



Eagle Act - New USFWS Regulations For Eagles



Environmental and Natural Resource Management Consultants

Endangered Species Act Compliance Strategic Solutions

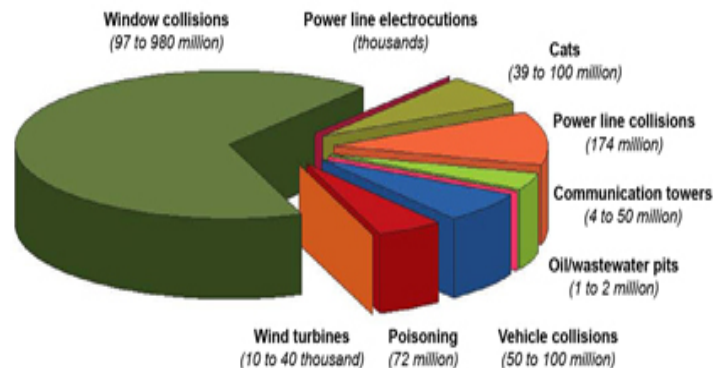
On November 10, 2009 the U.S. Fish and Wildlife Service (USFWS) implemented a new rule governing the “take” of bald (*Haliaeetus leucocephalus*) and golden (*Aquila chrysaetos*) eagles. The USFWS has removed the bald eagle from the list of threatened and endangered species under the Federal Endangered Species Act (ESA) in all areas except the Sonoran Desert bald eagle population, which remains protected as a threatened species. The Bald and Golden Eagle Protection Act (Eagle Act) is now the primary law protecting bald eagle populations no longer listed under ESA as well as golden eagles.



These new regulations define a new Preservation Standard associated with the allowance of take for bald or golden eagles. As such, the new regulations create some of the most biologically complex and stringent permitting rules for take of any species occurring within the United States. Three permits will be available: a standard take permit, eagle nest take permit, and a programmatic take permit. Nationwide, the number of take permits is expected to increase from an annual average of 54 authorized under ESA, to 830 eagle act standard permits, 40 nest take permits, and 40 programmatic permits each year. Examples of activities that might constitute potential violations of the Eagle Act and require permits under this new rule to avoid criminal and civil penalties include:

- Power Utilities - electrocutions from contact with power lines and collisions with lines or wind turbines may kill eagles; nests may need to be removed from power poles to ensure system reliability and safety.
- Water Agencies – operation of facilities, including associated recreation developments, may disturb eagles.
- Railroads – train strikes of eagles feeding on carcasses on the tracks.
- Ports - vessel traffic and/or other port operations may disturb eagles.
- Highway Departments - construction and maintenance of highways disturbs eagles.
- Airports - human safety issues may require the removal of eagle nests.

- Other Development Activities – Almost all new development and human activities within 660 feet of a bald eagle nest.



Major implications of the rule are:

- All entities whose activities may disturb or incidentally take an eagle or its nest are now required to obtain an Eagle Act permit.
- The legal (criminal and civil penalties), financial and PR consequences of not complying with the Eagle Act may be severe. For example, for violations of the Eagle Act in Wyoming, PacifiCorp recently was fined \$1.4M and required to retrofit all utility lines (\$9.1M) that may accidentally kill eagles through electrocutions or collisions, even though the company had an Avian Protection Plan.
- Unlike the ESA, the Eagle Act has a Preservation Standard that requires any permitted take to maintain a stable or increasing regional population of eagles, and only authorizes take that cannot “practically” be avoided. Mitigation will be required in many cases.
- To meet the Preservation Standard, the Eagle Act caps the maximum cumulative allowable take from all sources (permitted and unauthorized) to 5% of the estimated regional population and establishes rigid prioritization criteria: issuance of a permit may preclude issuance of other permits of lower priority. Permit renewals receive priority, so competition for permits in some regions is likely. Some populations of golden eagles out West are declining, and permits may not be issued in these regions.
- Permit implementation guidance for the Eagle Act rule is not yet available, and consistency in the administration of initial permits is uncertain.

In response to this new rule, Cardno ENTRIX has brought together a group of natural resource management professionals to guide our clients through the regulatory and permitting process to ensure effective and efficient compliance with the legal requirements.

