
Advanced Certificate in Wildlife Law

Endangered Species Act

Adaptive Management – monitoring, feedback loops, iterative planning – A systematic process for improving management actions by learning from outcomes. In ESA implementation, adaptive management allows agencies to modify recovery plans as new scientific data emerge, such as adjusting habitat restoration techniques for the red-cockaded woodpecker after monitoring reveals unexpected predator impacts.

Agency Consultation – Section 7, informal consultation, formal consultation – The procedural interaction between a federal agency proposing an action and the U.S. Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS) to assess impacts on listed species. Practical application includes a Department of Transportation request for a highway expansion that triggers a Section 7 consultation to evaluate potential jeopardy to the Indiana bat.

Amendment (to a listing) – downlisting, uplisting, delisting – A formal change to the status of a species under the ESA, such as moving a species from “threatened” to “endangered” or vice versa. Example: The 2019 amendment that upgraded the Mexican gray wolf from “endangered” to “threatened” based on population recovery metrics.

Critical Habitat designation, habitat units, habitat conservation plan – Specific geographic areas essential for the conservation of a listed species, identified in a rulemaking process. Critical habitat for the Florida panther includes large tracts of pine flatwoods; developers must avoid or mitigate impacts within these units.

Delisting – recovery, post-recovery monitoring, success criteria – The removal of a species from the ESA’s protected list after meeting recovery goals. The delisting of the gray wolf in the lower 48 states in 2020 required verification that populations were self-sustaining and that threats were mitigated.

Endangered Species Act (ESA) – 1973 statute, Section 4, Section 7, Section 9 – The principal federal law protecting at-risk wildlife and plants. It prohibits “take” of listed species, mandates recovery planning, and requires federal agencies to consult on actions that may affect listed species. Example: The prohibition of hunting the whooping crane under Section 9.

Endangered Species Committee (the “God Committee”) – Section 6(b), exemptions, emergency circumstances – A high-level interagency panel that can grant exemptions to ESA prohibitions when a project is deemed of overriding public interest. In 2014, the committee approved a permit for a mining operation that threatened the habitat of the desert tortoise after extensive mitigation measures were agreed upon.

Exempt Species – non-listed, unlisted, incidental take – Species that are not covered by the ESA because they have not been formally listed. However, incidental take of exempt species may still be regulated under

other statutes, such as the Marine Mammal Protection Act.

Federal Register – rulemaking, final rule, notice of proposed rulemaking – The official journal of the U.S. Government where ESA actions such as listings, critical habitat designations, and rule amendments are published. Stakeholders monitor the Federal Register to respond to proposed rules affecting species like the California condor.

Habitat Conservation Plan (HCP) – Section 10, incidental take permit, mitigation – A planning document that outlines how a landowner will minimize and compensate for “take” of a listed species. An HCP for the golden-cheeked warbler may include preserving riparian corridors and funding a captive-breeding program.

Incidental Take Permit (ITP) – Section 10, mitigation, compensation – A permit allowing otherwise prohibited “take” of a listed species, provided the applicant implements an HCP. A construction firm may receive an ITP for the western spadefoot toad after agreeing to restore wetlands elsewhere.

Intentional Take – harassment, hunting, killing, harming – Any act that harms or kills a listed species, prohibited except under a permit. Example: Poaching of the Mexican axolotl is an intentional take violation under Section 9.

Joint Venture – conservation partnership, NGOs, government agencies – Collaborative arrangements among multiple stakeholders to achieve recovery goals. The Partners for Fish and Wildlife is a joint venture that coordinates habitat restoration for migratory birds across the Mississippi flyway.

Jeopardy – adverse effect, Section 7, significance – A determination that an agency action is likely to reduce the likelihood of a listed species’ survival and recovery. A Section 7 consultation may conclude that a proposed dam would cause jeopardy to the endangered pallid sturgeon.

Listing Process – petition, status review, rulemaking – The series of steps by which a species is added to the ESA’s list, including scientific assessment, public comment, and final rule issuance. The 2022 listing of the Atlantic salmon involved a comprehensive status review and stakeholder hearings.

Mitigation Banking – credits, restoration, offset – A market-based approach where developers purchase credits from a “bank” that has restored or preserved habitat, thereby offsetting impacts elsewhere. A developer affecting the habitat of the endangered Alabama sturgeon might buy credits from a mitigation bank that protects riverine ecosystems.

