

properly trained in avian issues. This training should encompass the reasons, needs, and methods for reporting avian mortalities, following nest management protocols, disposing of carcasses, and complying with applicable regulations, and understanding the potential consequences of non-compliance. Supplemental training also may be appropriate when there are changes in regulations, permit conditions, or internal policies. APLIC-sponsored short-courses on avian electrocution, collision, and nest issues are conducted annually at locations throughout the United States. In addition, a two-hour overview presentation of avian issues that can be used for internal company training is available from APLIC (see www.aplic.org).

PERMIT COMPLIANCE

An APP can describe the process through which a company will obtain and comply

with all necessary avian-related permits. The activities that may require permits include, but are not limited to, nest relocation, temporary possession, depredation, salvage/disposal, and scientific collection.

CONSTRUCTION DESIGN STANDARDS

Avian interactions with electrical facilities can cause outages and reduce system reliability. To improve system reliability, avian interactions should be considered when designing and siting new facilities, as well as when operating and maintaining existing facilities. For those reasons, inclusion of accepted standards for both new construction and retrofitting techniques should be included in an APP. Companies can either rely upon construction standards recommended in this document or may develop their own standards that meet or exceed these guidelines. These standards may be used in areas where new construction should be avian-safe, and where existing infrastructure should be retrofitted for avian safety.

NEST MANAGEMENT

An APP may include procedures for managing nests on utility structures (Figure 7.1). This could include procedures for problem nests (ones that need to be relocated or removed) as well as for safe nest sites. These procedures should be explained to company employees during training to ensure consistent treatment of avian nest issues and compliance with regulations or permits related to nest management.

AVIAN REPORTING SYSTEM

Although avian mortality reports may be required as a condition of federal or state permits, a utility may also voluntarily monitor relevant avian interactions, including mortalities, by developing an internal reporting system. A well-implemented system can help pinpoint the locations of mortalities and the extent to which they are occurring. These data can be limited to avian mortalities or injuries,



© PACIFICORP

FIGURE 7.1: Utility crew installing raptor nest platform.



or could be expanded to track avian nest problems, problem poles or line configurations, and the remedial actions taken. All data should be regularly entered into a searchable database compatible for use in additional analyses (see Risk Assessment Methodology below). Some companies have developed their own bird interaction reporting systems, and the USFWS has created an online bird electrocution reporting system for utilities (see [Appendix C, Avian Reporting System](#)).

RISK ASSESSMENT METHODOLOGY

A utility can cost-effectively reduce avian mortalities by focusing its efforts on the areas of greatest risk to migratory birds. Therefore, an APP should include a method for evaluating the specific risks a company poses to migratory birds. A risk assessment will often

begin with a review of available data that address areas of high avian use, avian mortality, problem nests, established flyways, preferred habitats, prey populations, perch availability, effectiveness of existing procedures, remedial actions, and other factors that can increase avian interactions with utility facilities. The avian reporting system discussed in the previous section is an integral component of this risk assessment, as is the use of avian experts, birders, and biologists who can provide additional information on avian distribution. A risk assessment can be used to develop models that will enable a company to use biological and electrical design information to prioritize poles most in need of modification. A risk assessment may also provide data about the various causes of avian mortality as well as the benefits that birds receive from utility structures.

MORTALITY REDUCTION MEASURES

After completing a risk assessment, a company can focus its efforts on areas of concern, ensure that its responses are not out of proportion to the risks presented to migratory birds, and determine whether avian mortality reduction plans need to be implemented (Figure 7.2). Risk reduction measures may be implemented through the APP by using risk assessment results to direct monitoring and retrofitting activity in the existing system, and to direct attention to avian issues encountered during new construction projects. If a utility finds that avian protection measures are appropriate, it also may choose to develop an implementation schedule for these measures.

AVIAN ENHANCEMENT OPTIONS

In addition to reducing avian mortality risk, an APP also may include opportunities for a utility to enhance avian populations and/or habitat. This may include installing nest platforms, managing habitats to benefit migratory birds, or working with agencies or organizations in these efforts (Figure 7.3).



FIGURE 7.2: Reframing a crossarm to prevent avian electrocutions.

© PACIFICORP





© PACIFICORP

FIGURE 7.3: Volunteers and utility personnel work together to create nesting platforms.

Where feasible, new ideas and methods for protecting migratory birds should be encouraged and explored.

QUALITY CONTROL

An APP also may include a mechanism for reviewing existing practices and ensuring their efficiency and effectiveness. For instance, a utility may examine its reporting system's performance, or evaluate the techniques and technologies it uses for preventing collisions, electrocutions and problem nests.

PUBLIC AWARENESS

An APP may include a method for educating the public about the avian electrocution issue, the company's avian protection program, and its successes in avian protection.

KEY RESOURCES

An APP should identify key resources that address avian protection issues including a list of experts who may be called upon when resolving avian-related problems. Experts could include company specialists, consultants, state and federal resource agents, university faculty, or other conservationists. Engineers may find that company personnel such as environmental specialists can help find creative solutions to avian interaction problems, and that members of external organizations like APLIC can also serve as helpful resources through workshops, materials, and contacts. An understanding of avian behavior can influence how and when avian protection should be provided. An APP that connects biologists with utility decision-makers may reduce bird mortality and improve system reliability.

IMPLEMENTING AN AVIAN PROTECTION PLAN



Integrating an APP into an electric utility's operations will help the utility meet demands for reliable, cost-efficient, and environmentally compatible power delivery. A utility that creates and manages an APP will quickly become familiar with avian-related science, engineering, law, and politics. It will also need to establish a program that satisfies the law, utility employees, utility customers, investors, and other interests.

The ease of implementing an APP will depend on the size of a utility's transmission and distribution system, the range of avian species in the service area, and the frequency of bird/power line interactions. The extent of bird/power line interactions may not be realized until several years into a fully implemented

reporting program. Thus, APP implementation and operation is a long-term commitment and a process of continual evaluation and improvement.

An APP may be the first species-oriented environmental compliance initiative to which utility employees are exposed. Depending on the company's culture, the rate of adoption may vary. High-profile endorsements by corporate officers and managers can facilitate a program's adoption. Some larger utilities have effectively linked APP compliance with financial incentives, similar to more common budget, schedule, and safety goal incentives. Compliance with an APP will reduce utility costs in the long term through improved reliability and reduced regulatory risk.



Management support is critical for a successful program. However, even with management support, successful implementation is unlikely unless all the affected organizations within the utility also support it. An effective way to build a broad consensus during APP preparation is to form a team within the utility that includes representatives from standards, engineering, environmental services, vegetation management, construction and maintenance, public relations, customer service, and other departments that will be impacted by the APP. Considerable input and assistance from team members are needed to understand how APP implementation will best fit the operations of each department. Solutions to reducing avian mortality can be developed that are responsive to the work requirements of each functional unit. In this manner, individuals from each department will feel invested in the mortality reduction solutions they helped develop and will have an interest in assuring APP effectiveness.

Beyond developing and communicating a corporate APP policy, the most important component of an APP is a consistent and mandatory reporting process. An electronic or paper form of documenting bird-power line conflicts (e.g., time, place, equipment) becomes the foundation for appropriate corrective action—both to correct unsafe situations and to build a dataset to guide future engineering/construction needs.

Managing data for these purposes, as well as for meeting any state and federal agency reporting requirements is an important function of APP administration. Using Geographic Information System (GIS) technology to track and report bird mortalities, remedial actions, outages, and avian risks enables a utility to identify problems and to track the effectiveness of its APP.