The Bald and Golden Eagle Protection Act, enacted in 1940, (16 U.S.C. 668-668d) (Eagle Act) prohibits the “take” of bald eagles and golden eagles without a permit. Various modifications of the Eagle Act provided take authorization for golden eagles, but not bald eagles since these take authorizations were granted through the ESA sections 7 and 10 incidental take permit process. ESA approval provided assurances that the US Fish and Wildlife Service (USFWS) would exercise enforcement discretion in relation to violations of the Eagle Act and Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712). Upon federal delisting in 2007, all authorizations for the take of bald eagles under the ESA no longer applied. As such, the potential for human activities to violate Federal law by taking eagles remains under the prohibitions of the Eagle Act and the MBTA.

In November 2009, a final environmental assessment and rule that authorizes limited take of bald and golden eagles under the Eagle Act became effective (<http://www.fws.gov/migratorybirds/baldeagle.htm>). Under the new rule the Secretary of the Department of Interior can permit the incidental take of eagles resulting from otherwise lawful activities. These regulations also establish permit provisions for intentional take of eagle nests under particular, limited circumstances.

Many actions that are considered likely to incidentally take (harm or harass) eagles under the ESA will also disturb or otherwise take eagles under the Eagle Act. Until now, there was no regulatory mechanism in place under the Eagle Act to permit take of bald or golden eagles comparable to incidental take permits under the ESA. This new rule allows the USFWS to authorize the issuance of permits to take bald eagles and golden eagles on a limited basis. Three permits will be available:

- Standard take permit,
- Eagle nest take permit, and
- Programmatic take permit.

Permits will be issued for a period of five years with renewals receiving priority.

Nationwide, the number of take permits is expected to increase from an annual average of 54 under ESA, to 830 eagle act standard permits, 40 nest take permits, and 40 programmatic permits each year.

Definition of “Take”

The Eagle Act defines the “take” of an eagle to include a broad range of actions: “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

“Disturb” is defined in the regulations as: “To agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause:

- Injury to an eagle,
- A decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or
- Nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.



New Presentation Standard

The USFWS will authorize take of bald or golden eagles only if they determine that the take:

- Is compatible with the preservation of the bald eagle and the golden eagle, and
- Cannot practicably be avoided.

For purposes of these regulations: “compatible with the preservation of the bald eagle or the golden eagle” means “consistent with the goal of stable or increasing breeding populations.” As such, the USFWS has set a standard of limiting take to 5% of the estimated regional productivity of eagles.

For example – within Region 4 of the USFWS (SE USA), with an estimated 1,220 nesting pairs, the maximum cumulative allowable take would be less than 79 bald eagles from all sources, or temporary disturbances to less than 61 nests or permanent loss of 10 territories (whichever is greatest).

Within this cap, the new rule also establishes prioritization criteria for authorization of “take”:

1. Safety emergencies
2. Native Americans
3. Renewal of Programmatic permits
4. Non-emergency activities for public health and safety
5. Other interests in a particular locality

To meet this regional preservation standard, issuance of a permit may preclude issuance of other permits of lower priority.

Minimization of Take

Applicants will be required to minimize take to maximum extent practicable. "Practicable" is defined as capable of being done after taking into consideration the costs of the remedy, existing technology and logistics in light of overall project purpose(s). Mitigation may also be required to minimize the effect of the take on the local population.



Standard Permit

A standard permit will be available to industries or agencies undertaking activities that may disturb or otherwise take eagles on an single event basis.

Nest Removal Permit

A nest removal permit would authorize the removal of bald eagle and golden eagle nests where:

- necessary to alleviate a safety hazard to people or eagles,
- necessary to ensure public health and safety,
- the nest prevents the use of a human-engineered structure, or
- the activity, or mitigation for the activity, will provide a net benefit to eagles.

Programmatic Permit

A programmatic permit will be available to industries or agencies undertaking activities that may disturb or otherwise take eagles or their nests on an on-going operational basis. The USFWS is defining "programmatic take" as "take" that:

- Is recurring, but not caused solely by indirect effects, and
- Occurs over the long term and/or in a location or locations that cannot be specifically identified."