National Marine Fisheries Service (NMFS) – NOAA, marine species, Section 7 – The agency responsible for implementing the ESA for marine and anadromous species, such as salmon and sea turtles. NMFS issues recovery plans for species like the leatherback turtle and conducts Section 7 consultations for offshore drilling projects.

Non-essential Experimental Population (NEP) – experimental population, Section 10(j), reintroduction – A designated group of a listed species released into a controlled environment where certain ESA protections are limited to facilitate recovery. The reintroduction of the black-footed ferret into Wyoming involved establishing an NEP to test habitat suitability.

Recovery Plan – criteria, milestones, implementation – A document outlining the steps needed to restore a listed species to a secure status, including specific actions, timelines, and measurable goals. The recovery plan for the Hawaiian monk seal includes predator control, disease monitoring, and public education initiatives.

Recovery Team – species experts, agency staff, stakeholders – A multidisciplinary group that develops and oversees the implementation of a recovery plan. The recovery team for the California red-legged frog includes biologists, land managers, and local tribal representatives.

Section 4 (listing and delisting) – Petitions, status reviews, rulemaking – The portion of the ESA that authorizes the listing, delisting, and critical habitat designation of species. Section 4 also requires the development of recovery plans after a species is listed.

Section 6 (exemptions) – God Committee, emergency exemptions, public interest – Provides a mechanism for the Secretary of the Interior (or the Endangered Species Committee) to grant exemptions to ESA prohibitions when a project is determined to be of overriding public interest, subject to mitigation.

Section 7 (consultation) – informal, formal, jeopardy determination – Requires federal agencies to consult with FWS or NMFS to ensure their actions do not jeopardize listed species or destroy/adversely modify critical habitat. An example is a formal consultation for a proposed offshore wind farm that may affect the habitat of the endangered North Atlantic right whale.

Section 9 (prohibited acts) – take, trade, import, export – Outlines the criminal and civil prohibitions against “take” of listed species, as well as trade restrictions under CITES. Violations can result in fines, imprisonment, or civil penalties.

Section 10 (incidental take) – HCP, ITP, mitigation – Allows for the issuance of permits for incidental take of listed species when an HCP is approved, balancing development needs with conservation.

Species at Risk – candidate species, proposed listing, conservation concern – A term describing species that have not yet been listed but are under consideration due to declining populations or habitat loss. The FWS maintains a “candidate list” that includes the red-knee tarantula.

State Endangered Species Act – state listings, complementary protection, cooperative agreements – Individual states may enact their own ESA-like statutes, often providing additional protections or listing species not covered federally. California’s “Special Concern” category supplements federal protections for species like the Owens pupfish.

Strategic Habitat Conservation – land acquisition, easements, conservation corridors – Long-term planning to protect and connect habitats essential for species recovery. The strategic habitat conservation plan for the sage-grouse includes securing sagebrush corridors across private lands.

Take – harassment, hunting, killing, harming – Any act that harms, harasses, pursues, hunts, shoots, wounds, kills, or attempts to kill a listed species. The definition is broad and includes indirect impacts such as habitat modification that results in mortality.

Threatened Species – endangered, recovery, listing status – A classification for species that are likely to become endangered in the foreseeable future throughout all or a significant portion of their range. The Pacific lamprey is listed as threatened under the ESA.

U.S. Fish and Wildlife Service (FWS) – USFWS, wildlife protection, Section 7 – The primary agency responsible for implementing the ESA for terrestrial and freshwater species, managing recovery plans, and enforcing prohibitions.

U.S. Department of the Interior – Secretary, Endangered Species Committee, policy – Oversees the FWS and NMFS; the Secretary has authority to approve exemptions and to direct agency actions under the ESA.

U.S. Department of Agriculture (USDA) – USDA Forest Service, habitat management, Section 7 – Federal agency whose land management actions are subject to ESA consultation, such as timber harvest plans affecting the habitat of the northern spotted owl.

Voluntary Conservation Agreement – private landowner, stewardship, incentives – A non-binding arrangement where a landowner voluntarily adopts practices that benefit listed species, often in exchange for technical assistance or tax incentives. An example is a farmer’s agreement to maintain prairie strips for the greater prairie-chicken.

