



Roads in sensitive natural areas

Bjørn Iuell

- Norwegian Public Roads Administration
- Senior Principal Engineer
- bjorn.iuell@vegvesen.no



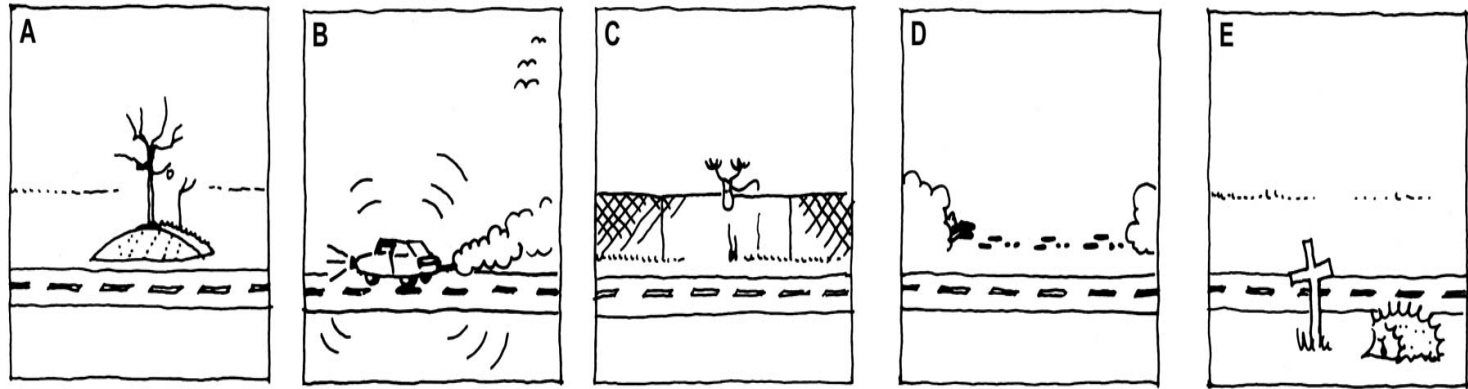
Statens vegvesen



Roads and nature

- Many countries make an effort to implement the concept of sustainable development in road construction and management.
- SEA, Strategic Environmental Assessment.
- EIA, Environmental Impact Assessment.

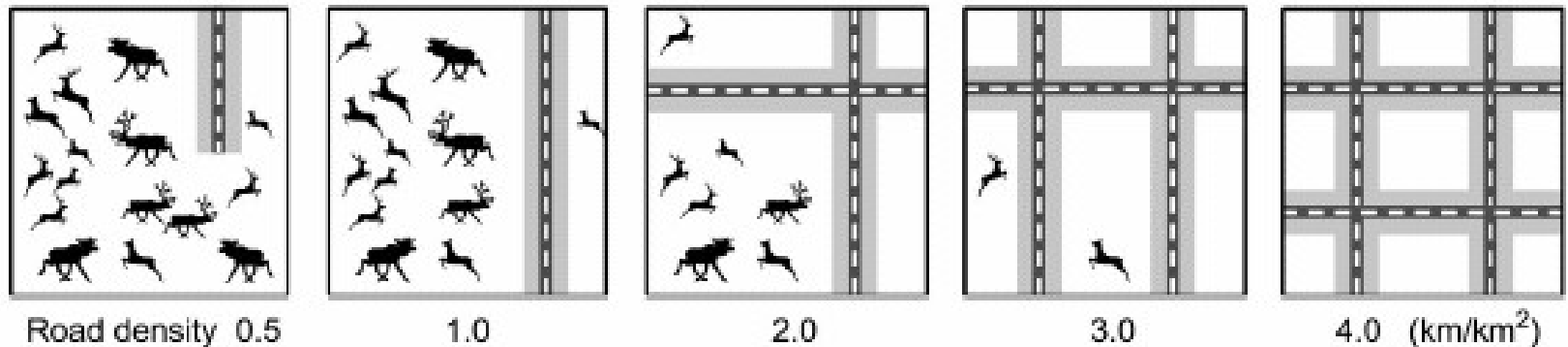
Ecological effects of roads and road traffic



- A. Habitat loss
- B. Pollution/disturbance
- C. Barriers
- D. Corridors
- E. Fauna casualties

