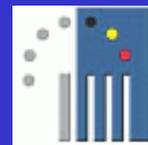


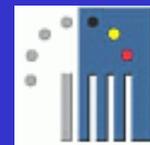
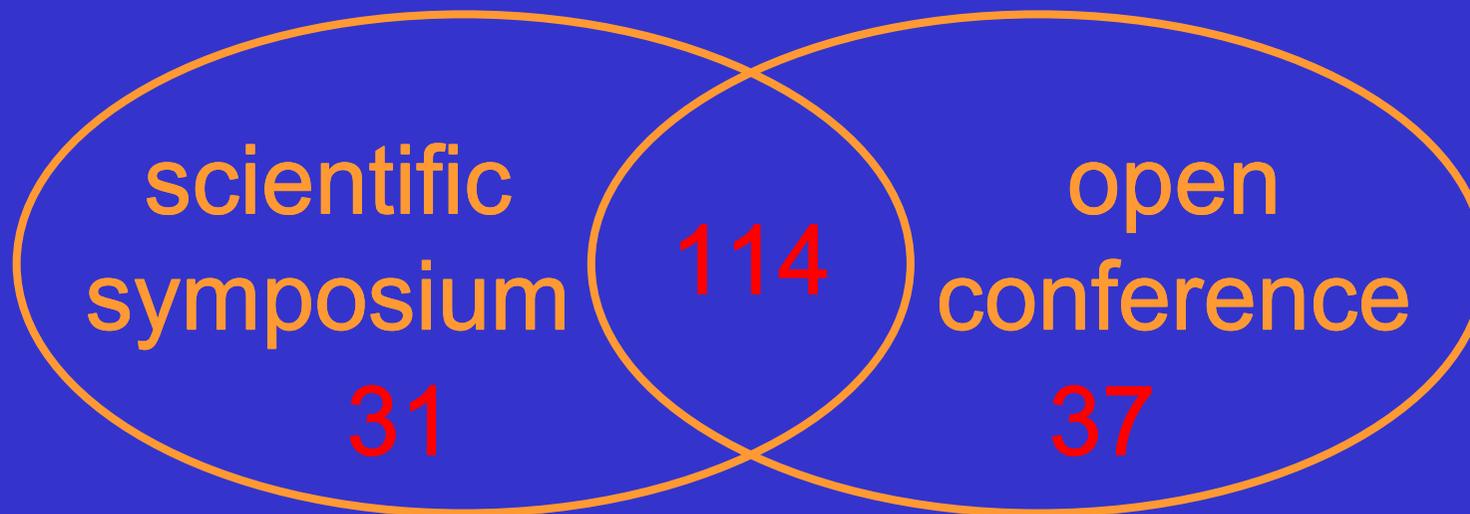


Biological invasions by alien species





Biological invasions by alien species





Alien invasive species

(IUCN: World Conservation Union)

Alien (non-native, non-indigenous, foreign, exotic):

a species, subspecies, or lower taxon **occurring outside of its natural range (past or present)** and dispersal potential (i.e. outside the range it occupies naturally or could not occupy without direct or indirect introduction or care by humans) and includes any part, gametes or propagule of such species that might survive and subsequently reproduce

Only neophytes (> 1500)



Alien invasive species

(IUCN: World Conservation Union)

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Alien invasive species

(IUCN: World Conservation Union)

Alien invasive: alien species which becomes **established** in natural or semi-natural ecosystems or habitat, is an **agent of change**, and **threatens native biological diversity**



ECOSYSTEMS



SOS invasions !