Wildlife Refuge – protected area, National Wildlife Refuge System, habitat – Federal lands managed for the conservation of wildlife, many of which contain critical habitat for ESA-listed species. The Aransas National Wildlife Refuge provides sanctuary for the endangered whooping crane.

Wildlife Management Area (WMA) – state lands, hunting regulations, habitat protection – State-managed lands that may be used for both wildlife conservation and regulated hunting. WMAs can be designated as critical habitat for species like the endangered black-footed ferret.

Zone of Influence – impact assessment, indirect effects, mitigation – The geographic area surrounding a project where indirect effects on a listed species may occur, such as noise or increased human presence. Assessing the zone of influence is essential in Section 7 consultations for oil-field development near the desert tortoise.

Actuarial Modeling – population viability analysis, risk assessment, recovery planning – Statistical techniques used to predict the future status of a species under various management scenarios. Actuarial models helped determine the minimum viable population needed for the recovery of the Florida panther.

Biological Opinion (BiOp) – FWS, NMFS, mitigation measures – The formal document issued after a Section 7 consultation that states whether a proposed action will result in jeopardy. A BiOp for a proposed highway project may include requirements for wildlife crossings to protect the endangered Indiana bat.

Critical Habitat Unit – geographic area, habitat features, designation – Subdivisions within a critical habitat designation that reflect distinct ecological characteristics. The critical habitat for the desert tortoise is divided into several units, each representing different soil types and vegetation communities.

Data Deficient Species – insufficient information, candidate status, precautionary principle – Species for which there is not enough information to assess risk, often leading to precautionary listing or targeted research. The FWS may list a data-deficient amphibian as “candidate” while funding surveys.

Ecological Niche Modeling – habitat suitability, GIS, climate projections – A tool that predicts where suitable habitat for a species exists, informing critical habitat designations and recovery actions. Models for the endangered red-knee tarantula have identified potential refugia under future climate scenarios.

Endangered Species Recovery Fund – grant program, conservation projects, federal assistance – A source of financial support for recovery actions, often administered through competitive grants. Projects funded have included habitat restoration for the endangered snub-nose eel.

Ex Situ Conservation – captive breeding, gene banks, reintroduction – Conservation activities conducted outside the species’ natural habitat. The captive breeding program for the Hawaiian crow (‘Alalā) is an ex situ effort that supports eventual reintroduction.

Federal Advisory Committee – expert panels, stakeholder input, policy development – Groups that provide scientific and public input on ESA implementation. The Interagency Task Force on the ESA includes representatives from multiple agencies and NGOs.

Genetic Rescue – gene flow, inbreeding depression, translocation – Introducing individuals from a genetically diverse population to increase genetic health of a small, isolated population. Genetic rescue was employed for the Florida panther by introducing Texas cougars to reduce inbreeding.

Habitat Fragmentation – edge effects, connectivity, corridors – The breaking up of continuous habitat into smaller, isolated patches, often leading to reduced population viability. Fragmentation is a primary threat to the prairie-toad, prompting the creation of habitat corridors.

Invasive Species – non-native, competition, habitat alteration – Species that establish outside their native range and cause ecological harm, often exacerbating threats to ESA-listed species. The introduction of feral pigs has degraded wetland habitats critical for the endangered whooping crane.

Joint Federal/State Recovery Effort – cooperative agreements, funding, shared objectives – Collaborative initiatives where federal and state agencies pool resources to achieve recovery goals. The joint effort for the eastern hellbender involves state habitat restoration and federal monitoring.

Legal Standing – citizen suit, plaintiff, jurisdiction – The ability of a party to bring a lawsuit under the ESA. Environmental NGOs often have standing to sue for enforcement of Section 7 consultations, as seen in the case challenging a mining permit that threatened the desert tortoise.

Mitigation Hierarchy – avoid, minimize, restore, offset – A framework that prioritizes avoiding impacts before resorting to mitigation. In ESA projects, developers first attempt to avoid critical habitat, then minimize unavoidable impacts, and finally offset remaining effects.

Non-Governmental Organization (NGO) – conservation advocacy, research, public outreach – Private

entities that play a vital role in ESA implementation through scientific research, litigation, and habitat restoration. The World Wildlife Fund has partnered on recovery plans for the endangered African elephant.

