Actions on IAS in Iceland national report

Pawel Wasowicz

Bern Convention IAS Group of Experts meeting in Madeira (1-3 June 2017)

IAS actions in Iceland

Actions to prevent the establishment and spread of IAS in Iceland

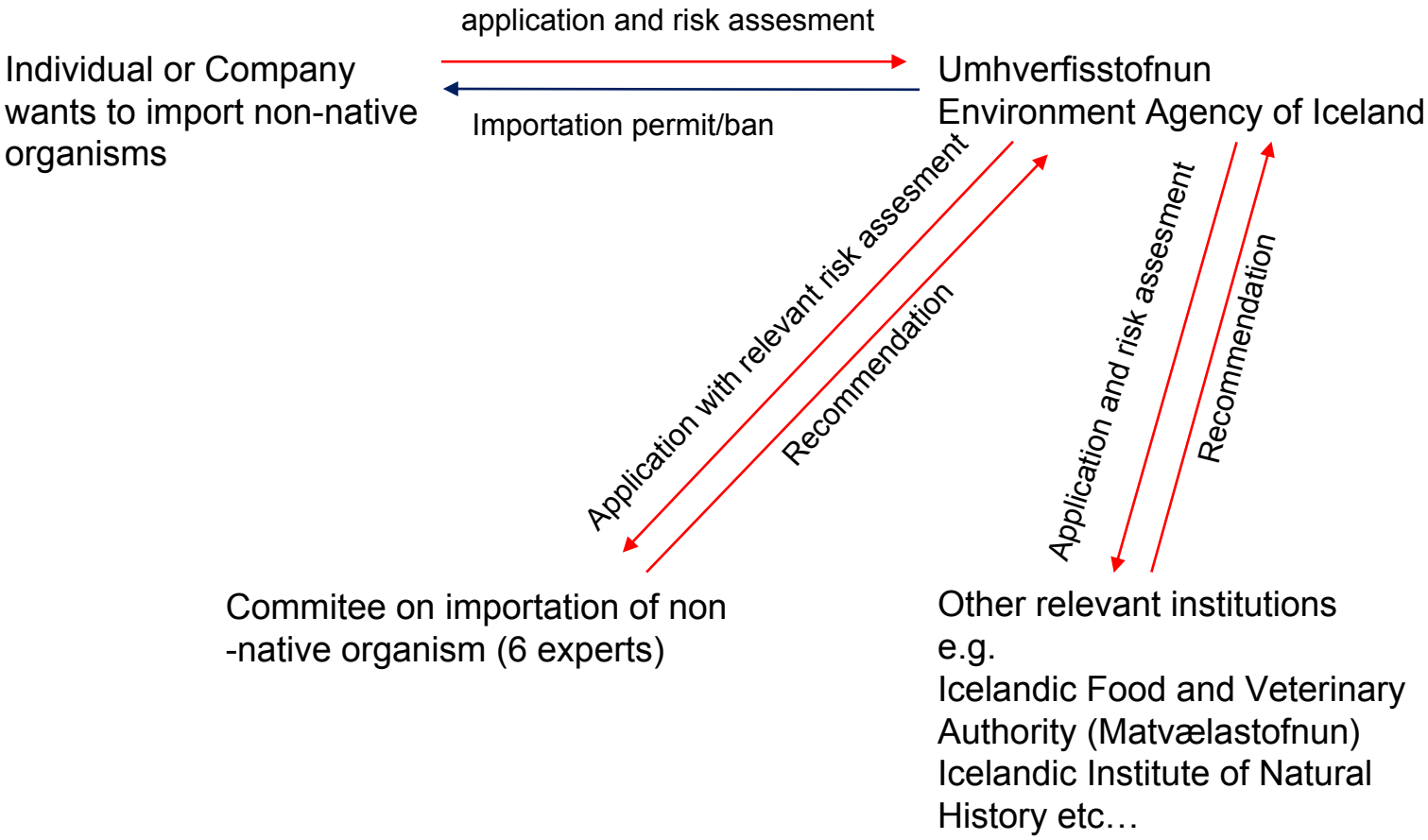
legistlative changes

Nature Protection Act

efforts to map the occurrence of IAS

Legistlative changes

Nature protection act that came into force in 2016 sets new rules on importation of non-native species



This procedure is valid for any non-native oragnism imported to Iceland, except organisms already in use in agriculture and horticulture.

Legistlative changes

- The Act bans all actions that can contribute to the spread of non-native organisms within the country.
- The Environment Agency of Iceland received a legal permit to take measures to control and/or eradicate non-native species that pose a threat to biodiversity and have a significant impact on the environment.