invasion

native plants
outcompeted

pollinators

decomposers

herbivores

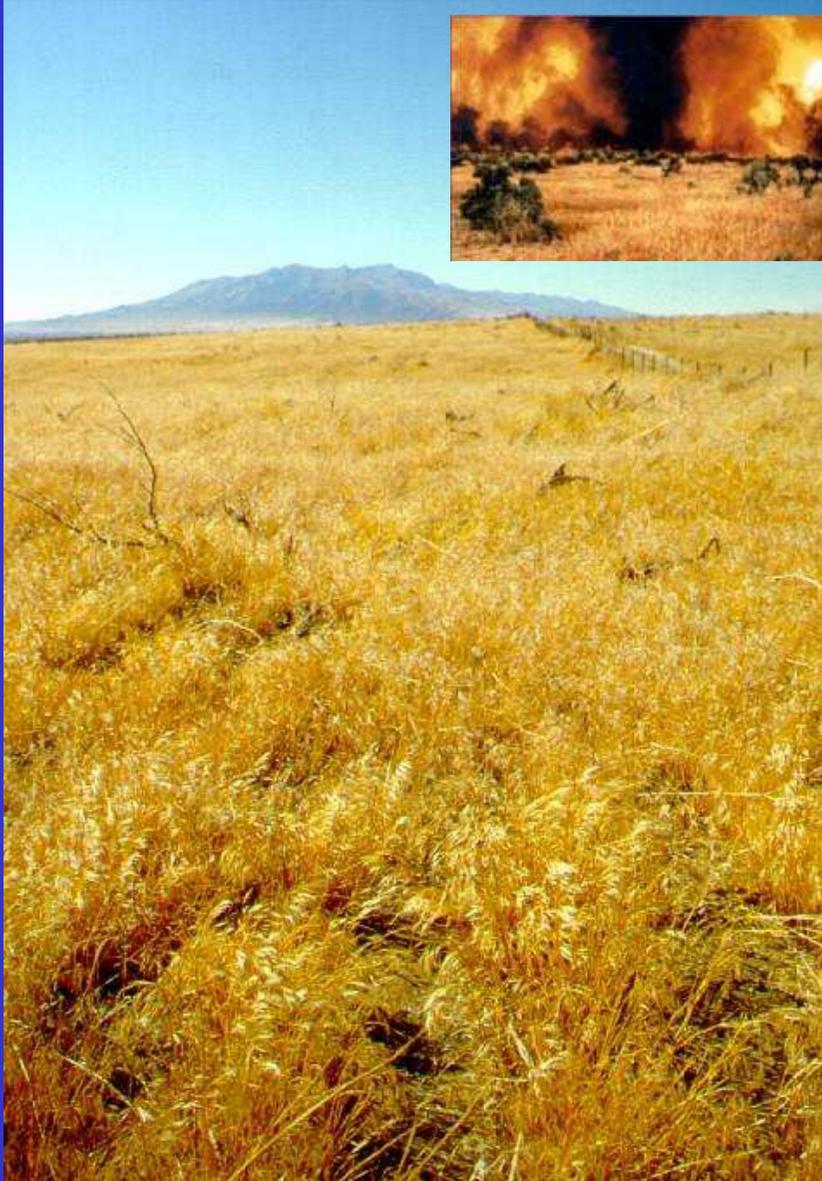
predators

Populations and
communities

Leafy spurge (*Euphorbia esula*)
invading a swamp reserve in
the Rocky Mountains

Kudzu vine (*Pueraria montana*)
invading forests from cleared
areas in S.E.-U.S.A.

Invading rain forests in Australia.



Cheatgrass (*Bromus tectorum*) in USA and Canada



Yellow star thistle
(*Centaurea solstitialis*)
in Idaho U.S.A.



Hydrology

disturbance



invasion



soil moisture
depletion



selection
for thistle



drought





SOS invasions !

Solidago gigantea



Prunus serotina



Rosa rugosa



Lathyrus latifolius





SOS invasions !

Impact?



Since 1998



horse chestnut leaf-miner
(*Cameraria ohridella*)



SOS invasions !



Asian lady beetle
(*Harmonia axyridis*)

Used in biological control of aphids in greenhouses, but now reproducing in the wild in Belgium



Impact in Europe?

has outcompeted native lady bird species in the USA through higher prey capture rates



ECONOMIC IMPACT



Damage to crops, forestry, grazing capacity

Cost of combating invasions:

US\$125 billion annually (USA)

Indirect cost: effect of invasive species on ecosystem services



Clogging of waterways and swamps by *Ludwigia peploides* and mechanical control in northern France



SOS invasions !

