

Wildlife Tracks®

A PUBLICATION OF THE HUMANE SOCIETY OF THE UNITED STATES AND THE HSUS WILDLIFE LAND TRUST

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Citizens and the Endangered Species Act

How will we explain to our children the disappearance of the American Serengeti, a landscape made possible by prairie dogs, bison, and wolves, which once stretched across over one hundred million acres on the Great Plains? To what degree will we impoverish human cognition and socialization when the world is sterile and bereft of wildlife, yet over 90% of the objects in children's books are animals or natural objects and the wild figures prominently in folktales and myths across the globe?¹ Why is it that 66 million Americans enjoy non-consumptive wildlife-related recreation such as bird-watching and wildlife photography, yet our government agencies at the state and federal levels allow broad-scale destruction of natural habitats and permit, or themselves engage in, unsustainable hunting, trapping, and fishing of the wildlife we enjoy?²

The Endangered Species Act provides us with tools to craft effective protections against human activities that are driving species and ecosystems to extinction. The stakes couldn't be higher.

Overview of the Law

Congress passed the Endangered Species Act (ESA) in 1973, and then-President Richard Nixon signed it into law, out of concern for the native plants and animals imperiled "as a consequence of economic growth and development untempered by



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adequate concern and conservation."³ In passing the ESA, Congress enacted one of the strongest environmental protection statutes in the world.

The ESA's purpose is to conserve imperiled species and the ecosystems upon which they depend.⁴ To achieve this end, the statute directs the federal government to classify ("list") species as "endangered" or "threatened," to designate critical habitat for listed species, and to develop recovery plans that actively conserve and restore listed species. The ESA obligates federal agencies to proactively conserve endangered and threatened species, to

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Letter from the Editor

Wildlife Tracks Mission and Goals:

Over 5,000 wildlife and habitat protection organizations nationwide are working to stop the rapid disappearance of wildlife and the destruction of their habitat. *Wildlife Tracks* combines the power of information, the power of networking and the power of people to strengthen local, state and national grassroots movements to preserve and restore wildlife and the ecosystems they need for their survival.

Goals:

- To expedite the exchange of experience and information between wildlife and habitat organizations, while increasing the efficiency and effectiveness of their efforts.
- To empower the grassroots by sharing the successful efforts to preserve wildlife and ecosystems and to inspire them to expand their vision and strategy to achieve long-term solutions.
- To assist in building responsible and credible organizations by providing information and guidance.

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The views expressed in these articles represent those of the authors and do not necessarily reflect the views of The Humane Society of the United States or those of The HSUS Wildlife Land Trust. The HSUS and The HSUS Wildlife Land Trust encourage the grassroots use of all actions that educate and encourage the humane and proper treatment of human and non-human animals; however, we do not promote or support the use of any action that violates federal, state, or local laws and regulations in this process.

In this issue of *Wildlife Tracks*, Nicole Rosmarino, endangered species director of Forest Guardians, provides a tool that should prove valuable for many people concerned about the conservation of biodiversity: a citizen's guide to enforcement of the U.S. Endangered Species Act (ESA). This article provides not only the "how-to" of citizen enforcement, but also the "why," and is an important follow-up to previous *WT* articles on the ESA, including the 1995 article by DJ Schubert and Jasper Carlton, "How to Protect Your Species Under Federal, State or Local Statutes and Regulations." In the future, we hope to print an article specifically regarding the critical habitat provision of the ESA, and perhaps an article regarding the role of the ESA in protection of foreign-listed endangered species.

Ed Clark, president of the Wildlife Center of Virginia (WCV), provides a thought-provoking perspective on two topics that have received a great deal of recent media attention and public concern: bioterrorism and emerging infectious diseases. Clark suggests that wildlife rehabilitators may be able to play a critical role in the detection of emerging infectious diseases—providing they endeavor, where needed, to upgrade their record keeping to ensure the integrity and compatibility of their data—and he offers a glimpse at a promising surveillance system currently in development at WCV.

The Future of *Wildlife Tracks*

In the last issue, we asked you to return a postcard or log onto our website, first to let us know whether you would like to continue receiving *WT* and, second, to indicate which topics you would find most valuable or interesting. While we did receive 62 postcards and other non-web responses, we suspect that many people

who would like to continue receiving *WT* attempted to access the web response page and were unable to do so, as technical difficulties have prevented proper set up of the page at this time. We apologize to all who attempted to respond via the web page and encountered difficulty. When the web response page is made functional, we will let readers know that it is accessible and will provide ample time for you to access the page to confirm your interest in receiving *WT* and to let us know the topics you most want to see covered. Meanwhile, all current subscribers will continue to receive *WT*. If you wish to be removed from the mailing list, please contact me via email, phone, or mail (see contact information below).

Reader Survey Feedback

The feedback we have received thus far indicates the following of reader interests. Habitat protection was the topic chosen most frequently, with wildlife rehabilitation, urban wildlife, endangered species protection, and wildlife diseases also chosen by many readers. Several readers offered additional suggestions for future topics, including game farms, aquaculture, urban sprawl, the exotic pet trade, endangered species reintroductions, and the conservation impacts of invasive species.

Thank you to those of you who provided feedback. We will consider your suggestions in planning for future issues of *WT*. Of course we'd love to hear from more of you if you have suggestions or requests for topics you'd like to see addressed in future issues. New subscribers may go to: www.hsus.org/wildlifetracks to request a subscription.

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Look for in next issue:

Marine Wildlife Tourism

North American Grizzlies

Canada Geese and Toxins



ENDANGERED SPECIES, cont. from front page avoid jeopardizing them or adversely modifying their critical habitat, and to protect listed species from “take” (for example, killing, harassment, degradation of habitat) by private individuals and public agencies.⁵

The ESA is a precautionary statute. It errs on the side of protecting wild flora and fauna in the face of scientific uncertainty. Under the law, a wide variety of life forms are eligible for protection, including species, subspecies, and distinct population segments. The ESA not only protects wildlife on the brink of extinction – “endangered” species, but also those on the road to becoming endangered – “threatened” species. Moreover, the law provides for species to be listed based on the best scientific or commercial data available, rather than mandating a higher threshold of scientific certainty.⁶ The choice of the drafters to act on the best available data is key, as it makes addressing suspected risks to species the priority rather than allowing species to languish during an often unachievable quest for perfect knowledge.

Congress had the foresight to authorize citizen enforcement of the ESA in the event that the federal government violated the law or failed to enforce it against non-governmental violators. Under the statute, citizens can petition for the listing or delisting of a species, and for the revision of a species’ critical habitat. In addition, citizens can sue the Secretaries of Interior

or Commerce, who share responsibility for the ESA’s enforcement, or any other party alleged to be in violation of the ESA. Citizens can also compel these Secretaries to enforce the ESA against other parties who are violating the law, after providing 60-days’ notice.⁷

Government foot-dragging on the ESA, under the current administration and, in fact, under every administration after Jimmy Carter’s, makes citizen enforcement of the ESA crucial. We must act on behalf of species on the brink when our elected officials and agency decision-makers fail to deliver.

ESA Controversies

Although Congress passed the law almost unanimously in 1973, it has been enshrouded in controversy since the late 1970s. Supreme Court Justice Antonin Scalia described the ESA as capable of imposing “unfairness to the point of financial ruin...upon the simplest farmer who finds his land conscripted to national zoological use.”⁸ Former president George H.W. Bush similarly characterized it as a “sword aimed at the jobs, families, and communities of entire regions.”⁹ A federal court judge wrote in a 2003 dissenting opinion that, “Under the court’s reasoning the ESA, like Frankenstein, despite the good intentions of its cre-



In 2000, the USDA’s Wildlife Services killed over three million animals, including gray wolves, which are listed under the ESA.

ators, has become a monster.”¹⁰ In contrast, in 1999, university researchers documented that 84% of the American public supports the current or even a stronger ESA.¹¹

Controversies span private and public lands. Private property rights groups have continually complained that the law erodes property rights by restricting actions that harm wild animals on private land.¹² However, the ESA’s reach to private lands is part of its wisdom. An estimated 75% of listed species find the majority of their habitat on private land, and some 90% find a significant portion of their habitat on private land.¹³ Therefore, if we are going to prevent the extinction of imperiled species, we must protect them where they live, on private or public land. In addition, the ESA can curtail destructive management activities (of land and wildlife) being permitted on federal land or by federal agencies, through its provision that federal agencies not permit actions that result in the jeopardy of a listed species or the adverse modification of its critical habitat.¹⁴ Moreover, federal agencies cannot themselves commit actions that would result in these harms.