The USFWS can issue programmatic permits for disturbance as well as take resulting in mortalities, based on implementation of "advanced conservation practices" (ACPs). ACPs refer to scientifically supportable measures that are approved by the Service and represent the best available techniques to reduce eagle disturbance and/or ongoing mortalities to a level where remaining take is unavoidable.

A programmatic take permit may be appropriate for industries such as energy and transportation providers, if they elect to work with the Service to develop ACPs. The ACPs and plan specifications will then become permit conditions, along with monitoring and reporting requirements more comprehensive than those for individual take permits. Programmatic permits are designed to provide a net benefit to eagles by reducing ongoing unauthorized take. Accordingly, programmatic permit conditions will be designed to provide ongoing long-term benefits to eagles. Recipients of programmatic permits must perform more rigorous monitoring than is required for standard, individual take permits.

The major advantages of opting for the programmatic permit are:

- Legal liability is removed comprehensively.
- Permit renewals receive higher priority under the regional preservation standards, which greatly improves the likelihood that additional take will be authorized in the future.
- Multiple types of authorizations (e.g., nest removal, incidental mortality or injury, disturbance of nests or eagles) can be issued under one permit.
- "Last-minute" emergency permits can be avoided, providing certainty to the permittee that the activity can be completed on schedule, and enhanced protection of eagles.

The disadvantage of programmatic permits is that the process of working with the USFWS to develop the permit conditions is likely to be time-consuming and more expensive than seeking a standard permit. Also, implementation of the ACPs will, in most cases, require substantial resources. In the long term, depending on the scale of an applicant's operations, programmatic permits should be the most economical and reliable approach for authorizing long-term or wide-ranging take of eagles.

Programmatic take is the direct result of ongoing operations. The following are examples of programmatic take:

- utilities that kill eagles through collisions and electrocutions from contact with power lines,
- a railroad that routinely strikes eagles feeding on carcasses on the tracks,

- ongoing disturbance at a port because of vessel traffic and/or other port operations,
- construction and maintenance of highways throughout a State or other jurisdiction that routinely disturbs eagles,
- airports that periodically (but immediately upon discovery) need to remove eagle nests to protect human and eagle safety.

Permit Application Process

Permits will be available to Federal, State, municipal, or tribal governments; corporations and businesses; associations; and private individuals, all of which are subject to the prohibitions of the Eagle Act. The new Service permit application (Form 3-200-71) requires the following information from the applicant as part of the application process:

1. A detailed description of the activity that will cause the disturbance or other take of eagles;
2. The species and number of eagles that will be taken and the likely form of that take;
3. Maps and digital photographs that depict the locations of the proposed activity, including the area where eagles are likely to be taken;
4. For activities that are likely to disturb eagles (versus other take),
 - a. Maps and digital photographs of the eagle nests, foraging areas, and concentration sites where eagles are likely to be disturbed by the proposed activity (including the geographic coordinates of the activity area and important eagle-use area(s) and the distance(s) between those areas);
 - b. Whether or not the important eagle use area(s) is visible from the activity area, or if screening vegetation or topography blocks the view; and
 - c. The nature and extent of existing activities in the vicinity that are similar to the proposed activity, and the distance between those activities and the important eagle-use area(s);
5. The date the activity will start and is projected to end;
6. An explanation of what interests(s) in a particular locality will be protected by the take, including any anticipated benefits to the applicant or to the public;
7. An explanation of why avoiding the take is not practicable, including at a minimum, a description of why take cannot be avoided after taking into consideration, relative to the magnitude of the impacts to eagles, (1) the cost of the remedy comparative with proponent resources; (2) existing technology; and (3) logistics in light of overall project purposes; or
8. For programmatic take, why any remaining take is unavoidable with ACPs; and
9. A description of measures proposed to offset the detrimental impact of the proposed activity on the regional eagle population.

General Permitting Approach

- Description and geographic location of activities.
- A GIS and field-based risk assessment of the activities on bald eagles.
- Development of an ACP implementation plan approved by USFWS.
 - Avian-safe construction standards and retrofitting techniques.
 - Company nest management procedures and company standards to address utility caused avian injuries/mortalities.
 - Employee training program materials for avian related issues.
 - Cost-effective phasing schedule for ACP implementation based on the risk assessment results.
- Annual monitoring and reporting system to ensure compliance.

