



Sveriges lantbruksuniversitet  
Swedish University of Agricultural Sciences

Nov 14, mini-symposium: Environmental  
Risk Assessment for Plant Pests

# Ecological impact assessments of alien species

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We're in the middle of  
something – busy  
working!







# ENVIRONMENT

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## Invasive Alien Species

Invasive Alien Species (IAS) are animals and plants that are introduced accidentally or deliberately into a natural environment where they are not normally found, with serious negative consequences for their new environment. They represent a major threat to native plants and animals in Europe, causing damage worth billions of euros to the European economy every year. As invasive alien species do not respect borders, action at the European level will be more effective than action at the Member State level.

### EU Regulation 1143/2014 on Invasive Alien Species

[Regulation \(EU\) 1143/2014 on invasive alien species](#) (the IAS Regulation) entered into force on 1 January 2015, fulfilling Action 16 of [Target 5 of the EU 2020 Biodiversity Strategy](#). It provides for a set of measures to be taken across the EU in relation to invasive alien species included on a [list of Invasive Alien Species of Union concern](#). For more information about the species included on this list click [here](#).

**Swedish Agency  
for Marine and  
Water Management**



SWEDISH  
ENVIRONMENTAL  
PROTECTION  
AGENCY

November 2016 workshop  
started the work: choice of  
methods and processes

Swedish Species Information Centre

**1. Screening**

Swedish indigenous  
biodiversity

5000 species  
Method EICAT

climate scenario RCP 8.5

Swedish Species Information Centre

**2. Risk assessment**

Swedish indigenous  
biodiversity

2000 species  
Method GEIAA

Authorities

**3. IAS-list of national importance**

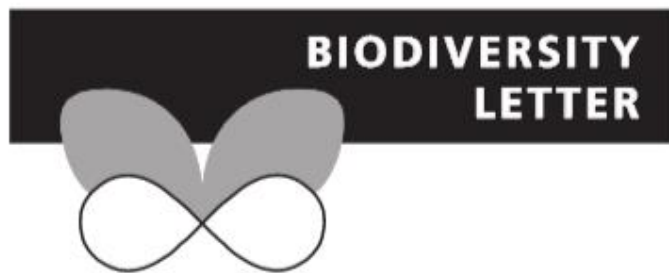
Ecosystem services  
Socio-economy  
Human health aspects



## Initial lists (app 5000 species):

- Nobanis lista över främmande arter NOBANIS
- Arter bedömda i arbetet med Norges svarta lista över främmande arter NORWAY
- Listade arter i Finlands strategi för invasiva främmande arter FINLAND
- Nobanis (2015). Pathway analysis and horizon scanning for countries in Northern Europe. TemaNord 2015:517
- Early warning - species alerts from the NOBANIS network
- Roy, H., et al. (2015). Invasive Alien Species – Prioritising prevention efforts through Horizon Scanning. Final Report ENV.B.2/ETU/2014/0016
- Roy, H., et al (2014). Organisation and running of a scientific workshop to complete selected invasive alien species (IAS) risk assessments
- Havs- och vattenmyndighetens lista över främmande arter (tidigare främmande arter i svenska hav ([www.frammandearter.se](http://www.frammandearter.se)))
- Non-native species port survey protocols, target species selection and risk assessment tools for the Baltic Sea (Helcom och Ospar)
- HELCOM already compiled two different lists (Helcom maritime 7/2008), one with non-indigenous species, which already occur in the Baltic area (Helcom list of non-indigenous and cryptogenic species in the Baltic sea (version 2)) and a draft target species list (draft Helcom target species list (version 2)) with species, which do not occur in the Baltic area.
- Gederaas, L. 2012. Alien Species in Norway – with the Norwegian Black List
- <https://www.nobanis.org/globalassets/nobanis-projects/invasive-alien-species---pathway-analysis-and-horizon-scanning-for-countries-in-northern-europe.pdf>
- <http://ec.europa.eu/environment/nature/invasivealien/docs/Prioritising%20prevention%20efforts%20through%20horizon%20scanning.pdf>
- <http://ec.europa.eu/environment/nature/invasivealien/docs/Workshop%20report.pdf>
- <https://www.havochvatten.se/hav/fiske--fritid/arter/frammande-arter/lista-over-frammande-arter-i-vart-naromrade---alertlistan.html>





## Framework and guidelines for implementing the proposed IUCN Environmental Impact Classification for Alien Taxa (EICAT)

