GIVING AWAY THE STORE

**FACING MOUNTING SCIENTIFIC CRITICISM,
THE FEDERAL GOVERNMENT CONTINUES TO APPROVE DEVELOPMENT
IN THE PANTHER'S LAST REMAINING HABITATS**

January 2005

The Florida Panther Society, Inc.

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FLORIDA WILDLIFE FEDERATION

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About the National Wildlife Federation
The nation's largest member-supported conservation education and advocacy group, the National Wildlife Federation (NWF) unites people from all walks of life to protect nature, wildlife and the world we all share. NWF has educated and inspired families to uphold America's conservation tradition since 1936. www.nwf.org

About the Florida Wildlife Federation
The Florida Wildlife Federation (FWF) is a statewide, nonprofit, citizens' organization, which promotes the conservation, restoration and sound management of Florida's fish and wildlife and their habitats. FWF also encourages the public's appreciation of Florida's environment through sustainable, resource-based outdoor recreation. www.flawildlife.org

About the Florida Panther Society
The Florida Panther Society (FPS), Inc. a nonprofit environmental group that provides a means of protection and support for the endangered Florida Panther. FPS works to protect panther habitat, reduce panther deaths on roads, and raise awareness of panther recovery needs through public education and outreach programs. www.panthersociety.org

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INTRODUCTION

The Florida panther is one of the most endangered mammals in the United States, with less than 100 individuals living in the wild. Its population has increased in recent years, thanks to the successful translocation of a related subspecies, the Texas cougar, into Florida to restore genetic diversity. But the primary threat to the survival of the panther is habitat loss and fragmentation, and this threat appears to be growing as development in southwest Florida sprawls eastward from the Gulf Coast to the peninsular interior.

The Florida panther is protected under the Endangered Species Act, one of the crown jewels of U.S. environmental law. This law requires federal agencies to protect and recover threatened and endangered species and to use the best available science in doing so.

This paper explains how the agency charged with the primary responsibility for implementing the Endangered Species Act – the U.S. Fish and Wildlife Service (FWS) – has rejected the best available science and instead employed unsound science in managing the Florida panther. Relying on this unsound science, FWS has approved extensive development within panther habitat that undermines the species' chances of survival and recovery.

This paper updates a January 2004 report (*Discrediting a Decade of Panther Science*, Kostyack and Hill 2004), that indicted FWS for failing to adopt the recommendations of its own Scientific Review Team. This Scientific Review Team, a group of leading independent scientific experts appointed by FWS, had issued a report in December 2003, identifying major flaws in the scientific methodologies used by FWS and pointing out how these methodologies were being improperly relied upon by FWS to justify authorizing habitat destruction. As of January 2004, FWS was refusing even to acknowledge the Scientific Review Team's work.

In the 12 months since the last report, FWS has continue using the discredited methodologies and has continued to ignore the Scientific Review Team's work. Moreover, the SRT's critique of FWS's methodologies has been reiterated and reaffirmed. First, in May 2004, FWS biologist Andrew Eller and the group Public Employees for Environmental Responsibility filed a Data Quality Act challenge showing how the "unsound science used and disseminated by the FWS has compromised panther recovery policy, population management, and [ESA] section 7 consultations during the past decade." (See Complainants' Brief, *Eller & Public Employees for Envtl. Responsibility v. Dep't of Interior* (May 4, 2004)). In August 2004, a federal judge held that FWS acted arbitrarily and capriciously in determining that impacts from a massive mining operation would not jeopardize the survival of the panther. (See *Nat'l Wildlife Fed'n v. Norton*, 332 F. Supp. 2d 170 (D.D.C. 2004)).

Despite the extensive criticisms, FWS has done little more than drag its feet. While the agency now concedes that it relied on bad science for about ten years, it refuses to acknowledge the harmful impacts this has had on the panther, and it refuses to take any corrective action. This paper offers recommendations on how FWS and other key actors can stop the massive habitat loss and put the panther back on a track toward recovery.

Role of Developers

A significant part of the story of the Florida panther is the role of developers, who have exerted substantial political pressure on agencies in rural southwest Florida. But this does not completely explain how and why FWS's decisions have become so unhinged from good science.

