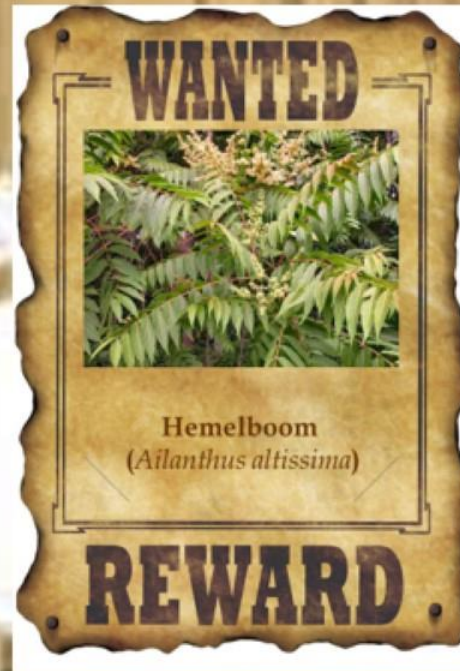




IAS in Dutch Dunes

Examples from the Amsterdam Dunes



Luc Geelen



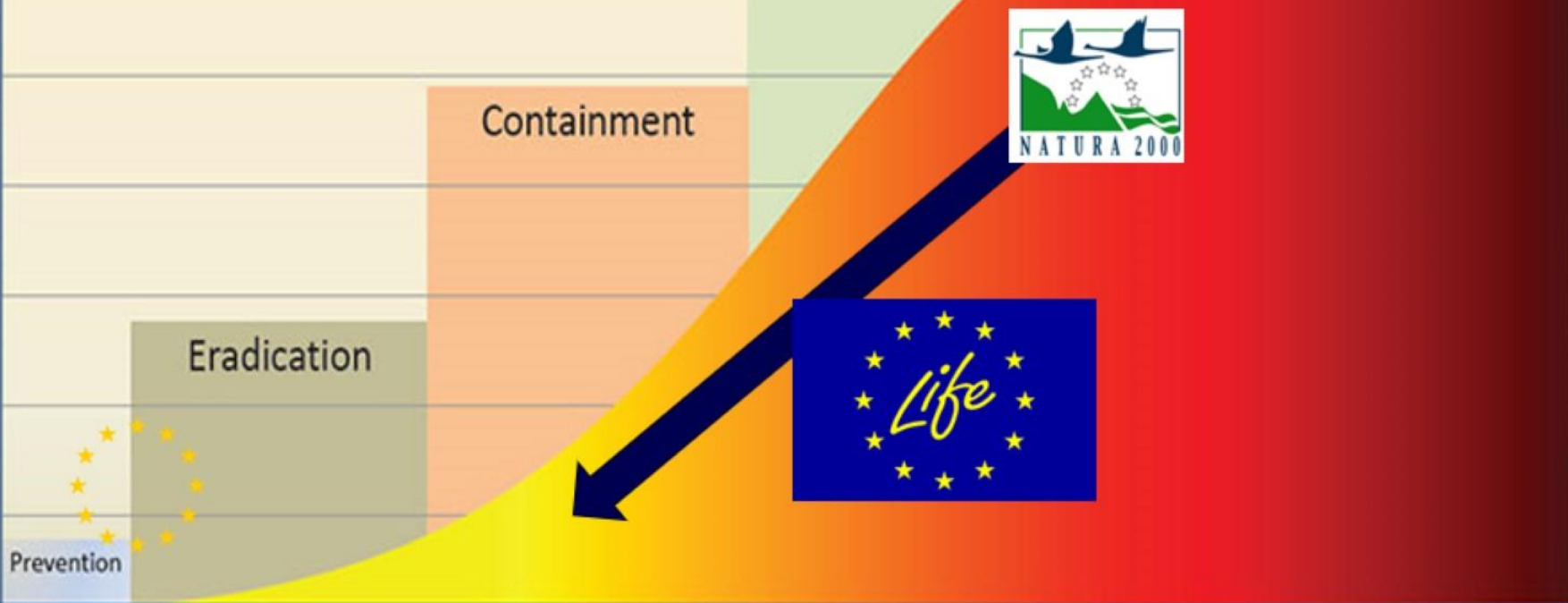
Alias Lucky Luke

THE INVASION CURVE

Asset Based Protection
& Long-term Management

AREA INFESTED →

CONTROL COSTS →



Prevention

Eradication

Containment



Species absent

Small number of localized populations; eradication possible

Rapid increase in distribution and abundance; eradication unlikely

Invasive species widespread and abundant; Long-term management aimed at population suppression and asset protection

Introduction

TIME →

SOURCE: https://h2oncoast.files.wordpress.com/2009/08/invasive_curve.jpg

Overview



- **Amsterdam Dunes**
- **History of Black Cherry**
- **Problem definition**
- **Management**
- **Results**
- **Conclusions**
- **Recommendations**

Coastal dunes in the Netherlands

Wadden
Dunes

Mainland
Dunes

Delta
Dunes



Natura 2000-site: open dune habitats



White dunes, (type H2120)
46 ha



Grey dunes, type H2130
1169 ha



Dune heath, (type H2150)
5 ha



Dune slack, (type H2190)
97 ha

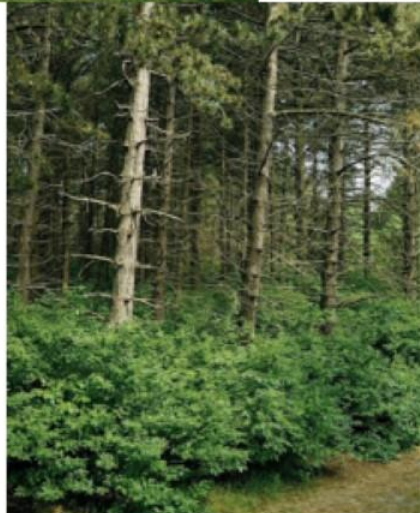
scrub and woodland habitats



Hippophae rhamnoides scrub
(type H2160)
722 ha



Dune Woodland
(type H2180)
571 ha



Pine plantation 122 ha
Black Cherry scrub 162 ha
(no Natura 2000 habitatttype)

Prunus serotina

- Broadleaved tree from America
- Rosaceae
- Dry to moist, more or less acid soil
- Early and abundant seed production
- Mammal & bird dispersion
- Easy settling, fast growing
- Invasive