Charlotte L. Hawkins<sup>1</sup>, Sven Bacher<sup>2</sup>, Franz Essl<sup>3</sup>, Philip E. Hulme<sup>4</sup>, Jonathan M. Jeschke<sup>5,6</sup>, Ingolf Kühn<sup>7,8</sup>, Sabrina Kumschick<sup>9,10</sup>, Wolfgang Nentwig<sup>11</sup>, Jan Pergl<sup>12</sup>, Petr Pyšek<sup>12,13</sup>, Wolfgang Rabitsch<sup>14</sup>, David M. Richardson<sup>9</sup>, Montserrat Vila<sup>15</sup>, John R. U. Wilson<sup>9,10</sup>, Piero Genovesi<sup>16</sup> and Tim M. Blackburn<sup>1,17,18,\*</sup>

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### ABSTRACT

Recently, Blackburn *et al.* (2014) developed a simple, objective and transparent method for classifying alien taxa in terms of the magnitude of their detrimental environmental impacts in recipient areas. Here, we present a comprehensive framework and guidelines for implementing this method, which we term the Environmental Impact Classification for Alien Taxa, or EICAT. We detail criteria for applying the EICAT scheme in a consistent and comparable fashion, prescribe the supporting information that should be supplied along with classi-

Organism	Nr of experts	Nr species screened	Nr species to risk assessment
Algae	1	28	26
Fungi	1	310	148
Plants	2	3175	1807
Lichens		1	1
Mosses		4	4
Fish	1	50	32 (+5)*
Hymenoptera	1	72	1 (+17)*
Marine inverts	1	258	55 (+186)*
Terrestrial verts	1	138	103
Limnic animalia	1	75	33 (+3)*
Skalbaggar	1	291	9
Butterflies	1	166	30 (+54)*
Other terrestrial inverts	1	458	23 (+95)*
	12	5026	2272 (+360)*



Focus on estimating any possible negative effects on **indigenous natural biodiversity**



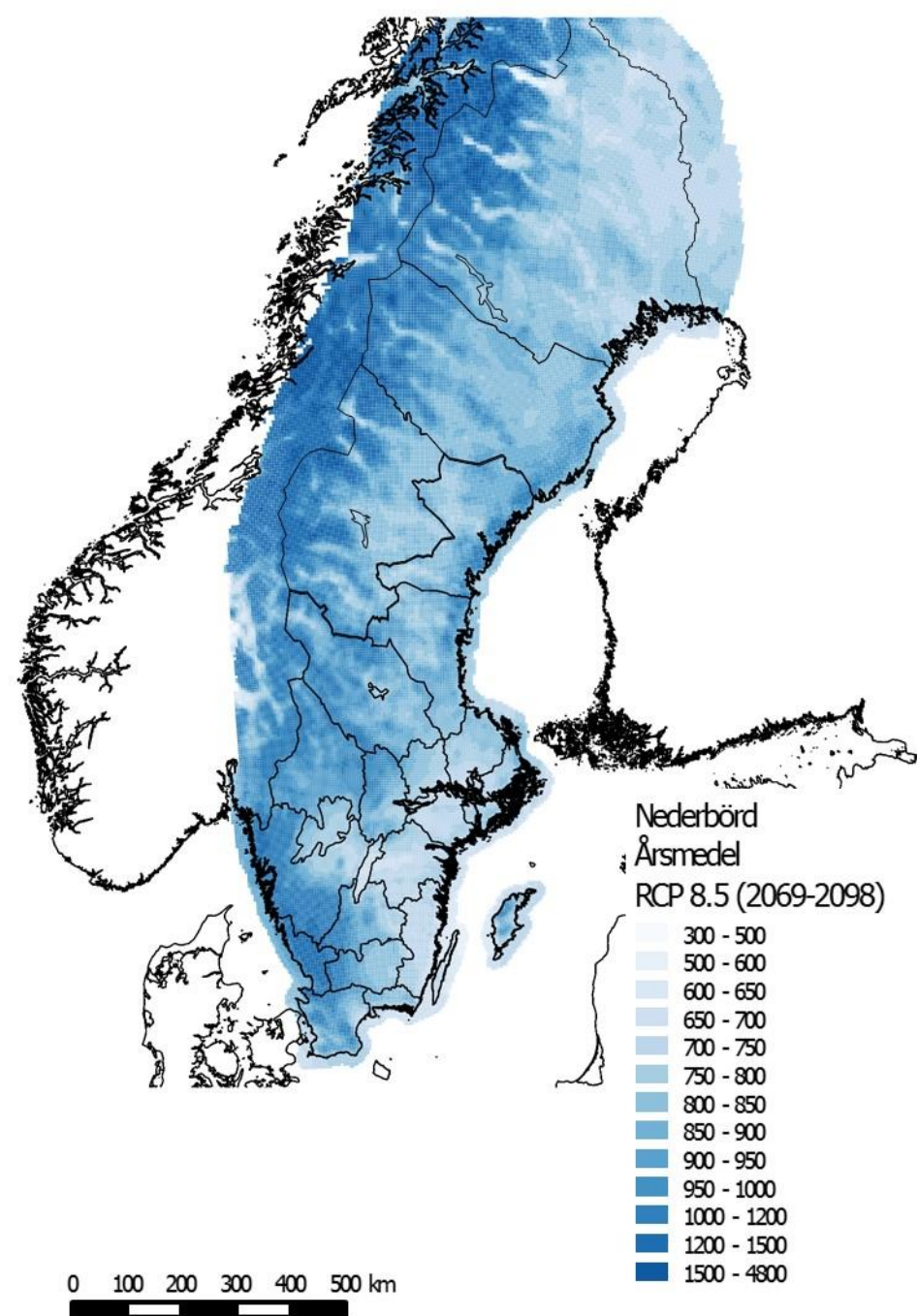
Species w neg effect only on commercial  
crops **are not processed in the deeper  
ecological risk assessment**