Use of existing processes and systems (e.g., outage reporting, environmental review, asset management, and accounting) will help control costs of developing and implementing an APP. Whether an APP is driven by an environmental, engineering, or operations department, cooperation will be necessary across all departmental lines to reduce actual and potential avian-power line conflicts. As with any project, better planning yields better results. The ultimate goals of an APP are a measurable decrease in avian-power line fatalities, and an increase in electric service reliability.

A utility's APP will represent the continuation of a long-term proactive conservation partnership between the utility industry, the conservation community, and the USFWS. These voluntary plans will provide utilities with a framework for addressing electrocution hazards, evaluating the risk their power lines pose to birds, and working with the USFWS to conserve federally protected migratory birds.





APPENDIX A

Literature Cited and Bibliography



- * Abbey, M., A. Stewart, and J. Morrell. 1997. Existing strategies for control/remediation of woodpecker damage. Proc. Workshop on the Mitigation of Woodpecker Damage to Utility Lines. Electric Power Research Institute.
- * Acklen, J.C., Z. Bates, and D. Campbell. 2003. The BB line: evaluating the role of birds in line faults. PNM Environmental Services Dept., Albuquerque, NM.
- * Adamec, M. 2005. Pers. comm. State Nature Conservancy of Slovak Republic.
- Alfiya, H. and R. Be'er. 1994. The Israel Electric Corporation (IEC)—a unique example of cooperation between progress and nature protection. *Torgos* 24:11-13, 90.
- * Allan, D.G. 1988. Raptors nesting on transmission pylons. *African Wildl.* 42:325-327.
- Allen, B.A. 1979. Determination of status and management of the golden eagle. New York Department of Environmental Conservation, Div. of Fish and Wildl. Unpubl. rep. Albany, NY. 4pp.
- * Amarante, J. 2005. Pers. comm. Rede Electrica Nacional, Portugal.
- * Américo, P. 2005. Pers. comm. Enersul, Brazil.
- * Anderson, A.H. 1933. Electrocution of purple martins. *Condor* 35:204.
- Anderson, H.P., and D. Bloch. 1973. Birds killed by overhead wires on some locations in Denmark. (In Danish with English summary). *Dan. Ornithol. Foren. Tidsskr.* 67:15-23.
- Anderson, M.D. 2000. Raptor conservation in the Northern Cape Province, South Africa. *Ostrich* 71:25-32.
- * Anderson, W.W. 1975. Pole changes keep eagles flying. *Transmission Distribution*. November 1975. Pages 28-31.
- * Ansell, A., and W.E. Smith. 1980. Raptor protection activities of the Idaho Power Company. Pages 56-70 in R.P. Howard and J.F. Gore, eds. *Proc. Workshop on Raptors and Energy Developments*. Idaho Chapter, The Wildl. Soc., Boise, ID.
- Anthony, R.G., R.W. Frenzel, F.B. Issacs, and M.G. Garrett. 1994. Probable causes of nesting failures in Oregon's bald eagle populations. *Wildl. Soc. Bull.* 22:576-582.

* Indicates references that have been cited in the text.



- *Arevalo, J., J. Roig, M. Gil, E. Ursua, J.L. Tella, D. Serrano, M.G. Forero, and K. Hobson. 2004. Use of power transmission substations of Red Electrica by the lesser kestrel (*Falco naumanni*) in Navarra and Aragon (Spain): The importance thereof for the conservation of the species at a state level. Abstract, Environmental Concerns in Rights-of-way Management, 8th International Symp., 12-16 Sept. 2004, Saratoga Springs, NY.
- *Arizona Game and Fish Department. 1976. Wildlife surveys and investigations [raptors]. Spec. Performance Rep. Proj. No. W-53-R-26. 77pp.
- *Austin-Smith, P.J., and G. Rhodenizer. 1983. Osprey (*Pandion haliaetus*) relocate nests from power poles to substitute sites. Can. Field Nat. 97:35-319.
- *Avery, M. L., J. S. Humphrey, E. A. Tillman, K. O. Phares, J. E. Hatcher. 2002. Dispersing vulture roosts on communication towers. J. Raptor Res. 36:45-50.
- *Avian Power Line Interaction Committee (APLIC). 1994. Mitigating bird collisions with power lines: the state of the art in 1994. Edison Electric Institute, Washington, D.C. 78pp.
- *_____. 1996. Suggested practices for raptor protection on power lines: the state of the art in 1996. Edison Electric Institute, Washington, D.C. 125pp.
- *_____. 2005. Avian electrocution issues and utility efforts: a survey of APLIC-member utilities. Edison Electric Institute, Washington, D.C. 13pp.
- *Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service (USFWS). 2005. Avian Protection Plan (APP) Guidelines. April 2005. Washington, D.C. 88pp.
- Baglien, J.W. 1975. Biology and habitat requirements of the nesting golden eagle in southwestern Montana. Master's Thesis. Montana State Univ., Bozeman. 53pp.
- Bagnall, G.B. 1996. Raptor electrocutions on electric utility distribution overhead structures. Pages 19-22 in Summary of Items of Engineering Interest. USDA-Rural Utility Service, Washington, D.C. August 1996.
- *Bahat, O. 2005. Pers. comm. Israel Nature and Parks Authority, Society for the Protection of Nature in Israel.
- Bak, J.M., K.G. Boykin, B.C. Thompson, and D.L. Daniel. 2001. Distribution of wintering ferruginous hawks (*Buteo regalis*) in relation to black-tailed prairie dog (*Cynomys ludovicianus*) colonies in southern New Mexico and northern Chihuahua. J. Raptor Res. 35:124-129.
- Baldrige, F.A. 1977. Raptor nesting survey of southern San Diego County, Spring 1977; with an analysis of impacts of powerlines. U.S. Bur. Land Manage. Unpubl. rep. Riverside, CA. 29pp.
- Barber, J.F. 1995. Raptor electrocutions and how to help prevent them. Colorado Field Ornithol. 29:76.
- *Bayle, P. 1999. Preventing birds of prey problems at transmission lines in western Europe. J. Raptor Res. 33:43-48.
- *BC Hydro. 1999. 1999 BC Hydro Annual Report. British Columbia, Canada. 81pp.
- *_____. 2004. BC Hydro revenue requirement hearing. Transcript Reference Vol. 18, Pg. 3110. June 7, 2004.



Bechard, M.J., R.L. Knight, D.G. Smith, and R.E. Fitzner. 1990. Nest sites and habitats of sympatric hawks (*Buteo* spp.) in Washington. J. Field Ornithol. 61:159-170.

*Bechard, M.J. and J.K. Schmutz. 1995. Ferruginous hawk (*Buteo regalis*). In The Birds of North America, No. 172 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

*Bechard, M.J. and T.R. Swem. 2002. Rough-legged hawk (*Buteo lagopus*). In The Birds of North America, No. 641 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

*Bednarz, J.C. 1995. Harris' hawk (*Parabuteo unicinctus*). In The Birds of North America, No. 146 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

*_____ and R.J. Raitt. 2002. Chihuahuan raven (*Corvus cryptoleucus*). In The Birds of North America, No. 606 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Beecham, J.J., Jr. 1970. Nesting ecology of the golden eagle in southwestern Idaho. Master's Thesis. Univ. of Idaho, Moscow. 48pp.