Time and again, FWS has approved development in "essential" panther habitat – i.e., habitat that FWS itself previously deemed essential to panther survival. Moreover, FWS has typically approved habitat destruction without ensuring that developers adequately avoid, minimize, or compensate for the harm caused.

History of Intense Scientific Controversy

The key to understanding what went wrong with panther management is to delve into the scientific controversy of the past decade. This part of the story begins with Dr. David Maehr, at one time considered a leading scientific expert on the Florida panther. In the mid-1990s, Dr. Maehr concluded his nine-year tenure with the Florida Fish and Wildlife Conservation Commission and wrote a well-received book on panther conservation, *The Florida Panther: Life and Death of a Vanishing Carnivore* (Maehr 1997). Since then, he has worked as both an assistant professor and as an environmental consultant for developers.

Over the past decade, Dr. Maehr wrote a number of papers on panther ecology that were peer-reviewed and published in reputable scientific journals. However, in recent years, the conclusions in these papers have faced an enormous amount of criticism. Independent scientists, both in wildlife agencies and in academia, have questioned the fundamental assumptions of virtually all of Dr. Maehr's recent work. For example, numerous biologists questioned and offered evidence to contradict Dr. Maehr's assumptions that the Florida panther is a forest obligate (i.e., only able to survive in forests) and that it rarely travels more than 90 meters from large patches of contiguous forest (Maehr and Cox 1995). In fact, as many have argued for years, the panther uses a wide variety of habitat types, including agricultural lands, and is not dependent solely on large forests.

This challenge to Dr. Maehr's work is no academic dispute. The findings of the Scientific Review Team are clear on what we know about panthers, what science is wrong, and even spell out recommendations for correcting the bad science.

Extensive Loss of Habitat

Developers in south Florida have used methodologies based on the questionable conclusions of papers written by Dr. Maehr to persuade FWS to reduce mitigation obligations under the Endangered Species Act. For example, Dr. Maehr's best-known methodology, the Panther Habitat Evaluation Model (PHEM) (Maehr and Cox 1995), enabled Lee County to win approval of the Daniels Parkway Extension, destroying or fragmenting roughly 2,000 acres of panther habitat. Adopting the PHEM methodology, FWS required Lee County to provide a mere 69 acres of land acquisition as compensation for the habitat lost to development. This level of mitigation was very convenient for Lee County – it was the exact amount that was already being required by the water management district to compensate for wetlands losses. Under Dr. Maehr's scientifically flawed methodology, this meager mitigation amount could be justified on the ground that virtually all of the habitat destroyed by the project was supposedly worthless to the Florida panther. (The project site was comprised primarily of agricultural lands and lacked a large contiguous forest.)

Using PHEM and similar habitat evaluation methodologies that wrongly treat the panther as a forest obligate, FWS has approved dozens of projects that destroy thousands of acres of panther habitat while requiring little or no mitigation. For years, independent scientists (as well as some within FWS itself) and conservation organizations provided scathing critiques of these methodologies to FWS officials. To date, FWS has never rebutted these critiques nor reversed its course.

Scientific Review Team

By 2002, criticisms of its panther management had forced FWS to appoint a Scientific Review Team (SRT). This team of four independent, highly qualified scientists was called on to review the scientific literature, interview the key players, and prioritize other panther related issues. The SRT issued its findings and recommendations in a final report in December 2003 (Beier et al. 2003).

In a lucid summary of the panther literature, the Scientific Review Team report thoroughly discredits PHEM and related methodologies. For example, the report shows that Dr. Maehr reached his conclusions by leaving out key data without acknowledging doing so – data that would have undermined his conclusions. The report also reveals Dr. Maehr characterized panther habitat use without acknowledging that the data on which he relies consists entirely of daytime resting points and does not account for nighttime movements. In summary, the SRT report highlights the dubious foundation of PHEM and raises serious questions about how FWS could have so heavily relied upon the methodology as the primary basis for its panther management decisions.

This report also raises tough questions about FWS's failures to act with respect to panther reintroduction. Since the early 1980s, panther recovery plans have stated that reintroduction of two additional populations is needed to ensure the cat's long-term viability. Yet, as the SRT report points out, progress on this front is dismayingly slow.