## The Intergovernmental Panel on Climate Change (IPCC)

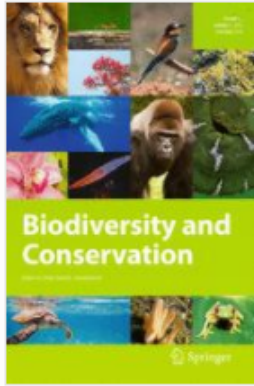
- The scenarios are called **Representative Concentration Pathways (RCPs)**. There are four pathways: RCP8.5, RCP6, RCP4.5 and RCP2.6
- The amount of future greenhouse gas emissions is a key variable.
- RCP 8.5 is worst case scenario: a continued fossil intense future with no reductions in gas emissions

### Swedish scenario 50 years into the future:

1. precipitation
2. temperature
3. zero-crosses
4. vegetative period








## [Biodiversity and Conservation](#)

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# Generic ecological impact assessments of alien species in Norway: a semi-quantitative set of criteria

[Authors](#)

[Authors and affiliations](#)

Hanno Sandvik , Bernt-Erik Sæther, Tomas Holmern, Jarle Tufto, Steinar Engen, Helen E. Roy

Original Paper

**First Online:** 18 November 2012

16

Citations

5

Shares

## Abstract

The ecological impact assessment scheme that has been developed to classify alien species in Norway is presented. The underlying set of criteria enables a generic and semi-quantitative impact assessment of alien species. The criteria produce a classification of alien species that is

# Impact of alien species – GEIAA method in brief

Ecological impact expressed along two independent axes:

## 1.invasion potential

expected population lifetime

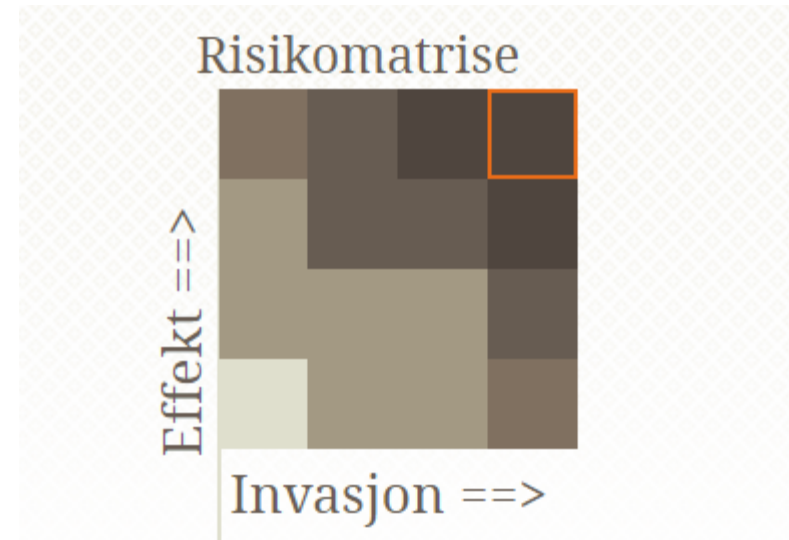
expansion rate

## 2.ecological effects

interactions with native species

changes in landscape types

potential to transmit genes or parasites



Effects on threatened species or landscape types receive greater weightings.

