INVASIVE ALIEN PLANT SPECIES

Colégio de Amorim

30/11/2018

Concepts

- **NATIVE** plants

(They are natural occuring autochnous and indigenous species)

The specieis is from the area it inhabits, meaning, it grows within its natural limits.

Oak Tree– *Quercus robur*

- **Exotic** Plants

(They are inserted species, allochthonous)

Gingko biloba – Exotic (China)

Richardson et al., 2000, Div & Dist. 6: 93-107

Pyšek et al., 2004, Taxon, 53(1): 131-143

Are all the Exotics Invading? NO

What to Consider:

1 – **Invading** Plant

These are species that develop very fastly and escape human control, a consequently become harmful to the ecosyistem.

2- **Infesting** Plant

Species that appears where it was not seeded or planted. Might be native or exotic but it is classified as infesting for not having been planted in a determined location.

MOST EXOTIC SPECIES ARE NOT INVADING

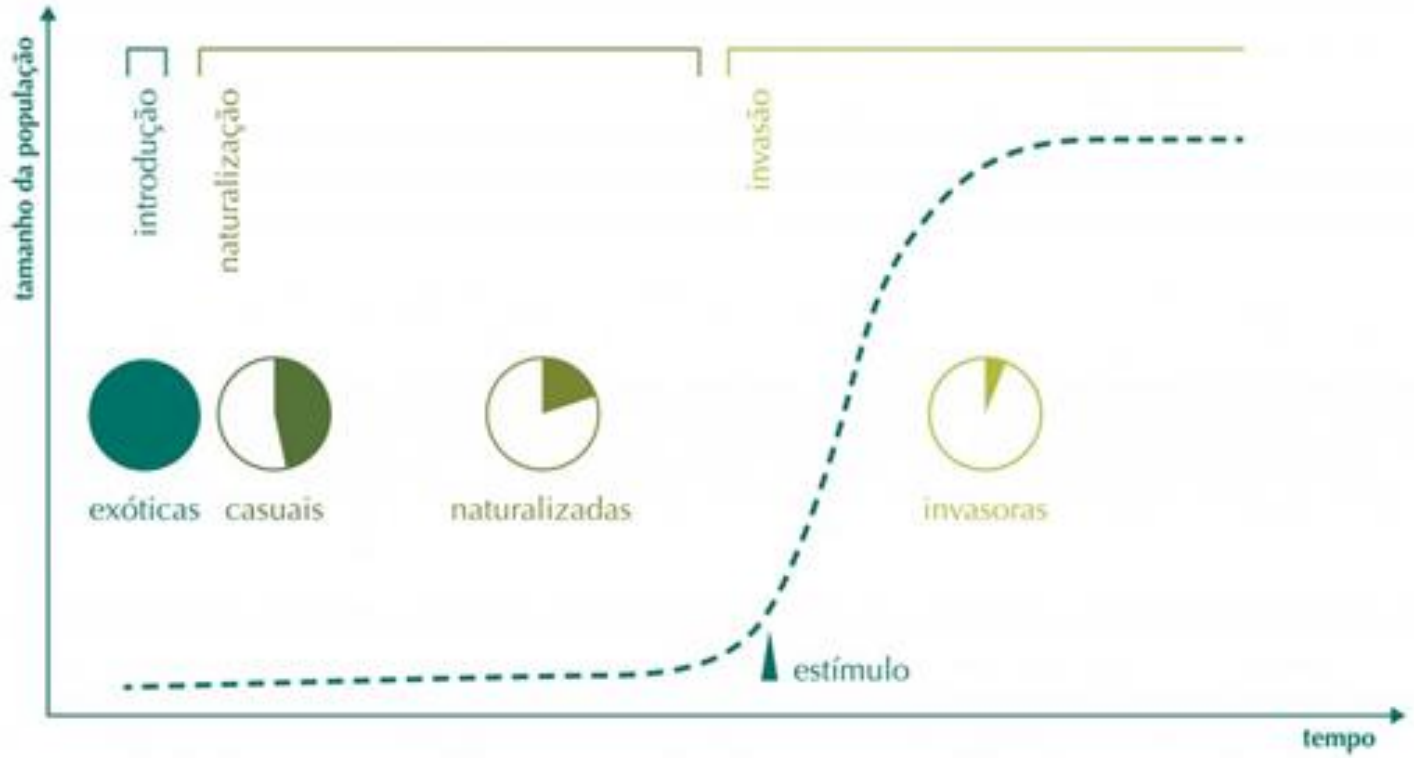
INVADING SPECIES

Considering all exotic plants that are introduced (full circule in the image), most of them remains with a distribution restricted to the pleaces where they have been placed.