Not All Bad News

Despite these problems, the story of the Florida panther is not all bad news. This paper documents a number of the accomplishments in panther protection and recovery, such as the successful genetic restoration program and the increasing number of highway crossing tunnels that help reduce panther injuries and mortality from automobiles. Many of these successes should be attributed to dedicated professionals at FWS, Florida Fish and Wildlife Conservation Commission, and other federal and state agencies.

Although the full story of the Scientific Review Team report is not over, the appointment of the SRT in and of itself also must be considered a success for panther protection. Because the SRT report was written by scientists appointed by FWS itself – esteemed scientists with decades of experience with conservation and management of large predators - the agency can no longer claim that the debate surrounding panther science is a mere academic dispute. Rather, the Scientific Review Team calls upon FWS to stand up for good science by correcting scientifically deficient methodologies and proactively addressing imminent threats to the last remaining panther habitat.

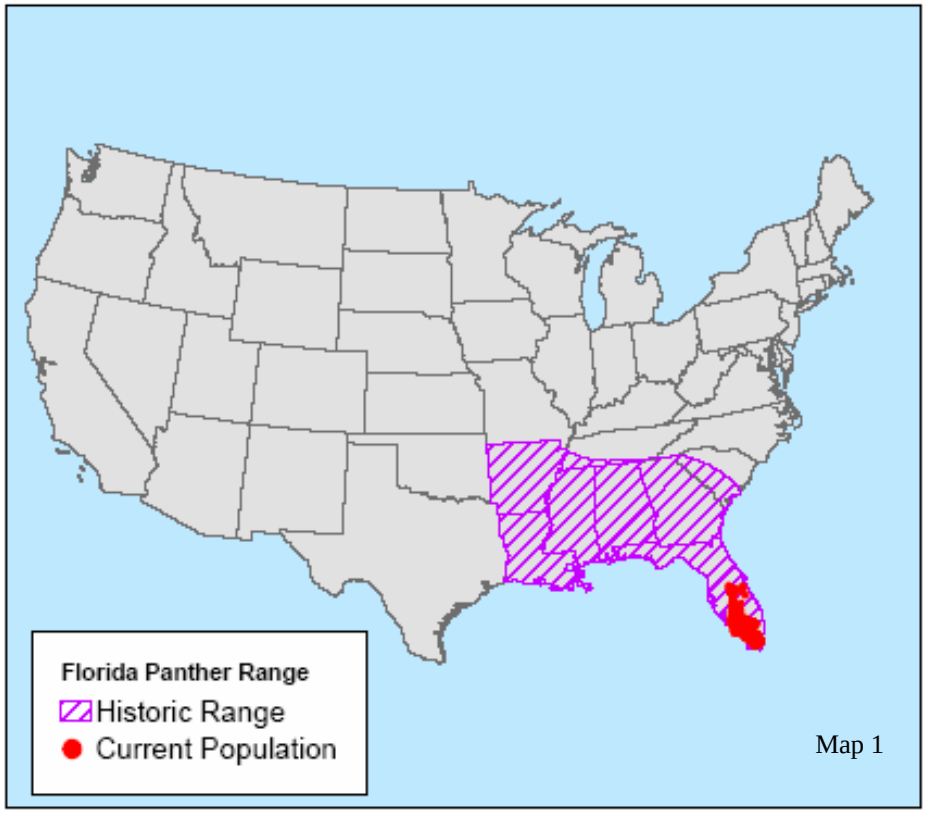
This paper calls upon the leadership of FWS and other key federal agencies to adopt sound science in the case of the Florida panther, even if the effect of doing so means that stronger protections must be put in place to counter sprawling development in panther habitat.

AUTHORIZING EXTENSIVE HABITAT DESTRUCTION

The Florida panther (*Puma concolor coryi*), a subspecies of the American mountain lion, once ranged across a broad swath of the southeastern United States, from eastern Texas and Arkansas to South Carolina and down to Florida. (See Map 1). Past eradication efforts and continuing habitat loss and degradation have isolated the remaining population in south Florida, primarily in the Western Everglades. As a result of this severe decline and continued threats to its survival, the panther was federally listed as endangered in 1967 and included on the first Endangered Species Act list when the law was passed in 1973. Less than 100 panthers currently survive in the wild (McBride 2002).