# Nine criterias:

- *Criterion A: median population lifetime*
  - *Criterion B: expansion speed*
  - *Criterion C: colonisation of nature types*
  - *Criteria D and E: ecological interactions with native species*
  - *Criteria F and G: state changes in nature types*
  - *Criterion H: transfer of genetic material*
  - *Criterion I: transmission of parasites and pathogens*
- Invasion axis
- Effect axis



Values from the assessment assign the species to one of five risk categories:

**SE - Severe impact:** are actually or potentially ecologically harmful species and have the potential to become established across large areas.

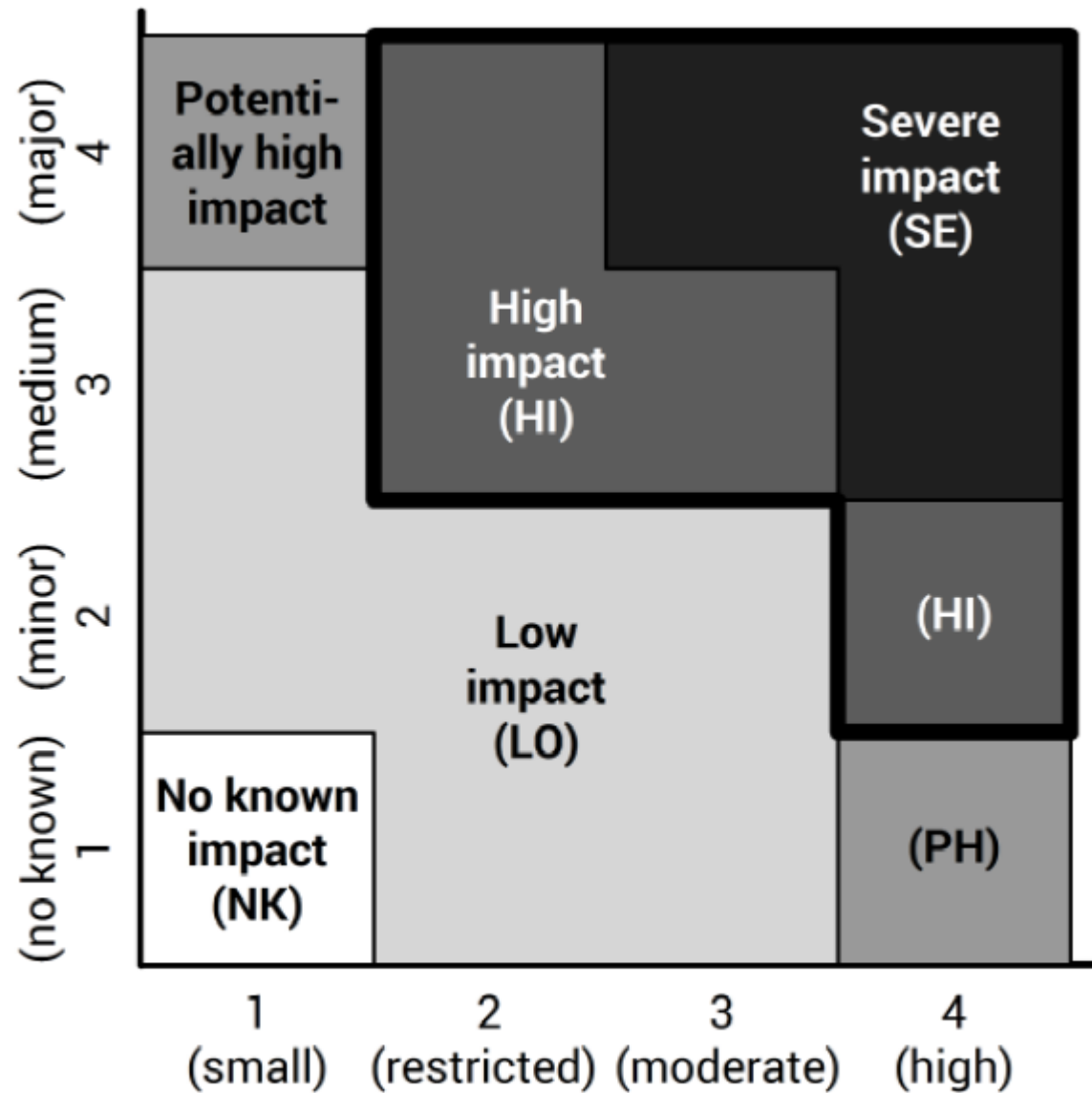
**HI - High impact:** have either a restricted/moderate ability to spread, but cause at least a medium ecological effect, or alternatively only a minor ecological effect but have a high invasion potential.