Others might blossom and even reproduce on occasion, but don't get to the level of creating a self-mantaining population, depending on repeted introductions for its persistance – **casual plants (naturalized)**

STIMULUS

- Natural disturbance;
- Adaptation to an agent that disperces seeds, such as a pollinator;
- The occurency of a storm or climatic changes;
- Changes in the use of soil or the occurency of a fire
- The control of another **invading species**



Classification of an Invasive Species

- An exotic plant starts being considered an invasor when:

- **Produces reproducing populations that are numerous and distinct from the initial one:**

In species that reproduce by seeds:

Might expand in space of more than 100 meters, in less than 50 years.

In species with vegetative reproduction:

- Might expance in spaces of 6 meters, each three years.

(regardless of the level of disturbance in the environment and without human direct action)

How were they inserted in Portugal?

Intentionally:

For feeding (zootechnics), ornamental, primal sources, etc.

By Accident:

Mixed with other products, etc.

What defines an invasive plant?

– They have a fast growth rate and/or great ability of dispersion.

– compete more effectively for natural resources

– produces a large amount of seeds, which might be viable for long periods of time, and might be stimulated by fire

– in the place where they are invadors, they have no natural enemies, as they are out of their original place

– they reproduce vegetatively without need for production og seeds for dispersion

What are the impacts?

Between the negative impacts, it's worth mentioning:

1) High economical impactsm in the production level, mainly when these species invade areas of agriculture, forest, or fishing areas, as well as in the application of control measurments and rehabilitation of invaded systems (In an european leve, the estimate of losses if around 10billion €/year) (Hulme *et al*. 2009);

2) **Impact on public health** (diseases and allergies)

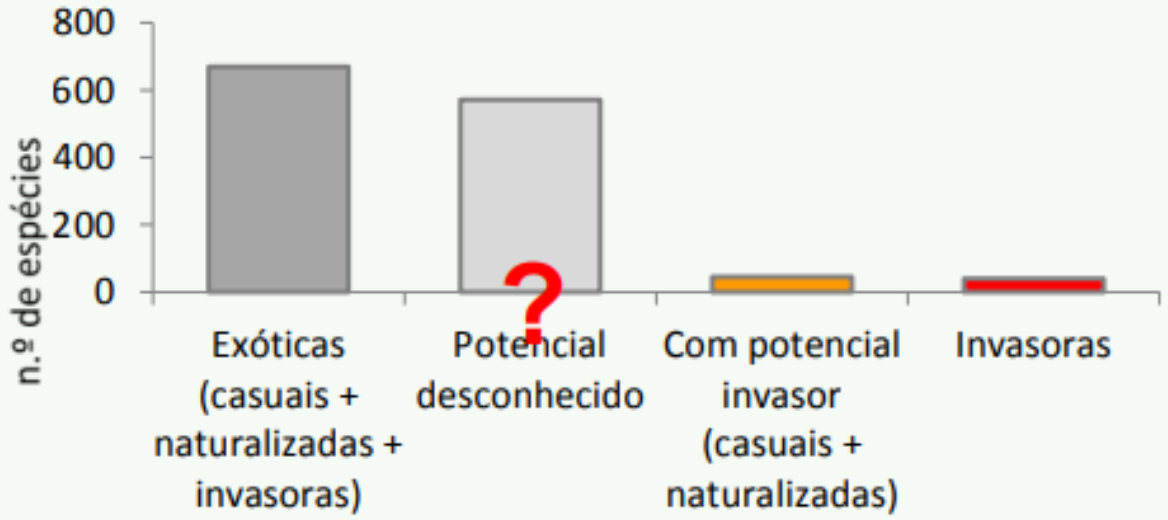
3) **Reduction of availability of groundwater**

4) **Impact in the ballence of ecosystems** managed during thousand of years, being currently today one of these main **threats to biodiversity**.

- Standardization of ecosystems,
- Altering of the fire regimes and food chains
- Competition with native species

Portuguese situation

- Ca. 3300 espécies NATIVAS
- Ca. 670 espécies EXÓTICAS; destas, ca. 40 são INVASORAS



Marchante et al 2014, Almeida e Freitas 2012

Laws

(DL n.º 28039, 14-09-1937
DL n.º165/74, 22 de abril
DL n.º 205/2003, 12 de setembro
Despacho 20194/2009; nº 4, artigo 19º, DL 16/2009, 14 janeiro)

Regulamento (UE) Nº 1143/2014 de 22 Outubro 2014

MINISTÉRIO DO AMBIENTE

Decreto-Lei n.º 565/99

de 21 de Dezembro

A introdução de espécies não indígenas na Natureza pode originar situações de predação ou competição com espécies nativas, a transmissão de agentes patogénicos ou de parasitas e afectar seriamente a diversidade biológica, as actividades económicas ou a saúde pública, com prejuízos irreversíveis e de difícil contabilização. Acresce que, quando necessário, o controlo ou a erradicação de uma espécie introduzida, que se tornou invasora, são especialmente complexos e onerosos.

