Greater Sandhill Crane

Ed Pandolfino
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- Most studies estimate risk by counting crane carcasses under power lines
- Recent work using electronic collision sensors and night vision optics showed that previous studies underestimated collisions by a factor 3 to 4 (2.8-3.7; Murphy et al. 2016a)
Effectiveness of bird diverters is highly variable and never 100% effective
Effectiveness of Bird Diverters varies widely

**TABLE 1: Comparison of Study Results for Effectiveness of Bird Diverters on Transmission Lines**

<table>
<thead>
<tr>
<th>Study</th>
<th>Location</th>
<th>Effect¹ (% reduction)</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrientos et al. 2012</td>
<td>Spain</td>
<td>9.8%</td>
<td>Various, no cranes</td>
</tr>
<tr>
<td>Murphy et al. 2009</td>
<td>Nebraska</td>
<td>50%</td>
<td>Sandhill crane</td>
</tr>
<tr>
<td>Ventana Wild. Soc. 2009</td>
<td>Merced Co., CA</td>
<td>30-60% Varied by location</td>
<td>Various, including sandhill crane</td>
</tr>
<tr>
<td>Yee 2008</td>
<td>San Joaquin Co., CA</td>
<td>60%</td>
<td>Various, including sandhill crane</td>
</tr>
<tr>
<td>Crowder 2000</td>
<td>Indiana</td>
<td>73%</td>
<td>Waterfowl</td>
</tr>
<tr>
<td>Janss &amp; Ferrer</td>
<td>Spain</td>
<td>81%</td>
<td>Various, including common crane</td>
</tr>
<tr>
<td>Brown &amp; Drewein 1995</td>
<td>Colorado</td>
<td>67% fall; 55% spring</td>
<td>Sandhill crane</td>
</tr>
<tr>
<td>Alonzo, et al. 1994</td>
<td>Spain</td>
<td>60%</td>
<td>Various</td>
</tr>
</tbody>
</table>

¹Reduction in collisions or mortality; if more than one device used, results for most effective device shown.
Effectiveness of bird diverters is highly variable and never 100% effective

• Results for Sandhill Crane varied from 50 to 70% effective
Conditions in the Delta increase the risk of collisions
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- The collision analysis (Appendix 5JC) uses the results of Brown & Drewein (1995), a study of Sandhill Cranes in the San Luis Valley, Colorado
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- Significant fog is more than 7 times more likely in the Delta than in the San Luis Valley, CO
% days w/significant fog

- Delta (Nov-Feb)
- San Luis Vly, CO (Feb-Mar)
- San Luis Vly, CO (Oct)
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- The collision analysis (Appendix 5JC) uses the results of Brown & Drewein (1995), a study of Sandhill Cranes in the San Luis Valley, Colorado

- Significant fog is more than 7 times more likely in the Delta than in the San Luis Valley, CO
  - 32% of days are foggy in the Delta when cranes are present
  - only 4-5% of days are foggy in San Luis Valley
Increased activity in the project area may flush cranes, increasing risk from existing power lines.
Increased activity in the project area may flush cranes, increasing risk from existing power lines

- Murphy et al. (2016a) noted that cranes were at particular risk of collision with lines when flushed
Elimination of transmission lines on Staten Island (Alt 4A) is helpful, but crane movements outside of this site significant
Delta Sandhill Crane Flock Distribution

Write a description for your map.
While Staten Island has the highest concentration of cranes, crane movement occurs well beyond that site.
Recommended Conditions of Approval
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- New studies of collision risk using methodology similar to Murphy et al. (2016a) should be conducted prior to the project.
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• Because most collisions occurred at night (Murphy et al. 2016a), glow-in-the-dark or lighted diverters should be tested.
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- Because most collisions occurred at night (Murphy et al. 2016a), glow-in-the-dark or lighted diverters should be tested.

- To reduce increased risk from existing lines, those lines should also be marked with the most effective diverters.
California Black Rail

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- In the 1990s a large population was discovered in the Sierra foothills (Aigner et al. 1995, Richmond et al. 2010, Girard et al. 2010).
The FEIR/S concludes that Project power lines do not pose a risk to Black Rail due to their “sedentary, non-migratory” nature.

- Recent work shows that there is migration between the Bay/Delta CA Black Rail population and the Sierra Foothills population (Girard et al. 2010).
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- Recent work shows that there is migration between the Delta CA Black Rail population and the Sierra Foothills population (Girard et al. 2010).
- There is frequent dispersal between sites in the foothills (Richmond et al. 2010).
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- Black Rails are also occur in the Central Valley floor and there may be movement between the Delta and these sites.
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- Black Rails have been shown to move between the south SF Bay and north SF Bay (Trulio & Evens 2000).
Recommended Conditions of Approval

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- Because rails migrate at night, glow-in-the-dark or lighted diverters should be used.
White-tailed Kite

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  - WT Kite is relatively sedentary and needs foraging habitat near nest sites.
Recommended Conditions of Approval
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- The Project must specify how grassland and ag land will be managed differently for Swainson’s Hawk and WT Kite.
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- The Project must specify how ag land will be maintained as high-quality habitat long term.
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• The Project must specify how ag land will be maintained as high-quality habitat long term.

• To ensure effective mitigation, habitats must be acquired BEFORE the Project begins and high-quality habitat needs to be acquired within 1 km of WT Kite nesting habitat.