Continued loss and degradation of habitat are the most significant threats to the panther's survival. Roughly 50 percent of occupied panther habitat now consists of private lands (Logan et al. 1993), and a substantial portion of these lands are under threat of development. Although radio-collared panthers have been documented in 12 counties in south Florida (FWS 1999), roughly half of the occupied range lies in three counties south of the Caloosahatchee River – Lee, Collier, and Hendry. Lee County leads the country in economic growth and five south Florida metropolitan areas rank in the top 15 in overall growth (*Ft. Myers News* (Ft. Myers) Nov. 17, 2004). Thus, the future of this magnificent species hinges in part on land use decisions that must be made in the very near term. Unless protection measures are undertaken soon, the habitat upon which the panther depends for its survival will be lost to highways, subdivisions, strip malls, and golf courses.

Fortunately, the panther enjoys the legal protections of the Endangered Species Act. The ESA expresses the nation's commitment to ensure that human activity does not drive other species to extinction. In a remarkable display of wisdom, Congress recognized when it enacted the ESA in 1973 that taking care of other species responds to the ecological, educational, historical, recreational, scientific, economic, moral, and aesthetic interests of people (ESA § 2(a)(3)).



Map 1

Unlike many other environmental laws (including Florida's endangered species law), the ESA contains a set of clear mandates and prohibitions, and it provides citizens with tools to enforce them. For example, ESA § 7 prohibits the Army Corps of Engineers (the Corps) from issuing a permit for development in panther habitat unless the U.S. Fish and Wildlife Service finds that the project is unlikely to appreciably reduce the likelihood of panther survival and recovery. This is known as the ESA's "jeopardy" prohibition. ESA § 9 forbids any actions, federal or nonfederal, that "kill," "harm," "harass," or otherwise "take" the panther. Under ESA § 10, an exception to this "taking" prohibition is made for non-federal actions if FWS finds that the developer has prepared a habitat conservation plan (HCP) that minimizes and mitigates the harmful effects of the taking "to the maximum extent practicable," provides adequate funding to implement the HCP, and avoids jeopardizing the existence of the species. In undertaking ESA § 7 and § 10 reviews of development projects and making these crucial findings, FWS is required to employ the best available science (ESA § 7(a)(2)).

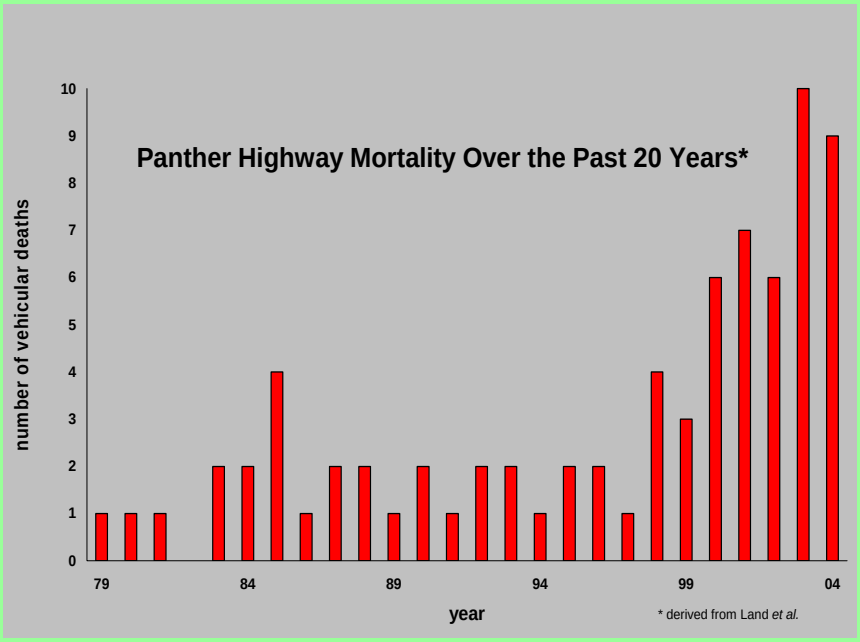
Unfortunately, despite the ESA's clear protective measures, FWS and the Corps have not faithfully implemented their ESA responsibilities for the Florida panther. In the past decade, these agencies have reviewed dozens of large-scale development projects pursuant to ESA § 7 – projects that together would destroy tens of thousands of acres of panther habitat. Despite the fact that FWS itself had previously deemed many of the project locations to be "priority" habitat that is "essential" to panther survival, the agencies have never found that any project would appreciably reduce the likelihood of panther survival and recovery.

