The Dutch Otter re-introduction project

ALTERRA – Centre for Ecosystem Studies

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Reintroduction

Small population

- Manage genetic diversity
- Manage threats
- Release strategy
- Abundance
- Relatedness (inbreeding)

Public awareness

- Communication
- Governmental policy
- Appreciated ……until

THE TIMES

Otter bites child in Friesland

LEEUWARDEN | The reintroduction of wild otters to Holland's protected wetlands has run into trouble. Recently a four year old child was bitten by an otter near the Friesland nature reserve of Rottige Meenthe.

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Release strategy – Area (North-West Overijssel)






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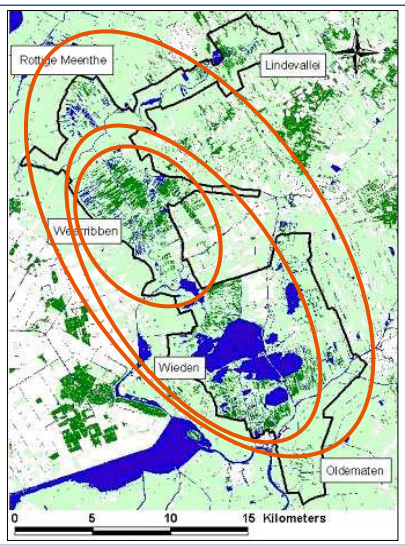
Release strategy - Plan



4 years – 10 otters each year

Stage 1 –
Populate the centre (Weerribben)

Stage 2 –
Restock from the border (Wieden)

Stage 3 –
Restock from the border (Rottige Meenthe and Linde Valley)

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Pivotal role for Genetics

- Phylogeography – population differentiation
- Non-intrusive monitoring (i.e. no capture – recapture)
  - transmitter release – territory size
  - paternity analysis
  - mating structure – social structure
  - dispersal
  - estimation of abundance

- Monitoring genetic diversity (= state of the population)
- Recommendations for the release strategy

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Non-intrusive genetics

- Use “secondary” material – hairs, feathers, droppings –
- Extract DNA from this material
- Applications
  - Dispersal (who is where?)
  - Paternity analysis
  - Estimation of abundance
  - Historic variation
- Promising technique, but with problems and pitfalls
  - DNA quantity and quality
  - Success rate about 40%
  - Need a rigorous protocol (multiple tube, matching)

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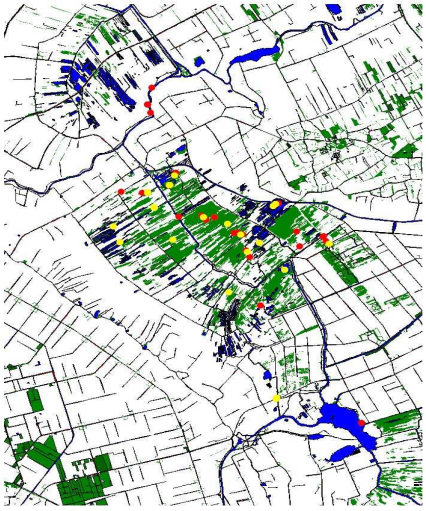
Distribution Spraints



Red – negative result
● = no genetic profile

Yellow – identified
● genetic profile

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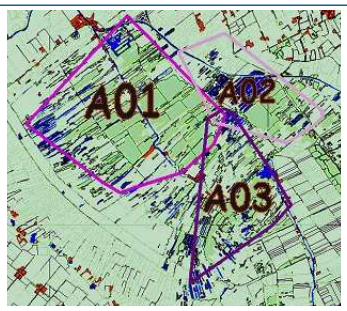
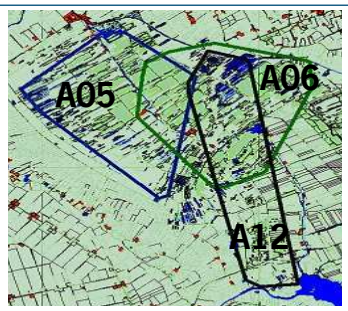
Distribution Mating

♀





♂

Newborn	Parents
NB1 ♂	(A01*A05)
NB2 ♀	(A03*A12)
NB3 ♂	-
NB7 ♀	-
NB4 ♀	(A02*A06)

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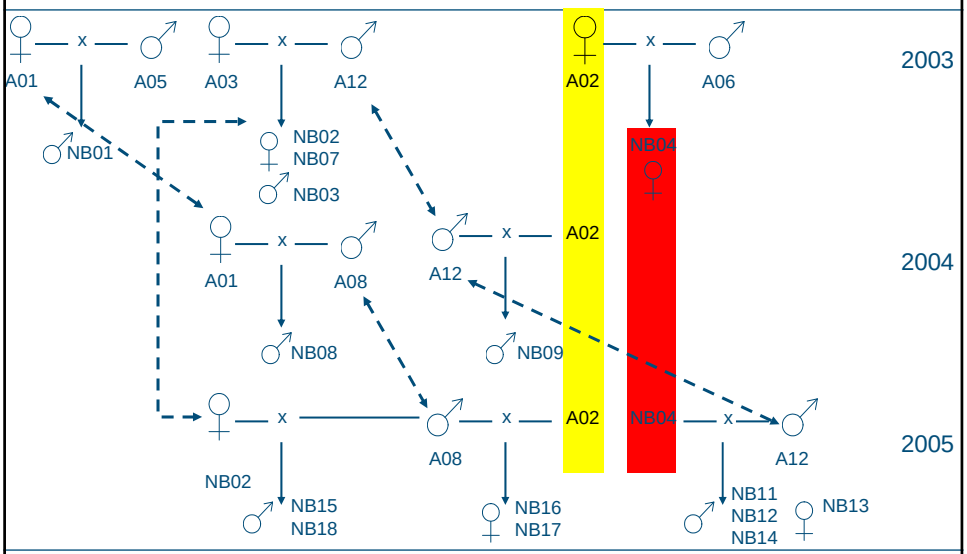
Mating structure — Complex pattern