Cardno ENTRIX is an environmental consulting firm that provides specialized services to both the public and private sectors. Since 1984, Cardno ENTRIX has assisted clients with a variety of assignments for project planning, permitting, scientific research, analysis, and compliance monitoring. A key element in our success is effective balancing of regulatory requirements, technical efficacy and cost. Our reputation for excellence and creative solutions has attracted a wide range of clients including city and county governments, state and federal agencies, and public interest groups. Cardno ENTRIX has a successful history with managing projects that invariably involve multiple regulatory agencies, competing concerns, and tight schedules. Since our inception in 1984, we have grown to a staff of approximately 450 professionals based in offices located throughout the United States and Latin America. Cardno ENTRIX operates as a national firm, accessing and utilizing key personnel from all of our offices.



Our firm emphasizes service, responsiveness, and innovative and collaborative efforts to develop winning solutions for endangered species issues. This is reflected in the strategic role that Cardno ENTRIX provides for many natural resource agencies and local governmental agencies throughout the U.S. Key to this role is understanding the technical, administrative, environmental, social, economic, and regulatory issues associated with resource management and the manner and extent to which they are pertinent to the specific requirements of individual projects.

USFWS Regulatory Compliance

Cardno ENTRIX has extensive knowledge; experience and expertise with the regulatory requirements of the ESA, Eagle Act, and MBTA (Table 1). Several members of our staff worked directly for the U.S. Fish and Wildlife Service (USFWS). Additionally, our staff members have worked extensively and closely with the USFWS on regulatory compliance issues for over 25 years (see Staff Experience below and Attachment). We understand the role and responsibilities of the USFWS in preparing issuing incidental take permits (ITP), issuing biological opinions, conducting status reviews, assessing population characteristics, establishing distinct population segments (DPS), assessing threats, making listing determinations, and developing recovery plans and strategies. As such, we specialize on assisting clients with adhering to and completing the USFWS regulatory compliance process.

Cardno ENTRIX staff members have been involved in projects encompassing some of the largest geographic areas and number species covered ever undertaken from an USFWS regulatory compliance perspective. Specifically, the Cardno ENTRIX Team brings in-depth experience in the following areas required for successful completion of USFWS regulatory compliance projects:

- Eagle Act
- Migratory Bird Treaty (MBTA)
- Strategic and Regulatory Guidance
- Endangered Species Act (ESA) Compliance
- Section 7(c) Biological Assessments
- Incidental Take Statements
- Agency Consultation and Negotiation
- ITP Application Package Preparation
- Habitat Conservation Plan (HCP) and Multi-Species HCP Development
- Impact Analysis for Species and Critical Habitat
- Section 10 Consultation and Documentation
- Development of NEPA Compliance Documents
- Surveys for Listed Species and Habitats

Cardno ENTRIX also understands the biology and habitat requirements of federally threatened and endangered species, eagles, and other imperiled species. Our staff has worked on projects involving listed mussels, fish, mammals, reptiles, amphibians, birds, and plants throughout the United States. We have provided data and expertise to the Service regarding population data and habitat characteristics to aid in the review of population status and development of critical habitat and for recovery planning. However, we understand and appreciate the knowledge of local and species experts. Our Regulatory Compliance Consulting Teams often include the inclusion of species, resource specialists and/or attorneys from outside Cardno ENTRIX. We believe in participating on a Consulting Team that provides the highest quality services available for a given ESA compliance project.

Cardno ENTRIX prides itself in using a science-based approach to present information and management proposals to resolve issues associated with balancing species needs with proposed project objectives. We have developed a unique multi-species potential effects approach and model that allows us to provide quantified estimates of “take” of species. The approach makes the analysis “transparent” for reviewing parties and helps the participants achieve concurrence. The Service often considers these factors to be important components of a successful project. This approach helps the applicant and the agencies make clear choices regarding project alternatives and conservation actions.