In at least four instances, draft "jeopardy" opinions written by FWS biologists were overturned by agency officials (Ex. 68-70, 106, 180, 182-84, 285,289 (The Habitat, Florida Gulf Coast University, Timberland & Tiburon Subidivision, Treeline Boulevard, Airport

Threats to the Panther's Survival

Habitat loss, degradation, and fragmentation remain the most significant threat facing the panther today. Development-induced habitat loss throughout south Florida limits the carrying capacity of the land by reducing prey availability and the size and quality of feeding and denning areas. In turn, these factors exacerbate competition between cats over territory and mates, causing intraspecific aggression, one of the two leading causes of panther mortality (Land et al. 2004).

Vehicle mortality is the other leading cause of panther mortality (Land et al. 2004). Over the last 25 years, approximately 75 panthers have died in vehicular collisions, with more than half of those mortalities (41) occurring during the last 5 years. This recent trend may be attributed to increased traffic volume and/ or expansion of the panther population into areas with more roads and fewer crossings and other highway protections. Highway construction in panther habitat results not only in direct mortality but also in further habitat loss and fragmentation, cat displacement and avoidance, and associated human development (Ruediger 1998, cited in FWS 1999).



In addition to habitat loss, intraspecific aggression, and vehicle mortality, the panther is also threatened by its small population size (e.g., inbreeding depression), environmental contaminants (e.g., mercury), and disease (e.g. feline leukemia) (FPRT 2001, Land et al. 2004).

Ecological and Economic Reasons for Protecting the Florida Panther

Protecting the Florida panther is important for moral and aesthetic purposes. However, panthers also greatly contribute to the economic growth of south Florida, particularly through tourism and outdoor recreation activities. Economists and ecologists agree that there is a positive relationship between economic growth and the quality of the environment. A recent economic study commissioned by National Wildlife Federation and Florida Wildlife Federation (Bell 2002) estimates that 78 percent of tourists engage in activities supported by the abundant natural resources in Collier and Lee Counties. Thus, ongoing environmental deterioration not only negatively impacts Florida panthers, but will also lead to a decline in visitors and spending in south Florida.

By protecting critical panther habitat in south and central Florida, land managers help ensure that many other Florida species and the unique ecosystems of the area survive in the face of intense development pressures. Protecting panther habitat enhances our quality of life by providing rich soil, fresh air, clean drinking water, and flood protection (Terborgh 1988), thereby promoting nature tourism and outdoor recreation. In fact, the quality of natural resources is a leading indicator of economic growth (Bell 2002). Ultimately, habitat protection for the Florida panther results in higher environmental quality and ongoing ecological and economic success for south and central Florida.

Access Road, Daniels Parkway Extension)).[1] During the same time period, in reviewing projects not involving Corps permits, FWS never found that any project in panther habitat would "kill," "harm," or "harass" a panther, and never required a developer to submit an HCP before going forward.

The following are a few examples of projects that FWS and the Corps have allowed to go forward in Florida panther habitat, in dereliction of their ESA duties. Through these examples, a pattern emerges – the repeated failure by these agencies to ensure the use of sound science to protect the endangered Florida panther.