By assertively defending imperiled species, the ESA has generated more than a few enemies. Extractive industry interests (e.g., mining, oil and gas, logging, ranching, water developers, commercial builders), state wildlife agencies, federal

Congress had the foresight to authorize citizen enforcement of the ESA in the event that the federal government violated the law or failed to enforce it against non-governmental violators.



In the northern Great Plains, where oil and gas wells are planned, citizens are fighting to protect the integrity of habitat that listed species—as well as candidates awaiting listing, such as the black-tailed prairie dog—need for survival.

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agencies, and pro-industry administrators and politicians have all sought to weaken the ESA, given its potential for curbing short-sighted economic activities.

Industrial interests have long been hostile to the ESA's purpose of tempering economic growth with "adequate concern and conservation." Within a few years after the law's passage almost three decades ago, various industries began to complain that the ESA was harming economic growth and was therefore a threat to the U.S. economy. Over the past three decades, the ESA, although enduring many sets of amendments, some motivated by complaints from industries, has emerged fairly intact. Meanwhile, the U.S. economy has experienced strong periods of economic growth.

The amended ESA now contains an exemption process for federal agencies (conducted by a committee nicknamed the "God Squad" for its ability to actually condemn a species to extinction) and a provision that allows private parties to secure incidental take permits by developing habitat conservation plans.¹⁵ Despite these and other exemptions, the law provides a vital bottom line for species protection and provides citizens with the tools to make sure species do not disappear forever.

State wildlife agencies often criticize the ESA, as listed species are primarily managed by federal authority, thus preempting state authority. The "states' rights" movement—often a thin window dressing for an anti-conservation agenda and generally allied with traditional extractive industries—picked up steam under the Reagan Administration. Especially in the West, state legislatures and agencies tend to be dominated by representatives of industries that damage or exploit the wild, and the ESA's potential to limit harmful land uses to benefit native species has not been welcome.



In the Pacific Northwest, after multiple citizen petitions and dogged litigation had secured ESA listing and critical habitat designation for the northern spotted owl, a stealthy legislative maneuver cleared the way to resume logging of old-growth forests on USFWS land.

In addition, state wildlife agencies are generally beholden to hunting, fishing, and trapping interests, as they are in large part funded through license fees paid by these groups. Because of this artificially skewed constituency, state wildlife agencies often engage in damaging practices such as the stocking of non-native sportfish that often compete with, prey upon, or hybridize with native fish species. Native fish are increasingly imperiled in the U.S. For example, some 85.7% of Arizona's native fish are at risk.¹⁶ Non-native inva-

sive species in general are considered a leading cause of species endangerment across the U.S., contributing to the decline of 57% of endangered plants and 39% of endangered animals.¹⁷

Because citizens can and have used the ESA to combat mischief by public and private parties, federal agencies and their administrators often seek to weaken the law. Front and center at present is Interior Secretary Gale Norton. Secretary Norton has primary authority over the enforcement of the ESA, yet she is a long-time adherent to states' rights and is un-

wavering in her support of propertied and moneyed interests over the biological needs of imperiled species. For example, Norton's term of office has seen the lowest number of listings per year since the early 1980s, and all listings have been in response to citizen petitions and litigation.¹⁸ Some 285 additional species desperately await listing as candidates and proposed species.¹⁹ Moreover, as of 1999, 6,460 U.S. species were identified as imperiled or vulnerable, the majority of which are not even listing candidates.²⁰

The abysmal bottleneck on listings under Norton is second only to that under Reagan,²¹ whose Interior Secretary, James Watt, was deeply antagonistic to imperiled species conservation. Not coincidentally, Watt was Norton's mentor. Administrative hostility was also evident in the administrations of Bill Clinton and Bush Senior. George H.W. Bush's Interior Secretary, Manuel Lujan Jr. – the primary official responsible for implementing the ESA at the time – quipped, in reference to the critically imperiled Mount Graham red squirrel in Arizona, "Nobody's told me the difference between a red squirrel, a black one, or brown one. Do we have to save every subspecies?"²²

Under the law, the answer is an unequivocal "yes." Chillingly, antagonism endures among the very federal officials responsible for the ESA's enforcement. The current Bush administration is trying very hard to weaken the ESA via broad ex-



Citizens continue to challenge logging and ski resorts in the Rocky Mountains, because of the negative impacts upon the lynx and other forest animals.

Federal agencies are not just guilty of allowing land uses and actions by private parties that jeopardize imperiled species and harm their habitat; these agencies also often need to be curtailed from committing actions themselves that are harmful to species on the brink.

emptions from the law, particularly for the Department of Defense, and is trying equally hard to administratively repeal the critical habitat provision and to erode citizens' power to enforce the law. The outlook would be bleak indeed if we had to rely solely on government enforcement of the ESA.

A Brief History of Citizen Enforcement of the ESA

There has long been an important role for citizens to play in ESA enforcement, including petitioning for species to be listed, for their critical habitat designations to be revised, and to sue any party that violates any section of the ESA. An early high watermark for controversy over the ESA was the Tellico Dam issue in the late 1970s. The Tennessee Valley Authority, a federal agency, planned the construction of a \$100 million dam on the Little Tennessee River. The completion of the dam was challenged by citizens as likely to jeopardize the survival and harm

the critical habitat of the snail darter, a type of perch inhabiting the Little Tennessee.

A citizen lawsuit stopped the dam from being completed. In the 1978 landmark opinion by the U.S. Supreme Court in *Tennessee Valley Authority v. Hiram Hill*, Chief Justice Burger declared that, "the plain language of the Act, buttressed by its legislative history, shows clearly that Congress viewed the value of endangered species as 'incalculable.'" The majority found that, given this incalculable worth of endangered species, it would be difficult and inappropriate for the court to weigh the economic costs of protection against the value of protecting a species. Consequently, the Supreme Court affirmed the injunction of the Tellico dam, a \$100 million dollar project that was 90% complete, because its completion would jeopardize the snail darter.²³

As a result, many in Congress were up in arms about the ESA. While the statute itself remained essentially intact, the Tellico Dam was ultimately completed, via an appropriations rider heard for a mere 42 seconds on the House floor.²⁴ In fact, Tennessee Republican Congressman John Duncan, who introduced the amendment, waived the clerk's reading of the measure before the word "Tellico" was uttered. Many observers suggested that House members appeared not to realize that they were voting for the completion of the dam despite its predicted effect on an endangered species.²⁵

The Tennessee delegation's undemocratic manner of obtaining the comple-



In the southwest, citizens fight to address the impact that livestock on federal lands have upon listed species, such as the Mojave Desert tortoise.

tion of the Tellico Dam proved a harbinger of future tactics employed by those antagonistic to endangered species protection. In the 1990s, in another high profile case, that of the northern spotted owl threatened by logging in the Pacific Northwest, multiple citizen petitions and dogged litigation resulted in ESA listing and critical habitat designation for the spotted owl.²⁶ However, a non-descript rider called Section 318 was attached to a Senate general appropriations bill. It briskly passed through both houses and overrode a court injunction that had stopped the logging of old-growth forests on U.S. Forest Service land in the Pacific Northwest on behalf of the northern spotted owl. Edward Grumbine, author of *Ghost Bears: Exploring the Biodiversity Crisis*, described this as "a sleight of hand that made a mockery of both the law and the democratic process."²⁷ Section 318 was one of several riders used by the Pacific Northwest delegation to avoid logging prohibitions that were intended to minimize threats to the owl.²⁸

Throughout the ESA's history, citizens have fought for species on the brink. More recent examples include efforts to address the impact of livestock grazing on

Endangered vs. Threatened

A species designated as Endangered automatically receives all protections provided by the law from "take", which includes killing, harassment, collection, and major habitat modification.

A species designated as Threatened does not automatically receive these protections. By regulation, the Interior Secretary (or Commerce, if it is a marine species) extends prohibitions on take to threatened species but also retains the authority to issue a "special 4(d)" rule for threatened species, allowing some take to be allowed, including killing.

The dangers of 4(d) rules become clear by example of the Utah prairie dog, a critically imperiled species numbering less than 10,000. Because this prairie dog was downlisted to Threatened status, the Fish and Wildlife Service allows up to 6,000 of them to be shot every year. The Utah prairie dog is declining and in danger of extinction.

It pays to be listed as Endangered. Where scientifically defensible, citizens should lobby for proposed species to be listed as Endangered or petition for reclassification of Threatened species to Endangered status.