HEALTH IMPACT



SOS invasions !

Heracleum mantegazzianum



phototoxicity

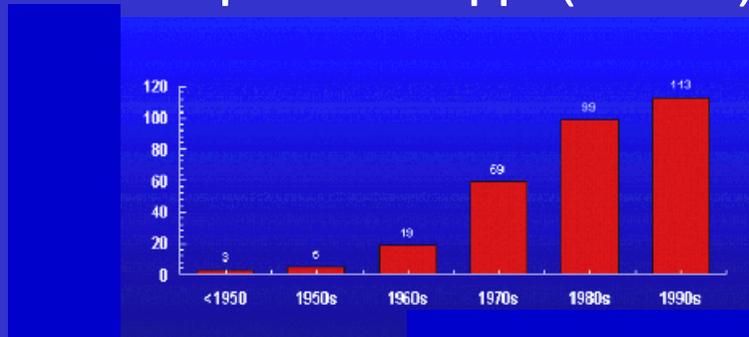




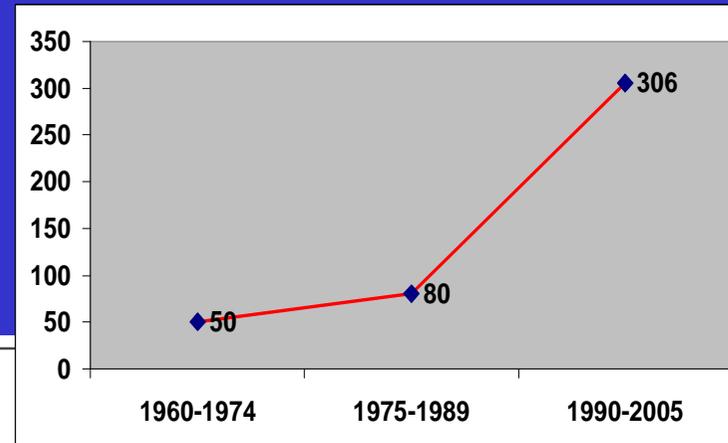
SOS invasions !

Alien invasive species **increase**

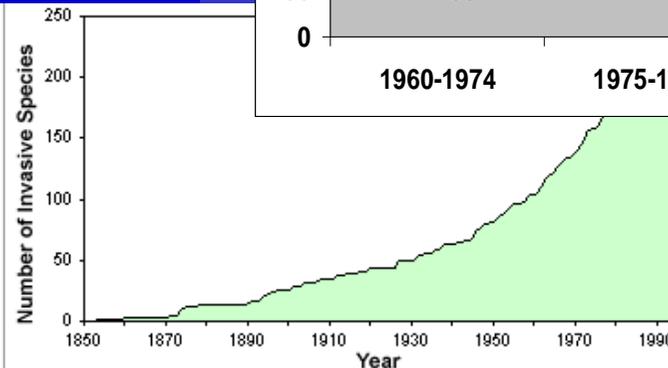
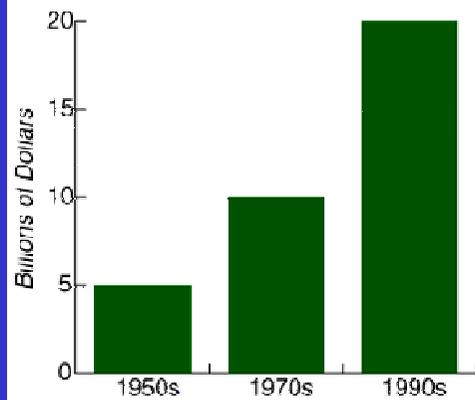
tropical fish spp. (Florida)