_____ and M.N. Kochert. 1975. Breeding biology of the golden eagle in southwestern Idaho. Wilson Bull. 87:506-513.

Belisle, A.A., W.L. Reichel, L.N. Locke, T.G. Lamont, B.M. Mulhern, R.M. Prouty, R.B. DeWolf, and E. Cromartie. 1972. Residues of organochlorine pesticides, polychlorinated biphenyls, and mercury and autopsy data for bald eagles, 1969 and 1970. Pestic. Monit. J. 6:133-138.

*Benson, P.C. 1977. Study of powerline utilization and electrocution of large raptors in four western states. Research proposal submitted to the National Audubon Soc. Brigham Young Univ., Provo, UT. 7pp.

_____. 1980a. Abstract: Large raptor electrocution and power pole utilization: a study in six western states. J. Raptor Res. 14:125-126.

_____. 1980b. Study of large raptor electrocution and power pole utilization in six western states. Pages 34-40 in R.P. Howard and J.F. Gore, eds. Proc. of a Workshop on Raptors and Energy Developments. Idaho Chapter, The Wildl. Soc., Boise, ID.

*_____. 1981. Large raptor electrocution and power pole utilization: a study in six western states. Ph.D. dissertation. Brigham Young Univ., Provo, UT. 98pp.

_____. 1982. Prevention of golden eagle electrocution. Electric Power Research Institute Rep. Ea-2680. Palo Alto, CA. 84pp.

Bent, A. C. 1937. Life history of North American birds of prey. U.S. Natl. Mus. Bull. 167.

Benton, A.H. 1954. Relationship of birds to power and communication lines. Kingbird 4:65-66.

*_____, and L.E. Dickenson. 1966. Wires, poles, and birds. Pages 390-395 in R.P. Howard and J.F. Gore, eds. Birds in Our Lives. U.S. Bur. Of Sport Fisheries and Wildl., Washington, D.C.

*Best, M. 2006. Pers. comm. Pacific Gas and Electric.

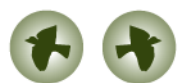
*Bevanger, K. 1994a. Bird interactions with utility structures: collision and electrocution, causes and mitigating measures. Ibis 136:412-425.



- _____. 1994b. Three questions on energy transmission and avian mortality. *Fauna Norv. Ser.* 17:107-114.
- * _____. 1998. Biological and conservation aspects of bird mortality caused by electricity power lines: a review. *Biol. Cons.* 86:67-76.
- * _____. 2005. Pers. comm. Norwegian Institute for Nature Research.
- _____ and K. Overskaug. 1995. Utility structures as a mortality factor for raptors and owls in Norway. Pages 381-392 in R.D. Chancellor, B.U. Meyburg, and J.J. Ferrero, eds. *Holarctic Birds of Prey: Proc. Internatl. Conf. Badajoz, Spain. 17-22 April 1995.* Berlin, Germany.
- Bijleveld, M.F.I.J., and P. Goeldlin. 1976. Electrocution d'un couple de Buses *Buteo buteo* a Jongny (VD). *Nos Oiseaux* 33: 280-281.
- * Birchell, J. 2005. Pers. comm. U.S. Fish and Wildlife Service.
- Bird, D.M., D.E. Varland, and J.J. Negro, eds. 1996. *Raptors in Human Landscapes: Adaptations to Built and Cultivated Environments.* Academic Press, Inc. San Diego, CA.
- Bisson, I.A., M. Ferrer, and D.M. Bird. 2002. Factors influencing nest-site selection by Spanish imperial eagles. *J. Field Ornithol.* 73:298-302.
- * Blem, C.R., L.B. Blem, and P.J. Harmata. 2002. Twine causes significant mortality in nestling ospreys. *Wilson Bull.* 114: 528-529.
- * Blodget, B.G. 1989. Common barn-owl. Pages 81-87 in *Proc. Northeast Raptor Management Symposium and Workshop.* Natl. Wildl. Fed., Washington, D.C.
- * Blue, R. 1996. Documentation of raptor nests on electric utility facilities through a mail survey. Pages 87-95 in D.M. Bird, D.E. Varland, and J.J. Negro, eds. *Raptors in Human Landscapes: Adaptations to Built and Cultivated Environments.* Academic Press, Inc. San Diego, CA.
- * Boarman, W.I. and B. Heinrich. 1999. Common Raven (*Corvus corax*). In *The Birds of North America*, No. 476 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- * Boeker, E.K. 1972. Powerlines and bird electrocution. U.S. Fish and Wildl. Serv. Unpubl. rep. Denver Wildl. Research Center, Denver Colo. 8pp.
- _____. 1974. Status of golden eagle surveys in the western states. *Wildl. Soc. Bull.* 3:79-81.
- * _____, and P.R. Nickerson. 1975. Raptor electrocutions. *Wildl. Soc. Bull.* 3:79-81.
- Boeker, E.K. and T.D. Ray. 1971. Golden eagle population studies in the southwest. *Condor* 73:463-467.
- Bogener, D.J. 1979. Osprey inventory and management study for Shasta Lake Ranger District (1979). U.S. For. Serv. Unpubl. rep. Redding, CA. 13pp.
- * Bohm, R.T. 1988. Three bald eagle nests on a Minnesota transmission line. *J. Raptor Res.* 22:34.
- Bologna, F.F., A.C. Britten, and H.F. Vosloo. 2001. Current research into the reduction of the number of transmission line faults on the Eskom MTS. 2nd South African Electric Power Research Conference. South Africa, June 13, 2001.



- *Boshoff, A. F. 1993. Density, breeding performance and stability of Martial eagles *Polemaetus bellicosus* breeding on electricity pylons in the Nama-Karoo, South Africa. Proc. VIII Pan-Afr. Orn. Cong. 95-104.
- _____. and B. Basson. 1993. Large raptor fatalities caused by powerlines in the Karoo, South Africa. *Gabar* 8:10-13.
- *Boshoff, A.F. and C. Fabricus. 1986. Black eagles nesting on man-made structures. *Bokmakierie* 38:67-70.
- *Boshoff, A.F., C.J. Vernon, and R.K. Brooke. 1983. Historic atlas of the diurnal raptors of the Cape Province (*Aves: Falconiformes*). *Ann. Cape Prov. Mus.* 14:173-297.
- *Bouchard, D. 2006. Pers. comm. American Electric Power.
- *Brady, A. 1969. Electrocutted great horned owl. *Cassinia* 51:57.
- *Brett, J. 1987. Regional reports—Northeast region. *Eyas* 10:18-22. National Wildl. Fed., Raptor Information Center, Washington, D.C.
- Bridges, J.M. 1980. Raptor nesting platforms and the need for further studies. Pages 113-116 in R.P. Howard and J.F. Gore, eds. *Proc. Of a Workshop on Raptors and Energy Developments*. Idaho Chapter, The Wildl. Soc., Boise, ID.
- _____. 2001. Never say always. Pages 269-275 in R.G. Carlton, ed. *Avian interactions with utility and communication structures: Proceedings of a workshop held in Charleston, South Carolina, December 2-3, 1999*. Electric Power Research Institute. Palo Alto, CA.
- *_____ and R. Lopez. 1995. Reducing large bird electrocutions on a 12.5-kV distribution line originally designed to minimize electrocutions. Pages 263-265 in G.J. Doucet, C. Seguin, and M. Giguere, eds. *5th International Symposium on Environmental Concerns in Rights-of-way Management*. Hydro-Quebec, Montreal, CA. 558pp.
- *Bridges, J.M. and D. McConnon. 1987. Use of raptor nesting platforms in a central North Dakota high voltage transmission line. Pages 46-49 in W.R. Byrnes and H.A. Holt, eds. *Fourth Symp. on Environmental Concerns in Rights-of-way Mgmt*. Purdue Univ., West Lafayette, IN. 595pp.
- Bromby, R. 1981. Killer lines in Colorado present an electrocution hazard to raptors. *Wildl. News* 6:2-3. (Colorado Division of Wildl. Denver.)
- *Brown, B. 2005. Pers. comm. Government Threatened Species Section, Tasmania.
- *Brown, C.J., and J.L. Lawson. 1989. Birds and electric transmission lines in South West Africa/Namibia. *Madoqua* 16:59-67.
- *Brown, C.R. 1997. Purple martin (*Progne subis*). In *The Birds of North America*, No. 287 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- Brown, L., and D. Amadon. 1968. *Eagles, hawks, and falcons of the world*. Country Lide Books, London. 945pp.
- *Brubaker, D.L., K. L. Brubaker, and B.C. Thompson. 2003. Raptor and Chihuahuan raven nesting on decommissioned telephone-line poles in the northern Chihuahuan desert. *J. Raptor Research* 37:135-146.