There are many roles citizens can play, including taking administrative and legal actions under the statute and expanding the public's awareness of the ESA's importance.

listed species inhabiting federal lands in the southwest, such as the Mojave Desert tortoise, Mexican wolf, southwestern willow flycatcher, Mexican spotted owl, and northern aplomado falcon. In the Rocky Mountains, citizens continue to challenge logging and ski resorts because of their impacts on the lynx and other forest wildlife. In the intermountain west, citizens fight for the sage grouse's habitat in the Sagebrush Sea. In the northern Great Plains, activities of oil and gas companies – particularly the Bush administration's plans for 77,000 coal-bed methane wells in the Powder River Basin – are being fought by citizens concerned for the imperiled mountain plover (whose listing proposal was recently withdrawn by Norton and Bush), the black-tailed prairie dog (a candidate for listing), and other grassland species whose habitat would be fragmented and degraded by these activities. From the east coast to the west, urban sprawl is taking its toll, and citizens struggle to protect endangered species on some of their last outposts on private and public land.

Federal agencies are not just guilty of *allowing* land uses and actions by private parties that jeopardize imperiled species and harm their habitat. These agencies themselves also often need to be curtailed – again through civic vigilance – from *committing* actions that are harmful to species on the brink. For instance, one division within the U.S. Department of Agriculture, little-known to the public and misleadingly named “Wildlife Services” (WS), kills millions of animals, both wild and feral, every year. In 2000, WS killed over three million animals, including gray wolves, which are listed under the ESA.²⁹

In a perverse twist, WS is playing an active role in “conserving” species listed under the ESA. Increasingly, the U.S. Fish and Wildlife Service (USFWS) appears to be substituting much-needed habitat protection with WS killing operations. Killing of native predators such as coyotes and bad-

gers is being employed in endangered species programs, for example, that of the black-footed ferret, while vital policy changes are unaddressed, such as the poisoning and shooting of prairie dogs, on whom ferrets depend for their survival. Gray wolves in the Northern Rocky Mountains and reintroduced Mexican wolves in the southwest are being mercilessly hunted down when they leave arbitrary boundaries that federal and state governments establish to please a handful of public lands ranchers whose livestock losses are compensated by Defenders of Wildlife. In the face of irrational governmental actions, citizen oversight is imperative.

A Continued Role for Citizens

Citizens and conservation groups must remain actively involved in ESA enforcement. There are many roles citizens can play, including taking administrative and legal actions under the statute and expanding the public's awareness of the ESA's importance. An overview of citizen roles in ESA enforcement and advocacy follows.

Petitioning for species to be listed or upgraded from threatened to endangered status. Under the ESA's Section 4, citizens can petition for a species to be added to the list of species protected under the ESA, or to be upgraded from threatened to endangered status. A previous issue of *Wildlife Tracks* [Fall 1995], provided a detailed outline for preparing a status review and conservation assessment. See Sidebar on Citizen Petitions, p.7.

Once a species is petitioned for listing under the ESA, or for reclassification from threatened to endangered status, the USFWS must meet certain deadlines to review the petition. From the date the petition was filed, the USFWS is required to issue a finding within 90 days “to the extent practicable” on whether the petition presents substantial scientific in-

formation indicating that the petitioned listing may be warranted.³⁰ If the 90-day finding is positive, the USFWS proceeds with a 12-month status review. Under the law, this process must be completed and a finding issued within 12 months of the date the petition was filed.³¹

At the 12-month finding stage, there are three possible determinations: that the species warrants listing, that the species does not warrant listing, or that the species warrants listing but that the listing is precluded by higher priority actions.³² If the species warrants listing, the USFWS is required under the law to propose the species for listing and then must publish a final listing rule within one year.³³ If listing of the species is deemed warranted but precluded, the species is placed on a list of candidate species and is assigned a listing priority number based on whether it is the only member of its genus, a full species, or a subspecies or distinct population; and based on the magnitude and imminence of the threats it faces.³⁴ As of early May 2003, there were 249 candidate and 36 proposed species, some of which have been mired in a state of bureaucratic purgatory as candidates for over 25 years.³⁵

Administration budget requests for listing have been so low in recent years that they have ensured a listing bottleneck. While the USFWS estimates that it requires \$153 million to redress the backlog of candidates and critical habitat designations,³⁶ budget requests for these items have been well under 10% of what is required. Such low requests ensure that the USFWS can use the under funding excuse to dodge species listings. Citizens must counter this systemic pathology by continuously applying pressure for listing of imperiled species and exposing USFWS's flawed excuses at every turn.

Petitioning for critical habitat designations for listed species. The USFWS has an abysmal record of designating critical habitat for listed species. The Bush Administration recently declared that “the ESA is broken,” spotlighted critical habitat as the

Citizens can sue any party for any violation of the ESA that harms an endangered species.

Habitat destruction is the primary cause of imperilment for 85% of endangered species in the U.S., yet only one out of three listed species have critical habitat designations.

culprit, and declared that it considers critical habitat to be a low priority.³⁷ Past administrations have similarly ducked this vital provision. As a result, only one out of three listed species have critical habitat designations.³⁸ The lack of critical habitat designation is problematic, as habitat destruction is the primary cause of imperilment for 85% of endangered species in the U.S.³⁹ The current Bush Administration is the only presidency not to have designated any critical habitats except under court order. Of the critical habitat proposals under the current administration, 92% were reduced in size between the proposed and final rules, costing imperiled species some 42 million acres.⁴⁰ Citizens can contest flawed administrative refusals to designate critical habitat and challenge the content (e.g., area protected) of proposed critical habitat designations.

Critical habitat designations escalate federal agencies' species protective obligations from merely preventing extinction to enabling recovery. Critical habitat designations provide protection for unoccupied areas essential to recovery of a species.⁴¹ In addition, federal agencies are barred from adversely modifying critical habitat, rather than the less restrictive standard of not jeopardizing a species' survival.⁴² The USFWS admits that species with critical habitat designations are twice as likely to be recovering as those lacking designations.⁴³ The listing petition timelines described above are the same as the timelines governing citizen petitions to revise critical habitat.⁴⁴

Challenging federal activities (including the permitting of private parties) that imperil listed species. Under the ESA's Section 11, citizens can sue *any* party for *any* violation of the ESA.⁴⁵ This includes challenging activities being permitted on federal land (e.g., livestock grazing, logging, and oil and gas extraction) that are harming endangered species. A vital beginning step is to provide the alleged violator with a 60-day notice via certified mail (return receipt requested), which is a letter laying out your claims. This starts the clock for when you can litigate.⁴⁶ The recipient of a 60-day notice may respond to you about

Citizen Listing Petitions

§ Preliminary research. Conduct a comprehensive scientific literature review, including academic journals, books, population surveys, and wildlife agency reports. Also, send formal open records requests to state and federal agencies involved in the species' management.

§ Petition-writing. Describe the historic and current distribution and population status of the species that is the subject of the petition. Discuss the threats to the species, as laid out by the ESA:

- (A) the present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) over-utilization for commercial, recreational, scientific, or educational purposes;
- (C) disease or predation;
- (D) the inadequacy of existing regulatory mechanisms;
- (E) other natural or manmade factors affecting its continued existence.

§ Working with experts. Contact the leading scientific authorities for the species or subspecies you're petitioning. Ask them for as much assistance as they can give, including ensuring you are using the best available data and requesting they review drafts of your petition.

§ Legal concerns. Make sure that you can establish legal standing of the petitioners. Work collaboratively with citizens, scientists, and conservation groups that observe, study, or work to protect the species you're petitioning. Ask them to sign on to your petition. Send your final petition, which must be clearly marked as a petition to list/uplist a species, to the Interior Secretary and USFWS Director via certified mail, return receipt requested. Include a cover letter indicating that you are submitting a formal ESA listing petition.

§ Follow-up. If the agency fails to meet the law's petition deadlines, consult an attorney well versed in the ESA before moving forward. Earthjustice (<http://www.earthjustice.org/>) and the Western Environmental Law Center (<http://www.welc.org/>) have attorneys on staff who litigate ESA petitions and may be able to assist you. Many private attorneys, available for consultations, are also working to ensure species protection.

§ Outreach. Coordinate your petition work with the Endangered Species Coalition (www.stopextinction.org) to ensure the word gets out to the public and the media about the need to protect the species you're petitioning for listing, and to align your efforts with national work to improve endangered species policy.

your claims and may articulate plans to bring their behavior in line with the ESA. If that response is not satisfactory, 60 days after they received the notice (which you'll know from the date on the certified mail return receipt), you can take the case to court.