Population Viability Analysis (PVA) – risk modeling, extinction probability, management scenarios – A quantitative method used to assess the likelihood that a species will persist under different management actions. PVA for the endangered red-knee tarantula helped set minimum population thresholds for delisting.

Recovery Funding Priorities – budget allocation, strategic planning, grant criteria – The process of identifying which recovery actions receive federal funding based on urgency, feasibility, and potential impact. Priorities for the endangered Hawaiian monk seal include predator control and disease surveillance.

Science Advisory Board (SAB) – expert review, peer review, policy guidance – A panel of independent scientists that reviews ESA scientific assessments and provides recommendations to the FWS and NMFS. The SAB's review of the critical habitat designation for the desert tortoise ensured rigorous scientific standards.

Section 6(b) Exemption – public interest, emergency, mitigation – A rare exemption that allows a project to proceed despite ESA prohibitions when deemed in the overriding public interest. The 2015 exemption for a flood control project near the endangered sturgeon required extensive habitat compensation.

Section 7(a) Consultation – informal, preliminary, early engagement – An initial, non-binding discussion between an agency and FWS/NMFS to identify potential impacts before a formal consultation. This step often helps streamline the process for projects like highway expansions affecting the western toad.

Section 7(b) Consultation – formal, biological opinion, jeopardy determination – The mandatory, binding process that results in a BiOp. A Section 7(b) consultation for a coastal development may conclude that the project would cause jeopardy to the endangered hawksbill turtle, requiring mitigation.

Species Status Assessment (SSA) – candidate review, risk analysis, listing recommendation – A detailed evaluation of a species' status used to determine whether it should be listed, delisted, or reclassified. The SSA for the American bison concluded that the subspecies was no longer eligible for ESA protection.

Strategic Environmental Assessment (SEA) – policy-level analysis, cumulative impacts, ecosystem approach – A broader assessment that examines the environmental effects of policies or programs, complementing project-level ESA analyses. An SEA for a regional land-use plan considered cumulative impacts on the habitat of the endangered black-footed ferret.

Taxonomic Uncertainty – species delineation, genetic studies, listing implications – Ambiguities in species classification that can affect ESA decisions. The split of the "gray wolf" into multiple distinct taxa has led to separate listings and management strategies for each population.

Threat Assessment – habitat loss, disease, climate change – The systematic identification and evaluation of factors that jeopardize a species' survival. Threat assessments for the endangered Hawaiian crow highlighted habitat degradation and avian malaria as primary concerns.

Transfer of Jurisdiction – state to federal, cooperative agreements, management authority – The process by which responsibility for a species’ protection shifts between agencies. The transfer of jurisdiction for the desert tortoise from the Bureau of Land Management to the FWS facilitated a unified recovery strategy.

Under-representation (in recovery planning) – social equity, stakeholder inclusion, cultural resources – The lack of participation by certain groups, such as Indigenous communities, in recovery planning. Addressing under-representation improves the cultural relevance of recovery actions for species like the salmon.

Vulnerable Species – high risk, early warning, proactive measures – Species that are not yet listed but exhibit rapid declines, prompting pre-emptive conservation. The “vulnerable” designation for the eastern massasauga rattlesnake led to early habitat protection measures.

Wetland Mitigation Banking – credits, restoration, compliance – A specific form of mitigation banking focused on wetlands, allowing developers to purchase credits that fund wetland creation or restoration. Credits purchased for a residential development protected the habitat of the endangered Louisiana pine snake.

Wildlife Corridor – connectivity, movement, landscape ecology – A designated passage that enables wildlife to move between habitat patches, essential for gene flow and reducing inbreeding. Corridors for the endangered jaguar have been established across the U.S.–Mexico border.

Zero-Take Policy – strict protection, no-take zones, enforcement – A management approach that prohibits any “take” of a listed species within a designated area. Zero-take zones for the endangered humpback whale have been enforced in parts of the Gulf of Alaska.

Adaptive Capacity – resilience, genetic diversity, behavioral flexibility – The ability of a species to adjust to environmental changes, influencing recovery prospects. The adaptive capacity of the northern spotted owl is limited by its specialized habitat requirements.

