Is it possible to eradicate American mink (*Neovison vison*) from Iberian Peninsula?

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International Workshop “Invasive species – threat and management - Bialowieza, Poland, September 18-21, 2012.”
- Introduced (fur farms) in Spain at the end of years 1950s. In the wild, in years 1970s

- Six populations: Central, Galicia, Catalonia, Aragon-Valencia, Alava, Northern Basque Country.
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La Voz de Galicia.es

ABEGONDO

Un sabotaje deja sueltos y sin control 14.000 visones de granjas de Abegondo

Los asaltantes liberaron a los animales de madrugada, y la Guardia Civil sospecha del Frente de Liberación Animal

Se escapan 1100 visones de una granja de Santa María de la Alameda

El País.com

Comunidad Valenciana

Una mano anónima libera más de mil visones en Viver

Mueren decenas de animales huidos de una granja
Main impacts

- Competition
- Depredation
- Diseases transmission
- Economic costs

El visón americán (**Neovison vison**)

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American mink control and eradication Plan in Spain

• **Aims:**
  - To eliminate non-native mink populations inside of European mink distribution in Spain.
  - To control feral American mink populations out of influence area of European mink in Spain.

• **Goal:**
  - To preserve the biodiversity in rivers and wetlands (aquatic ecosystems) in Spain.

• It starts in **2002**. It is carrying out mainly in:
  - Alava and La Rioja (Alava).
  - Burgos, Palencia, Soria and La Rioja (Central).
  - Biscay (Northern Basque Country).
  - Barcelona and Girona (Catalonia).
  - Teruel, Zaragoza, Castellon and Cuenca (Aragon).
American mink distribution in Europe
American mink distribution in Spain
European mink (*Mustela lutreola*)

- Ecological competition.
- Transmission of Aleutian mink diseases (ADV) – parvovirus; distemper?
European and American mink in Spain and France

Current presence
- American mink
- European mink
European and American mink in Spain and France

Current presence

- American mink
- European mink
Analysis viability population of European mink in Spain

- 1 population or 1 metapopulation with three subpopulations.
- Females reproduction: 70, 80 and 90%.
- Carrying capacity (K): -18%, 0, +8% (American mink).

Supervivencia

Probabilidad de supervivencia

Años

0 2 4 6 8 10
American mink in Levante

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American mink in Catalonia

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European polecat (*Mustela putorius*)

- Ecological competition.
- Transmission of Aleutian mink diseases (ADV) –parvovirus–; distemper?

Is it possible to eradicate American mink from Iberian Peninsula? Bialowieza, Poland, September 18-21, 2012
American mink in Northern Basque Country

Is it possible to eradicate American mink from Iberian Peninsula? Bialowieza, Poland, September 18-21, 2012
American mink in Central Spain

Is it possible to eradicate American mink from Iberian Peninsula? Bialowieza, Poland, September 18-21, 2012
## Trapping effort of American mink in Spain

<table>
<thead>
<tr>
<th>Population</th>
<th>Alava (+La Rioja)</th>
<th>Northern Basque Country (Biscay, Gipuzkoa)</th>
<th>Central Spain (Burgos, Palencia, Soria, La Rioja)</th>
<th>Aragon</th>
<th>Catalonia</th>
<th>Total</th>
</tr>
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<tbody>
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<td>600</td>
<td>200</td>
<td>1,588</td>
<td>500</td>
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<td>200</td>
<td>3,018</td>
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<td>0</td>
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<td>16,678</td>
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<tr>
<td>2012</td>
<td>-</td>
<td>-</td>
<td>1,000</td>
<td>-</td>
<td>2,033</td>
<td>3,033</td>
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<tr>
<td>Total</td>
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<td>14,610</td>
<td>89,462</td>
<td>27,998</td>
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<td>231,584</td>
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American mink captured in Spain

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Alava (+ La Rioja)</th>
<th>Northern Basque Country (Biscay, Gipuzcoa)</th>
<th>Central Spain (Burgos, Palencia, Soria, La Rioja)</th>
<th>Aragon</th>
<th>Catalonia</th>
<th>Total</th>
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</thead>
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<td>5</td>
<td>3</td>
<td>5</td>
<td>16</td>
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<td>1</td>
<td>10</td>
<td>12</td>
<td>0</td>
<td>26</td>
<td></td>
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<tr>
<td>2001</td>
<td>16</td>
<td>0</td>
<td>4</td>
<td>11</td>
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<td>31</td>
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<tr>
<td>2002</td>
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<tr>
<td>2003</td>
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<tr>
<td>2005</td>
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<td>8</td>
<td>116</td>
<td>27</td>
<td>175</td>
<td>345</td>
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<tr>
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<tr>
<td>2008</td>
<td>1</td>
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<td>215</td>
<td>40</td>
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<td>344</td>
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<tr>
<td>2009</td>
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<td>12</td>
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<td>306</td>
<td>40</td>
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<td>16</td>
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<td>333</td>
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<tr>
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<td>11</td>
<td>-</td>
<td>51</td>
<td>-</td>
<td>79</td>
<td>141</td>
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<tr>
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<td>170</td>
<td>2,097</td>
<td>458</td>
<td>1,053</td>
<td>4,048</td>
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</table>
Economic cost