of newly introduced plant taxa in Belgium

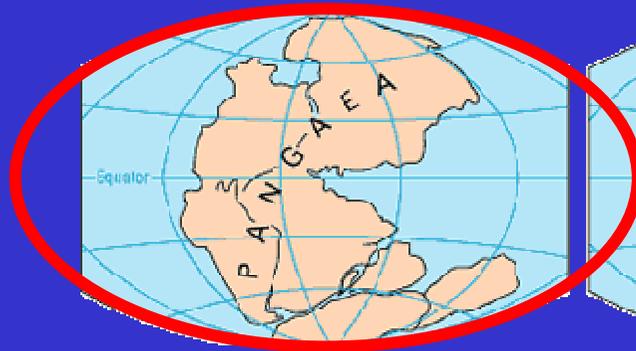


Weed Losses and Costs in the United States



invasive spp. San Francisco estuary

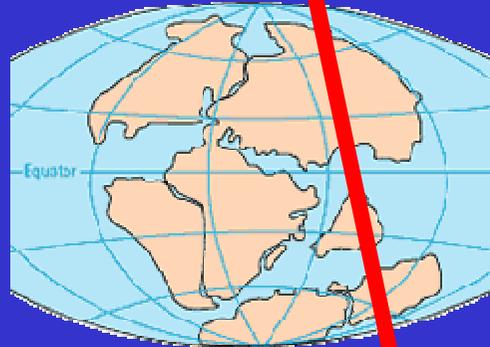
cost of combating weeds (USA)



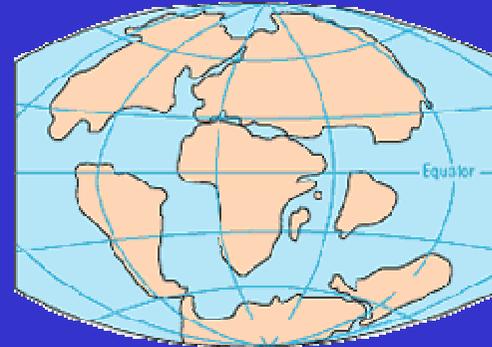
225 million y ago



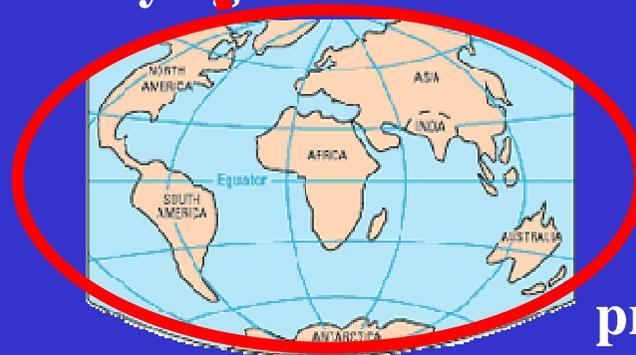
200 million y ago



135 million y ago



65 million y ago



present



Brown JH (1995): If all of the continents were pushed back together yet the resultant land mass still spanned the climates of today we would expect to see a decrease in species numbers as follows:

•Land birds 65.7%

•Land mammals 47.6

•Butterflies 35.0

•Angiosperms 70.5

Responsibility according to the Biodiversity Convention

- "prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species"



SOS invasions !

PROGRAMME



Scientific symposium = closing workshop of **INPLANBEL project** (2003-2006), Belgian Science Policy

Invasive Plants in Belgium : Patterns, Processes and Monitoring

Session 1 - Survey and monitoring of invasive species
in Belgium

Session 2 - Prediction of invasion success

Session 3 - Dispersal at landscape level

Session 4 - Impacts of invasive species on ecosystems
and biodiversity



SOS invasions !

PRACTICAL ISSUES



Poster session



INPLANBEL poster

Mooi maar meedogenloos

Het binnendringen van exotische plantensoorten in onze inheemse flora neemt de laatste decennia exponentieel toe door toedoen van de mens. De meeste exoten zijn onschadelijk, maar sommige gaan woekeren en worden "invasief". Ze bedreigen inheemse soorten en ecosystemen, en kunnen economische en gezondheidschade toebrengen. Omdat ze vaak moeilijk te verwijderen zijn, kunnen ze best zo vroeg mogelijk opgespoord worden. De soorten op deze poster vormen een staalkaart van de schadelijkste invasieve planten in België.