Introdução intencional de espécies exóticas na natureza

Exceções "económicas" - agricultura, horticultura, interesse zootécnico

DL nº 565/99

Acacia dealbata Link
Acacia karroo Hayne
Acacia longifolia (Andrews) Willd.
Acacia mearnsii De Wild.
Acacia melanoxylon R. Br.
Acacia pycnantha Bentham
Acacia retinodes Schlecht.
Acacia cyanophylla Lindl
Ailanthus altissima (Mill.) Swingle
Arctotheca calendula (L.) Levyns
Azolla filiculoides Lam.
Carpobrotus edulis (L.) N. E. Br.
Conyza bonariensis (L.) Cronq.
Datura stramonium L.
Eichhornia crassipes (Mart.) Solms
Elodea canadensis Michx
Erigeron karvinskianus DC.
Eryngium pandanifolium Cham. & Schlecht.
Galinsoga parviflora Cav.
Hakea salicifolia (Vent.) B.L. Burtt
Hakea sericea Schrader
Ipomoea acuminata (Vahl) Roemer & Schultes
Myriophyllum brasiliense Cambess.
Oxalis pes-caprae L.
Pittosporum undulatum Vent.
Robinia pseudoacacia L.
Senecio bicolor (Willd.) Tod. subsp. cineraria (DC.) Chater
Spartina densiflora Brongn.
Tradescantia fluminensis Velloso
Cortaderia selloana* (J. A. & J. H. Schultes) Aschers & Graebner.
Arundo donax* L.
Opuntia* spp.

*** extra Dec. Lei 565/99**

What are the main invading species we can find?