- Buckley, N. J. 1998. Interspecific competition between vultures for preferred roost positions. *Wilson Bulletin* 110:122-125.
- Buehler, D.A. 2000. Bald eagle (*Haliaeetus leucocephalus*). In *The Birds of North America*, No. 506 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- _____, J.D. Fraser, J.K.D. Seegar, G.D. Therres, and M.A. Byrd. 1991. Survival rates and population dynamics of bald eagles on Chesapeake Bay. *J. Wildl. Manage.* 55:608-613.
- *Bull, E.L. and J.R. Duncan. 1993. Great gray owl (*Strix nebulosa*). In *The Birds of North America*, No. 41 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- *Bunnell, S. T., C. M. White, D. Paul, and S. D. Bunnell. 1997. Stick nests on a building and transmission towers used for nesting by large falcons in Utah. *Great Basin Naturalist* 57:263-267.
- *Burger, A.A. and K.J. Sadurski. 1995. Experimental investigation of bird initiated AC flashover mechanisms. CIGRE SC 33-95 (WG07).
- Burke, H.F., S.F. Swaim, and T. Amalsadvala. 2002. Review of wound management in raptors. *J. Avian Medicine and Surgery* 16:180-191.
- *Burnham, J.T. 1994. Bird streamer flashovers on FPL transmission lines. Florida Power and Light, Juno Beach, FL.
- *_____. 1995. Bird streamer flashovers on FPL transmission lines. *IEEE Trans. Power Delivery* 10:970-977.
- *Burnham, W.A. 1982. Peregrine Fund's Rocky Mountain Program operation report, 1982. The Peregrine Fund, Inc. Unpubl. rep. Fort Collins, CO. 152pp.
- *Burruss, J. 2005. Pers. comm. PacifiCorp.
- _____, K. Garlick, and A. Manville. 2003. Joint electric utility – conservation group effort is for the birds. *Electric Energy T&D Magazine*. Nov./Dec. 2003: pg. 8.
- Butler, C. 2003. Species status review: monk parakeets in Oregon. *Oregon Birds* 29:97-100.
- *Cade, T.J. 1985. Peregrine recovery in the United States. Pages 331-342 in Newton, I. and R.D. Chancellor, eds. *Conservation studies on raptors*. ICBP Tech. Publ. No. 5. California Bald Eagle Working Team. 1985. [Minutes of June 5, 1985, Working Team Meeting.]. Sacramento, CA. 4pp.
- *_____ and P.R. Dague. 1977. The Peregrine Fund Newsletter No 5. 12pp.
- California Department of Fish and Game. 1987. Recovery of a banded bald eagle in Siskiyou County, California, on June 23, 1987. Agency Memorandum from the Wildl. Biol., Nongame Bird and Mammal Section, to the Files, dated 1 December 1987. Sacramento, CA. 3pp.
- California Energy Commission. 1992. Final Report. Wind turbine effects on avian activity, habitat use, and mortality in Altamont Pass and Solano County wind resource areas. 1989-1991.
- _____. 1995. Avian collision and electrocution: an annotated bibliography.



- Call, M. 1979. Habitat management guides for birds of prey. U.S. Bureau of Land Manage. Tech. Note No. T/N-338. Denver, CO. 70pp.
- * Cardenal, A.C. 2005. Pers. comm. Biological consultant to the local governments of La Rioja and Valencia, Spain.
- * Cartron, J-L.E. 2005. Pers. comm. University of New Mexico, Albuquerque, NM.
- * Cartron, J-L.E., G.L. Garber, C. Finley, C. Rustay, R. Kellermueller, M.P. Day, P. Manzano-Fisher, and S.H. Stoleson. 2000. Power pole casualties among raptors and ravens in northwestern Chihuahua, Mexico. *Western Birds* 31:255-257.
- * Cartron, J-L.E., R. Harness, R. Rogers, and P. Manzano-Fischer. 2005. Impact of concrete power poles on raptors and ravens in northwestern Chihuahua, Mexico. Pages 357-369 in Cartron, J-L.E., G. Cebballos, and R.S. Felger, eds. *Biodiversity, Ecosystems, and Conservation in Northern Mexico*. Oxford Univ. Press: New York.
- * Cartron, J-L.E., R. Rodriguez-Estrella, R.C. Rogers, L.B. Rivera, and B. Granados. In press. Raptor and raven electrocutions in northwestern Mexico: a preliminary regional assessment of the impact of concrete power poles. In R. Rodriguez-Estrella, ed. *Current Raptor Studies in Mexico*. CIBNOR, La Paz, Mexico.
- * Ceballos, G., E. Mellink, and L.R. Hanebury. 1993. Distribution and conservation of prairie dogs *Cynomys mexicanus* and *Cynomys ludovicianus* in Mexico. *Biol. Cons.* 63:105-112.
- * Central Vermont Public Service. 2002. News release: CVPS 'bird guards' save animal lives, reduce outages. Sept. 18, 2002.
- Chancellor, R.D.(ed). 1977. World conference on birds of prey, report of proceedings. Intern. Counc. For Bird Preserv. Vienna, Austria. 442pp.
- _____ and B.U. Meyburg, eds. 2000. *Raptors at Risk: Proc. V World Conf. on Birds of Prey and Owls*. Midrand, Johannesburg, South Africa. 4-11 August 1998. Hancock House. Berlin, Germany.
- _____ and _____. 2004. *Raptors Worldwide: Proc. VI World Conference on Birds of Prey and Owls*. Budapest, Hungary. 18-23 May 2003. World Working Group on Birds of Prey and Owls, MME/BirdLife. Hungary, Berlin, Budapest.
- * Chindgren, S.R. 1980. Mixing it up. *Hawk Chalk* 19:50-53.
- _____. 1981a. Raptor electrocution. *Hawk Chalk* 20:36-40.
- _____. 1981b. Trained raptor electrocution—a request for information. *Hawk Chalk* 20:59.
- Colson, E.W. 1993. The electric utility industry approach to bird interactions with powerlines- a historical perspective. Pages 3-I – 3-6 in J.W. Huckabee, ed. *Proc.: Avian Interactions with Utility Structures—International Workshop*. Electric Power Res. Inst. Tech. Rep. 103269, Palo Alto, CA.
- Conn. Dep. Of Env. Prot. Wildl. Bur. 1987. Connecticut osprey update. Wildl. Bur. Nongame Ser. No. Ng-3. Burlington. 6pp.
- Conover, A. 1999. To save a falcon. *Smithsonian* 29:102-116.
- Conservation News. 1973. Eagle electrocution study undertaken. 38:10-11. 15 May 1973.