Short history of *Prunus* in dunes

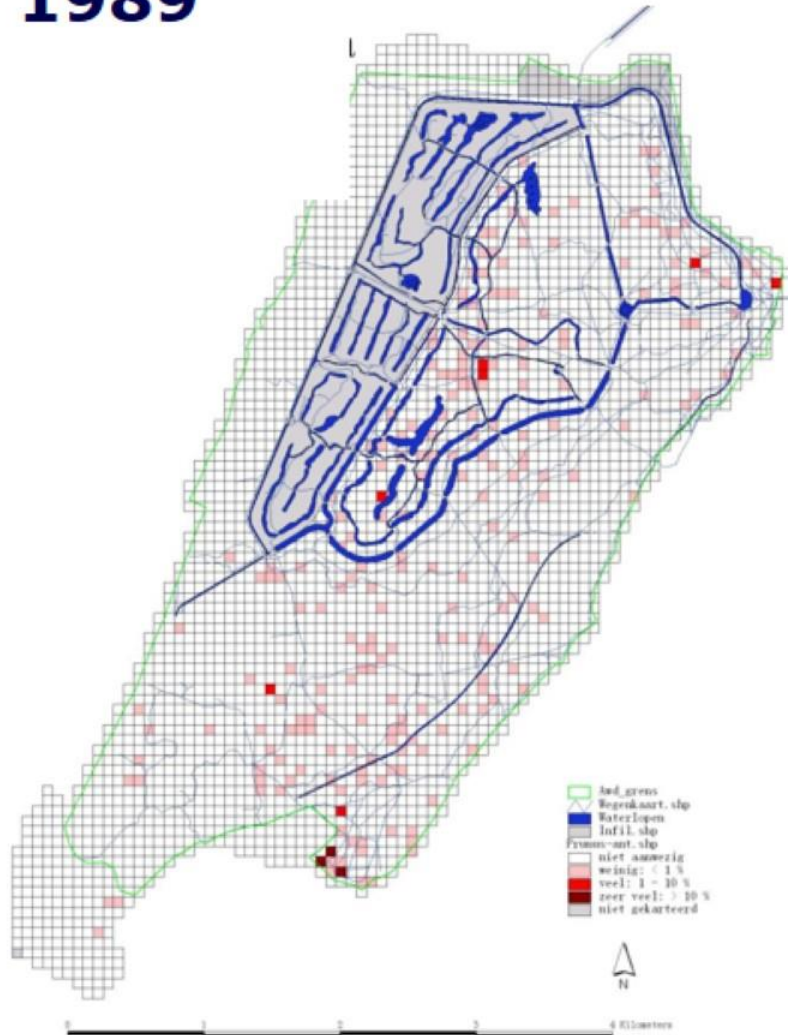
- 1930 - 1970 : Introduced by man
- 1970 - 1990 : Invasive in pine stands
Still rare in open dunes
- 1990 - 2004: Increased all over AWD



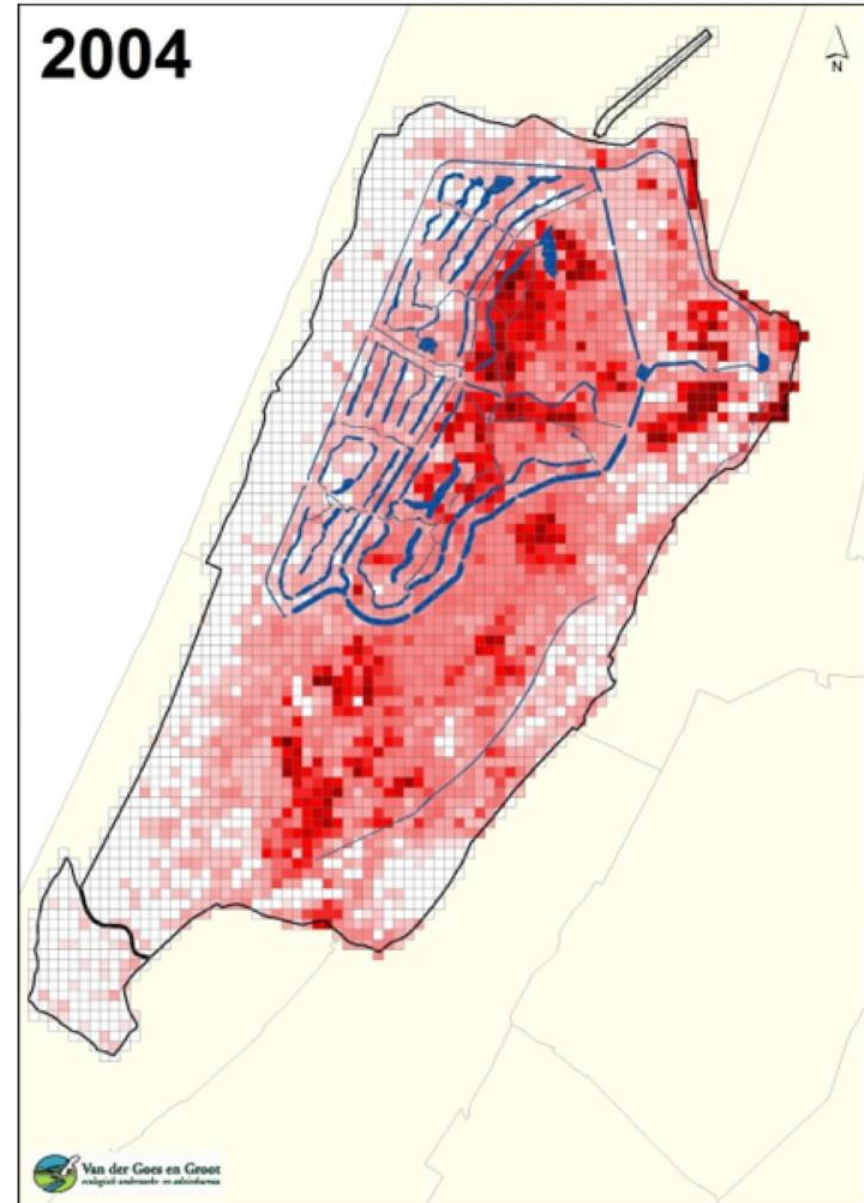
- The favourable conservation status of Natura2000 dune habitats is at risk

Presence increased during 15 years: from 10% to 75%

1989



2004



How it starts



... and after some years...



... and after some more years...