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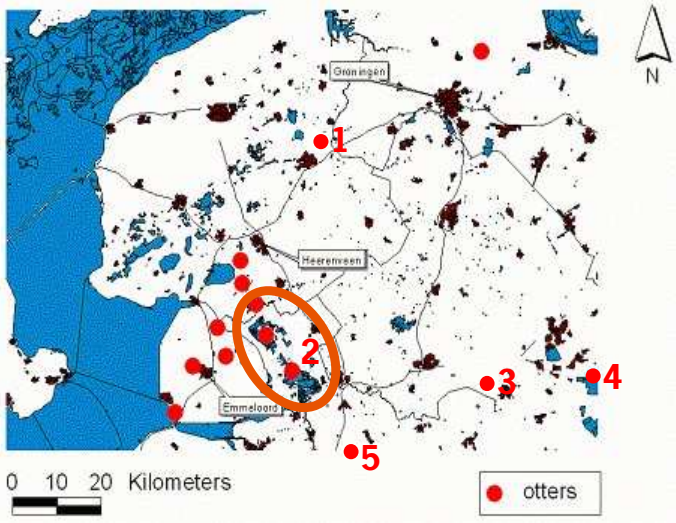
Social structure — Dispersal/Mortality



19 newborn detected

8:11 Female/Male

1:7 Dead or missing

Detected road kills (all subadult males)

1 – Drachten

2 – Wieden

3 – Westerbork

4 – Sögl (Germany)

5 – Zwolle

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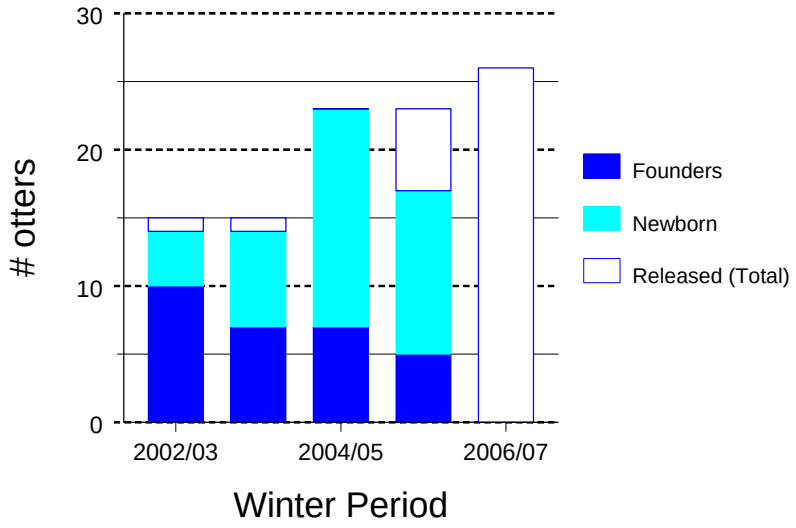
Abundance



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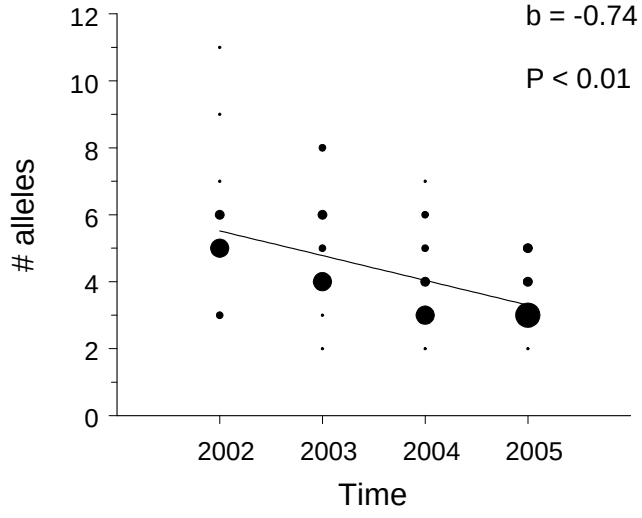
Genetic diversity



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Conclusions

- Non-intrusive genetics requires effort and is costly, but provides important information on the population status and well-being
- Most of the otters in the area are currently of “native” origin, i.e. born from released individuals
- Juvenile mortality is male biased. Sub-adult males leave the area. Sub-adult females stay close to the territory of the mother
- Decrease in genetic diversity is until now caused by random processes. In 2006 the first matings between related individuals might be possible.
- Modified release strategy
  - Put females in a corridor around the main centre (the males will come in time)
  - Release new individuals (reduced diversity)

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Thanks to

The field crew

Hugh Jansman
Loek Kuiters
Dennis Lammertsma
Freek Niewold

The lab crew

Marie-Claire Boerwinkel
Jan Bovenschen
Maribel Perez-Haro

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