Florida Gulf Coast University: The Camel's Nose Under the Tent

In the early 1990s, a group of prominent developers in Florida decided to build a new state university on rural lands to the east of Fort Myers in southwest Florida. A problem arose: the preferred site, on land owned by a prominent developer, served as habitat for the Florida panther. FWS biologists issued a draft biological opinion stating that the project would jeopardize the existence of the panther (Ex. 98, 106-108, 110, 112-13). However, after extensive lobbying of top agency officials, in 1994 the developers ultimately secured a no-jeopardy opinion from FWS (Ex. 11, 92, 96, 114, 118, 124, 131, 135-6, 142-43, and 146). Although FWS admitted that the project "raises serious concerns regarding the future status of the Florida panther in south Florida, and specifically, in Lee County," it allowed the project to go forward without requiring any measures to compensate for the extensive loss of panther habitat (Ex. 11). A key to the developers' success was having obtained a letter of support from Dr. David Maehr, the noted panther biologist (Ex. 332 (letter of support); see also Def. Ex. 23 (Dr. Maehr resume claiming credit for "creative and successful permitting" on projects that include The Habitat, Florida Gulf Coast University, and most recently the Daniel's Parkway Extension)).

During the battle over what is now known as Florida Gulf Coast University, federal and state officials recognized that they had a problem: no one had ever clearly stated what habitat was needed for the panther to survive. Anticipating a wave of development into the rural lands of southwest Florida, in 1993 four agencies jointly released a Habitat Preservation Plan (HPP) finding that the panther's habitat had already dropped to the "minimum threshold levels necessary to prevent extinction," and identifying "priority" habitats they deemed "essential" for panther survival

[1] Exhibits (Ex.) referred to in this paper are government agency documents, on file with the lead author, that were submitted by the NWF team in support of its motion for summary judgment in *NWF v. Caldera*, Case No. 1:00CV01031(JR) (D.D.C.).

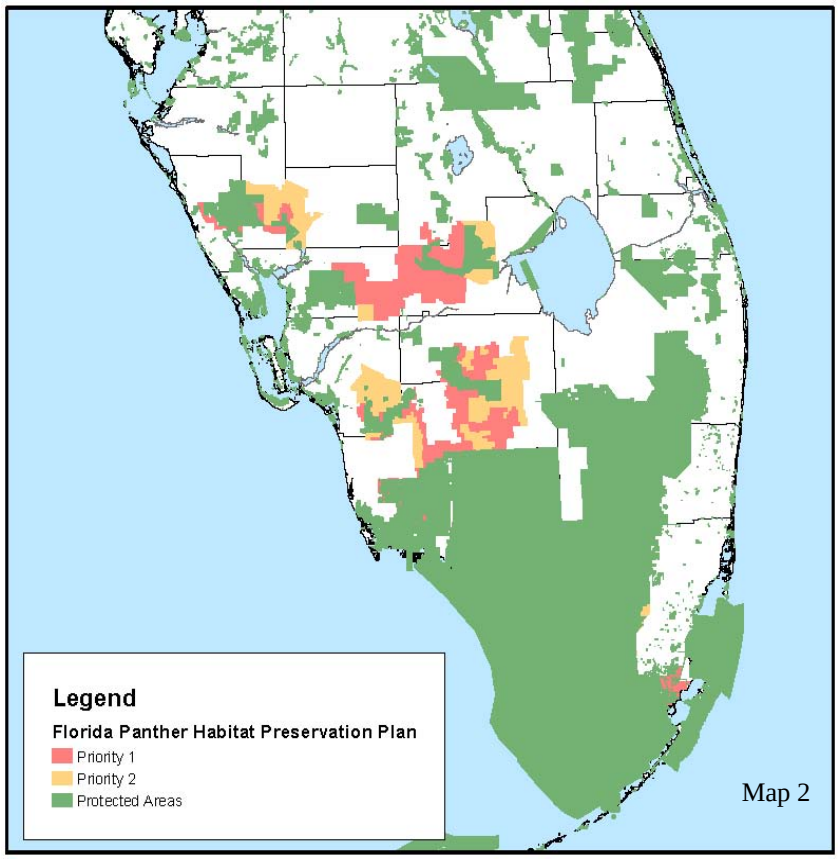
and in need of land acquisition or other conservation attention (Logan et al.1993) (see Map 2). In its 1999 recovery plan, FWS stated that protection of priority habitat is "essential to maintaining a minimum viable population of 50 breeding adult panthers in South Florida" (FWS 1999).