_____. 1976. Power line electrocution-hazards made safer. 41:8-10. 15 November 1976.

Consumers Power Company. 1972. Construction awaits birth of eagles at utility line project. News release dated 27 April 1972. Jackson, MI. Ip.

*Cooley, T. 2005. Pers. comm. Michigan Dept. of Natural Resources Wildlife Disease Laboratory.

*Coon, N.C., L.N. Locke, E. Cromartie, and W.L. Reichel. 1970. Causes of bald eagle mortality, 1960-1965. J. Wild. Dis. 6:72-76.

*Craig, T.H. 1978. Car survey of raptors in southeastern Idaho, 1974-1976. Raptor Res. 12:40-45.

*_____ and E. H. Craig. 1984. A large concentration of roosting golden eagles in southwestern Idaho. Auk 101:610-613.

Crawford, J.E., and L.A. Dunkeson. 1974. Power line standards to reduce raptor losses on the National Resource Lands. (Abstract only.) Page 2:124 in F.N. Hamerstrom, Jr., B.E. Harrell, and R.R. Olendorff, eds. Management of Raptors. Raptor Res. Rep. No. 2:124.

Crawford, R.L. and R.T. Engstrom. 2001. Characteristics of avian mortality at a north Florida television tower: a 29-year study. J. Field Ornithol. 72:380-388.

Cromartie, E., W.L. Reichel, L.N. Locke, A.A. Belisle, T.E. Kaiser, T.G. Lamont, B.M. Mulhern, R.M. Prouty, and D.M. Swineford. 1975. Residues of organochlorine pesticides and polychlorinated biphenyls and autopsy data for bald eagles, 1971-72. Pestic. Monit. J. 9:11-14.

Csermely, D. and C.V. Corona. 1994. Behavior and activity of rehabilitated buzzards (*Buteo buteo*) released in northern Italy. J. Raptor Res. 28:100-107.

Curtis, C. 1997. Birds and transmission lines. Blue Jay 55:43-47.

*Damon, J.D. 1975. Report suggests ways to protect eagles perched on power lines. News release dated 20 August 1975. Edison Electric Institute, New York, NY. 3pp.

*Dawson, J.W., and R.W. Mannan. 1994. The ecology of Harris' hawks in urban environments. Report submitted to Arizona Game and Fish Dept. Agreement G20058-A. 56 pp.

_____ and _____. 1995. Abstract: electrocution as a mortality factor in an urban population of Harris' hawks. J. Raptor Res. 29:55.

*Dean, W.R.J. 1975. Martial eagles nesting on high tension pylons. Ostrich 46:116-117.

Dedon, M. 1999. Reducing wildlife interactions with electrical distribution facilities. PIER, California Energy Commission, San Francisco, CA.

Deem, S.L. 1999. Raptor medicine: basic principles and noninfectious conditions. Compendium on Continuing Education for the Practicing Veterinarian 21:205-214.

*Dell, D. A. and P. J. Zwank. 1986. Impact of a high-voltage transmission line on a nesting pair of southern bald eagles in southeast Louisiana. J. Raptor Research 20:117-119.

*DeLong, J.P. and K. Steenhof. 2004. Effects of Management Practices on Grassland Birds: Prairie Falcon. Northern Prairie Wildlife Research Center, Jamestown, ND. 25 pp.



- *Demeter, I. 2005. Pers. comm. MME BirdLife, Hungary.
- Dennis, J.V. 1964. Woodpecker damage to utility poles: with special reference to the role of territory and resonance. *Bird-Banding* 35:225-253.
- Denver Audubon Society Newsletter. 1971. Action taken on eagle electrocutions. 3:1
- *Denver Post. 1974. Power lines menacing eagles. Newspaper article. 24 March 1974.
- *Detrich, P.J. 1978. Osprey inventory and management study for Shasta Lake Ranger District. U.S. For. Serv. Unpubl. rep. Redding, CA. 17pp.
- _____. 1989. Management recommendations for bald eagles at Lake Cachuma County Park. Unpubl. rep. prepared for the Santa Barbara [California] County Park Department. Ecos, Inc. Sacramento, CA. 17pp.
- *Dexter, R.W. 1953. Electrocution of a Baltimore oriole. *J. Field Ornithol.* 24:109.
- Dickerman, R.W. 2003. Talon-locking in the red-tailed hawk. *J. Raptor Res.* 37:176.
- *Dickinson, L.E. 1957. Utilities and birds. *Audubon* 59:54-55, 86-87.
- *Dilger, W.C. 1954. Electrocution of parakeets at Agra, India. *Condor* 56:102-3.
- DIN VDE 0210/12.85. 1991. Vogelshutz an Starkstrom-Freileitungen mit Nennspannungen über 1-kV (Bird protection on above ground power lines with power over 1-kV).
- Dodge, G. 1975. Engineers' forum: protection against problems of wildlife. *Elec. World*, 1 April 1975. Page 48.
- Donazar, J.A., C.J. Palacios, L. Gangoso, O. Ceballos, M.J. Gonzalez, and F. Hiraldo. 2002. Conservation status and limiting factors in the endangered population of Egyptian vulture (*Neophron percnopterus*) in the Canary Islands. *Biol. Cons.* 107:89-97.
- Dos Santos, J.A. 2004. Storks and transmission finding a middle ground. *Transmission and Distribution World*. June, 2004.
- Doumitt, T.A., M. Szczypinski, and J.K. Gardner. 2000. Reproductive success and nesting chronology of ferruginous hawks in northwestern Utah from 1997-1999. U.S. Dept. Interior, Bureau Land Mgmt., Salt Lake City, UT. 45 pp.
- *Dunstan, T.C. 1967. Study of osprey in Itasca County, Minnesota. Master's Thesis. Univ. of South Dakota, Vermillion. 66pp.
- *_____. 1968. Breeding success of osprey in Minnesota from 1963-1968. *Loon* 40:109-112.
- _____, J.H. Harper, and K.B. Phipps. 1978. Habitat used and hunting strategies of prairie falcons, red-tailed hawks, and golden eagles. U.S. Bur. Of Land Manage., Denver, CO, and Boise, ID. 177pp.
- *Dwyer, J.F. 2004. Investigating and mitigating raptor electrocution in an urban environment. M.S. Thesis, Univ. of Arizona. 71pp.
- Edison Electric Institute (EEI). 1973. [Raptor electrocutions.] Letter to the Associate Director of the Bur. of Land Manage. Dated 16 July 1973. 3pp.
- *_____. 1975. [Distribution of *Suggested Practices for Raptor Protection on Powerlines*.] Letter from the Institute to the Assistant Secretary of the Interior for Fish and Wildlife and Parks. Dated 24 September 1975. 2pp.



_____. 1980a Compatibility of fish, wildlife, and floral resources with electric power facilities and lands: an industry survey analysis. Urban Wildl. Res. Cent., Ellicott City, MD. 130pp.

_____. 1980b [Silver Wires, Golden Wings.] News release dated 17 June 1980. Edison Electric Institute, Washington, D.C. 2pp.

_____. 1980c. Studies/management for raptors. Unpubl. rep. Washington, D.C. 9pp.

_____. 1993. EEI Statistical Yearbook 1993. Edison Electric Institute, Washington, D.C. 9pp.

*EDM International, Inc. 2004. Guide to raptor remains: a photographic guide for identifying the remains of selected species of California raptors. Ft. Collins, CO. 118pp.

*Edwards, C.C. 1969. Winter behavior and population dynamics of American eagles in Utah. Ph.D. Dissertation, Brigham Young Univ., Provo, UT. 142pp.