**PH - Potentially high impact:** have either high ecological effects combined with a low invasion potential, or a high invasion potential without any known ecological effect.

**LO - Low impact:** have no substantial invasion potential and ecological effect.

**NK - No known impact:** are not known to have spread and have no known ecological effects.

# Ecological effect



# Invasion potential

# *Heracleum persicum*

3 Artsinformasjon

4 Naturtyper

5 RISIKOVURDERING

Referanser

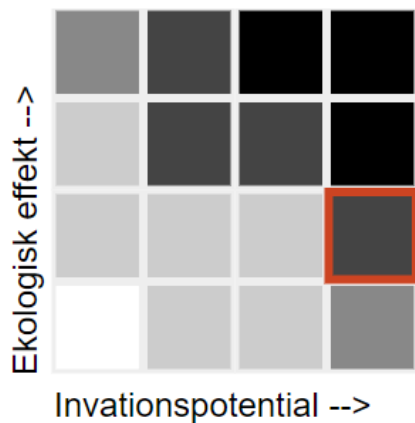
5.1 Invasjonspotensiale

5.2 Økologisk effekt

5.3 Geografisk variasjon

5.4 Klimaeffekter

5.5 KRITERIEDOKUMENTASJON



Our work-bench - imported from Norway "Swedish FAB"

17 persons currently working in the tool, with expert committees in connection

Høy risiko **HI**

Utslagsgivande kriterier: **4A,2H**

Beskrivning av arten

Artens status: Främmande art innanför avgränsningen som är observerad och etablerad i Sverige



The number of habitats?



Habitats – did we pick the relevant ones?



Criteria evaluation procedure – what do we miss?

Generic, yes – but still?  
Marine and brackish environments??

Intercalibration!?

Climate models...

National vs regional resolution?



# *Hemigrapsus sanguineus*

## Svartelistet

Høy risiko HI:2,3d

## Risikovurdering

- a Forventet levetid  
Delkategori 1 Mindre enn 10 år eller 5 generasjoner
- b<sub>1</sub> Spredningshastighet  
Delkategori 3 Mer enn 10 km/år
- c Naturtypekolonisering  
Delkategori 1 Mindre enn 5 %
- d Interaksjoner med truede arter/nøkkelarter  
Delkategori 3 Små effekter
- e Interaksjoner med øvrige arter  
Delkategori 2 Små effekter
- f Tilstandsendringer i truede eller sjeldne naturtyper  
Delkategori 1 Usannsynlig
- g Tilstandsendringer i øvrige naturtyper  
Delkategori 1 Usannsynlig
- h Introgresjon  
Delkategori 1 Usannsynlig
- i Vert for parasitter eller patogener  
Delkategori 1 Usannsynlig



Norways web-view of results, with search functions

Invasjonspotensial

## Kriteriedokumentasjon

Arten er ikke påvist i Norge.

*Hemigrapsus sanguineus* er en krabbe med opprinnelse i nordlige Stillehav. Arten ble trolig introdusert til Le Havre området i perioden rundt 1998. Den er under spredning både sørvestover langs den franske kanalkysten og nordøstover hvor den har nådd Tyskland (Schleswig Holstein). Arten har spredd seg forholdsvis langsomt langs deler av franskekysten. Den har imidlertid blitt mer vanlig. Undersøkelser fra kanalkysten av Frankrike har vist økende antal i 2008 og 2010.

Arten er varmekjær og det er usikkert om den vil kunne reprodusere naturlig i norsk klima. Mulighetene for etablering øker ved økt sjøtemperatur.

Arten forekommer på hardbunn og blandingsbunn på grunt vann og i moderate dyp i marine områder og estuarier.



We're in the middle of  
something – busy  
working!





## Søk i fremmede arter

Hva er en fremmed art?

Svarteliste og svartelistet – hva betyr det?

Norsk svarteliste 2012



Ny svarteliste 2018



Faktaark for fremmede arter

Tidligere risikovurderinger (2007)

Få tidlig varslings om fremmede arter

# Søk i fremmede arter

I 2012 ble det påvist 2320 fremmede arter i norske områder. Artsdatabanken har vurdert 1383 av disse med tanke på hvilken økologisk risiko de utgjør for stedeegne arter og naturtyper.

Her kan du søke i Fremmede arter – med norsk svarteliste 2012 og få informasjon blant annet om arters økologisk risiko, utbredelse (fylker), når og hvordan arten kom til Norge og også hvordan arten har spredt seg i Norge.

Søk i Fremmede arter – med norsk svarteliste 2012

Du kan også bruke [avansert søk](#).





2007

2012

2018