Daniels Parkway Extension: Rationalizing the Destruction of "Essential" Habitat

In the late 1990s, Lee County sought approval from FWS and the Corps for a new four-lane highway, called Daniels Parkway Extension, that would slice through rural lands that had been described in the HPP as priority habitat for the panther. According to FWS, the highway would destroy roughly 700 acres of priority habitat, and fragment another 840 acres from the CREW Ecological Study Area, an important breeding area for the panther (Ex. 60 at 4, 18). Additional acres of habitat, not quantified, would also be destroyed because they were now ripe for development as a result of the highway (Id. at 18; Ex. 309 at 4).

In December 1998, FWS issued a biological opinion stating that the project would avoid jeopardy if Lee County would commit to acquiring 265 acres of off-site habitat to compensate for the highway's harmful impacts. Lee County refused, stating that it would provide no compensation beyond the 69 acres that was already being required by the water management district to offset wetlands losses. The county hired lobbyists in Washington, D.C., to pressure top officials to agree to this approach (Ex. 288, 299, and 300). A key part of the county's lobby message was that Dr. Maehr had concluded, using his Panther Habitat Evaluation Model (PHEM) methodology, that a 69-acre habitat acquisition would fully offset the loss of habitat caused by the highway (Ex. 288). Under PHEM, there would allegedly be no net loss of panther habitat value or functionality because the 69 acres of land allegedly had habitat value equal to the roughly 2,000 acres of land to be developed (Id.).

In May 1999, FWS biologists expressed concern to agency officials that important habitats would be destroyed or fragmented under Dr. Maehr's methodology, and called for a jeopardy determination unless Lee County agreed to major compensation measures (Ex. 289). In August 1999, the National Wildlife Federation (NWF) and its state affiliate the Florida Wildlife Federation (FWF) sent a letter to



Map 2

FWS expressing alarm about a report that FWS officials would soon be approving the project, with virtually no mitigation, in reliance on the methodologies of Lee County's consultant, Dr. Maehr (Ex. 306). The letter identified several flawed assumptions with Dr. Maehr's methodology, including that it improperly assumed that agricultural lands had no value to the panther, even though such lands were known to support the panther's prey base.

A Corps biologist also criticized the PHEM methodology, noting that, among other things, it ignored the highway's effects on "naturally vegetated areas," including agricultural lands that contain prey for the panther (Ex. 309 at 4, 14. See also Ex. 59 at 40) (noting the agricultural habitats destroyed by the road were assigned no value, while agricultural lands to be acquired as mitigation were assigned a habitat value of 0.3).

Despite these criticisms, FWS and the Corps approved the Daniels Parkway Extension project, relying on the PHEM methodology to conclude that jeopardy to the panther would be avoided with an off-site acquisition of 69 acres of land.

Multiple Development Projects in and Around Priority Panther Habitat

In 2000, NWF, FWF, and other conservation groups sued FWS and the Corps, challenging the approval of the University, Daniels Parkway Extension and 21 other development projects in and around priority panther habitat. The NWF team argued that the two agencies were violating the ESA by ignoring the best available science, including the HPP and FWS's own 1999 recovery plan update, both of which characterized priority habitats as essential to the panther's survival (Logan et al 1993 and FWS 1999). It also alleged that the agencies were disregarding the cumulative effects of piecemeal development in panther habitat, and that the 23 projects alone had resulted in over 5,000 acres of habitat destruction.

Unfortunately, in 2002 the court dismissed the case on procedural grounds, finding, in essence, that the case was framed too broadly. The fundamental scientific issues raised by the case - whether FWS and the Corps had failed to use the best available science by continuously allowing destruction of priority habitats that FWS previously had deemed to be essential (as alleged by the NWF group), or whether the lands in question could be dismissed as having little habitat value under the PHEM methodology (as alleged by the government and the developers) – were never addressed by the court.