Table 2. Staff Qualifications

<p>Steve Godley</p> <ul style="list-style-type: none"> • M.A., Zoology • B.A., Biology 	<ul style="list-style-type: none"> • Ecological Assessments • Environmental Permitting • Endangered and Threatened Species Issues • Mitigation Design • DRI Support • Condemnation Support • Expert Witness Testimony • Agency Negotiation • Project Management 	<p>Mr. Godley has over 30 years of experience and is a recognized expert in bald eagle biology and permitting. He has written or supervised the development of over 30 bald eagle management plans in seven states, including over 20 plans that authorized incidental take of eagles. He has assisted electric utilities in preparing Avian Protection Plans and mining companies in designing avian deterrents to prevent accidental deaths of eagles in ponds. As a result of his expertise, he served on the USFWS Bald Eagle Recovery Team for the SE USA. He also is the primary author of the USFWS Bald Eagle Monitoring Guidelines for Florida. Mr. Godley has served as an expert in over 12 cases involving eagles.</p>
<p>Richard Williams</p> <ul style="list-style-type: none"> • B.S., Wildlife Management 	<ul style="list-style-type: none"> • Wildlife Impact Assessment • Biological Mitigation and Monitoring • FERC Licensing and Compliance • ESA Compliance • Avian-Powerline Interactions 	<p>Mr. Williams has over 30 years of experience as a wildlife biologist and project manager with specific expertise in avian studies and wildlife assessments for energy projects in the Western U.S., and is currently managing a suite of avian and bat studies at five proposed wind energy facilities in California. He has participated in regional and national forums pertaining to raptor management, wind/wildlife issues and research and is a past member of the California Peregrine Falcon Recovery Team. Mr. Williams is highly experienced with applications of the key federal and state laws and regulations for avian resources including the Bald and Golden Eagle Protection Act, Federal Endangered Species Act, and Migratory Bird Treaty Act. He is a past president of The Western Section of The Wildlife Society and a past member of the executive council of The Wildlife Society.</p>
<p>Craig Kling</p> <ul style="list-style-type: none"> • M.S., Wildlife Biology • B.A., Zoology 	<ul style="list-style-type: none"> • NEPA Compliance • Project Permitting • Endangered Species • Biological Assessments • Agency Consultation 	<p>Mr. Kling has over 35 years of professional experience assisting with permitting thousands of miles for transmission lines and substations; fiber optic lines; pipelines for water, natural gas, crude, refined products, phosphate slurry, irrigation canals; highways; and railroads. In addition, Mr. Kling has managed, prepared, or provided peer reviews on hundreds of third-party environmental impact statements (EIS), third-party and proponent prepared environmental assessments (EA), and biological surveys, as well as served as a technical coordinator assisting with the preparation of discipline-specific portions of NEPA documents. He has conducted routing analysis, constraints and opportunity analysis, and fatal flaw analysis for transmission lines and pipelines in several Rocky Mountain states.</p>
<p>Raymond K. Loraine</p> <ul style="list-style-type: none"> • M.S., Zoology • B.S., Biology 	<ul style="list-style-type: none"> • Ecological and Environmental Assessments • Herpetology • Endangered and Threatened Species Assessments • Management and Permitting • Natural Community Assessment 	<p>Mr. Loraine has more than 25 years of experience and expertise in the areas of listed and non-game wildlife surveys, management, and permitting; natural community/habitat delineation and assessment; and environmental planning and permitting. He has prepared assessments, wildlife inventories, natural community mapping, and management plan recommendations for publicly and privately owned tracts of land up to 30,000 acres in size. Mr. Loraine's expertise is valuable throughout the life of the project, from pre-purchase assessments through design and permitting to project implementation. Mr. Loraine has contributed to the preparation of numerous Developments of Regional Impact (DRIs), Project Development and Environment (PD&E), and Sector Plan studies. He also has extensive experience in wetlands and wildlife permitting at the local, state, and federal levels.</p>

