Ecology of a Proposed Dark Sky Reserve in Mayo

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Importance of light & dark

- Artificial light at night
  - Widespread and globally increasing
- Circadian rhythms
- Nocturnality
Ecological Light Pollution

- Negatively alters the ecological cycles and processes of flora and fauna
- Disruptions
  - Ecosystem services
  - Predator/prey relationships
  - Orientation and dispersal
  - Circadian rhythms
What about Ireland?

- Acknowledged as issue, largely unexplored
- Preliminary measurements taken
  - Light reaching protected areas
- Ecological impacts largely unknown
What about Ireland?

Mean light 1995-2000

Mean light 2005-2010
Ballycroy National Park
Species of Interest
Analysis

- 3 out of 4 light meter sites visited
  - Habitat mapping, light source noted

- Species data
  - National Biodiversity Data Centre (NBDC)

- Light meter measurements
  - International Dark Sky Association (IDSA categories)
Species at risk

- **Birds**
  - Greenland White-Fronted Goose, Whooper Swan, Merlin

- **Mammals**
  - Common Pipistrelle, Soprano Pipistrelle, Lesser Noctule, Pine Marten, Badger, Otter

- **Other**
  - Atlantic Salmon
Limitations

- Bias towards higher vertebrates
- Data taken on clear and cloudy nights
- Stationary SQM’s
- Spatial distribution not examined
What Now?

- Further research!
- Mitigation measures
  - Dark sky reserves, limiting installation, switching off, changing light types
- Species sensitivity to light
  - Species specific and ecosystem level effects
Thanks for listening

Any Questions?