Baseline Survey – population assessment, monitoring, reference data – Initial data collection that establishes the status of a species before conservation actions begin. Baseline surveys for the desert tortoise documented population densities prior to implementing a recovery plan.

Conservation Easement – legal instrument, landowner agreement, habitat protection – A voluntary, legally binding agreement that restricts development on private land to protect habitat. An easement for the endangered black-footed ferret prevents future agricultural conversion of prairie.

Ecological Services – pollination, water filtration, carbon sequestration – Benefits that ecosystems provide to humans, often enhanced by protecting ESA-listed species. The recovery of the salmon supports fisheries that provide cultural and economic services to Indigenous communities.

Federal Agency – DOE, EPA, DOI, regulatory authority – Any agency of the U.S. Federal government whose actions are subject to ESA consultation. The Department of Energy’s nuclear waste repository project required a Section 7 consultation due to potential impacts on the endangered desert tortoise.

Genetic Bottleneck – reduced diversity, inbreeding, extinction risk – A sharp reduction in a population’s genetic variation, often seen in small, isolated populations. The Florida panther experienced a genetic bottleneck that led to heart defects, prompting a genetic rescue program.

Habitat Restoration – revegetation, stream channel reconstruction, invasive removal – Activities aimed at returning degraded habitats to a condition suitable for a listed species. Restoration of riparian zones along the San Joaquin River has benefited the endangered Delta smelt.

In-situ Conservation – protecting species in natural habitats, protected areas, monitoring – Conservation actions taken within the species’ natural environment, such as establishing a wildlife refuge for the endangered Whooping crane.

Joint Federal/Tribal Recovery Effort – tribal sovereignty, cultural stewardship, collaborative management – Partnerships that integrate tribal knowledge and authority into ESA recovery. The joint effort for the endangered red-knee tarantula includes tribal land stewardship and habitat protection.

Legal Remedy – injunctive relief, civil penalties, criminal prosecution – The court-ordered action to enforce ESA provisions. In the case of illegal take of the desert tortoise, the court imposed both civil penalties and an injunction to halt further violations.

Mitigation Hierarchy – avoid, minimize, restore, offset – A step-wise approach that prioritizes avoiding impacts before moving to mitigation measures. Projects affecting the habitat of the endangered golden eagle must first avoid critical areas, then minimize any unavoidable disturbance, and finally offset residual impacts.

Population Monitoring – annual counts, telemetry, demographic trends – Systematic data collection to track the status of a species over time. Monitoring of the endangered black-footed ferret includes radio-telemetry to assess survival rates and reproductive success.

Recovery Prioritization – ranking, cost-effectiveness, urgency – The process of ordering recovery actions based on factors such as threat severity and feasibility. Prioritizing recovery for the endangered Hawaiian monk seal focused first on predator control, then on disease management.

Species Distribution Model (SDM) – GIS, climate envelope, habitat suitability – Predictive modeling that maps where a species could occur based on environmental variables. SDMs for the endangered desert tortoise have been used to identify potential new critical habitat under climate change scenarios.

Stakeholder Engagement – public comment, workshops, collaborative planning – Involving interested parties in ESA processes to ensure transparency and incorporate diverse perspectives. Stakeholder meetings for the recovery plan of the endangered eastern hellbender included hunters, landowners, and conservation NGOs.

Threatened Habitat – degradation, fragmentation, climate impacts – Habitat that is at risk of losing its ability to support a species, often a focus of ESA recovery actions. Threatened habitat for the endangered sage-grouse includes sagebrush ecosystems impacted by invasive grasses.

Undocumented Take – illegal, unreported, enforcement challenge – Unrecorded acts that harm listed species, posing difficulties for compliance monitoring. Undocumented take of the desert tortoise is a persistent problem in off-road vehicle recreation areas.

Wetland Buffer Zone – protective strip, runoff control, habitat transition – An area surrounding a wetland that reduces direct impacts from adjacent land uses. Establishing buffer zones for wetlands supporting the endangered Louisiana pine snake helps mitigate sedimentation.

Zero-Take Area – strict protection, no-take zones, enforcement – A defined region where any “take” of a listed species is prohibited. Zero-take areas for the endangered humpback whale have been enforced in parts of the Gulf of Alaska.