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<p>Robert Williams</p> <ul style="list-style-type: none"> • M.S., Fisheries and Aquatic Ecology • B.S., Aquatic Ecology and Zoology 	<ul style="list-style-type: none"> • Endangered Species Act Compliance • ESA Habitat Conservation Plans • ESA Recovery Programs • FWS Coordination Act 	<p>Mr. Williams has worked over 34 years in all aspects of implementation of and compliance with the Endangered Species Act and other federal environmental laws. He performed field and office work for the first 10 years, assisting in research that provided information for ESA consultation and conservation of endangered fish species leading to the development and implementation of the Colorado River Fish Recovery Implementation Program. He has been responsible for managing and overseeing ESA compliance in Utah and Nevada in both rural and urban settings since 1992. Mr. Williams also has considerable experience in negotiating complex and controversial terrestrial and aquatic related issues, looking for creative ways to solve ESA and other environmental compliance requirements to the satisfaction of all parties. He also assisted in the development of numerous recovery programs and conservation plan for federally and state listed species. Mr. Williams has established professional contacts throughout the West and in Washington DC, within and outside of the federal government and is frequently requested by environmental groups and project proponents to assist in problem-solving and finding creative solutions to ESA compliance issues.</p>
<p>Jim Teitt</p> <ul style="list-style-type: none"> • M.S., Fisheries Biology • B.S., Biology 	<ul style="list-style-type: none"> • FERC • Federal Power Act / Natural Gas Act Permitting • Public Utility Comm. Planning 	<p>Mr. Teitt has 30 years of experience providing environmental services to electric utility, oil & gas, public utility regulation and energy consulting interests, covering environmental, social, economic and engineering aspects of generation and transmission systems, electric & fuel supply options, energy policy and planning, and strategic energy supply and demand management. Mr. Teitt formerly directed water augmentation and flow management studies in the Delaware River Basin as part of the Delaware River Basin Electric Utility Group (DRBEUG), assisted in siting the Merrill Creek Project in N.J. and also directed the public involvement process for the Allegheny Power and General Public Utilities (GPU Corp.) proposal to route and construct a 765 kV HV Transmission Project connecting ECAR to MAAC, crossing Pennsylvania and connecting into New Jersey, as well as numerous power plant siting and licensing reviews along the Pennsylvania and New Jersey borders of the Delaware River.</p>
<p>Zach Adcock</p> <ul style="list-style-type: none"> • B.S., Biology and Environmental Science 	<ul style="list-style-type: none"> • Wildlife Ecology • Wetland Ecology and Assessment • Marine Ecology 	<p>Mr. Adcock has a diverse educational and professional background with a focus on Florida ecosystems. His experience includes wildlife ecology and management, community ecology, wetland evaluation, technical writing, and biometrics. His primary responsibilities include development and implementation of environmental and wildlife specific management plans, wetland assessments and delineations, and wildlife surveys, relocations, and permitting, spanning all vertebrate classes and including numerous survey techniques.</p>
<p>Wayne Kicklighter</p> <ul style="list-style-type: none"> • M.S. Ecology-Fisheries • B.S. Biology 	<ul style="list-style-type: none"> • NEPA Compliance • Aquatic Ecology • Impact Assessment • Mitigation / Restoration 	<p>Mr. Kicklighter is an aquatic ecologist with over 13 years of professional experience assessing the impacts of human activities on aquatic habitat. This work has consisted of a wide array of projects related to environmental impact statements (EISs), water resource permitting, natural resource damage assessments (NRDAs), development and implementation of mitigation projects, and scaling restoration measures. He has been the project manager for both interstate and international pipeline projects and Environmental Impact Assessments during which his responsibilities included agency consultation, coordination of public participation and outreach, management of sub-contractors, and project coordination.</p>
<p>Lisa Mash</p> <ul style="list-style-type: none"> • B.S., Marine Biology 	<ul style="list-style-type: none"> • USFWS Regulations • ESA Compliance NEPA/CEQA Compliance • Fish and Invertebrate Sampling 	<p>Ms. Mash's relevant experience includes work with endangered species issues relating to aquatic and terrestrial species. Ms. Mash has provided project management and support on the development of environmental documents associated with these consultations including Habitat Conservation Plans, Environmental Assessments, EISs/ EIRs, and Biological Assessments.</p>