Trapping:
- 1 iron trap = 45 €; 1 raft = 100 €.
- 1,000 iron traps = 45,000 €.
- 800 traps x night = 1 people x 1 month = 2,000-2,500 €.
- 231,584 traps x night = 578,960 – 723,700 €.

4,048 minks = 155-190 € per mink captured.

Transport:
- Gasoline, every day more expensive: € per kilometre covered.

Sacrifice:
- Anaesthetic and sacrifice material, expensive.
- Veterinarian (public or private).

Total = 170-205 € per mink captured and sacrificed
Actions inside Spanish Plan

- To ban the building of new fur farms (Spanish and Regional governments laws). Requirements higher security in facilities to avoid mink escapes (laws). To reconvert fur farms to another type of livestock farm: rabbits, chicken, etc.
- Studies about different methods applicable for a more effective control and eradication.
- Close down all farms what threaten directly European mink population.
- Training of skilled trappers in every Region: search and knowledge of tracks and signs; management of traps and minks. Sacrifice of minks by bloodless methods; taking of data and samples.
Methodology of American mink capture

- Type of trap (iron, wooden, rafts).
- Type of bait (fish, meat, eggs, live prey, long-life baits).
- Type of lure (oil, pheracol, urine, preys smells, commercial lures for mink, anal glands).
- Most effective periods: pre-reproductive and mating (January-April) and post-reproductive and subadult dispersal (September-December).
- Sacrifice: anaesthetic + pentotal; CO$_2$ chamber; buckshot gun.

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Conclusions

- Effort very high in economic cost, time and people.
- Are results in accordance with effort carried out?
- How we could increase the trapping effectiveness?
- How we could increase the number of American mink captured?
- To keep the job of contracted technicians and ranger agents (Regional governments): more experience, more captures and less economic cost.
- To involve to Natural Parks and Protected Areas.

Is it possible to eradicate American mink from Iberian Peninsula?
Now, we don’t know.
Now, with the current methods: NO.
Now, with the current effort: NO.
Now, with the available money: NO.

I’m sorry by my pessimistic (or realistic) view.
Conclusions

• **Focus efforts on:**

  - Smallest populations: Northern Basque Country and Alava.
  - Populations threaten European mink: Northern Basque Country, Alava and Central Spain (north-east).
  - Populations threaten other protected and endangered species:
    - Outskirts populations: to slow down and stop the populations expansion; to avoid colonization of new basins (Catalonia and Aragon); to avoid union of two populations (Northern Basque Country and Alava; Catalonia and Aragon).
  - Protected areas and surroundings: Natural Parks, Natura 2000.
  - Areas where mink can cause conflict with human activities: fishing, hunting, predation on farms, etc.
Conclusions

- To work every regional government separately is absurdity.
- To coordinate all efforts among regional governments and between they and Spanish government.
- To have the goal and aims very clear. There are global aims and regional aims.
- Increase the economic budget.
- To coordinate all efforts among different countries (France, Portugal and Spain).

Is it possible to eradicate American mink from Iberian Peninsula? Is it possible to control American mink to conserve European mink?
Yes, it is possible
Aknowledgements

• Gobierno de la Rioja.
• Diputación Foral de Álava.
• Junta de Castilla y León.
• Gobierno de Navarra.
• Diputación Foral de Guipúzcoa.
• Diputación Foral de Vizcaya.
• Gobierno de Aragón.
• Generalitat Valenciana.
• Generalitat de Cataluña y empresa Forestal Catalana
• Ministerio de Agricultura, Alimentación y Medio Ambiente, y la empresa TRAGSA.
• Asociación Visón Europeo.
• Grupo Nutria, de la SECEM.
• ICARUS.
• Unión Europea (Proyectos LIFE).
• Técnicos y Guardería de todas las CCAA.
• Universidad de Barcelona, Universidad del País Vasco.
• Fundación Lutreola (Estonia).
• Fundación Euronerz (Alemania).
• Centros de Recuperación de todas las CCAA.