Enforcing prohibitions on take against private parties. As mentioned above, the ESA prohibits take of endangered animals.⁴⁷ Regulations have extended this protection

to threatened species, with some exceptions (see Endangered v. Threatened sidebar, p. 5). The law does not provide the same protection for listed plants, but does prohibit maliciously damaging or destroying listed plants on federal lands or on other lands if the destruction is in violation of state laws.⁴⁸ For listed animals, "take" is defined broadly as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to



engage in any such conduct.”⁴⁹ By regulation, “harm” includes “significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.”⁵⁰

Section 9 of the ESA is a potentially powerful tool for protecting individual animals of a listed species from direct harm by humans or indirect harm through habitat destruction by private parties. However, it is lightly applied by the USFWS. The U.S. General Accounting Office found in a 1994 report that only 126 takings violations were adjudicated between 1988 and 1993. In only four cases was injunctive relief obtained to delay or stop activities on non-federal lands. The defendant in one of the four cases was a state wildlife agency. Therefore, in the years 1988-1993, the actions of only three private parties on private lands were delayed or enjoined via Section 9 prohibitions.⁵¹ It is vital that citizens use the power given them through the ESA to bring lawsuits to enjoin private parties from taking listed species.⁵²

Contesting flawed species reintroduction programs. Given the long delays in listing, by the time species are added to the threatened or endangered list, they have often been extirpated from vast areas within their historic range. One review of the status of ESA-listed species revealed that the median population sizes and numbers of plant and animal populations at time of listing are so low as to “suggest a high risk of extinction and a low probability of recovery.”⁵³ These authors indicated that the sizes and numbers of vertebrate populations at time of listing are low enough to recommend establishing captive populations to avoid total extinction. According to this study, the median population size of plants at time of listing is a mere 119.5 individuals.

Consequently, reintroduction of species to areas within their former range is increasingly a part of species recovery programs. Unfortunately, reintroduced animals are usually designated as “experimental, non-essential” populations, which

strips them of many of the ESA’s protections.⁵⁴ Citizens can challenge these designations by commenting on proposed experimental, non-essential rules when they are published in the Federal Register and can litigate if their objections are ignored by the USFWS.

Increasing awareness about the need for a strong federal ESA. Whether talking to your neighbors, your co-workers, friends and families, or writing letters to elected officials or agency managers, it is essential that you increase awareness about the ESA’s importance. In today’s political climate, the media and public officials are criticizing this law as too harsh and potentially crippling for the U.S. economy. This is hyperbolic and inaccurate. The ESA is a crucial last-string defense against extinction, and it helps rein in unsustainable economic activities, many of which are heavily subsidized by government agencies.⁵⁵ As discussed below, the ESA should encourage us to look farther down the road, beyond the next quarter’s earnings, to the needs and well-being of people and the natural world for decades and generations to come.

The ESA in perspective

The ESA was visionary when it was passed by Congress almost unanimously thirty years ago and it remains at the vanguard today. The law’s architects and supporters argued for a strong biodiversity statute based on moral, ecological, and utilitarian reasons, and from the perspective that imperiled species represent (unwilling) canaries in a coal mine. We ignore the onward march of species extinction at our own peril, agreed most of Congress in 1973.⁵⁶

That warning still rings true. Two-time Pulitzer Prize winner E.O. Wilson argued in *The Future of Life* that we are literally mortgaging the Earth by continuing down the path of unsustainable economies.⁵⁷

Non-governmental researchers have established that humans are currently exceeding the Earth’s biological capacity by at least 20%. In other words, “the human economy is liquidating the Earth’s natural capital.”⁵⁸ Rather than merely living off the interest that the Earth’s natural capital provides, we are drawing down the capital, and our bank account will soon be empty.⁵⁹

On the way to eventual economic collapse (if policies aren’t changed), ecosystems will crumble and native flora and fauna will disappear. Economists estimate that intact natural systems provide us with \$33 trillion annually in “ecosystem services.” Whether the maintenance of the atmosphere, creation of clean air, and recycling of rainfall by forests; filtering of water by forests and healthy watersheds; nourishing of agricultural plants and trees by microorganisms; decomposition of organic matter; waste disposal; nitrogen fixation and nutrient cycling; bioremediation of chemicals; biocontrol of species that attack crops, forests, and domesticated animals; or pollination by birds, bees, butterflies, bats, and others, components and processes of nature make the Earth livable, and we must therefore defend them more vigilantly.⁶⁰

Yet, we should regard estimates of the monetary value of a living planet as grossly underestimated. We generally cannot replace ecosystems once they are in tatters.⁶¹ In addition, monetary measurements do not consider the intangible spiritual, moral, and aesthetic values discussed at the outset of this article.

With a government unwilling to do so, citizens must grasp the tools provided by the ESA and hold government and industry accountable to moral, spiritual, aesthetic, ecological, and utilitarian reasons to prevent species from disappearing forever. That is what a wiser, more compassionate Congress intended. It is our duty to turn this vision of a better, wilder, more peaceful world into reality.

FOR CITIZEN ACTIVISTS, THE ENDANGERED SPECIES COALITION IS AN INVALUABLE SOURCE OF BACKGROUND INFORMATION ON THE ESA AND PROVIDES ON-LINE TOOLKITS FOR TAKING ACTION AT WWW.STOPEXTINCTION.ORG.

By Nicole Rosmarino, Ph.D., *Endangered Species Director, Forest Guardians*. Adapted from a longer report entitled, "Enforcing the ESA," available from *Forest Guardians*, www.fguardians.org.

Additional Reading

§ Defenders of Wildlife's and Center for Biological Diversity's report on *Conservation in Action: Safeguarding Citizen Rights Under the Endangered Species Act*. Available on-line: at <http://www.biologicaldiversity.org/swcbd/Programs/science/ESAreport.pdf>.

§ Stanford Environmental Law Society. (2000). *The Endangered Species Act Handbook*. Stanford, CA: Stanford University Press.

§ Schubert, D.J. and Carlton, J. (1995). How to protect your species under federal, state or local statutes and regulations. *Wildlife Tracks*, 1(2): 1, 3 – 5. Request a copy from Bette Stallman, 301-258-2147; bstallman@hsus.org

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¹Kellert, Stephen R. (1996). *The Value of Life: Biological Diversity and Human Society*. Washington, DC: Island Press.

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³16 U.S.C. § 1531(a)(1).

⁴16 U.S.C. § 1531(b).

⁵16 U.S.C. § 1531 et seq.

⁶16 U.S.C. § 1533(b).

⁷16 U.S.C. § 1540(g).

⁸See Scalia's dissenting opinion in *Babbitt v. Sweet Home Communities for a Greater Oregon* (515 U.S. 687 (1995)).

⁹President Bush stated this in 1992, in reference to the northern spotted owl controversy. See Houck, Oliver A. 1993. "The Endangered Species Act and its implementation by the US Departments of Interior and Commerce." *University of Colorado Law Review* 64(2):277.

¹⁰See dissenting opinion of Judge Paul Kelly in *Rio Grande Silvery Minnow et al. v. John W. Keys, III, et al.* (10th Cir. 2003) at p. 35.

¹¹Czech, Brian, and Paul R. Krausman (1999). "Public Opinion on Endangered Species Conservation and Policy." *Society and Natural Resources* 12(5): 469-479.

¹²The prohibition on taking listed species only applies to animals, not plants. 16 U.S.C. § 1538(a).

¹³See U.S. General Accounting Office (1994).

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¹⁴16 U.S.C. § 1536(a)(2).

¹⁵16 U.S.C. §§ 1536(e) and 1539(a)(1)(B).

¹⁶Stein, Bruce A. (2002). "States of the Union: Ranking America's Biodiversity." Arlington, VA: NatureServe.

¹⁷Wilcove, David S., David Rothstein, Jason Dubow, Ali Phillips, and Elizabeth Losos (1998). "Quantifying threats to imperiled species in the United States." *BioScience* 48(8):607-615.

¹⁸See Center for Biological Diversity (2003). "Critical habitat works for endangered species." Unpublished manuscript. 5 pp.

¹⁹The list of candidate species numbered 249 and the list of proposed species numbered 36 as of May 9, 2003. See <http://endangered.fws.gov/wildlife.html#Species>, visited 9 May 2003. This URL provides links to list of candidate, proposed, and listed species.