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<p>Art Saunders</p> <ul style="list-style-type: none"> • B.S., Biology 	<ul style="list-style-type: none"> • Project Management • Environmental Permitting • Wastewater Sampling • Source Trackdown Studies • Pollutant Minimization Plans • Field Biology/Ecological Assessments • Extent of Contamination Studies • Wetland/Marsh Assessments • EPA RAP Develop & Implementation • Site Remediation 	<p>Mr. Saunders has over 14 years of professional experience in environmental project management, applied environmental science, field biology, and contaminated site work. His areas of expertise include design and implementation of environmental/ecological assessments; management of field study programs; oversight of remediation and restoration actions; and oil spill/hazardous waste emergency response. Mr. Saunders currently manages a number of Supplemental Environmental Projects (SEPs) that include implementation of riparian buffer and shellfish restoration projects, construction of a meteorologic tower, and installation and operation of a Delaware River water monitoring station. Mr. Saunders is also currently responsible for designing and implementing several sampling programs for facilities in NJ and DE, related to both NPDES permitting and DRBC TMDLs. He has managed a NJ screening level risk assessment support project and two Response Action Plans (RAPs) projects, which have collectively involved design and implementation of extent of contamination surveys, evaluation of ecological injury/risk; evaluation of remedial alternatives, oversight of selected remediation and restoration solutions, and client representation interfacing with Federal and state agencies.</p>
<p>Support Staff</p>		
<p>Michelle E. Curtis</p> <ul style="list-style-type: none"> • B.S., Environmental Science 	<ul style="list-style-type: none"> • Wildlife Ecology • Wetland Ecology and Assessment • Wetland Permitting • Marine Ecology 	<p>Ms. Curtis has educational and professional experience in ornithology, wildlife ecology, environmental permitting, and terrestrial and aquatic community ecology throughout ecosystems of Florida. Specific areas of expertise include listed species assessments, biological resource inventories, wetland delineation, wetland permitting, and mitigation monitoring. Her primary responsibilities are listed species surveys, including trapping for herpetofauna and small mammals, wildlife relocations, wetland delineations and assessments, and ecological site assessments.</p>
<p>Lavinia DiSanto</p> <ul style="list-style-type: none"> • B.A., Biological Sciences 	<ul style="list-style-type: none"> • FERC 3rd Party EISs • NRDA Environmental Data Synthesis • Environmental Field Sampling • Phase I ESA 	<p>Ms. DiSanto is has over 7 years of experience in environmental consulting. In addition, she has been the contributing author for Marine Resources, Water Resources, and Threatened and Endangered Species sections on pipeline EIS reports for FERC. Ms. DiSanto also has lent technical support on 316(a) and (b) demonstrations through organization of data, data analysis, and report writing. She has performed a number of Phase I environmental site investigations. Ms. DiSanto has assisted with toxicological models to estimate biological impacts from oil spills. She has researched fisheries life histories and estimations of populations within contaminated areas.</p>
<p>McLane E. Evans, PMP</p> <ul style="list-style-type: none"> • B.S., Environmental Science 	<ul style="list-style-type: none"> • Project Management • Permitting • Wetland Delineation • Wildlife Ecology • Environmental Assessments 	<p>Ms. Evans has extensive professional experience in a wide range of ecological consulting services. In her nine years as an ecologist, she has acquired a vast knowledge of Florida ecosystems. She also spent two years in phosphate mining and permit compliance. Her primary responsibilities include project management, due diligence site evaluations, and permitting. She also has completed bald eagle management plans associated with permits. Ms. Evans also deals with wetland jurisdictional determinations, wildlife surveys, wetland mitigation, and permit compliance.</p>
<p>Sara Fischer</p> <ul style="list-style-type: none"> • B.S., Biology 	<ul style="list-style-type: none"> • Endangered Species Act compliance and consultation • Clean Water Act compliance and permitting • Habitat assessments • Wildlife management 	<p>Ms. Sara Fischer has conducted surveys for threatened, endangered, and sensitive species including southwestern willow flycatcher, black-footed ferret, desert tortoise, and various sensitive plant species. She has provided project assistance in ensuring project compliance with the Endangered Species Act (ESA), Clean Water Act, and the National Environmental Policy Act (NEPA). She has prepared survey reports and biological assessments/evaluations according to ESA and NEPA standards, and conducted field reviews, ecological assessments, and habitat assessments for various sensitive plant and animal species.</p>

