terrestrial and aquatic ecosystems, non-target species and other important ecological resources are minimised and where possible mitigated (see paragraph 12).
- ii. The use of biological control agents must adhere to internationally agreed standards.¹⁰

20. If dealing with pest animals, particularly vertebrates, welfare guidance should be adhered to as outlined by the manufacturer of the trapping equipment or biocide, internationally recognised

⁷ World Health Organization and United Nations Food and Agriculture Organization, 2014. *International Code of Conduct on Pesticide Management*. Available at <http://www.fao.org/agriculture/crops/thematic-sitemap/theme/pests/code/en/>

⁸ World Health Organization, 2009. *The WHO recommended classification of pesticides by hazard and guidelines to classification: 2009*. Available at http://www.who.int/ipcs/publications/pesticides_hazard_2009.pdf.

⁹ World Health Organization and United Nations Food and Agriculture Organization, 2016. *Guidelines on highly hazardous pesticides*. Available at <http://www.fao.org/3/a-i5566e.pdf>.

¹⁰ In particular the standard published by the Secretariat of the International Plant Protection Convention (IPPC, 2016, *Guidelines for the export, shipment, import and release of biological control agents and other beneficial organism*, available at: <http://tinyurl.com/IPPC-Guidelines-adopted-2005>). Further guidance is expected to be published in 2017 by IUCN, Invasive Species Specialist Group (ISSG), together with the Convention of Biological Diversity (CBD).

best practice¹¹, and national legislation, whichever is stricter. For example, many kinds of trap should be checked daily, and in some countries or circumstances, management of certain pest taxa such as mammals and birds may not be carried out while they have dependent young. The use of firearms should be guided by explicit firearm protocols developed by the executing entity or national legislation, whichever is stricter. The executing entity should also establish specific protocols for disposing of the carcasses of culled pest animals.

21. Populations of both pests and non-target indicator species should be measured before and after treatment, to evaluate the effectiveness of pest removal and any impacts on non-targets.
22. The executing entity must monitor the implementation of the mitigation measures regularly and judge their effectiveness in mitigating pest management risks, so that corrective action can be undertaken, where needed. The end-of-project evaluation should assess whether the project has been able to avoid or mitigate negative impacts and identify any risk issues that require further action or monitoring. Where relevant, measures should be devised for post-project monitoring, including the identification of resources for this.
23. The costs for implementing the activities specified in the pest management plan, including risk mitigation measures, must be estimated and incorporated into the project budget.
24. At the start of the project, the executing entity should explain to all relevant stakeholders the IUCN ESMS Grievance system and its role as a mechanism to receive and address complaints related to situations where the project fails to adhere to the agreed mitigation measures, or where the application of pest management techniques might cause social or environmental harm.
25. In addition to this Guidance Note, projects managing invasive alien species should also follow the guidelines developed by IUCN and CBD on the prevention of biodiversity loss caused by invasive alien species¹² and the recommendations from the CBD for the use of biological control to combat invasive alien species¹³.

¹¹ For instance best practices published by the Government of New Zealand, available at: <http://tinyurl.com/NZ-HumaneVertebratePestContr>

¹² IUCN (SSC Invasive Species Specialist Group), 2000. *IUCN Guidelines for the Prevention of Biodiversity Loss caused by Alien Invasive Species*. Available at: <https://portals.iucn.org/library/efiles/documents/Rep-2000-052.pdf>. CBD, COP 6, 2002, Guiding principles for the prevention, introduction and mitigation of impacts of alien species that threaten ecosystems, habitats or species. Available at: <https://www.cbd.int/doc/decisions/cop-06-dec-23-en.pdf>. CBD, 2014. *Pathways of Introduction of Invasive Species, their Prioritization and Management*, available at <http://tinyurl.com/CBD2014Invasive>

¹³ Decision XIII/13 of COP 13, *Invasive alien species: addressing risks associated with trade, experiences in the use of biological control agents, and decision support tools*. Available at: <https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-13-en.pdf>

Outline Pest Management Plan (PMP)

Section 1: Intended project or programme

1. Title of the proposed project or programme.
2. Countries or territories where the pest management will be applied.
3. Name of the executing entity, full name and contacts of the main project personnel responsible for the PMP and his/her manager(s).
4. Summary of the project.
5. Date of preparation of the PMP.

Section 2: Rationale for the pest management approach

This section establishes the rationale for using the proposed pest management approach by providing a description of the following items:

1. Current impacts caused by the pest which is proposed for management by the project, and anticipated future changes such as those caused by climate change and other planned interventions;
2. Current management practices applied to the pest, and rationale for the proposed changes;
3. Executing entity's experience with pest management.

