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Birds and Power Lines

Utilities use several strategies to reduce the number of birds that are injured and killed when they contact power lines or electrical equipment. The strategies are:

- **Preventive** – conducting risk assessments and using avian-safe design standards where possible.
- **Reactive** – documenting mortalities, notifying resource agencies and applying remedial measures where appropriate.
- **Proactive** – educating employees and being involved in organizations that conduct avian interaction research.

Some basic information regarding bird power line interactions is provided below. For more information go to www.aplic.org.

Roosting and Nest Management

Utility structures and equipment are attractive to birds for roosting and building nests. Utilities try to minimize the risk of electrocution or injury to birds, of damage to electrical equipment and of outages to customers that may result when birds come in contact with power lines and structures. Perch discouragers are used to try to keep birds from perching or roosting on utility equipment. Nest management programs include installing nest boxes or platforms in safe areas on or near utility structures, where warranted. Additionally, utility personnel are educated on nest reporting, nest removal and platform construction.

Electrocution

Electrocution of birds typically is not associated with transmission lines greater than 138 kilovolts (kV) because generally the electrical components are far enough apart to avoid a bird making contact with two of them and fatally completing a circuit. Problems that do arise can be corrected in two primary ways:

- 1) **Isolation:** Moving the components farther apart to get the necessary clearance.
- 2) **Insulation:** Using covers on various electrical components to prevent contact with the component that would cause the electrocution.



Nest management

Collisions

Many factors can affect the likelihood of bird collisions with power lines:

- Habitat (if the line bisects critical habitat)
- A bird's size and maneuverability
- Flight altitude
- Bird behavior (chasing prey, interactions within or between species, flocking)
- A bird's age and gender
- Time of day
- Weather (fog, high winds, heavy precipitation)
- Land use (refuges, agricultural fields, landfills, cooling ponds)
- Topography
- Line configuration (grounding wire is thinner and harder to see; lines configured vertically tend to be less visible than those configured horizontally)
- Human disturbance (hunting, agricultural and recreational activities)

Collision Minimization Measures

Pre-construction efforts

- Use vegetation, topography or man-made structures to shield lines
- Cluster lines together
- Site lines away from obvious flyways if possible

Post-construction efforts

- Modify habitats
- Create habitats on the same side of the power line to minimize crossings
- Minimize human activities/disturbance near the line (educational process)

Marking Lines

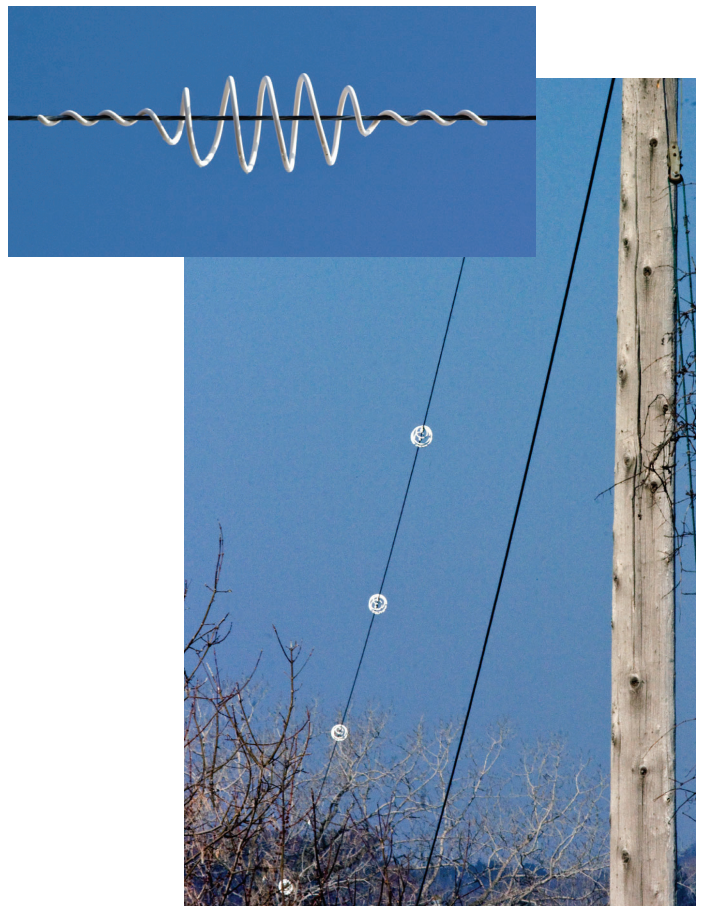
Marking lines with various types of markers can decrease but not eliminate bird collisions. The different types of markers vary in effectiveness. Devices include bird and swan flight diverters and clamp-on markers. Examples of these devices are shown in the photos.

Utilities have used a variety of these markers on their lines. The decision to use them is based on:

- Effectiveness
- A line's voltage rating
- The markers' weight
- Wind/ice loading factors
- Durability
- Ease of installation
- Effect on the viewshed
- Susceptibility to vandalism



Clamp-on markers



Bird flight diverters