Solidago gigantea Late guldenroede



Heracleum mantegazzianum Reuzenbrekelaauw



Impatiens glandulifera Reuzenbalsemien



Prunus serotina Amerikaanse vogelkers



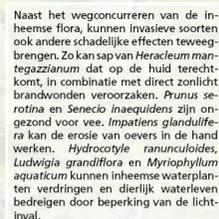
Rhododendron ponticum Pontische rododendron



Fallopia japonica Japanse duizendknoop



Senecio inaequalis Bezemkruiskruid



Hydrocotyle ranunculoides Grote waternevel



Hydrocotyle ranunculoides Grote waternevel



Myriophyllum aquaticum Parelvederkruid



Ludwigia grandiflora Waterteunisbloem

Mit de steun van het Federaal Wetenschappelijk Instituut voor Natuurwetenschappen (INM) en de Vlaamse Milieuoverzichtsorganisatie (Vlaamse Milieuoverzichtsorganisatie, Departement Biologie, Universiteit Antwerpen).
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Belles mais impitoyables

Ces dernières décennies, l'introduction de plantes exotiques dans notre flore indigène a augmenté exponentiellement sous l'action de l'homme. La plupart des espèces exotiques sont inoffensives mais certaines peuvent se développer au point de devenir envahissantes. Elles menacent les espèces indigènes ainsi que les écosystèmes, pouvant constituer un danger pour la santé publique et un poids pour l'économie. C'est donc qu'il est difficile de les éliminer, mieux vaut les détecter le plus tôt possible. Ce poster illustre quelques-unes des espèces de plantes exotiques les plus envahissantes en Belgique.



Solidago gigantea Late guldenroede



Heracleum mantegazzianum Reuzenbrekelaauw



Impatiens glandulifera Reuzenbalsemien



Prunus serotina Amerikaanse vogelkers



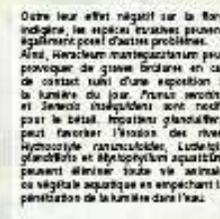
Rhododendron ponticum Pontische rododendron



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Senecio inaequalis Bezemkruiskruid



Hydrocotyle ranunculoides Grote waternevel



Hydrocotyle ranunculoides Grote waternevel



Myriophyllum aquaticum Parelvederkruid



Ludwigia grandiflora Waterteunisbloem

Outre leur effet négatif sur la flore indigène, les espèces invasives peuvent également poser d'autres problèmes. Ainsi, *Heracleum mantegazzianum* peut provoquer de graves brûlures en cas de contact suivi d'une exposition à la lumière du jour. *Prunus serotina* et *Senecio inaequalis* sont nocifs pour le bétail. *Impatiens glandulifera* peut favoriser l'érosion des rives. *Hydrocotyle ranunculoides*, *Ludwigia grandiflora* et *Myriophyllum aquaticum* peuvent éliminer toute vie animale ou végétale aquatique en empêchant la pénétration de la lumière dans l'eau.