Section 3: Description of pest management technique

This section provides a comprehensive description of the chosen pest management technique. For the application of synthetic or natural biocides (or bio-pesticides) the following items need to be included:

1. The identity, class and quantity/application rate of biocides or bio-pesticides envisaged for use by the project (including chemical, trade and common names, likely dilution rates, application rates per ha etc).
2. The form and methods of application in which biocides or bio-pesticides will be used (e.g., pellet, liquid, paint-on, back-pack or aerial spraying, rodenticides dropped from aircraft, permanent bait stations etc).
3. Specific geographical location where the biocides or bio-pesticides will be applied: e.g. name of local area, district, municipality, landowners, map or coordinates (if available); and the estimated total area (hectares) to which the biocide will be applied.
4. Name and address of supplier of selected biocides or bio-pesticides (including confirmation of holding a license to sell this product) and details of facility where the products will be stored.

Section 4: Institutional and regulatory framework

This section should provide a short description of the institutional and legal framework under which the biocide or other technique will be applied.

1. Short description of the country's regulatory framework and the legal status of the product or technique including a reference to the required documentation and standards required under national law and international good practice.
2. Where a biocide or other technique is not regulated, the proponent should attempt to identify international laws for this or similar products, or applicable regulations in neighbouring countries that could be used as a guide, including internationally recognised good practice. The proponent must also explain why this particular biocide or technique is necessary despite the absence of national regulation.

3. Analysis of institutional capacity for control of the distribution, use and disposal of biocides, in particular the product selected by the project and the institutions responsible at the project site.
4. Any measures proposed to strengthen regulatory framework and institutional capacity, where relevant.

Section 5: Technique Risk Assessment (TRA)

This section should analyse the potential environmental, occupational, and public health risks of the chosen pest management approach, taking into account the proposed use, intended users and other actors involved. It should propose effective measures for minimizing identified risks. This should include

1. Assessment of **risks to people** associated with **application** of the product or technique based on any physical risks or the expected exposure to the biocide of relevant operators or members of the public, their sensitivity and likelihood that exposure may cause harmful impacts. The assessment should take the real circumstances of application into account, including the capability of operators to handle products within acceptable risk margins and their access to and use of protective gear and appropriate application equipment.
2. Assessment of **risks to the environment** associated with **application** of the technique or product, based on the expected levels of use of the product. The assessment should include potential impacts to all components of the biophysical environment, including but not limited to soils, surface waters, groundwater, marine run-off, habitats, plant communities, and non-target species, particularly native, endemic and threatened species.
3. Assessment of risks linked to the **steps prior and subsequent to application** such as transport, storage, local movement and handling, and disposal of the proposed chemicals (and diluents) under local circumstances (including the disposal of empty chemical containers); evaluation of the capability of actors operating these steps to handle product.
4. The TRA should consider normal operations as well as abnormal situations and hazards (including weather hazards, spills and emergencies, and associated clean up).
5. Effective measures should be identified to **reduce and mitigate the risks** such as training for workers applying biocides and for people coming in contact with the substances, effective personal protective equipment, development of standard operating procedures, upgrading of storage facilities etc.; mitigation measures should include activities for monitoring effectiveness of application and early identification of needs for corrective actions (e.g. tracking of damage to and/or deaths of non-target species).
6. **Alternatives** to the proposed technique should be examined and evidence provided that no less risky technique would be viable for the specific context and objective. Similarly, evidence should be provided that preference has been given to products that are less hazardous and persistent, and to methods of application that reduce environmental and health risks and **maximise efficiency** by requiring smaller quantities of the biocide.
7. The assessment should conclude with a comparison of the selected approach and its expected result with the current situation, and provide clear **evidence of the benefits** justifying the selection of the approach.

Section 6: Mitigation, monitoring and emergency plan

1. This section should provide a detailed description of the mitigation measures recommended by the TRA. This should include specifying required resources, technical specifications, schedule, costs and responsibilities.
2. This section should also include an emergency plan outlining the actions to be taken if the application of the technique results in unexpected events with negative environmental or health impacts (including unpredicted non-target mortality, physical damage such as landslides, or leaks, spills and associated clean up). The emergency plan should

- i. describe the planned responses to emergency situations caused by unexpected natural events (such as high winds, excessive rainfall, runoff, unexpected movement of wild or domestic animals, etc.) as well as by technical failure or human error;
- ii. describe procedures for first aid and medical attention for cases involving poisoning or undue contact with these substances;
- iii. include the provision to cease the application as quickly as possible whenever necessary, and to assist in preventing damage (and to reverse it if at all possible);
- iv. include a mechanism to observe and record any such unexpected events or impacts.

Section 7: Consultation, disclosure and grievance

1. This section should document when and where the PMP was disclosed and the range of consultations the proponent has undertaken with stakeholders, particularly local communities and their potentially affected members including adjacent land-owners or land users. It should specify the dates and results of relevant consultations, including how feedback received was taken into consideration.
2. It should also provide evidence of consultations held with relevant authorities (indicating who and when) and evidence that appropriate EIA procedures were followed and licenses and permissions, where relevant, were obtained.
3. The section should conclude with an explanation of the IUCN ESMS grievance system and its role to receive and address complaints in case pest management techniques might cause social or environmental harm; this should include instructions how to access this system.