Electric Meter. 1949. Pampered bird. March 1949. p. 3.

_____. 1951. Homeless hawk happy with rebuilt roost. May 1951. p.1.

*_____. 1953. South Jersey Nemesis. November 1953.

Electric Power Research Institute (EPRI). 1978. Compact Line Design 115-138-kV. Palo Alto, CA. 177pp.

*_____. 1988. A joint utility investigation of unexplained transmission line outages. Final Rep. EL-5735. Palo Alto, CA. 76pp.

Electric Reporter. 1946. Short circuit is isolated. October 1946.

Electric World. 1981. 500k-V towers are for the birds. July 1981.

Electricity Supply Commission of South Africa. 1980. Plea to save Africa's birds from electrocution. Megawatt 63:11-13.

*Ellis, D.H., J.G. Goodwin, Jr., and J.R. Hunt. 1978. Wildlife and electric power transmission. Pages 81-104 in J.L. Fletcher and R.G. Busnel, eds. Effects of Noise on Wildlife. Academic Press, Inc. New York, NY.

*Ellis, D.H., D.G. Smith, and J.R. Murphy. 1969. Studies on raptor mortality in western Utah. Great Basin Nat. 29:165-167.

*Energy and Environmental Economics, Inc. 2005. The cost of wildlife-caused power outages to California's economy. California Energy Commission, PIER Energy-Related Environmental Research. CEC-500-2005-030.

*Engel, K.A., L.S. Young, J.A. Roppe, C.P. Wright, and M. Mulrooney. 1992a. Controlling raven fecal contamination of transmission line insulators. Ebasco Environmental. Unpubl. rep. Bellevue, WA. 19pp.

*Engel, K.A., L.S. Young, K. Steenhof, J.A. Roppe, and M.N. Kochert. 1992b. Communal roosting of common ravens in southwestern Idaho. Wilson Bull. 104:105-121.

*England, A.S., M.J. Bechard, and C.S. Houston. 1997. Swainson's hawk (*Buteo swainsoni*). In The Birds of North America, No. 265 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

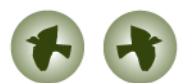
Erickson, W.A., R.E. Marsh, and T.P. Salmon. 1992. High frequency sound devices lack efficacy in repelling birds. Pages 103-104 in J.E. Borrecco and R.E. March, eds. Proc. 15th Vertebr. Pest Conf. Univ. of California, Davis.



- *Erickson, W., J. Watson, and B. Hubbard. 2004. Cooperative efforts by the Bonneville Power Administration to promote ferruginous hawk nesting on the Department of Energy's Hanford Reservation in Washington State Bonneville Power. Abstract, Environmental Concerns in Rights-of-Way Management, 8th International Symp., 12-16 Sept. 2004, Saratoga Springs, NY.
- *Estep, B. 2005. Pers. comm. Georgia Power Company.
- Estep, J.A. 1989. Avian mortality at large wind energy facilities in California: identification of a problem. California Energy Commission. Unpubl. rep. Sacramento, CA. 30pp.
- *Ewins, P. J. 1994. Artificial nest structures for ospreys: A construction manual. Environment Canada. Canadian Wildlife Service, Downsview, Ontario, Canada.
- *_____. 1996. The use of artificial nest sites by an increasing population of ospreys in the Canadian Great Lakes Basin. Pages 109-123 in D.M. Bird, D.E. Varland, and J.J. Negro, eds. Raptors in Human Landscapes: Adaptations to Built and Cultivated Environments. Academic Press, Inc. San Diego, CA.
- Fajardo, I. G. Babiloni, and Y. Miranda. 2000. Rehabilitated and wild barn owls (*Tyto alba*): dispersal, life expectancy and mortality in Spain. Biol. Cons. 94:287-295.
- Farquhar, C.C. 1992. White-tailed hawk (*Buteo albicaudatus*). In The Birds of North America, No. 30 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- *Federal Energy Regulatory Commission (FERC). 1992. Manual of standard special articles prepared by Edward A. Abrams and James Haimes, Div. Of Proj. Rev., Office of Hydropower Licensing, Paper No. DPR-4. Washington, D.C.
- Fernandez, C., and J.A. Insausti. 1990. Golden eagles take up territories abandoned by Bonelli's eagles in northern Spain. J. Raptor Res. 24: 125-125.
- Fernie, K. J., D. M. Bird, R. D. Dawson, P. C. Lague. 2000. Effects of electromagnetic fields on the reproductive success of American kestrels. Physiological and Biochemical Zoology 73:60-65.
- Ferrer, M., and M. de La Riva. 1987. [Impact of power lines on the population of birds of prey in the Donana National Park and its environments]. Ricerche di biologia della Selvaggina 12, 97-98.
- *_____, _____, and J. Castroviejo. 1991. Electrocution of raptors on power lines in southwestern Spain. J. Field Ornithol. 62:181-190.
- Ferrer, M. and M. Harte. 1997. Habitat selection by immature Spanish imperial eagles during the dispersal period. J. Appl. Ecol. 34:1359-1364.
- Ferrer, M. and F. Hiraldo. 1991. Evaluation of management techniques for the Spanish Imperial eagle. Wildl. Soc. Bull. 19:436-442.
- _____, and _____. 1992. Man-induced sex-biased mortality in the Spanish imperial eagle. Biol. Conserv. 60:57-60.
- Ferrer, M. and G.F.E. Janss, eds. 1999. Birds and power lines: collision, electrocution, and breeding. Quercus. Madrid, Spain.
- *Fiedler, M. 2005. Pers. comm. Public Service Company of New Mexico.



- Fishcer, D.L., K.L. Ellis, and R.J. Meese. 1984. Winter habitat selection of diurnal raptors in central Utah. *J. Raptor Res.* 18:98-102.
- Fitzner, R.E. 1975. Owl mortality on fences and utility lines. *J. Raptor Res.* 9:55-57.
- * _____. 1978. Behavioral ecology of the Swainson's hawk (*Buteo swainsoni*) in south-eastern Washington. Ph.D. Dissertation. Washington State Univ., Pullman. 194pp.
- * _____. 1980a. Impacts of a nuclear energy facility on raptorial birds. Pages 9-33 in R.P. Howard and J.F. Gore, eds. *Proc. Workshop on Raptors and Energy Developments*. Idaho Chapter, The Wildl. Soc., Boise, ID.
- _____. 1980b. Behavioral ecology of the Swainson's hawk in southeastern Washington. Battelle Pacific Northwest Lab. Tech. Rep. No. PNL-2754. Richland, WA. 65pp.
- * _____. and R.L. Newell. 1989. Ferruginous hawk nesting on the U.S. DOE Hanford site: a recent invasion following introduction of transmission lines. Pages 125-132 in *Issues and Technology in the Management of Impacted Wildlife*. Pacific Northwest Lab., Richland, WA.
- Fitzner, R.E., W.H. Richard, L.L. Caldwell, and L.E. Rogers. 1981. Raptors of the Hanford Site and nearby areas of south-central Washington. Battelle Pacific Northwest Lab., Richland, WA.
- Fix, A.S. and S.Z. Barrows. 1990. Raptors rehabilitated in Iowa during 1986 and 1987: a retrospective study. *J. Wildl. Diseases* 26:18-21.
- *Florida Power and Light. 2005. Unpubl. data.
- *Forrester, D.J. and M.G. Spaulding. 2003. *Parasites and Diseases in Wild Birds in Florida*. University of Florida Press, Gainesville, FL. 1152pp.
- *Franson, J.C., and S.E. Little. 1996. Diagnostic findings in 132 great horned owls. *J. Raptor Res.* 30:1-6.
- *Franson, J.C., L. Sileo, and N.J. Thomas. 1995. Causes of eagle deaths. Page 68 in LaRoe, E.T., G.S. Farris, C.E. Puckett, P.D. Doran, and M.J. Mac, eds. *Our living resources: a report to the nation on the distribution, abundance, and health of U.S. plants, animals, and ecosystems*. U.S. Dept. Interior, Natl. Biol. Service, Washington, D.C. 530pp.
- *Franson, J.C., N.J. Thomas, M.R. Smith, A.H. Robbins, S. Newman, and P.C. McCarton. 1996. A retrospective study of postmortem findings in red-tailed hawks. *J. Raptor Res.* 30:7-14.
- Freeman, A. 2003. Two wild endangered birds die. *Greenwire*, Feb. 21, 2003.
- Frenzel, R.W. 1984. Environmental contaminants and ecology of bald eagles in south central Oregon. Ph.D. Dissertation. Oregon State Univ., Corvallis, OR. 151pp.
- Friend, M., J.C. Franson, and USGS-BRD, eds. 1999. *Field manual of wildlife diseases: general field procedures and diseases of birds*. USGS-BRD. Washington, D.C.
- Frier, J.A. 1977. Research and management of endangered birds in New Jersey (Ospreys). New Jersey Department of Environmental Protection, Division of Fish, Game, and Wildl. Unpubl. rep. Trenton, NJ. 13pp.