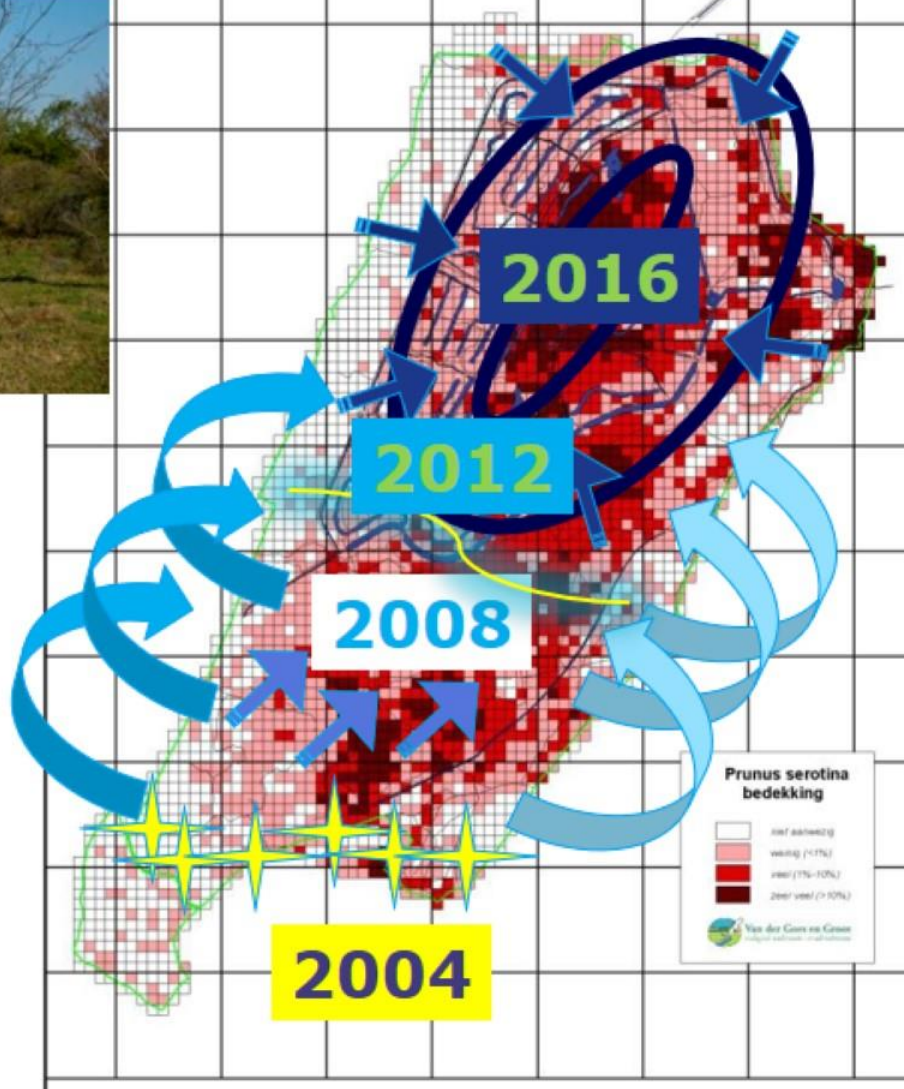


**In 10-15 years
low Sea Buckthorn shrub changed into
high Prunus woodland**



Plan of attack

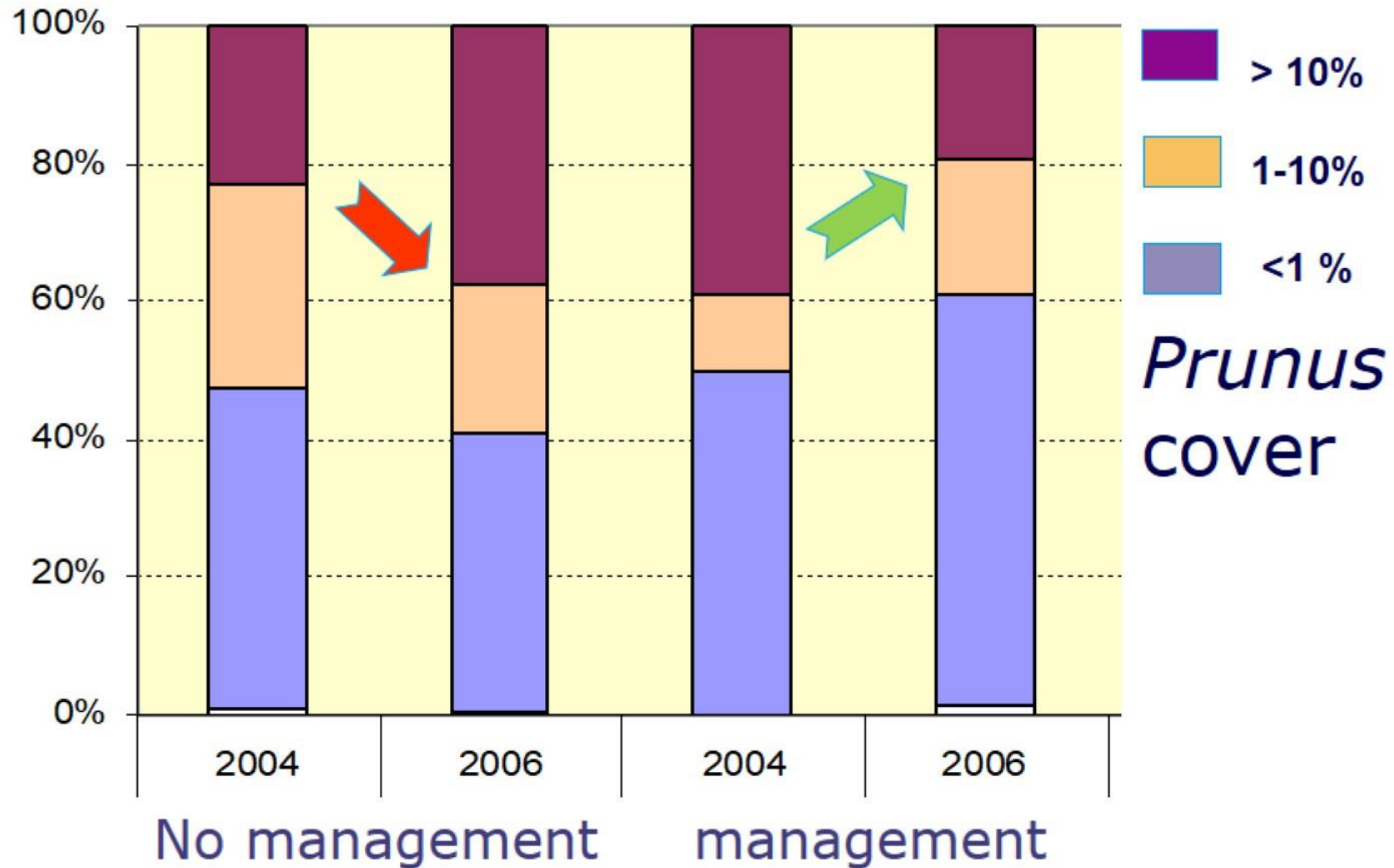
Prunus serotina kartering
2004



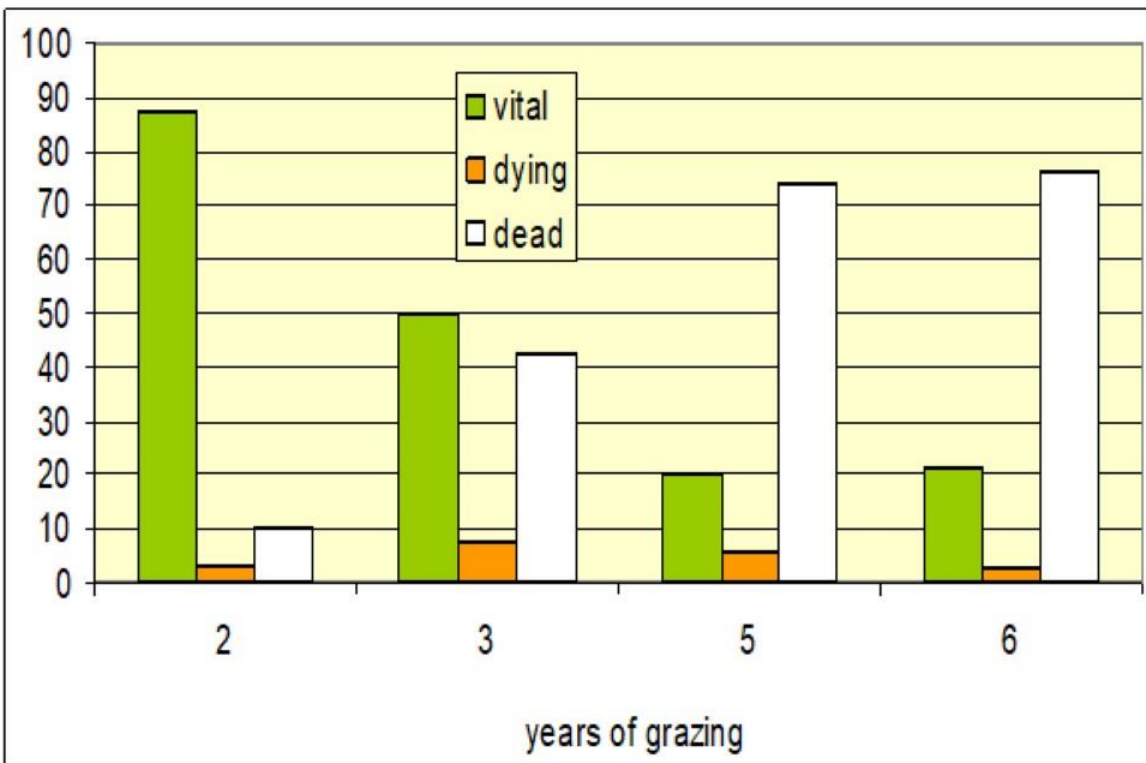