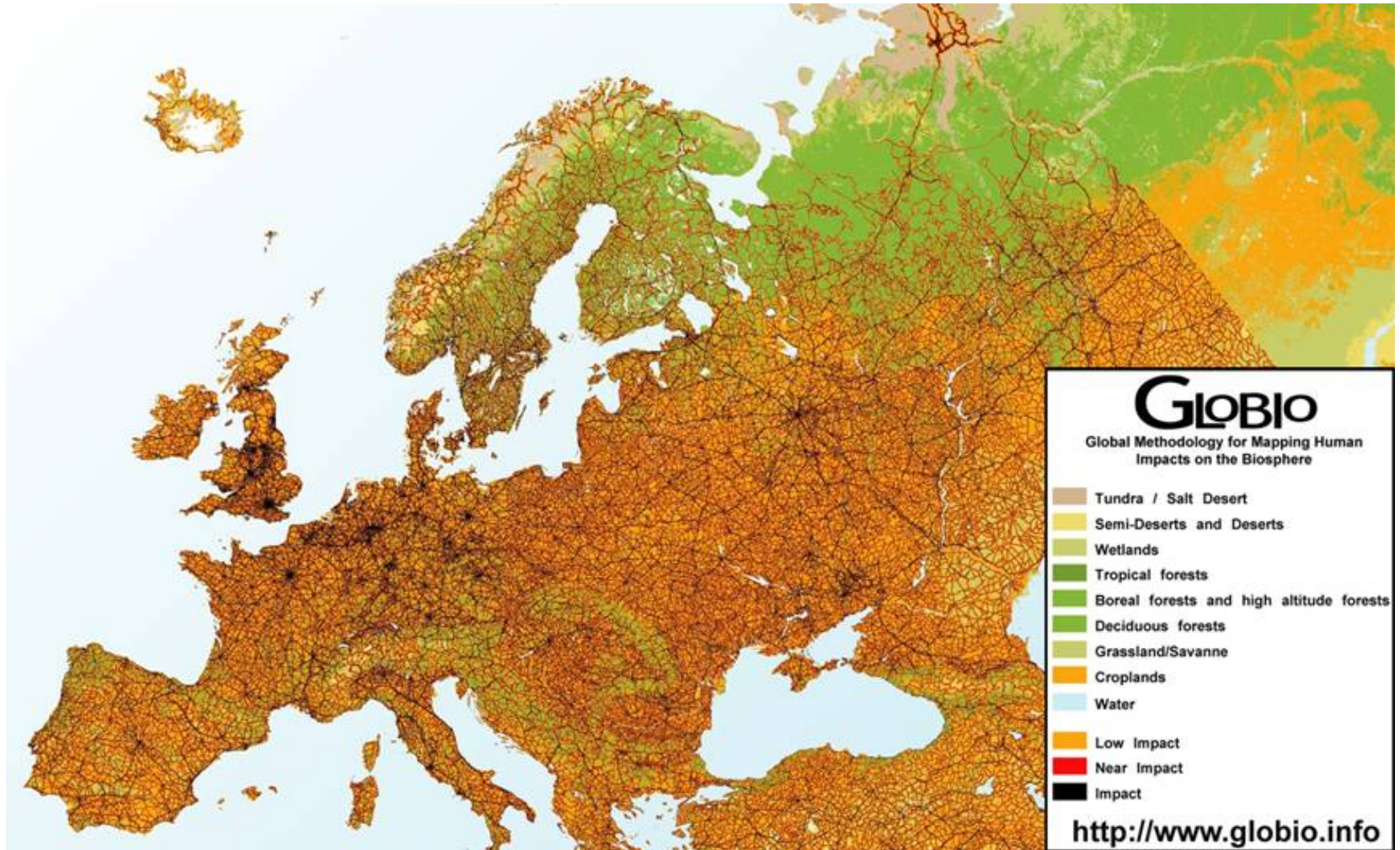
Barriers lead to habitat fragmentation

Splitting of natural habitats and ecosystems into smaller and more isolated patches.



Habitat fragmentation due to transportation infrastructure can lead to local extinction of species when the patches become smaller than the minimum habitat size.