Legistlative changes

Iceland, as a part of the Arctic Council, signed recently (May 2017) an

Arctic Invasive Alien Species Strategy and Action Plan

that sets forth the priority actions that the Arctic Council and its partners are encouraged to take to protect the Arctic region from a significant threat: the adverse effect of invasive alien species.

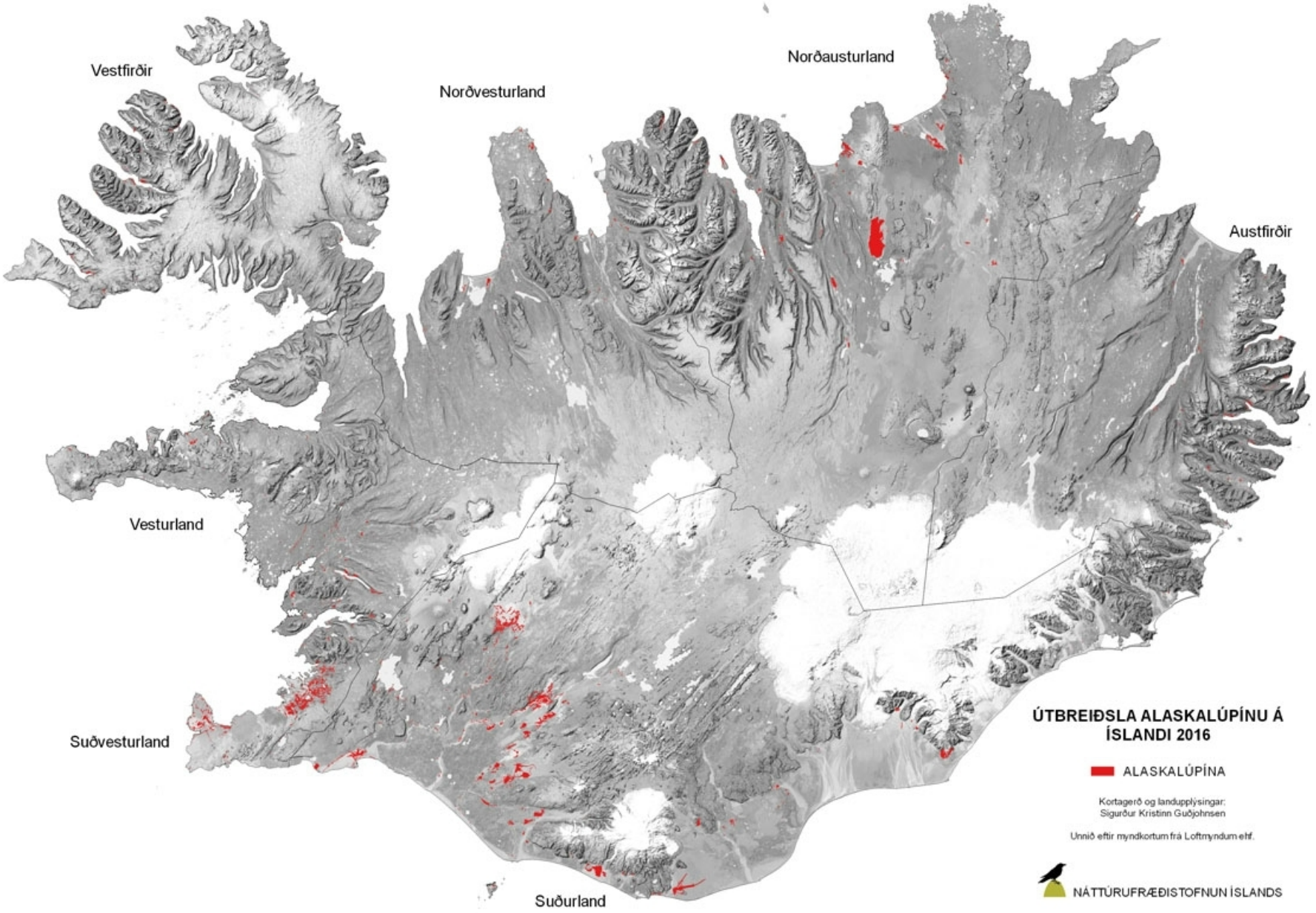
These priority actions span terrestrial, aquatic, and marine ecosystems. The actions take environmental, cultural, and economic perspectives into consideration, including drivers, impacts, and response measures.

Efforts to map the occurrence of IAS

Research projects were carried out by Icelandic Institute of Natural History in order to map the occurrence of non-native and invasive alien species in Iceland.

Efforts to map the occurrence of IAS

A new distribution map of the main terrestrial invasive alien *Lupinus nootkatensis* was prepared and based i.a. on data from remote sensing.