No herbicides



First management results

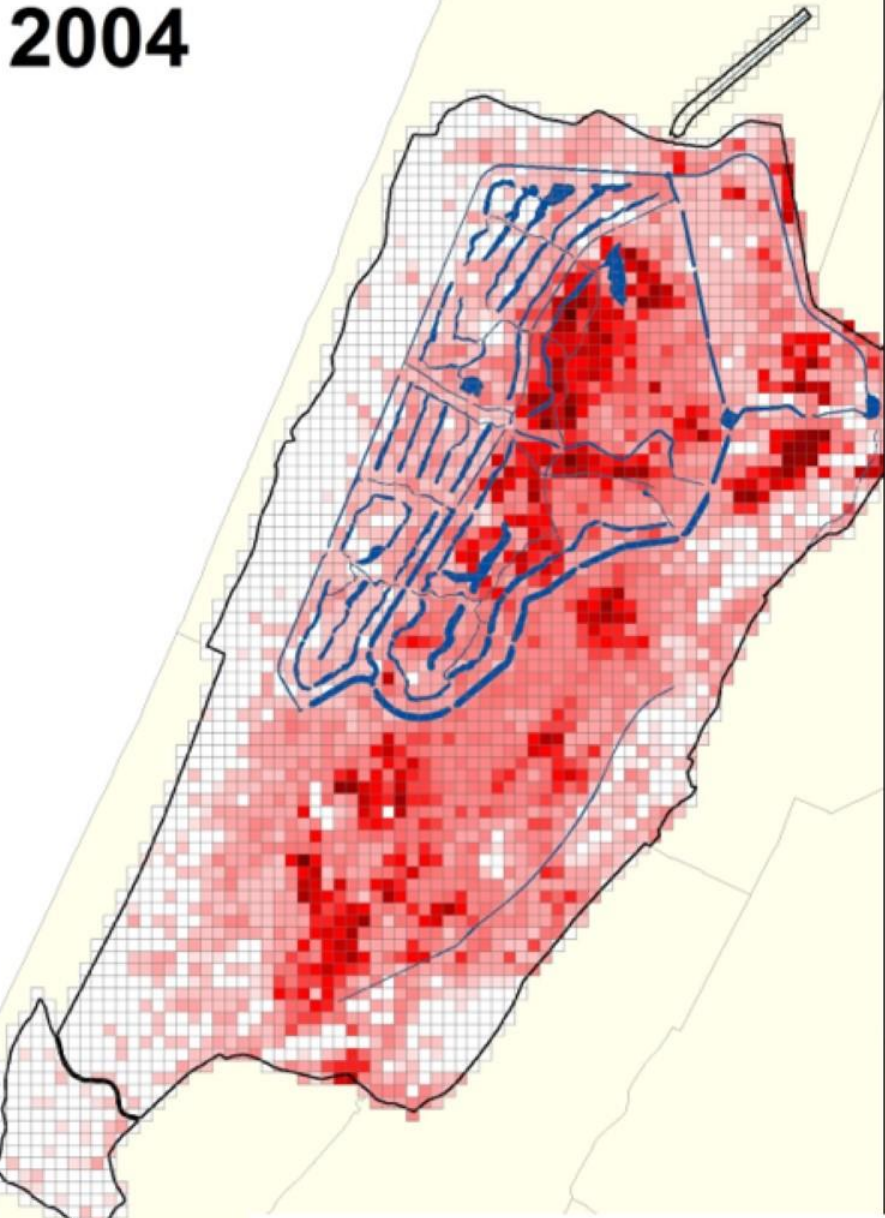


Effect grazing on stump vitality

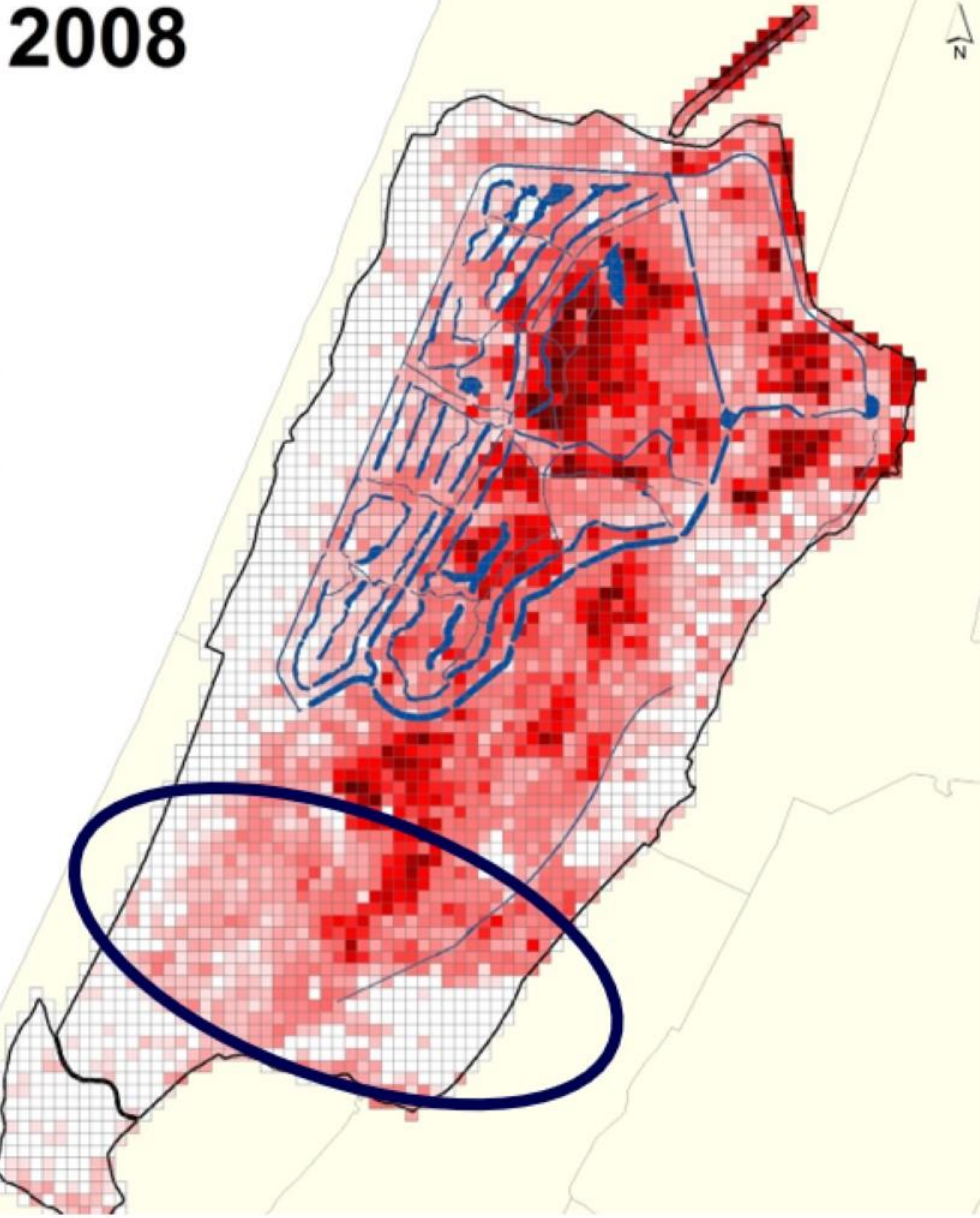


75% dead stems after 6 years of grazing

2004

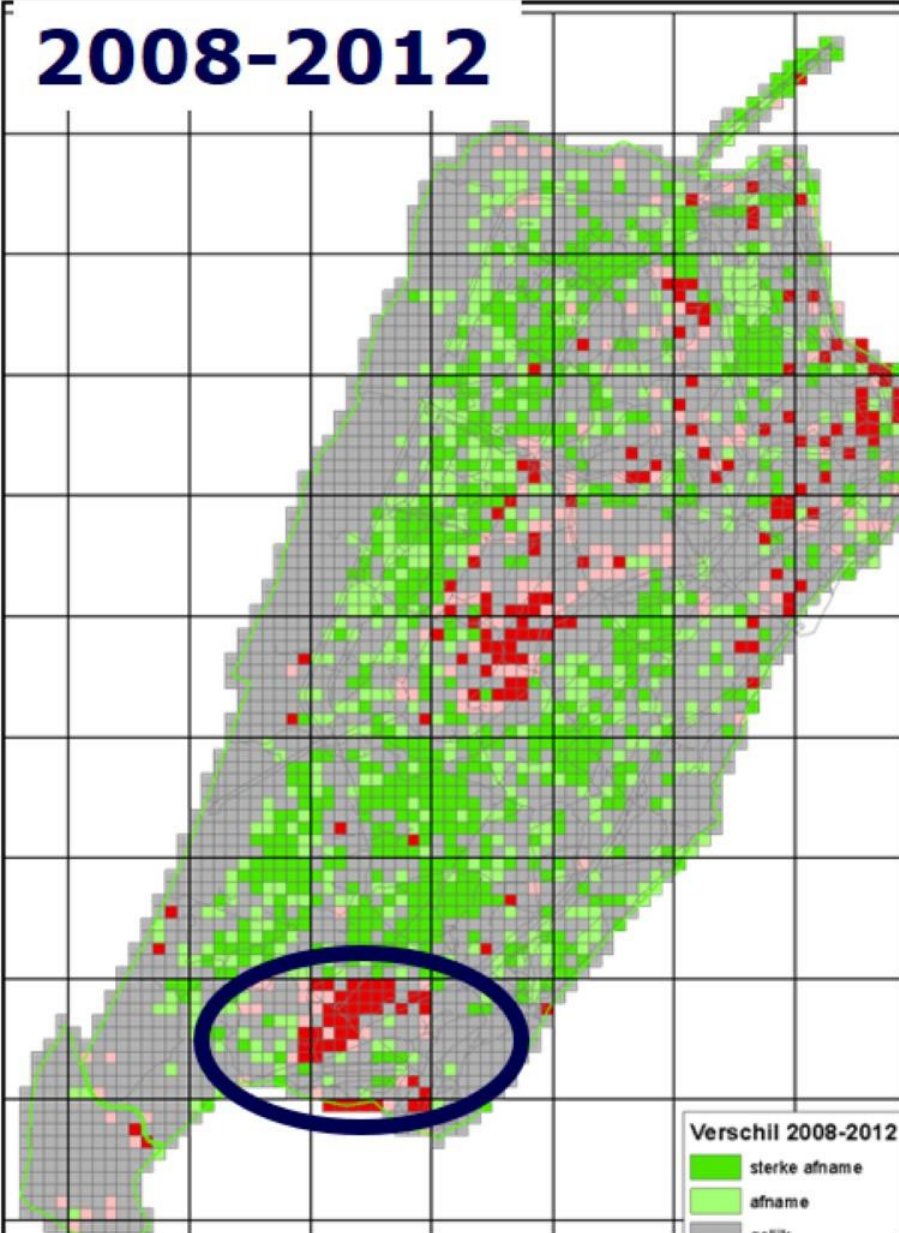