Mit de steun van het Federaal Wetenschappelijk Instituut voor Natuurwetenschappen (INM) en de Vlaamse Milieuoverzichtsorganisatie (Vlaamse Milieuoverzichtsorganisatie, Departement Biologie, Universiteit Antwerpen).
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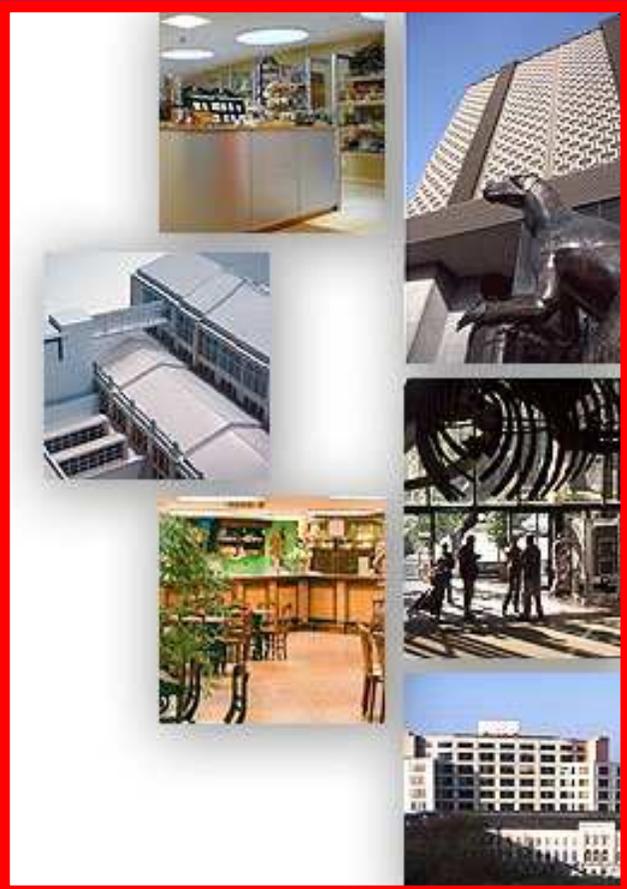


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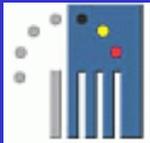
If we get < 55 demands, it will be FREE

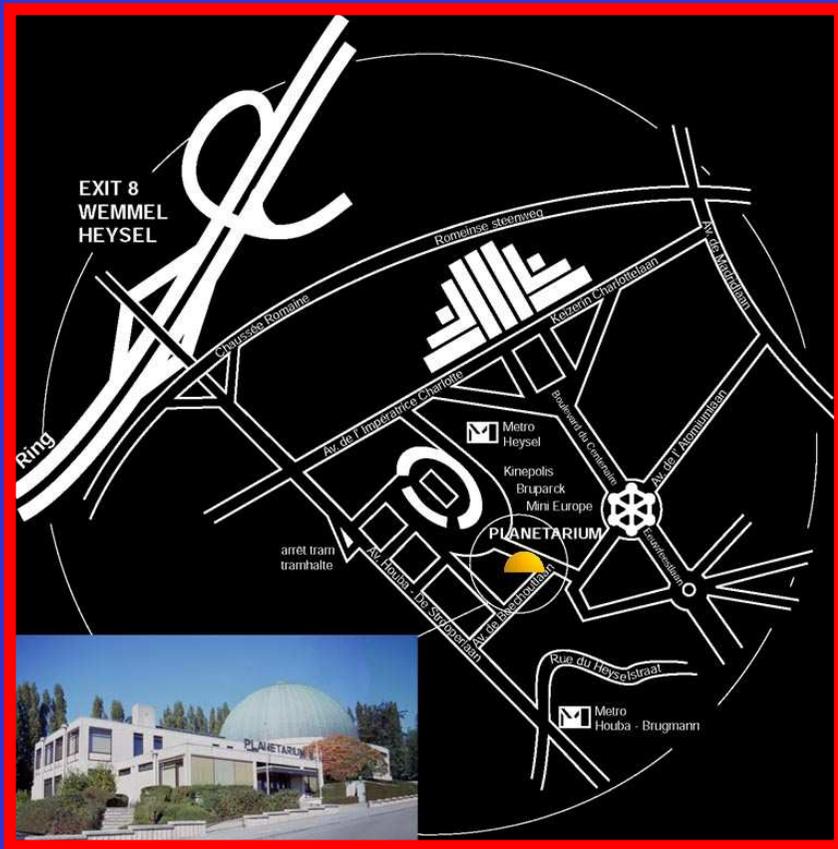
If > 55 demands: sold at part of the cost

We will let you know

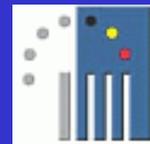


Royal Belgian Institute of Natural Sciences





Planetarium of the Royal Observatory of Belgium





Federal Science Policy

Belgian Biodiversity Platform

Belgian Focal Point for the CBD

INPLANBEL project

Federal public service Health, Food chain safety and
Environment