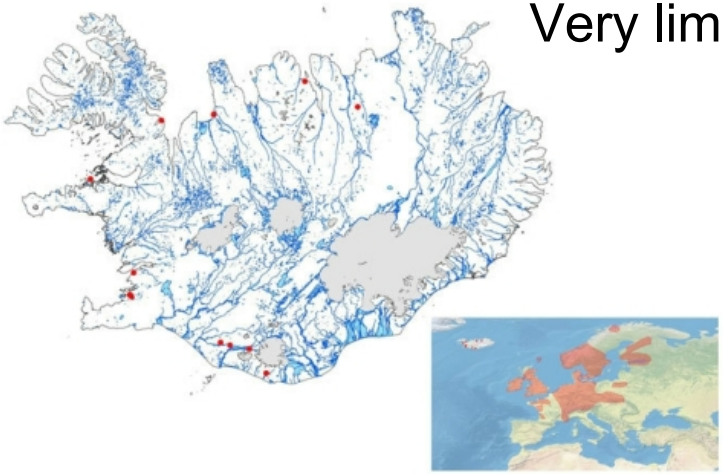
L. nootkatensis occupies at least 314 km^2.

Distribution of *Heracleum* species

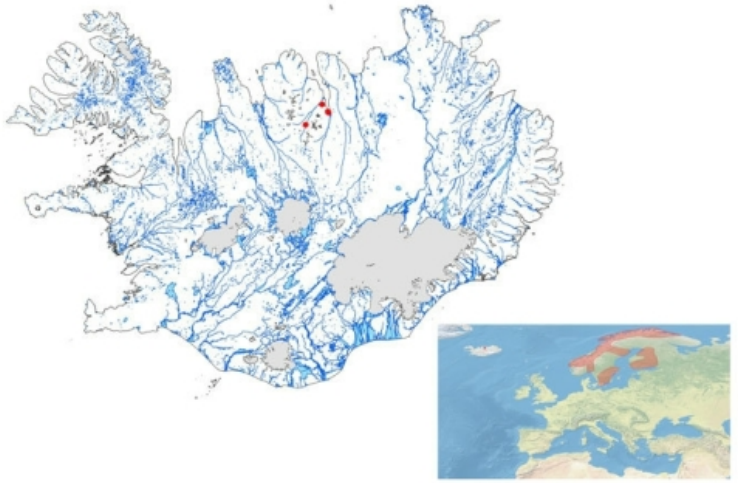
Icelandic Institute of Natural History has also performed mapping of *Heracleum* species in Akureyri (N Iceland). These new non-native taxa are currently becoming invasive in Iceland. A similar project is now underway in the capital region of Reykjavik.

Both species shows very high reproduction rate and spread abilities in Iceland.

Very limited overall distribution but locally abundant



Heracleum mategazzianum



Heracleum persicum

Non-native plant species in Icelandic highlands

PeerJ

Non-native species in the vascular flora of highlands and mountains of Iceland

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ABSTRACT

The highlands and mountains of Iceland are one of the largest remaining wilderness areas in Europe. This study aimed to provide comprehensive and up-to-date data on non-native plant species in these areas and to answer the following questions: (1) How many non-native vascular plant species inhabit highland and mountainous environments in Iceland? (2) Do temporal trends in the immigration of alien species to Iceland differ between highland and lowland areas? (3) Does the incidence of alien species in the disturbed and undisturbed areas within Icelandic highlands differ? (4) Does the spread of non-native species in Iceland proceed from lowlands to highlands? and (5) Can we detect hot-spots in the distribution of non-native taxa within the highlands? Overall, 16 non-native vascular plant species were detected, including 11 casuals and 5 naturalized taxa (1 invasive). Results showed that temporal trends in alien species immigration to highland and lowland areas are similar, but it is clear that the process of colonization of highland areas is still in its initial phase. Non-native plants tended to occur close to man-made infrastructure and buildings including huts, shelters, roads etc. Analysis of spatio-temporal patterns showed that the spread within highland areas is a second step in non-native plant colonization in Iceland. Several statically significant hot spots of alien plant occurrences were identified using the Getis-Ord Gi* statistic and these were linked to human disturbance. This research suggests that human-mediated dispersal is the main driving force increasing the risk of invasion in Iceland's highlands and mountain areas.

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INTRODUCTION

While it is well known that the average proportion of non-native species in polar regions is very low (*Elven et al., 2011*; *Ellis, Antill & Kreft, 2012*; *Alsos, Wiree & Elven, 2015*), the total number of alien plant species in the local floras may vary considerably. In the Arctic, the number of both casual and naturalized aliens grows rapidly from the polar Arctic desert zone (where alien species are absent) towards low Arctic floras (southern Greenland, northern Scandinavia, and Iceland), where the proportion of non-native taxa is higher (*Lassuy and Lewis, 2013*; *Wasowicz, Przedpelska-Wasowicz &*

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