2008

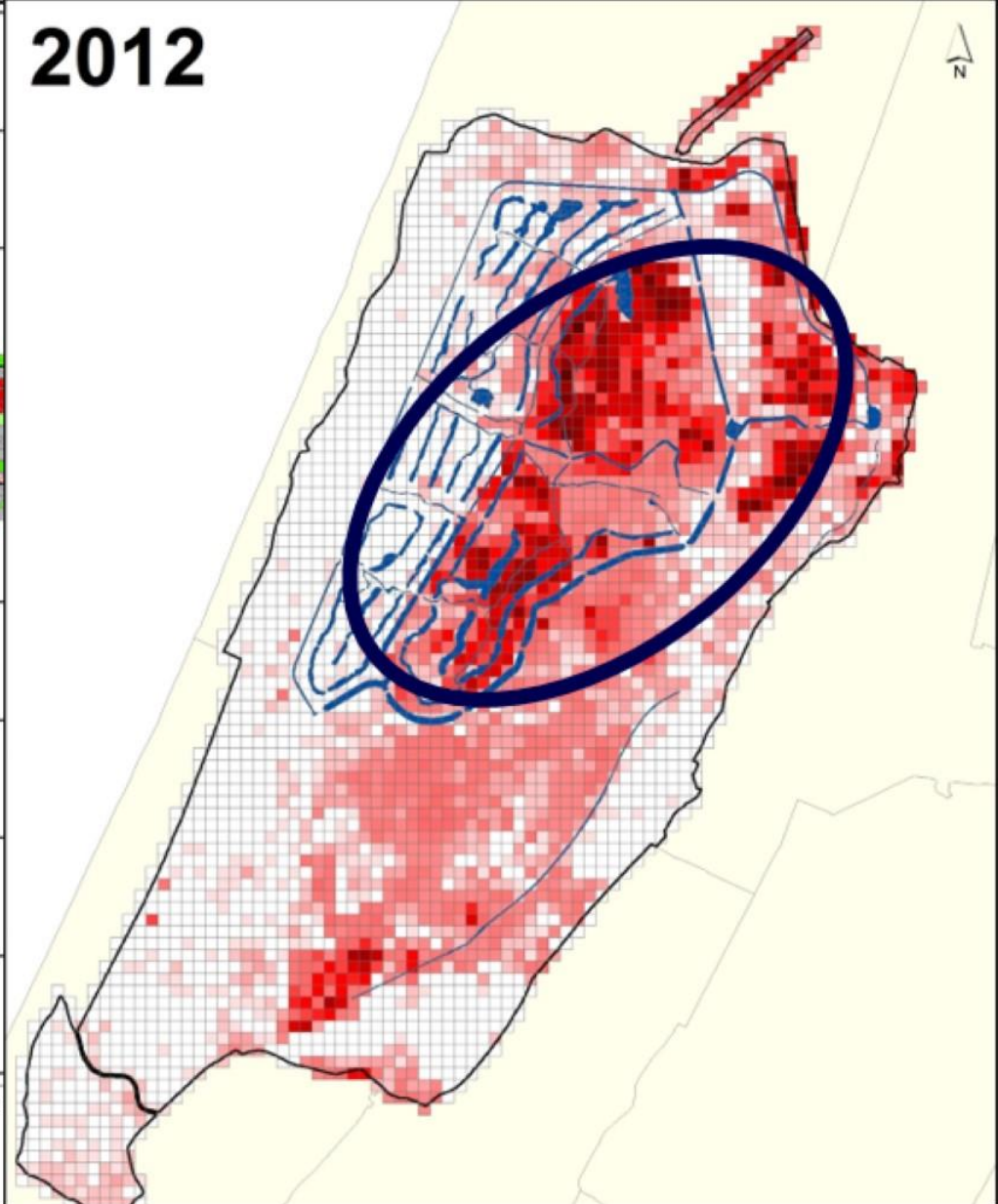


**In 2008 presence still increased 75% -> 77%
We only slowed down yearly growth**

2008-2012



2012



**In 2012 good progress
but.. regrowth & huges dense prunus cores**

Amsterdam Dunes

Source for nature

Dune habitat restoration project

- LIFE11NAT/NL/000776
- Restore & improve 350 ha
- H2130 /H2160 /H2190
- H1014 /H1042
- Budget € 2,483,024



Yellow-spotted Whiteface



whorl snail



Dynamic Dunes 2015
Daring solutions for 'Natura 2000 challenges'