- _____. 1978. Research and management of endangered birds in New Jersey (Ospreys). New Jersey Dep. Environmental Protection, Division of Fish, Game, and Wildl. Unpubl. Rep. Trenton, NJ. 14pp.
- *Fulton, J.R. 1984. Ospreys nest at John H. Kerr Reservoir. *Raven* 54:14.
- Fyfe, R.W., and R.R. Olendorff. 1976. Minimizing the dangers of nesting studies to raptors and other sensitive species. *Can. Wildl. Service, Occas. Paper No.23*. 17pp.
- *Gaines, R.C. 1985. Nest site selection, habitat utilization, and breeding biology of the ferruginous hawk in central North Dakota. Master's Thesis. North Dakota State Univ., Fargo. 32pp.
- Garber, D.P. 1972. Osprey study, Lassen and Plumas Counties, California, 1970-1971. California Department of Fish and Game, Wildl. Management Branch Admin. Rep. No. 72-I, Sacramento. 33pp.
- Garrett, M.G. 1993. PacifiCorp program for managing birds on power lines, a case study. Pages 18-1 – 18-5 in J.W. Huckabee, ed. *Proc.: Avian Interactions With Utility Structures—International Workshop*, Electric Power Res. Inst. Tech. Rep. 103269, Palo Alto, CA.
- Garzon, J. 1977. Birds of prey in Spain, the present situation. Pages 159-170 in R.D. Chancellor (ed.). *World Conference on birds of prey*, Report of Proceedings. Intern. Counc. For Bird Preserv. Vienna, Austria.
- Gauthreaux, S.A. 1993. Avian interactions with utility structures, background and milestones. Pages I-1 – I-6 in J.W. Huckabee, ed. *Proc.: Avian Interactions with Utility Structures—International workshop*. Electric Power Res. Inst. Tech. Rep. 103269, Palo Alto, CA.
- *Georgia Power Company. 2005. Unpubl. data.
- *Gilbertson, B. 1982. Minnkota Power Co-op and the hawks. *Hawk Chalk* 21:51-54.
- *Gillard, R. 1977. Unnecessary electrocution of owls. *Blue Jay* 35:259.
- Gilliland, J. 1975. Eagle-safe poles praised. Newspaper article. *Idaho Statesman*, Boise, ID. 22 October 1975.
- *Gilmer, D.S., and R.E. Stewart. 1983. Ferruginous hawk populations and habitat use in North Dakota. *J. Wildl. Manage.* 47:146-157.
- *Gilmer, D.S. and J.M. Wiehe. 1977. Nesting by ferruginous hawks and other raptors on high voltage power line towers. *Prairie Natur.* 9:1-10.
- Graham, F., Jr. 2000. The day of the condor. *Audubon*, Jan/Feb 2000: 46-53.
- Gray, L.D. 1988. California Energy Commission informational workshop on wind turbine effects on avian activity and habitat use. Alameda County Planning Department. Unpubl. rep. Hayward, CA. 20pp.
- Grazhdankin, A.V., and V.I. Perverva. 1982. [Causes of mortality of steppe eagles (*Aquila nipalensis*) on the transmission line supports and the ways of their removal.] *Mosuva* 1982:3-10. [English summary]
- Gretz, D.I. 1981. Power line entanglement hazard to raptors. U.S. Fish and Wildl. Serv. Unpubl. rep. Denver, CO. 9pp.
- *Grubb, T. G. 1995. Constructing bald eagle nests with natural materials. USDA Forest Service Research Note RM-RN-535. 8pp.



- Guzman, J. and J.P. Castano. 1998. Raptor mortality by electrocution in power lines in eastern Sierra Morena and Campo del Montiel (Spain). *Ardeola* 45:161-169.
- *Haas, D. 1980. Endangerment of our large birds by electrocution—a documentation. Pages 7-57 in *Okologie der vogel* [Ecology of birds]. Vol. 2. Deutscher bund fur Vogelschutz, Stuttgart. (German with English summary).
- _____. 1993. Clinical signs and treatment of large birds injured by electrocution. Pages 180-183 in P.T. Redig, J.E. Cooper, J.D. Remple, D.B. Hunter, and T. Hahan, eds. *Raptor Biomedicine*. Univ. of Minnesota Press. Minneapolis.
- *_____. 2005. Pers. comm. German Nature Conservation Association.
- Hall, T.R., W.E. Howard, and R.E. Marsh. 1981. Raptor use of artificial perches. *Wildl. Soc. Bull.* 9:296-298.
- *Hallinan, T. 1922. Bird interference on high tension electric transmission lines. *Auk* 39: 573.
- Hannum, G., W. Anderson, and M. [W.] Nelson. 1974. Power lines and birds of prey. Report presented to Northwest Electric Light and Power Assoc., Yakima, WA, 22 April 1974. 23pp.
- *Hanson, K.E. 1988. Managing transmission lines for wildlife enhancement. *J. Arboricult.* 14:302-304.
- *Hardy, N. 1970. Fatal dinner. *Thunder Bay Field Natur. Club Newsletter* 24:11.
- Harlow, D.L., and P.H. Bloom. 1989. Buteos and the golden eagle. Pages 102-110 in B.G. Pendleton, ed. *Proc. Western Raptor Manage. Symp. And Workshop*. Nat. Wildl. Fed. Sci. and Tech. Series No. 12.
- *Harmata, A.R. 1991. Impacts of oil and gas development on raptors associated with Kevin Rim, Montana. Kevin Rim Raptor Study Group. Unpubl. rep. Biol. Dep. Montana State Univ., Bozeman. Prepared for the U.S. Bur. Of Land Manage., Great Falls Resource Area, MT. 98pp.
- *_____. 2002. Encounters of golden eagles banded in the Rocky Mountain West. *J. Field Ornithol.* 73:23-32.
- *_____, G.J. Montopoli, B. Oakleaf, P.J. Harmata, and M. Restani. 1999. Movements and survival of bald eagles banded in the Greater Yellowstone ecosystem. *J. Wildl. Manage.* 63:781-793.
- Harmata, A.R., M. Restani, G.J. Montopoli, J.R. Zelenak, J.T. Ensign, and P.J. Harmata. 2001. Movements and mortality of ferruginous hawks banded in Montana. *J. Field Ornithol.* 72:389-398.
- *Harness, R.E. 1996. Raptor electrocutions on electric utility distribution overhead structures. Pages B4-I – B-4-7 in *Proc. Of the 1996 Rural Electric Power Conference*. Inst. Electr. and Electronic Engineers, New York, NY.
- *_____. 1997. Raptor electrocutions caused by rural electric distribution powerlines. MS Thesis, Colorado State University, Fort Collins, CO. 54pp.
- *_____. 1998. Steel distribution poles—environmental implications. Pages DI-I through DI-5 in *Proc. Rural Electric Power Conference*. Institute of Electrical and Electronics Engineers. New York, NY.