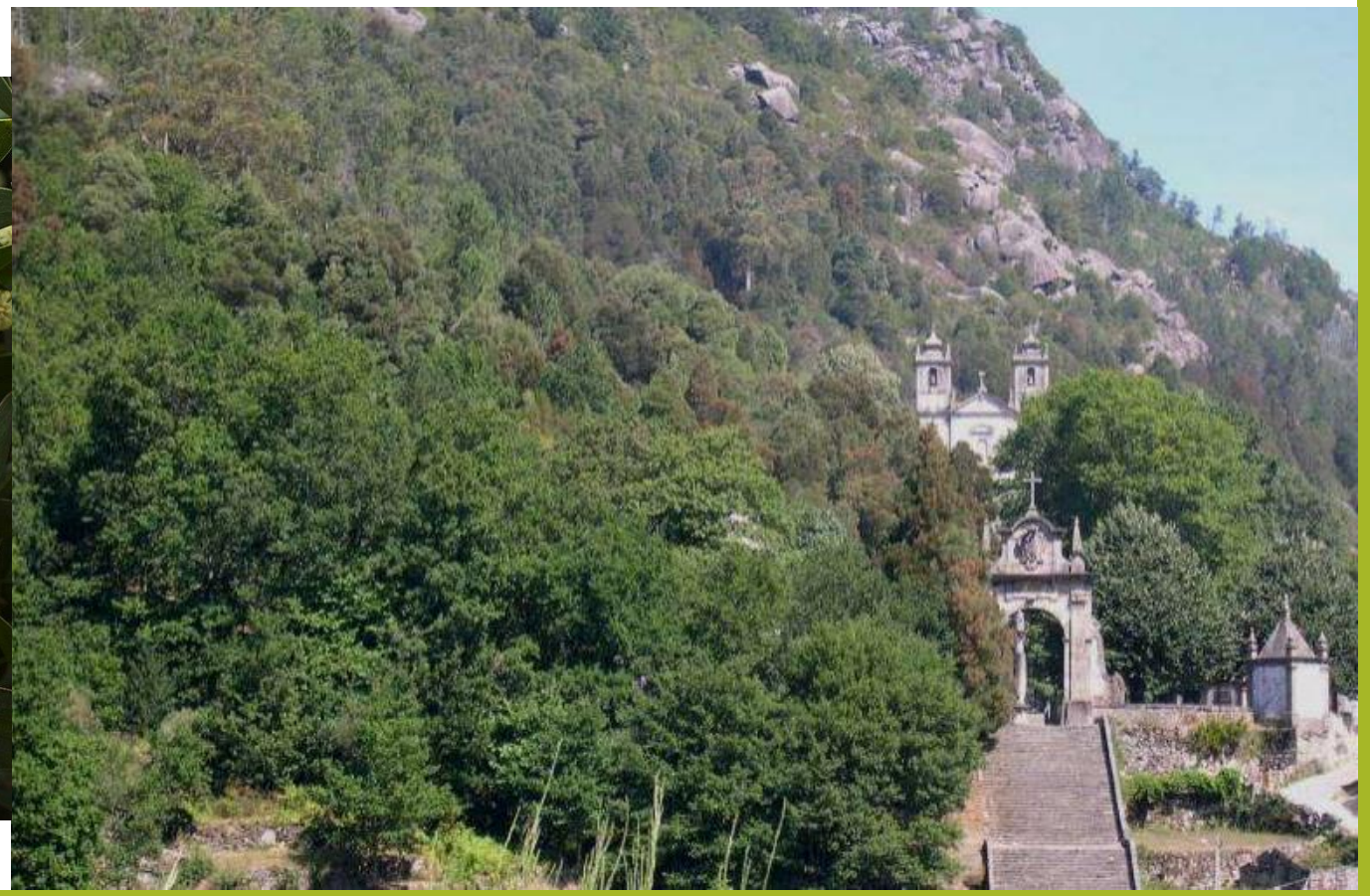
Ailanthus altissima – Origin: China

Invading mainly margins of pathways, disturbed or urban areas.

What are the main invading species we can find?

***Acacia melanoxylon* – Origin: Austrália**

Invades mainly valleys and mountain areas, banks of waterpaths and pathways



What are the main invading species we can find?

***(Carpobrotus edulis*) – Origin: South Africa**

Invades mainly coastal dunes,capes where it was planted

What are the main invading species we can find?

(*Acacia longifolia*) – Origin: Australia

Invades mainly coastal dunes,capes and banks of waterlines

What are the main invading species we can find?

(*Acacia dealbata*) – Origin: Australia

Invades mainly valleys and mountain areas, banks of water paths

What are the main invading species we can find?

(*Ipomoea acuminata*) – Origin: zonas tropicais

Invades mainly disturbed areas (p.e., abandoned buildings

What are the main invading species we can find?

(*Cortaderia selloana*) – Origin: South America

Invades mainly coastal dunes, margins of pathways and disturbed areas

What are the main invading species we can find?

Black locust(*Robinia pseudoacacia*) – Origin: North America

Invading mainly margins of pathways, waterlines and disturbed areas

What are the main invading species we can find?

(*Tradescantia fluminensis*) – Origin: South America

Invades manily dark and damp areas, common in gardens and the lower part of woods or disturbed and urban areas.

Managing invasors

<u>Preventing</u>:
- Early detection and fast response that keeps the colonization by new species.

- Selecting the methdologies of control for fitted for each species

1.Initial control. Of continuity
2.Of maintenance).
3. Monitorizing and evaluation of results

Fonte:www.invasoras.pt

Main Methodologies

Manual pulling

Simple cut

PEEL

Benefits

- Effective (in the right species and time)
- Easy
- Does not require tools that are difficult to operate
- Applicable on trees of almost all diameters
- Generally does not stimulate the emission of root shoots
- Eco-Friendly

Disavantages

- time
- Careful
- Dependent on species and time of the year
- Requires two interventions spaced months apart
- Visual impact / public opinion
- (high labor force)

CUT WITH APPLICATION OF PHYTOCIDES

<u>Benefits</u>

- Reduction of costs in subsequent interventions
- Enables the use of motor-manual equipment (labor saving).
- Applicable on trees of all diameters

<u>Desvantagens</u>

- Very variable results (e.g., root shoots).
- Complex and dangerous.
- Requires the use of PPE's and training
- Conditioned by climatic conditions, mobility on the ground and restrictions on phytocidal use.
- Efficacy affected by site conditions, inconsistency in techniques and conservation of phytocides.

INJECTION OF PHYTOCIDES

Benefits

• Generally, high efficacy in terms of shoot mortality and root systems (depending on species and time of year)
• Relatively easy application (with craft infusion systems)
• Phytocide does not contact the outside and is applied in very small quantities

Disavantages

• Requires drilling equipment with long range
• Requires 2 interventions spaced months apart to remove 1 tree
• Very expensive if carried out extensively (high labor force).

OUR ROLE?

"PREVENTION"

1. Learn how to identify invasive plants and DO NOT USE them
2. When buying plants, prefer native species; if you opt for exotic ones inform themselves of its invasive character.
3. When walking in the field, check that the clothes and shoes do not bring seeds or other propagules of invasive plants.
4. When cleaning the garden or farmland, do not throw remains of exotic plants in the wild.
5. Organize lectures, awareness activities or control actions on invasive plants
6. **Ask for intervention**

THANK YOU