waternet

170 ha Prunus removal



4.037.000 Kg stumps & roots



68 ha Sodcutting









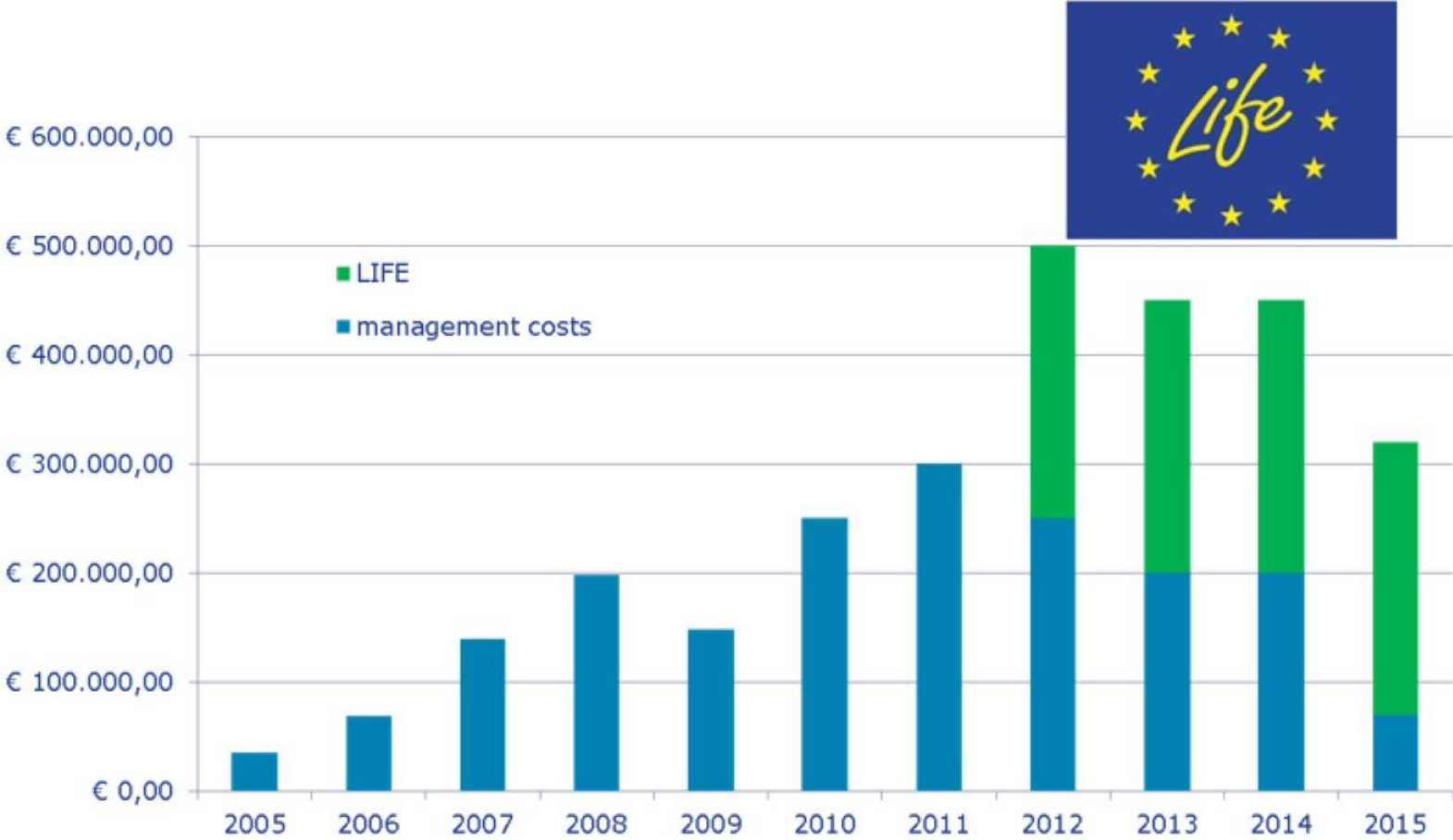




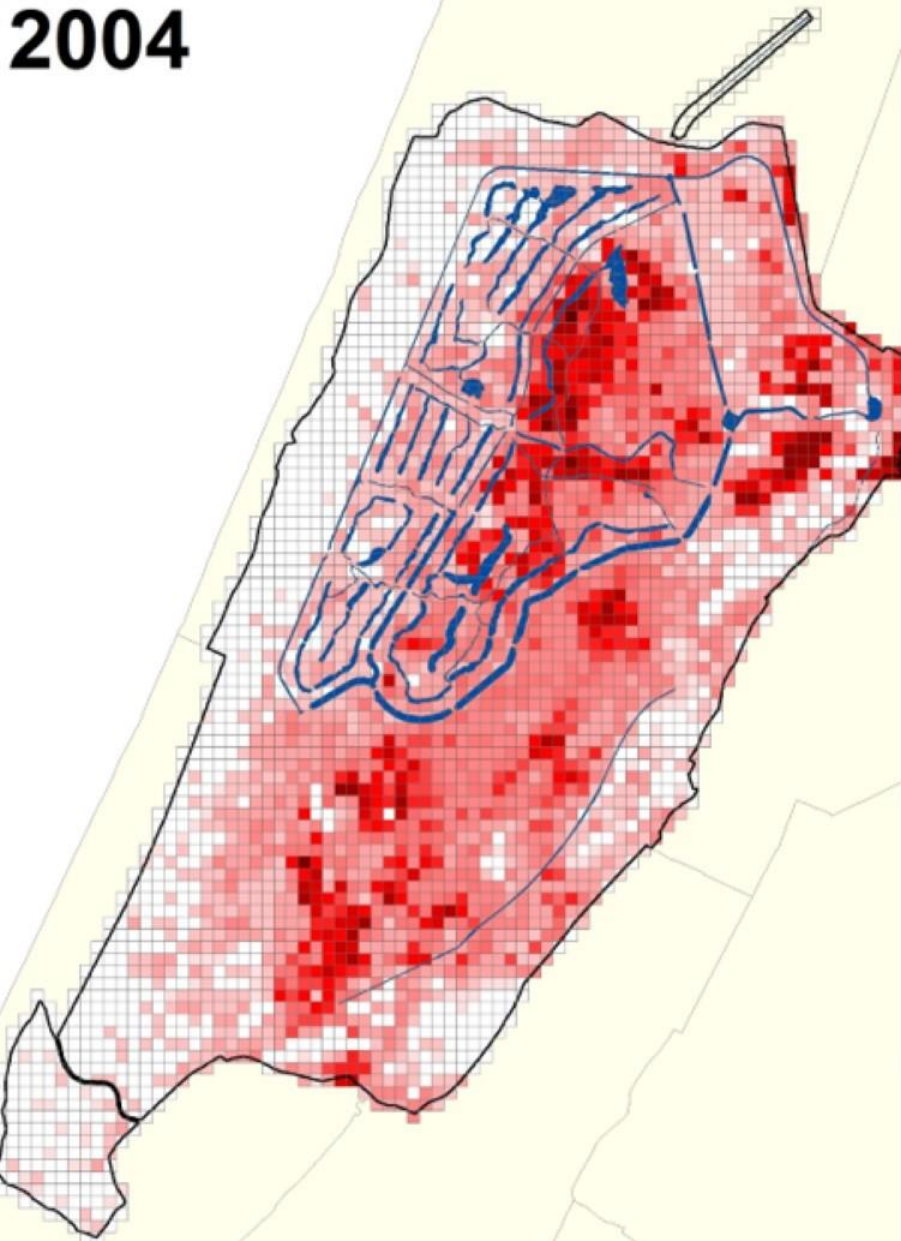
Aftercare with volunteers



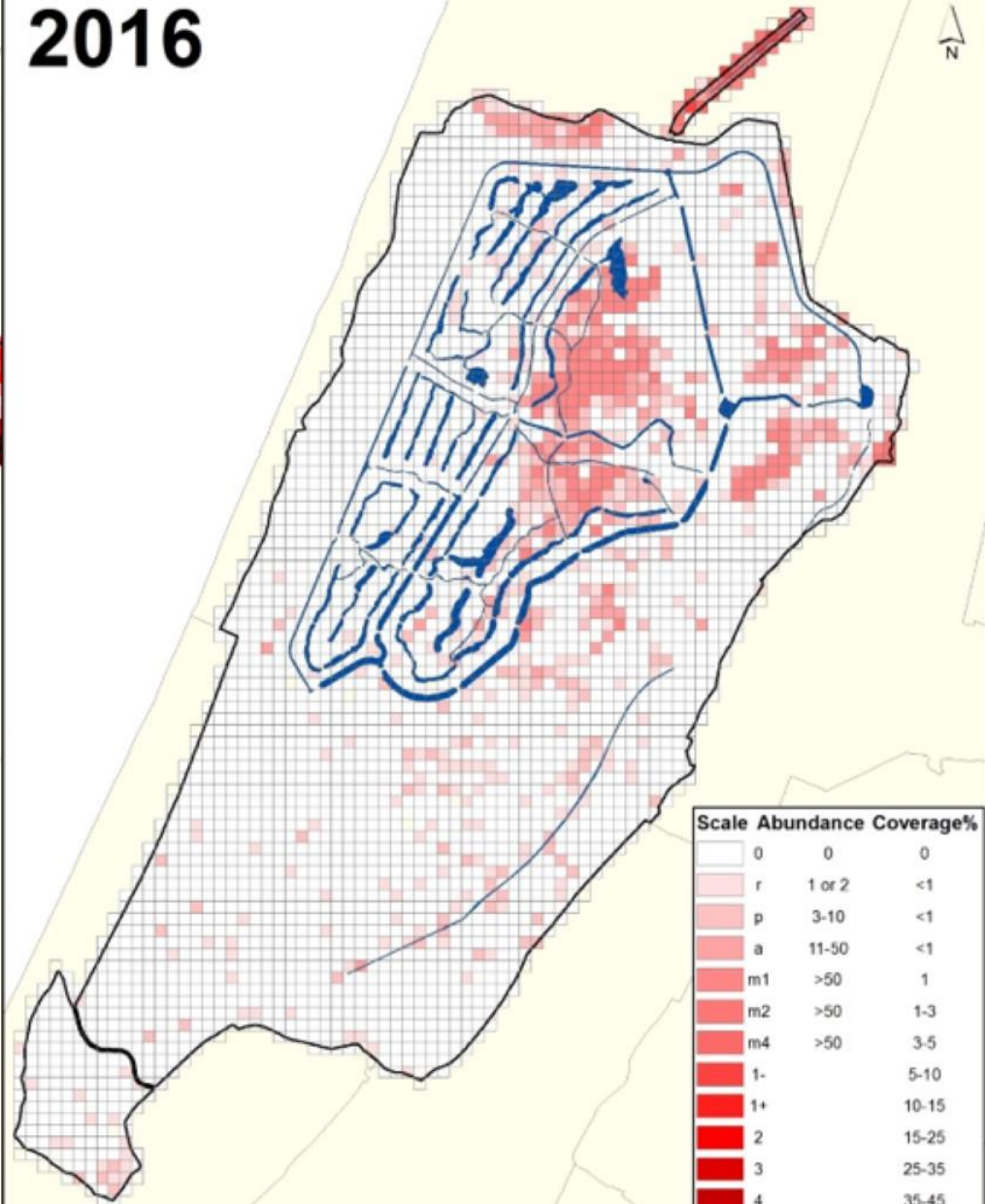
Management costs



2004



2016

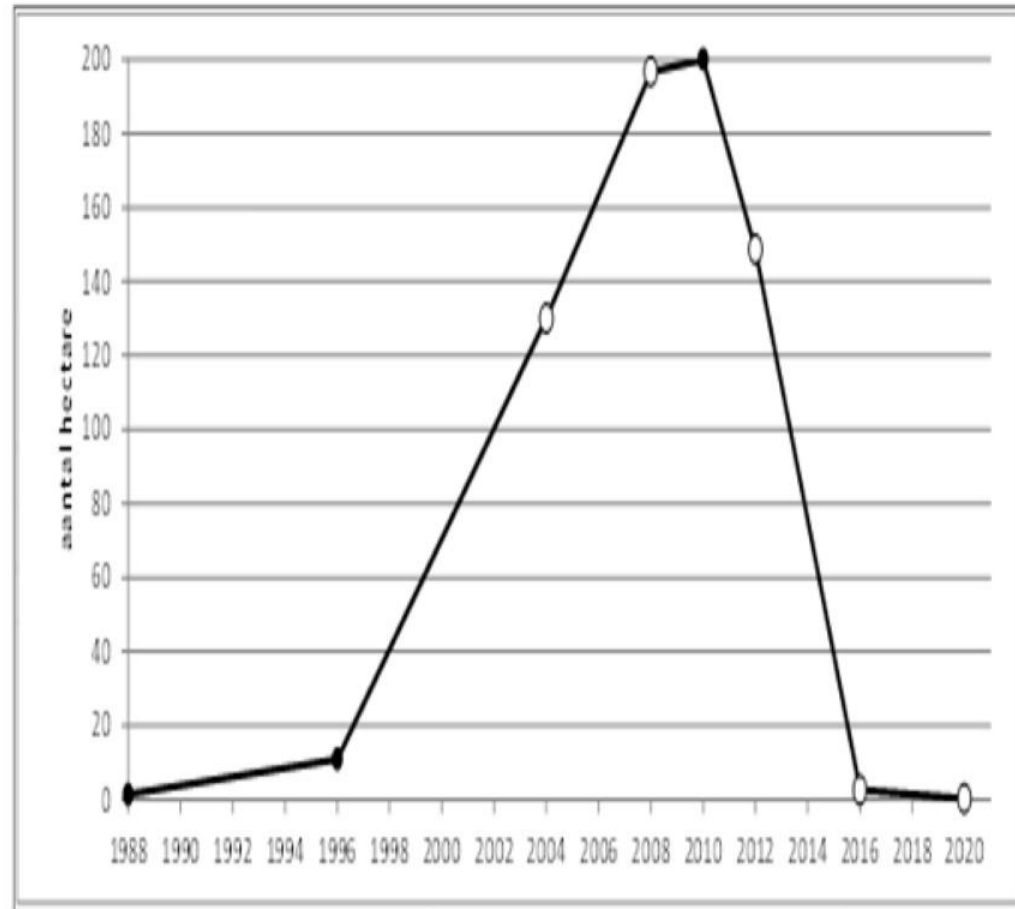


Scale	Abundance	Coverage%
0	0	0
r	1 or 2	<1
p	3-10	<1
a	11-50	<1
m1	>50	1
m2	>50	1-3
m4	>50	3-5
1-		5-10
1+		10-15
2		15-25
3		25-35
4		35-45
5		45-55
6		55-65
7		65-75
8		75-85
9		85-100

Conclusions

- Strategic restoration plan (12y)
- Very costly
- Stakeholder involvement
- No compromise

- In control again
- Aftercare management



Recommendations

- Investigate potential invasions
- Regional Black list (N2000 area?)
- Start management A.S.A.P!



INVASIVE SPECIES IN DUNES

- Rosa rugosa
- Heracleum mantegazzianum
- Prunus serotina
- Fallopia baldschuanica
- Mahonia aquifolium
- Impatiens glandulifera
- Crassula helmsii
- Acer pseudoplatanus
- Ailanthus altissima