- _____. 1999. Monk parakeets (*Myiopsitta monachus*) nesting in Colorado. J. Colorado Field Ornithol. 33:225.
- _____. 2000. Raptor electrocutions and distribution pole types. North Amer. Wood Pole Coalition Tech. Bull. October 2000: 1-19.
- * _____. 2001. Reduce raptor mortality by retrofitting power lines. IEEE Industry Applications Magazine. Nov./Dec. 2001: 50-55.
- _____. 2002. Raptors: test to protect. Transmission and Distribution World. March, 2002.
- * _____. 2004. Artificial food sources and bald eagle (*Haliaeetus leucocephalus*) electrocutions in Alaska. Abstract, Environmental Concerns in Rights-of-Way Management, 8th International Symp., 12-16 Sept. 2004, Saratoga Springs, NY.
- _____. 2005. Pers. comm. EDM International.
- * _____ and M. Garrett. 1999. Effectiveness of perch guards to prevent raptor electrocutions. J. Colorado Field Ornithol. 33:215-220.
- * Harness, R.E., and K.R. Wilson. 2001. Electric-utility structures associated with raptor electrocutions in rural areas. Wildl. Soc. Bull. 29:612-623.
- _____ and _____. 1998a. Raptor electrocutions. IEEE Industry Applications Magazine 4:25-31.
- _____ and _____. 1998b. Review of falconers' electrocution data. Hawk Chalk 37:79-81.
- Harris, R.D. 1988. Report of a golden eagle mortality. Memorandum from the Project Manager, LSA Associated, to R.M. Jurek, D.A. Anderson, D.L. Harlow, and R.R. Olendorff, dated 21 December 1988. Richmond, CA. 2pp.
- Harrison, J. 1962. Heavy mortality of mute swans from electrocution. Wildfowl Trust Annual Report 14:164-165.
- Harshbarger, R.M. S.W. Platt, and N.E. Hargis. 1994. Mitigation planning for raptors during mining in southwestern Wyoming. Thorne Ecological Institute: 67-75.
- * Hartley, R.R., K. Hustler, and P.J. Mundy. 1996. The impact of man on raptors in Zimbabwe. Pages 337-353 in D.M. Bird, D.E. Varland, and J.J. Negro, eds. Raptors in Human Landscapes: Adaptations to Built and Cultivated Environments. Academic Press, Inc. San Diego, CA.
- Henderson, C. 1988. Regional reports—midwest. Eyas 11:8-10. National Wildl. Fed., Raptor Information Center, Washington D.C.
- * Henny, C.J., and D.W. Anderson. 1979. Osprey distribution, and abundance and status in western North America: III. The Baja California and Gulf of California population. Bull. So. Calif. Acad. Sci. 78:89-106.
- * _____ and _____. 2004. Status of nesting ospreys in coastal Baja California, Sonora and Sinaloa, Mexico, 1977 and 1992-1993. Bulletin Southern California Academy Science 103:95-114.
- * Henny, C.J., D.J. Dunaway, R.D. Mallette, and J.R. Koplin. 1978. Osprey distribution, abundance, and status in western North America: I. The northern California population. Northwest Sci. 52:261-271.
- * Henny, C.J. and J.L. Kaiser. 1996. Osprey population increase along the Willamette River Oregon, and the role of utility structures, 1976-1993. Pages 97-108 in D.M. Bird, D.E. Varland, and J.J. Negro, eds. Raptors in Human Landscapes. Academic Press, London.



- *_____, _____, and R. A. Grove. 2003. Ospreys in Oregon and the Pacific Northwest. U.S.D. I. Geological Survey Fact Sheet 153-02 (rev. 2003), Corvallis, OR. 4pp.
- Herren, H. 1969. Status of the peregrine falcon in Switzerland. Pages 231-238 in J.J. Hickey, ed. Peregrine Falcon Populations: their Biology and Decline. Univ. of Wisconsin Press, Madison.
- *Herron, G.B., S.J. Stiver, and R. Turner. 1980. Population surveys, species distribution and key habitats of selected nongame species. Nevada Dept. Wildl. Unpubl. rep. Reno. 21pp.
- Hjortsberg, W. 1979. Morlan Nelson among the raptors. Rocky Mountain Mag. May, 1979. Pages 58-67.
- Hlavac, V. 1998. Current results of the program aimed at saving the peregrine falcon (*Falco peregrinus*) and the saker falcon (*Falco cherrug*) in the Czech Republic. Buteo 10:125-130.
- *Hobbs, J.C., and J.A. Ledger. 1986. Powerlines, bird-life and the golden mean. Fauna and Flora 44:23-27.
- *Houston, C.S. 1978. Recoveries of Saskatchewan-banded great horned owls. Can. Field-Nat. 92:61-66.
- _____. 1982. Artificial nesting platforms for ferruginous hawks. Blue Jay 40:208-213.
- _____. 1998a. Ferruginous hawk banding in Saskatchewan. Blue Jay 56:92-94.
- _____. 1998b. Great horned owl (*Bubo virginianus*). In The Birds of North America, No. 372 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- *_____ and F. Scott. 2001. Power poles assist range expansion of ospreys in Saskatchewan. Blue Jay 59:182-188.
- Houston, D.C. 1996. The effect of altered environments on vultures. Pages 327-335 in D.M. Bird, D.E. Varland, and J.J. Negro, eds. Raptors in Human Landscapes: Adaptations to Built and Cultivated Environments. Academic Press, Inc. San Diego, CA.
- Howard, R.P. 1975. Breeding ecology of the ferruginous hawk in northern Utah and southern Idaho. Master's Thesis. Utah State Univ., Logan. 59pp.
- _____. 1980. Artificial nest structures and grassland raptors. Pages 117-123 in R.P. Howards and J.F. Gore, eds. Proc. of a Workshop on Raptors and Energy Developments. Idaho Chapter, The Wildl. Soc., Boise, ID.
- _____, and M.Hilliard. 1980. Artificial nest structures and grassland raptors. Raptor Res. 14:41-45.
- Howard, R.R., and J.F. Gore (eds). 1980. Proc. of a Workshop on Raptors and Energy Developments. Idaho Chapter, The Wildl. Soc., Boise, ID. 125pp.
- *Howell, J.A. and J. Noone. 1992. Examination of avian use and mortality at a U.S. Windpower, wind energy development site, Montezuma Hills, Solano County, California. Solano Co. Dept. Environmental Management. Fairfield, CA. 41 pp.
- Huckabee, J. W., ed. 1993. Proceedings: Avian Interactions With Utility Structures —International Workshop. Electric Power Res. Inst. Tech. Rep. 103268, Palo Alto, CA. 3379pp.

