Including manageability into prioritisation

Flemish Government – Agency for Nature and Forests

Agentschap voor Natuur en Bos

Symposium – 12/03/2014

Prioritisation, prevention & rapid response for invasive species in Belgium

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Including manageability into prioritisation

1. Objective of the assignment
2. General management principles
3. Review of existing frameworks
4. Possible criteria
5. Development of the tool – work in progress
6. Conclusion – use of the tool - future

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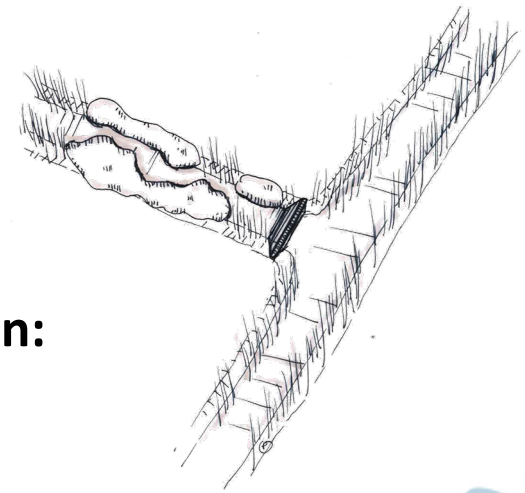
Objective of the assignment

What do land managers want to know?

- Which species are invasive? (Alien Alert)
- Where/when intervention is **needed/appropriate**? (current assignment)
- Where/when intervention is **feasible**? (current assignment)
- Which species are **priority**? (combination of Alien Alert and current assignment)

What are the options?

- Eradicate
- Containment
- Control
- Do nothing



Protocol to determine the feasibility of intervention:

will be used to <u>Flemish scale</u> as well as at <u>field level:</u>

field questions must be general enough

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General management principles

- Cooperate across borders
- Make an inventory of the challenge (field characteristics, which species,…)
- Formulate vision and goals (feasability of eradication, containment or control, which species need priority,…)
- Formatting and implementing a management plan (which methods, which materials and techniques, environmental impact of the techniques, frequency of managing, removal plant material, cost estimation, permits,…)
- Monitoring

General management principles

- Prevent: most cost-efficient (sensibilisation, prevent establishment or spread)
- Rapid intervention (for small populations of invasive species)
- Eradicate (feasibility depending on the nature and extent of the contamination, the available techniques, biology and ecology of the species)
- Containment (actions to prevent the spread)
- Control (actions to reduce the problem)
- Do nothing

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Review existing frameworks

Very few models where feasibility is integrated!

- Decision tree
  - Yes/no questions: user friendly, but problem if information is missing
  - Number of outcomes is limited ➔ difficult to make a clear ranking
  - No use of weighing factors
  - Used by some authors in a pre-evaluation step (eradicate / containment / control / do nothing)

Review existing frameworks

- Questionnaires
  - Division of criteria, sub-criteria and individual questions
  - Final score has no value in itself, needs to be compared with other scores
  - Existing questionnaires are usually limited to particular species groups, general models are usually too little profound

Review existing frameworks

- Questionnaires: number of questions
  - The more questions, the more accurate the result
  - Models with few questions ➔ high sensitivity
  - The more questions, the more data is required to complete the questionnaire
- Questionnaires: number of answers
  - Commonly used: Likert-scale (1-5 or 1-7): too little ➔ little difference in final score, to much ➔ difficult to distinguish answers from each other

➔ Use of a questionnaire in this protocol

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Possible criteria / questions

- Species-specific questions
- Field/location-specific questions
- Questions about the method
- Questions about the public support
- Questions about legislation

Possible criteria / questions

Species-specific questions

- Traceability of the species
  - How big is an individual at adult age?
  - Easy distinguishable from other species in area?
  - Plants: height at flowering compared to surrounding vegetation?
  - Animals: sensitivity to disturbance from human presence?

- Population (eradication usually only feasible for small populations)
  - % of the area that is currently infected?
  - Density of the population in the field?