²⁰Stein, B.A., L.S., Kutner, and J.S. Adams (Eds.) (2000). *Precious Heritage: The Status of Biodiversity in the United States*. Oxford University Press. See Table 4.4 at p. 104.

²¹Center for Biological Diversity (2003).

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²⁴Plater, Zygmunt J.B. (1982). "Reflected in a river: agency accountability and the TVA Tellico Dam case." *Tennessee Law Review* 49(4):772-783; Tilt, Whitney (1989). "The biopolitics of endangered species." *Endangered Species Update* 6(1): 35-39.

²⁵Foley, Elizabeth A. (1992). "The tarnishing of an environmental jewel: the Endangered Species Act and the Northern spotted owl." *Journal of Land Use and Environmental Law* 8: 253.

²⁶For overviews on the northern spotted owl controversy and litigation, See Blumm, Michael (1991). "Ancient forests, spotted owls, and modern public land law." *Boston College Environmental Affairs Law Review* 18: 605; Bonnett, Mark and Kurt Zimmerman (1991). "Politics and preservation: the Endangered Species Act and the Northern spotted owl." *Ecology Law Quarterly* 18: 105; Foley 1992; Flournoy, Alyson C. (1993). "Beyond the "Spotted Owl Problem": learning from the old-growth controversy." *Harvard Environmental Law Review* 17: 261; Yaffee (1994).

²⁷Grumbine, R. Edward (1992). *Ghost Bears: Exploring the Biodiversity Crisis*. Washington, DC: Island Press. See p. 147.

²⁸Foley 1992.

²⁹Wildlife Services (2001). "Number of Animals Taken and Methods Used by the WS Program, FY 2000 (Table 10)." All quantified data of animals killed by Wildlife Services in 2000 derives from this source. Available at <http://www.aphis.usda.gov/us/tables/00table10t.rtf>.

³⁰16 U.S.C. § 1533(b)(3)(A).

³¹16 U.S.C. § 1533(b)(3)(B).

³²*Ibid.*

³³16 U.S.C. § 1533(b)(6). At this stage, FWS can also withdraw the listing proposal or extend the one-year period by six months if there is "substantial disagreement regarding the sufficiency or accuracy of the available data." 16 U.S.C. § 1533(b)(6)(B)(i).

³⁴FWS developed this listing priority number

system in 1983 (48 Federal Register 43098). It is supposedly in the process of being replaced with a new listing priority guidance.

³⁵See <http://endangered.fws.gov/wildlife.html#Species>, visited 9 May 2003.

³⁶Declaration of Gary Frazer, Assistant Director for Endangered Species, U.S. Fish and Wildlife Service, in *Defenders of Wildlife et al. v. Gale Norton and Steve Williams* (CIV 02-00165-M-DWM), April 26, 2003 at p. 4.

³⁷See U.S. Dept. of Interior press release, dated May 28, 2003.

³⁸See <http://endangered.fws.gov/wildlife.html#Species>, visited 12 May 2003. Of the 1,263 species listed under the ESA, 426 had critical habitat designations as of May 12, 2003.

³⁹Wilcove et al. (1998).

⁴⁰See Center for Biological Diversity memo dated May 28, 2003. Available at: <http://www.biologicaldiversity.org/>.

⁴¹16 U.S.C. § 1532(5).

⁴²16 U.S.C. § 1536(a)(2).

⁴³See Center for Biological Diversity (2003); U.S. Fish and Wildlife Service 1996 *Biennial Report to Congress*; and the National Marine Fisheries Service 2002 *Biennial Report to Congress*.

⁴⁴16 U.S.C. § 1533(b)(3)(D).

⁴⁵16 U.S.C. § 1540(g)(1).

⁴⁶16 U.S.C. § 1540(g)(2).

⁴⁷16 U.S.C. § 1538(a)(1).

⁴⁸16 U.S.C. § 1538(a)(2).

⁴⁹16 U.S.C. § 1532(19).

⁵⁰50 C.F.R. § 17.3.

⁵¹U.S. General Accounting Office (1994).

⁵²For an overview of the requirements for making such a case, see Goldman, Patti (2003).

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⁵³Wilcove, David S., M. McMillan, and K.C. Winston (1993). "What exactly is an endangered species? An analysis of the US Endangered Species List: 1985-1991." *Conservation Biology* 7(1):87-93. See p. 92.

⁵⁴16 U.S.C. § 1539(j).

⁵⁵For an overview on government subsidization of environmentally destructive economic sectors, visit <http://www.greenscissors.org/>.

⁵⁶Rosmarino, Nicole J. (2002). "Endangered Species Act: Controversies, Science, Values, and the Law." Ph.D. Dissertation, University of Colorado at Boulder.

⁵⁷Wilson, E.O. (2002). *The Future of Life*. New York: Alfred A. Knopf.

⁵⁸Wackernagel, Mathis, Chad Monfreda, and Diana Deumling (2002). "Ecological Footprint of Nations: November 2002 Update." Published by Redefining Progress.

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⁶⁰Ehrlich, Paul R., and E.O. Wilson (1991). "Biodiversity studies: science and policy." *Science* 253:758-62; Costanza, R., R. d'Arge, R. de Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg, S. Naeem, R. V. O'Neill, J. Paruelo, R.G. Gaskin, P. Sutton, and M. van den Belt (1997). "The value of the world's ecosystem services and natural capital." *Nature* 387:253-260.

⁶¹Ehrlich and Wilson (1991).



The Role of Wildlife Rehabilitators in Biosecurity and Bioterrorism Surveillance and the Detection of Emerging Wildlife Disease

Over the past two years, two words have become an uncomfortable part of our daily lexicon, *biosecurity* and *bioterrorism*. While these words certainly existed in the English language prior to September 11, 2001, the frequency with which they are now used, and the sense of urgency attached to their use, is very unsettling. It is difficult to pick up a newspaper or listen to a news broadcast without being confronted by the issues represented by these two words.

What exactly is biosecurity? By general definition, the word refers to the security of living things and living systems. Some of the issues under the biosecurity umbrella include human health and safety, wildlife and environmental health, ecosystem health, ecosystem services such as the supply of food and water, the introduction of invasive species, the emergence of new diseases, and the effects of such issues on our economy and quality of life. In short, biosecurity can refer to almost anything that affects life on the planet.

Perhaps the most frightening biosecurity issues emanate from the potential for deliberate attacks by an individual or an adversarial force. When deliberate attacks are carried out using biological weapons, they are characterized as bioterrorism. Such attacks are not confined to direct attacks on humans or human health. Bioterrorism attacks may be directed at our food supply, water supply, or environment. The attacks may be intended to disrupt our economy, international trade, or simply the feeling of secu-

rity we enjoy in our daily lives. Often bioterrorism is a tool in psychological warfare, in which the main goal is to instill fear and uncertainty into the human population. The most surrealistic aspect of bioterrorism is that the weapons themselves are essentially alive. Once the exclusive domain of science fiction, biological weapons are now a very real threat.

Wildlife Health and Biosecurity

Wildlife and wildlife health are significant considerations in biosecurity, and especially in bioterrorism. Wildlife disease organisms such as bubonic plague, anthrax, botulism, and tularemia, or parasites such as *Baylisascaris*, may well be the weapons of choice in a bioterrorism attack. These and other pathogens or parasites cause *zoonotic* diseases (diseases that are transmitted to humans from animals). However, there are many more wildlife diseases that could be used as bioterrorist weapons that may not physiologically affect humans at all. Diseases such as avian influenza, exotic Newcastle disease, and brucellosis are contagious to non-human animals, and they could have devastating effects on livestock or poultry, either by causing infections that result in the destruction of herds or flocks or by causing even a minor outbreak of reportable diseases that could cause an entire region to be quarantined or to lose its markets. The use of such bioweapons could cripple our food supply and agricultural economy.

Wildlife may also be used as dispersal vehicles for weaponized pathogens, both

those occurring naturally in wildlife populations and those deliberately introduced to free-roaming animals. Since 1999, we have seen West Nile virus (WNV) spread from its point of initial discovery within the U.S., in New York City, across North America, Central America, and the Caribbean, as a result of the normal migration of birds. We have no reason to believe that other, far more deadly, diseases could not similarly spread, affecting entire ecosystems, our food supply, or the health of our human populations in a short time. The spread of Lyme disease and rabies, two other diseases affecting both humans and domestic animals, is linked almost exclusively to wildlife, even though actual human exposure may be from ticks or domestic animals that have been infected once the disease is introduced to a community.

