Influence of landscape configuration on wind facility frequentation by Golden eagles - A case study

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GOLDEN EAGLE BREEDING DISTRIBUTION

Relatively rare in the northeast

Mostly in Quebec

bna.birds.cornell.edu
Vulnerable birds of prey
Nesting site distribution in Quebec
Status of Golden eagle in Quebec

- 82 known nesting sites in Quebec
- 10 in the Gaspe Peninsula
Existing and projected wind facilities in Quebec

About 2/3 of 1900 turbines planned by 2015 in the Gaspé Peninsula
Objective: reduce collision risk near nesting sites

Methods

- Satellite telemetry
- Home range delineation
- Determine possible overlap with wind facility
- Identification of mitigation measures

• Priority: nests < 20 km of wind facilities
Captured with bow nets

Baited with

• live crows (nesting season)

• deer carcasses (fall)
Case studies in the Gaspe Peninsula
GOEA mount Ernest Laforce

Home range (FK 95%):
515,8 km²
(1999 fixes)

Pink: burns
Yellow: forest cuts < 15 years
Green: forest (>3m)
Blue: water and other
GOEA Lac Matane

Home range (FK 95%): 817.5 km² (1868 fixes)

Yellow: forest cuts < 15 years
Green: forest (>3m)
Blue: water
GOEA Mount Pico

Home range (FK 95%): 2132.8 km²
(1411 fixes)

Carleton wind facility

Yellow: forest cuts < 15 years
Green: forest (>3m)
Blue: water
Movements recorded within wind facility

One location/hour = presumed movements
12 hours on the ground in same area
Corresponds to carcass persistence tests carried out within the facility limits
Proportion of open habitat vs home range size

\[ y = -7E-05x + 0.1556 \]

\[ R^2 = 0.7827 \]
Forest area vs home range size

The linear relationship is described by the equation:

\[ y = 0.8624x - 81.437 \]

with a goodness of fit of \( R^2 = 0.999 \).
Preliminary conclusions

• Eagles nesting in areas with high availability of nearby open habitats
  – have smaller home ranges
  – are less prone to using open habitats surrounding wind farms
Preliminary conclusions

• Eagles nesting in areas with low availability of nearby open habitats
  – Have greater home ranges
  – May be attracted to openings created near wind facilities which offer increased hunting areas
  – Have greater risk of collision with turbines
Conclusion

• Efforts must be made to avoid location of wind facilities near GOEA nesting sites
• When it can not be avoided
  – Reduce creation of openings to a minimum
  – Be aware of possible effects of carcass persistence tests