Human impact on European nature



Fragmentation due to transport infrastructure



Photo: Jean Carsignol

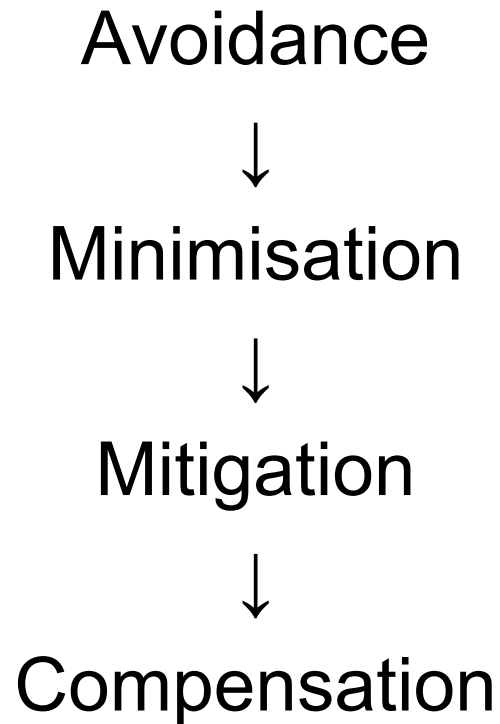
A36 Alsace, France



Traffic and Wildlife; results from survey

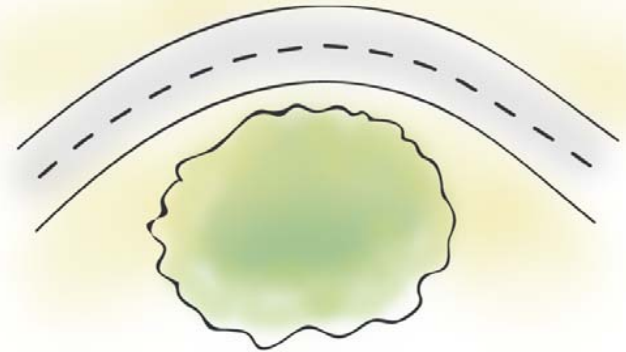
- Different focus among the countries.
- Traditionally traffic safety, collisions with larger animals.
- Barriers and fragmentation a growing concern the last 10-15 years.
- In some countries also smaller animals, i.e. amphibians.

The Approach



Avoidance

- Prevention is better than cure
- Early planning phases
- Integrated solutions
- Landscape ecology





Minimisation

- Alignment
- Adjustments in the chosen corridor to minimise the impact.
- Adaptation of infrastructure to surrounding landscapes.
- Different levels (site, landscape, region).

Mitigation measures

Overpasses:

- landscape bridges, green bridges
- ecoducts

Underpasses:

- viaducts
- tunnels
- culverts
- pipes

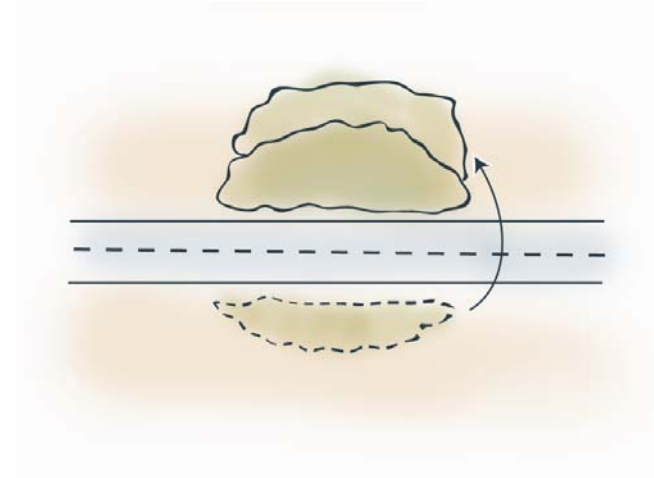
Measures to avoid or reduce animal mortality.



Ecological compensation

→ Creating, restoring or enhancing nature qualities in order to counterbalance ecological damage.

→ Measures should balance the ecological damage, aiming for a 'no-net-loss' situation that benefits both habitats and their associated species.





Quality control

- Ensure follow-up on early assessments.
- Precise and clear descriptions of goals and measures.
- Environmental surveys before and after.
- Environmental issues clearly stated in tenders and contracts.

Existing roads

- Most of our roads are already built.
- Many of them before environmental concerns were taken into account.
- Environmental effects of existing roads change with:
 - traffic volume, speed, changes in land use, building of new infrastructure.
- Most of the measures used on new roads can also be used in upgrading existing roads.

Conclusions

- The Precautionary principle should be applied in the planning and building of roads.
- It is always more cost-effective to deal with the environmental matters at an early stage.
- Use SEA and EIA to minimize the ecological footprint of road constructions.

or else