As was the case with WNV, wildlife may be the first indicators of the presence of emerging diseases. Scientists are now conceding that, by monitoring wildlife health, we may be able to better understand how a disease like WNV is spread and the connections between intermediate hosts, in this case birds, and the primary vectors of the disease, mosquitoes. Most scientists have conceded that attempts to control WNV at this point would be like trying to put smoke back into a cigarette, but studying the spread of this disease may put us in a better position to respond to the next threat on the horizon, including threats to biosecurity and deliberate bioterrorist attacks. While it is encouraging that

scientists and many public agencies are devoting a great deal of energy to studying how WNV has exploded onto the North American continent, this study is still essentially a retrospective examination. The challenge will be to create a surveillance system that can detect and identify disease in the early stages, **before** it spreads out of control.

Across North America, there are examples of new wildlife diseases that have implications for environmental health and safety, human health, and the integrity of our food supplies. Chronic Wasting Disease (CWD), rabies, Lyme disease, foot and mouth disease, bubonic plague, anthrax, epizootic hemorrhagic fever, and avian influenza are but a few such diseases presently on the public policy agenda. Unfortunately, in too many cases, by the time an outbreak of one of these diseases has been detected, it is far advanced and control is extremely difficult, if not impossible. There simply is no early warning system in place.

Greater Risk Demands Greater Surveillance

Many factors contribute to the increasing risk of emerging diseases. Global environmental change, habitat alteration and destruction, loss of biodiversity, globalization of trade and travel, and the introduction of invasive species and pathogens are but a few of the challenges facing those whose job it is to protect the biosecurity of our nation and our planet. Organisms, diseases, parasites, and pathogens can all now travel around the globe in a matter of hours. Surveillance methodologies of the past are no longer adequate to deal with the emerging threats.

Current wildlife health assessments conducted by most government agencies and academic researchers seem to look primarily for population impacts and gross indicators of environmental change.



While the Wildlife Center of Virginia had no confirmed cases of West Nile Virus in 2002, this year it has had 37 confirmed cases, most in red-tailed hawk and great horned owl patients. Bald eagles and other raptor species have also been affected by West Nile Virus.

Unfortunately, by the time a disease has an impact on a population or species, it has spread to the point where mitigation or control is extremely challenging, if not entirely impossible. In the United States, there is no centralized system for identifying priority biological threats or compiling information on them—at least not where wildlife is concerned. A diverse array of agencies and institutions may well detect an environmental problem, or the occurrence of a particular disease in wild animals, each using its own techniques or methods. However, there are no effective systems in place through which that information can be widely disseminated to all who may need it, nor are there contingency plans in place to respond to outbreaks.

Cooperation Is Not a Simple Matter

While it may seem to be a straightforward matter for individuals and agencies to share information or to establish coordinated surveillance networks, the political and economic realities make it an extremely challenging undertaking. State and federal wildlife agencies are typically responsible for managing wild birds, mammals, reptiles, and amphibians in the United States. However, the Bush Administration has named the Department of Agriculture (USDA) as the lead agency in the management of **all** animal diseases in the arena of border security and food safety. This situation creates a dy-

namic in which conflict is inevitable. An agency whose primary expertise is in the management of livestock and poultry health is now responsible for protecting the nation

from the introduction of diseases that may be carried by parrots, pets, or exotic fish. The recent outbreak of monkey pox in the Midwest was traced back to a single Gambian giant pouched rat that presumably



passed through one of the nation's inspected ports of entry. This clearly raises the possibility that the current inspection system is not fully effective.

To date, there is no universally accepted set of priorities or protocols with which to respond to a wildlife disease event or biosecurity threat. Planning for a disease outbreak in wildlife is outside the training of most wildlife managers, so many states are simply unprepared to do this type of contingency planning. When a disease incident takes place, such states are forced into a reactive mode and are hard-pressed to mount a scientifically sound response. In such cases, the urge to do something can be overwhelming, even if the outcome or effectiveness of the action is not fully understood.

In Wisconsin, for example, the recent outbreak of CWD in white-tailed deer triggered the state-sponsored slaughter of 25,000 animals across five counties, a desperate attempt to eliminate a disease threat by eliminating all of the animals that could contract the disease. However, there is no scientific evidence that such drastic measures are effective. Little is known



Wildlife rehabilitators are uniquely positioned to detect the occurrence of certain diseases at the early stages of an outbreak, when an effective control response may still be possible.

about the disease, including how it is spread, though some researchers speculate that it can spread via a contaminated environment. If this is true, then as soon as deer return to the area, the disease may reoccur. In their haste to respond to the intense public and political pressure to stop this disease that threatened the state's multi-million-dollar deer-hunting economy, the Wisconsin Department of Natural Resources also apparently did not stop to figure out how it was going to dispose of 25,000 deer carcasses, let alone how it was going to pay for the disposal. The result was a potentially more daunting problem than the disease itself. The agency ended up leasing refrigerated trailers and storing the carcasses until a permanent solution could be hammered out.

At the federal level, wildlife agencies such as the U.S. Fish and Wildlife Service (USFWS) have the mandate and expertise to manage species and populations of wildlife for public and environmental benefit, yet they have very limited resources or authority to manage wildlife disease. For the USDA, there seems to be a great deal of money to study animal health, but the conservation of wildlife is neither its top priority nor its mandate. This agency's job is to promote American agriculture and to protect our food supply. It is not hard to imagine what could happen to a wildlife species or population that was seen as a threat to the poultry industry, for example. The controversial Wildlife Services Division of USDA has a long history of trying to eradicate wildlife that is seen as competing with agriculture. Wildlife doesn't vote, but farmers, ranchers, and investors do.

Resources and Current Methods are Limited

The scientific community agrees that more *targeted surveillance* is necessary to better understand existing wildlife diseases. This involves the intensive monitoring of animal health in areas where disease outbreaks are anticipated or among species or populations vulnerable to specific priority diseases. For example, in 2003, there has been a dramatic increase in the testing of certain bird species for



TWO TYPES OF SURVEILLANCE

Among the many types of animal health surveillance and disease monitoring systems and methodologies, two broad categories illustrate clearly the different approaches that can be taken: *scanning surveillance* and *targeted surveillance*. The first looks at the big picture in hopes of spotting a problem anywhere. The second looks in specific areas where the probability of a problem is thought to be the greatest. It doesn't matter what is being monitored—health syndromes, specific diseases, genetic issues, etc.—surveillance can be done through a wide-angle lens or under a microscope.

SCANNING SURVEILLANCE takes the broad view. It can be equated to quality control monitoring in a factory. A random sampling of all products is tested for quality as a means of assuring that all products are up to a predetermined standard of quality. This is a game of odds and probability. In wildlife health monitoring, scanning surveillance would be conducted by randomly examining a sample of animals from an area to see if the population is healthy.

TARGETED SURVEILLANCE is more focused. This method might concentrate the monitoring on a particular region or species where a known problem is thought most likely to occur, or where there is the greatest public interest. Or the surveillance might be looking for the occurrence of a single disease or abnormality. An example of this would be the testing of crows and blue jays for West Nile virus. While other animals are known to be able to contract the virus, corvids, the family of birds that includes crows and jays, seem to be the most susceptible. And while crows and jays are certainly susceptible to other diseases, the testing is for one particular viral infection. This is essentially double targeting. Therefore, when public health officials want to determine the spread of their target disease, they target their surveillance on the species most likely to carry or contract the disease, or in a region thought to be a hotspot for the disease.

Neither system is all good or all bad. Each has its place. Ideally, both approaches should be employed for a comprehensive understanding of wildlife health. The new syndromic surveillance system being designed by the Wildlife Center of Virginia is primarily a scanning surveillance network in that all species of wildlife will be entered into the database, and input will eventually be received from sources nationwide. Also, the system will collect data on all health syndromes, not just a single disease or injury. However, the breadth of the scan will be far more focused than conventional wildlife health assessments, because it will collect disease data from animals with some sort of health problem, as evidenced by the fact that they were presented to a wildlife care facility in the first place. Common sense suggests that if you are looking for a new wildlife disease or an outbreak of a known one, you are more likely to find it in a group of sick animals than in the general wildlife population.

Once this scanning surveillance system detects a problem, it will be able to trigger highly targeted follow-up surveillance that can concentrate on the regions or species most likely affected, or on the new disease itself. Once the surveillance system is fully operational, and contingency planning for the array of disease events, biosecurity threats, or bioterrorism attack is put in place, the result could be the best of both worlds.