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<p>Andrew M. Fuddy</p> <ul style="list-style-type: none"> • B.S., Environmental Science 	<ul style="list-style-type: none"> • Wildlife Ecology • Wildlife Permitting • Wetland Delineation • Water Quality Assessments • Freshwater and Marine Ecology 	<p>Mr. Fuddy has experience in ornithology, wildlife ecology, environmental permitting, and community ecology throughout Florida's ecosystems. Specific areas of expertise include listed species assessments, biological resource inventories, wetland delineation and permitting, and mitigation monitoring. His primary responsibilities are listed species surveys, including trapping for herpetofauna and small mammals and camera-assisted gopher tortoise burrow inventories; wildlife relocations; bald eagle monitoring; wetland delineations and assessments; and ecological site assessments. He has completed field surveys in association with avian protection plans.</p>
<p>Gary Harmon</p> <ul style="list-style-type: none"> • Ph.D., Ecology • B.A., Env. Studies 	<ul style="list-style-type: none"> • Habitat Injury Assessment • Wetland Permitting • NRDA 	<p>Dr. Harmon is a registered Professional Wetland Scientist with over 14 years experience in wetland ecology and habitat restoration. Since joining Cardno ENTRIX, Dr. Harmon has provided technical support for habitat injury assessment and habitat restoration and creation projects in conjunction with Natural Resource Damage Assessments (NRDA) and assessment of effects to wetlands for third-party EISs.</p>
<p>Michelle Johnson</p> <ul style="list-style-type: none"> • M.S., Natural Resource Planning • B.S., Biology 	<ul style="list-style-type: none"> • NEPA Compliance • Wildlife Biology • ESA Compliance and Consultation • GIS 	<p>Ms. Johnson has over 9 years of experience in environmental and species planning, which includes work in regulatory compliance and permitting, conservation biology, and GIS. In project manager and NEPA task lead roles, she has participated in the development of EAs, EISs, Biological Assessments (BAs), Habitat Conservation Plans (HCPs), watershed assessments, and related environmental assessment reports, including serving as task lead for multiple NPS EAs and EISs. She has strong skills in overseeing production of quality, timely documents and associated graphics.</p>
<p>Patti Reilly, CWB</p> <ul style="list-style-type: none"> • M.S., Biology • B.S., Ecology 	<ul style="list-style-type: none"> • Avian Biology/Ecology • Biological Inventory • Habitat Assessment • Oil Spill Response - NRDA 	<p>Ms. Reilly is a Certified Wildlife Biologist with The Wildlife Society and has 25 years experience as an avian biologist/ecologist and interdisciplinary scientist. She has extensive experience conducting biological inventories, wildlife and habitat assessments, and environmental screening with emphasis on endangered and threatened species. Ms. Reilly is an expert in avian identification and has developed studies for highly complex and controversial wind energy, transportation, pipeline and linear power projects.</p>
<p>Carly Spahr</p> <ul style="list-style-type: none"> • B.S., Zoology 	<ul style="list-style-type: none"> • Terrestrial Ecology • Restoration Ecology • Endangered Species Act 	<p>Ms. Spahr is an ecologist with a background in endangered species monitoring and compliance, habitat restoration, and data management. Ms. Spahr has also performed scientific wetland monitoring to evaluate the performance of wetland restoration sites as required by the regulatory agencies. Ms. Spahr has led numerous field crews, and is proficient at planning and executing project design.</p>
<p>Jeffrey Wakefield</p> <ul style="list-style-type: none"> • Ph.D., Economics • M.S., Marine Biology and Biochemistry • B.S., Biology 	<ul style="list-style-type: none"> • NEPA Compliance • Natural Resource Economics • Population Dynamic Modeling • NRDA • Resource Equivalency Analysis 	<p>Dr. Wakefield has performed numerous analyses relating to natural resource damage assessments (NRDAs), environmental impact statements (EIS), power plant 316(a) & (b) resource assessments, regulatory impact analysis related to pending EPA regulation, habitat restoration projects, and population viability assessments. Dr. Wakefield has conducted cost benefit analyses of beach nourishment projects and in support of EPA permitting activities. In addition, he has modeled the response of habitats, wildlife populations, and recreational users to environmental change. His experience also includes designing analyses which identify cost-effective restoration projects for a variety of natural resources and recreational uses.</p>



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