- Ambrosia artemisiifolia
- Colutea arborescens
- Cotoneaster spec.
- Datura stramonium var. tatula
- Elaeagnus multiflora
- Parthenocissus inserta
- Pinus nigra
- Populus spec.
- Amelanchier lamarckii
- Vincetoxicum nigrum
- Symphoricarpos albus
- Syringa vulgaris
-
-ETC



WANTED

De rimpelroos
(*Rosa rugosa*)

Bestrijding: Rimpelroos zou niet geplant moeten worden in kustgebieden. De meeste effectieve bestrijding is om de soort uit te graven, waarbij ook wortels en wortelstokken moeten worden verwijderd.

REWARD

WANTED

reuzenberenklauw
(*Heracleum mantegazzianum*)

REWARD

REWARD

Exoten AWD (Noord-Holland)

Soorten

- Alsemambrosia
- Amerikaanse eik
- Amerikaanse vogelkers
- Chinese bruidsluier
- Cotoneaster
- Hemelboom
- Japanse bamboe
- Mahonie
- Moerashyacint
- Oosterse karmozijnbes
- Reuzenbalsemien
- Reuzenberenklauw
- Rimpelroos
- Sneeuwbes
- Valse wingerd
- Vederesdoorn

0 250 500 1.000 1.500 2.000
Meters







**Thanks for your attention !
Questions?**

More INFO: luc.geelen@waternet.nl