WNV, because the spread of the disease has become a matter of national concern. During the 2002 fall hunting season, most states conducted sampling of harvested deer, in an attempt to detect the presence of CWD. Even with these priority wildlife disease issues, the driving interest is human health, and the resources are still rather limited.

Unfortunately, neither wildlife nor agriculture agencies have the capacity or funding with which to effectively monitor individual animal health on a broad scale. This is partly due to the fundamental inefficiency with which wildlife health studies have traditionally been conducted. When human health organizations such as the Centers for Disease Control and Prevention (CDC) or the World Health Organization want to determine what is making people sick, they look where sick people go, hospitals and primary health care facilities. When wildlife management agencies want to assess wildlife health, they go out into the woods! There is something counter-intuitive about that.

An Untapped Data Source Is Available

There is a significant resource with the potential to greatly advance our understanding of wildlife health issues that has remained largely untapped: wildlife veterinarians and the wildlife rehabilitation community.

Wildlife hospitals and the wildlife rehabilitators essentially fulfill the same role for wildlife that human hospitals do for people. When the public encounters sick wild animals, each year hundreds of thousands of them take those animals to a local wildlife hospital or rehabilitation center. This creates the potential for these facilities to play a critical role in filling the knowledge gap in wildlife disease surveillance and biosecurity monitoring. The loose network of thousands of individuals and hundreds of organizations that form this community already focus on the health of individual animals and see hundreds of thousands of patients annually. Wildlife rehabilitators are uniquely positioned to detect the occurrence of certain

diseases at the early stages of an outbreak, when an effective control response may still be possible. Monitoring and reporting the emergence of wildlife disease could be the most important contribution to society that the wildlife rehabilitation community has ever made.

Obstacles in the Path of Progress

Unfortunately, the wildlife rehabilitation community is not presently ready to take on such an important responsibility. Before the data collected by wildlife rehabilitators can be useful on a broad scale, it must be collected in a uniform and scientifically valid way. Better diagnostic testing, environmental and geographic information, and more timely reporting will be required before the wildlife management and scientific communities will accept information from wildlife rehabilitators. Those collecting and reporting this kind of information will have to establish that they are qualified to do so.

Wildlife rehabilitators are all too familiar with the problems that can exist in the relationship between wildlife agencies and wildlife caretakers. Agency personnel are often traditionally trained biologists who have been taught that individual animals do not matter. Therefore, they often dismiss the perspective and expertise of those who focus on individual animals. Conversely, wildlife rehabilitators often do not appreciate that the mandate and responsibility of agencies is to care for the entire population of wildlife rather than to focus on the welfare of the individual creatures within their jurisdictions.

Overcoming these challenges and building new relationships will not be easy, but it is possible. Many individuals and organizations within the wildlife rehabilitation and conservation medicine community have forged productive relationships with wildlife management agencies and professionals. The time has come to build upon these exemplary relationships and to broaden the cooperation and collaboration between wildlife rehabilitators and wildlife management agencies across the board. The common threats posed by biosecurity risks, bioterrorism, the emergence of new wildlife diseases, and the loss

of control of wildlife management to agriculture agencies confront wildlife agencies and wildlife rehabilitators alike. These two groups must recognize their shared interests and begin to work together as never before.

For this to happen, wildlife rehabilitators across North America must engage in scientific and public policy discussions, both within their own community and in broader scientific venues. Small organizations and individual wildlife rehabilitators must follow the lead of the large professional centers and national associations in the promotion of professional standards and the pursuit of excellence in patient care and tracking of trends. The fierce individualism and turf battles that too often characterize the wildlife rehabilitation community must give way to the movement to standardize practices, improve record keeping, and establish collective efforts to track wildlife health. The willingness of all members of the community to rise to this challenge will largely determine the fate of the animals in need of human foresight, planning, and care.

Those organizations with the expertise and resources necessary to participate in professional and public policy initiatives must share their knowledge and experience with others. They must work together to strengthen the capacity of all members of their community. The improvement of skills and the advancement of knowledge are no longer discretionary goals. The world has changed around us, and we must change with it.

New Tools and Systems Under Development

In the months ahead, new programs and initiatives will be established and made public; through these, wildlife rehabilitators can contribute information and observations in the battle to overcome emerging wildlife diseases,



Monitoring and reporting the emergence of wildlife disease could be the most important contribution to society that the wildlife rehabilitation community has ever made.

Continued on back page



REPORTS



Agency Reports to Congress Contradict Bush Administration's Anti-Endangered Species Act Claims, a study by Cornell University and scientists from the Center for Biological Diversity, analyzes four reports by the USFWS regarding the significance of designating critical habitat for endangered species. Species with critical habitat are twice as likely to be improving as species without it. The study is online at www.biologicaldiversity.org/swcbd/programs/policy/ch/index.html.

Cooling the Hotspots, from Audubon, provides a science-based roadmap that recommends immediate investments to protect ten critical areas from invasive species. States implicated include California, Colorado, Florida, Maryland, Mississippi, New Mexico, New York, South Dakota, Texas, and Washington. Read online at Audubon's invasive species website: www.stopinvasives.org.

Worldwatch Paper 166: Purchasing Power: Harnessing Institutional Procurement for People and the Planet, by Lisa Mastny, promotes the concept of encouraging large institutions to shift spending away from harmful goods and services to more environmentally friendly alternatives to benefit ecosystems and communities, while also saving money and sending a message to markets that more sustainable options are wanted. The 72-page report is available for \$5, either online or as a hardcopy at www.worldwatch.org/pubs/paper/166/.

Towards a Global Tree Conservation Atlas, a new report from the British government, assesses the declining health of the world's tree populations. The report is online at www.unepwcmc.org/resources/publications/treetlas.

American Rivers' annual Salmon Migration Report Card examines river conditions in the spring and summer of 2003, finding multiple failings. The report is online at www.amrivers.org/docs/Migration_Report_card_20032.pdf.

National Wildlife Refuges: Opportunities to Improve the Management and Oversight of Oil and Gas Activities on Federal Lands, a new

GAO report, finds that the government has not sufficiently protected wildlife sanctuaries from environmentally damaging effects of oil and gas drilling and that the USFWS lacks the expertise to effectively oversee oil and gas activities. Access the report online at www.gao.gov/atext/d03517.txt or search for the PDF version of this report at www.gao.gov (under report number "GAO-03-517") or order by phone (202)-512-6000.

The Art of Anonymous Activism: Serving the Public While Surviving Public Service, a new report by Public Employees for Environmental Responsibility (PEER), the Government Accountability Project, and the Project on Government Oversight, is a helpful guide for public employees who want to come forward about on-the-job wrongdoing or harassment, while avoiding retaliation from angry agencies seeking to hide their foibles and corruption. \$10.00. Order online at www.peer.org or contact PEER at 202-265-7337.

BOOKS



A Fierce Green Fire: The American Environmental Movement, Rev. Ed., by Philip Shabecoff, presents the definitive history of American environmentalism from its earliest days to the present and suggests what is needed now to counter the economic and ideological forces working against the environment and its defenders. This new edition includes an analysis of the current administration's efforts to dismantle a half-century of progress, as well as of the growing international effort to protect Earth's life-support systems and the ways in which the administration is seeking to undermine that effort. Island Press. PB, 352 pp. \$18.00. Phone 800-282-1302 or order online at www.islandpress.org.

Experiments in Consilience: Integrating Scientific and Social Responses to Biodiversity & Conservation Challenges, edited by Frances R. Westley and Philip S. Miller, tells the story of the Biodiversity Research Network's efforts to apply E.O. Wilson's idea that integrating knowledge and in-

sights from across fields such as the humanities, social science, and natural sciences is the key to solving complex environmental and social problems. Island Press. PB, 328 pp. \$35.00. Phone 800-282-1302 or order online at www.islandpress.org.

Ecosystems and Human Well-Being: A Framework for Assessment is a publication sponsored by Millennium Ecosystem Assessment, a four-year international work program designed to meet the needs of decision-makers for scientific information on the links between ecosystem change and human well-being. The book provides an overview of the project, defines its scope, and sets forth a baseline of understanding for participants to move forward. Island Press. PB, 212 pp. \$25.00. Phone 800-282-1302 or order online at www.islandpress.org.

Invasive Species: Vectors and Management Strategies, edited by Gregory M. Ruiz and James T. Carlton, presents extensive information and new analyses on vectors and vector management, assessing terrestrial, freshwater, and marine ecosystems for major taxonomic groups in a variety of regions throughout the world. Island Press. PB, 484 pp. \$40.00. Phone 800-282-1302 or order online at www.islandpress.org.