Possible criteria / questions

Area-specific questions

- Scale of the area (smaller = more feasible)
  - What is the scale of the infected area?
- Accessibility (human, required equipment)
  - What is the accessibility of the area(s)
- Number of owners (more owners = complex implementation, even if all the owners want to collaborate)
  - What is the ownership structure of the area(s)?
- The need to take action
  - Will postpone eventualy lead to a greater cost? (small population and slow/fast reproduction, population in explosive phase)
  - Still many suitable habitats within the area? (proposal to weigh the aquatic environments more heavier)

Possible criteria / questions

Area-specific questions

- Recolonisation (depends also of the number of offspring and vegetative reproduction = invasiveness ➔not included in this protocol)
  - % surrounding areas that is infected?
  - Does the action eliminate the underlaying causes of colonisation? (if yes, the chance of recolonisation is very smal, even if the species is present in the surrounding areas)
  - Recolonisation by long-distance dispersal?
  - Species still planted / sold with reasonable chance of escape?
- Area boundaries
  - Does the population occurs in the boundary of the area? (to estimate the chance of spreading to other areas)

Possible criteria / questions

Methods that can be used

- Knowledge
  - Is the knowledge available how to eradicate/contain/control?
- Effectiveness
  - How effective is the method? (% that survives the action + killing the seed bank?)
- Cost – labor intensity
  - What is the cost of the method (including repetition and monitoring)?
  - What is the cost compared with the return of the method?
- Control together
  - Can 1 or more species be controlled together with the same method? (to reduce the impact of cost)
- Positive versus negative effects
  - Negative side effects?
  - Positive effects of the species to its environment?
- Kind of method
  - Mechanical, cultural practices, 1 or more chemicals,…

Possible criteria / questions

Public support

- Is there support to take action against the species?
- Is there support for the chosen method?

Legislation

- Does the legislation allow the chosen method?

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Development of the tool

- Development of clearly formulated questions and answers
- Standard: 5 answers per question
- Search for the correct weighing of the (sub)criteria
- Need for uncertainty in the answers (indicate how reliable the answer is)?
- For each species: necessary to complete the protocol several times, depending on the chosen method (control/contain/..) ➔ several scores for the same species in combination with the method.

Development of the tool

Testing the tool

- Purpose: to check if well known species are ranked logically
- Who: Antea Group and special workgroup
- 9 species (plants and animals)
- 3 field cases:
  - Natuurreserve Doeveren: Rhododendron ponticum, Spiraea douglasii, Prunus serotina, Larix decidua, Solidago gigantea, Picea abies
  - City of Ghent
  - Costal dunes

Testing the tool

- Test species
  - Common ragweed *(Ambrosia artemisiifolia)*
  - American bullfrog *(Lithobates catesbeianus)*
  - New Zealand Pigmyweed *(Crassula helmssii)*
  - Himalayan Balsam (*Impatiens glandulifera)*
  - Round goby *(Neogobius melanostomus)*
  - Asian tiger mosquito *(Stegomyia albopicata)*
  - *Carpobrotus edulis*
  - Ring-necked parakeets (*Psittacula krameri*)
  - Pallas squirrel *(Callosciurus erythraeus)*

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Conclusion: use of the tool

- Future goal after completing the tool continuation of the proces – use in practise
- In relation with Alien Alert / ISEIA score
  - Feasibility alone says nothing about priority, relation with Alien Alert score is necessary
  - In practice: intermediate species may need most attention, the most invasive species are usually not the most obvious to intervene

Conclusion: use of the tool – future implementation

- Relation with Alien Alert score: for example weed risk Virtue 2006 -protocol

WEED RISK	FEASIBILITY OF CONTAINMENT				
	Negligible >113	*Low >56*	*Medium >31*	*High >14*	*Very High <14*
Negligible <13	LIMITED ACTION	LIMITED ACTION	LIMITED ACTION	LIMITED ACTION	MONITOR
Low <39	LIMITED ACTION	LIMITED ACTION	LIMITED ACTION	MONITOR	MONITOR
Medium <101	MANAGE SITES	MANAGE SITES	MANAGE SITES	PROTECT SITES	CONTAIN SPREAD
High <192	MANAGE WEED	MANAGE WEED	PROTECT SITES	CONTAIN SPREAD	DESTROY INFESTATIONS
Very High >192	MANAGE WEED	PROTECT SITES & MANAGE WEED	CONTAIN SPREAD	DESTROY INFESTATIONS	ERADICATE

ALERT

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