Land Conservation Financing, by Mike McQueen and Ed McMahan, provides a comprehensive overview of how successful land conservation programs were created, how they are funded, and what they have accomplished, giving detailed case studies from throughout the U.S. Island Press. PB, 212 pp. \$30.00. Phone 800-282-1302 or order online at www.islandpress.org.

New Economy of Nature: The Quest to Make Conservation Profitable, by Gretchen C. Daily and Katherine Ellison, uses case studies to describe the dynamic interplay of science, economics, business, and politics that is involved in establishing a new system of recognizing the economic value of natural systems and the potential profits in protecting them. PB, 260 pp. \$15.00. Phone 800-828-1302 or order online at www.islandpress.org.



The National Wildlife Refuges: Coordinating a Conservation System through Law, by Robert L. Fischman, examines the laws and policies governing management of the national wildlife refuges, offering a practical description and analysis of the management regime outlined in the 1997 National Wildlife Refuge System Improvement Act. Island Press. PB, 224 pp. \$25.00. Phone 800-282-1302 or order online at www.islandpress.org.

The Whaling Season: An Inside Account of the Struggle to Stop Commercial Whaling, by Kieran Mulvaney, recounts voyages undertaken by Greenpeace to attempt to stop, through nonviolent means, the whale killing by a particular fleet in the waters surrounding Antarctica. The author, who led four such expeditions as a campaigner and coordinator, gives a behind-the-scenes look at the hazards and triumphs of these activist expeditions and explores broader scientific and political efforts to conserve marine life. HC only, 304 pp. \$26.00. Phone 800-828-1302 or order online at www.islandpress.org.

Rivers for Life: Managing Water for People and Nature, by Sandra Postel and Brian Richter, explains why restoring and preserving more natural river flows are key to sustaining freshwater biodiversity and healthy river systems. They describe innovative policies, scientific approaches, and management reforms for achieving those goals. Island Press. PB, 220 pp. \$25.00. Phone 800-282-1302 or order online at www.islandpress.org.

In a Perfect Ocean: The State of Fisheries and Ecosystems in the North Atlantic Ocean, by Daniel Pauly and Jay Maclean, draws on a wide range of studies, as well as original research, to analyze 14 large marine ecosystems. Includes an original series of maps and charts illustrating where the effects of

over-fishing are the most pronounced and highlighting the interactions that contribute to the overall decline of the North Atlantic's ecosystems. PB, 160 pp., \$25. Island Press: 800-828-1302 or www.islandpress.org.

Alternative Futures for Changing Landscapes: The Upper San Pedro River Basin in Arizona and Sonora, by Carl Steinitz, Hector Arias, et al., presents a detailed case study of one alternative futures project, which sought to balance the needs of the natural environment with those of a local human community. Describes how the research team, working with local stakeholders, developed a set of scenarios that encompassed public opinion on the major issues facing the area. PB, 200 pp., \$30. Island Press: 800-282-1302 or www.islandpress.org.

Seeds of Deception: Exposing Industry and Government Lies About the Safety of the Genetically Engineered Foods You're Eating, by Jeffrey M. Smith, is a groundbreaking expose, revealing the author's experiences while employed by a laboratory that tests for the presence of genetically modified foods. Founder of the Institute for Informed Citizens, the author seeks to spread awareness of the serious health problems associated with genetic engineering of foods and of how to protect oneself. Yes! Books. PB, 240 pp. \$17.95. Available from Chelsea Green Books 800-639-4099 or online at www.chelseagreen.com.

The Lost Language of Plants: The Ecological Importance of Plant Medicines to Life on Earth, by Stephen Harrod Buhner, is being heralded by some as the "pharmaceutical Silent Spring." An expose of the threat that the allopathic Western medical system poses to the health of the planet, the book thoroughly documents some hard truths about the state of the environment, health care, and cultural sanity. PB, 336 pp. \$19.95. Available from Chelsea Green Books at 800-639-4099 or online at www.chelseagreen.com.

Strangely Like War: The Global Assault on Forests, by Derick Jensen and George Draffan, exposes the escalating attack on the world's forests and serves as an essen-

tial handbook for forest and anti-globalization activists. PB, 160 pp. \$15.00. Available from Chelsea Green Books at 800-639-4099 or online at www.chelseagreen.com.

Animal Behavior and Wildlife Conservation, by Marco Festa-Bianchet, and Marco Apollonio, explores how knowledge of animal behavior may help increase the effectiveness of conservation programs. Conservation biologists, wildlife managers, and academics examine the importance of general principles, the role played by specific characteristics of different species, and the importance of considering the behavior of individuals and the strategies they adopt to maximize fitness. PB, 322 pp., \$35. Island Press: 800-828-1302 or www.islandpress.org.

Community Forestry in the United States: Learning from the Past, Crafting the Future, by Mark Baker and Jonathan Kusel, clarifies the state of the community forestry movement and suggests a direction and process for its development. PB, 264 pp., \$25. Island Press: 800-828-1302 or www.islandpress.org.

OTHER



ARKive, a digital storage project undertaken as a not-for-profit initiative of The Wildscreen Trust, provides centralized public access to photos, films, and soundtracks documenting endangered and threatened species. Thoughtfully designed and tiered to be useful to all, from children to scientists, ARKive has already been recognized by The National Grid for Learning in the UK for its educational quality and content. Still a work in progress, the ultimate goal is to include the 11,000 animals and plants threatened with extinction, based on the World Conservation Union's Red Lists of Threatened Species. The primary website is at www.arkive.org with a special website for kids aged 7 to 11 at www.planetarkive.org and for teachers www.arkiveeducation.org. 

If you have a publication or website announcement, please phone (301) 258-3147 or e-mail bstallman@hsus.org.



WILDLIFE DISEASES, cont. from page 13

biosecurity, and bioterrorism threats. Among the most ambitious is the initiative of the Wildlife Center of Virginia (WCV). WCV is one of the world's leading teaching and research hospitals for wildlife and conservation medicine. Under the leadership of a group of highly qualified staff professionals and board volunteers, WCV is working to create an Internet-based wildlife disease surveillance network. With a variety of high-tech and geographic information system partners, WCV is building upon software and epidemiological database systems that were designed by the CDC. WCV has used this CDC platform for its own record-keeping for more than a decade, but the system must be strengthened and modified to allow multiple users to provide input and to gain access to the data for research purposes. Unlike current wildlife health database efforts that document past cases of disease after all diagnostics and testing are completed, this system will compile "syndromic" information, the primary health issues or symptom(s) that cause an animal to be presented to a wildlife rehabilitation center, as the animals come in the door.

Examples of such syndromes could be eye problems, skin lesions, or central nervous system disorders. While there can be many reasons for an animal to display problems with its nervous system—poisoning, trauma, disease, genetic defects—



Canada geese can be found on virtually every farm pond in most parts of the U.S. If they contract a disease that could affect poultry, for example, they will be targeted to protect economic interests.

there is simply not enough money or lab capacity to fully test every animal. However, over time, the general percentage of animals with that particular syndrome should be relatively constant. Before long, a baseline profile of health syndromes seen in wildlife care centers will be established. Then the system will watch for deviations from that normal baseline. If a spike in some particular health problem or suite of symptoms is seen, it could indicate a new disease outbreak or some sort of environmental event. These deviations will be immediately reported to relevant state and federal agencies and institutions, so that more intensive investigations and/or diagnostic testing can be directed where a deviation is detected, rather than spreading limited resources thinly, in hopes of detecting a problem as soon as possible.

WCV's syndromic surveillance system uses the same methodology that is used

in the surveillance of human health issues nationwide. The validity of the approach to disease detection has been proven through comparative studies in which the results of the surveillance of broad health syndromes were compared to the findings of the traditional diagnostic methodology for disease detection. Syndromic surveillance alone was less accurate in determining the precise prevalence of a given disease, that is, what percentage of the population was affected. However, in nearly all cases, the outbreak itself was detected and generally quantified. By combining this new approach with traditional research and diagnostic methods, a much more sensitive detection system will almost certainly be established.

WCV is currently in the testing phase of its new surveillance system, and the search for implementation funding is ongoing. Once fully operational, this system could be an unprecedented technological finger on the pulse of wildlife health.

The wildlife rehabilitation community has long claimed that the care of individual animals is significant and important. By embracing the scientific rigor that will allow its members to be sources of data on wildlife and environmental health, the community may soon have the chance to prove its point.

By Edward Clark, President, Wildlife Center of Virginia



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Wildlife Tracks

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