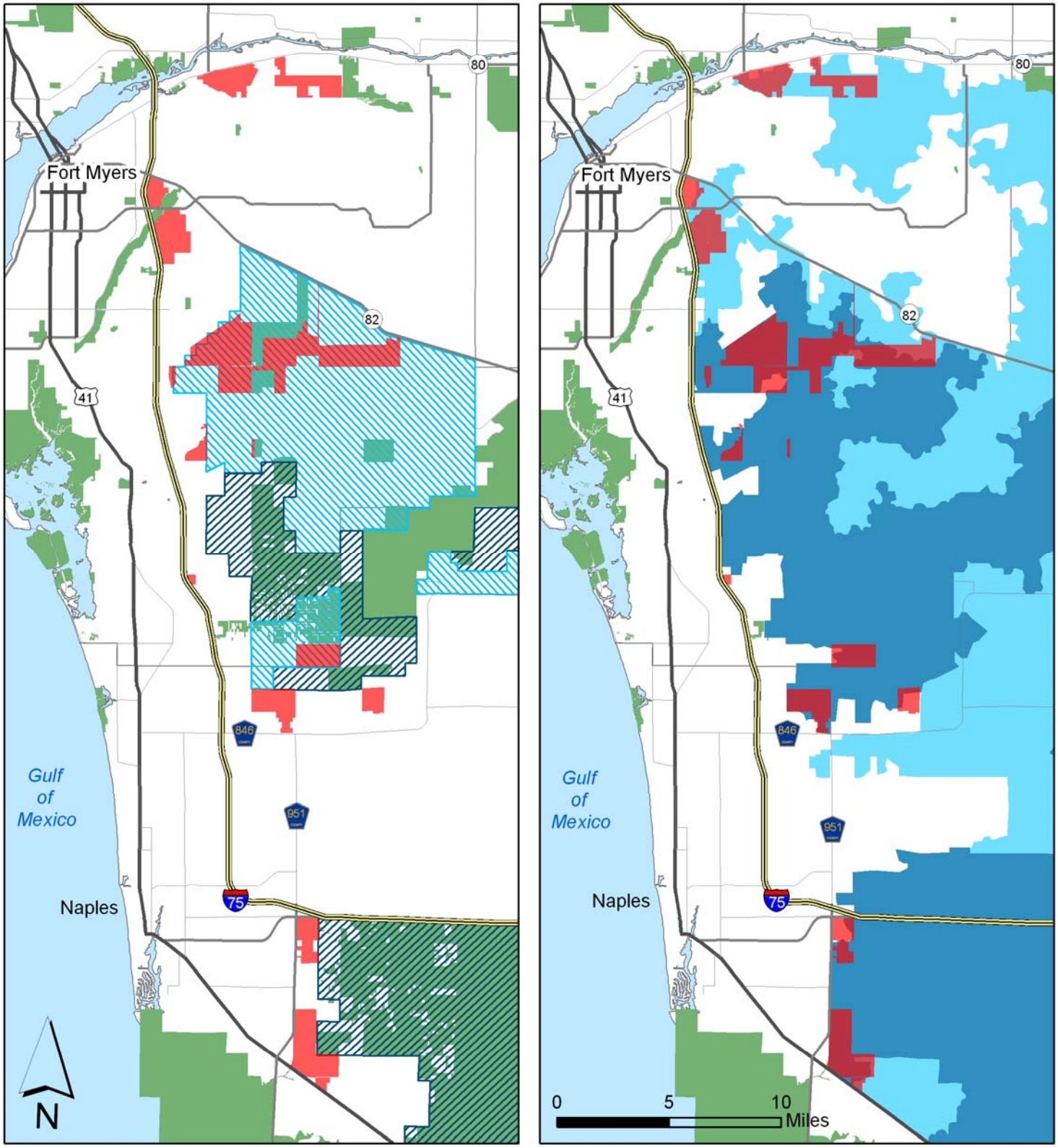
After this 2000 case was filed, FWS continued to allow development throughout panther habitat without correcting its scientific flaws or engaging in meaningful impact analyses. For example, since June 2000, FWS has issued 20 additional biological opinions allowing development throughout valuable panther habitat (BiOps on file with authors; see Map 3). In part, to address this cumulative habitat loss, in 2003, NWF and its partners filed two new panther cases in federal court, raising the same substantive concerns, while avoiding the procedural problem encountered in the earlier case.

5,200 Acre Rock Mine in Essential Panther Habitat

The first case, filed by NWF, FWF, and the Florida Panther Society, challenged approval of a 5,200 acre mine in priority panther habitat. FWS justified approval of this massive mining operation by arguing that the mining company, Florida Rock Industries, Inc., would compensate for this loss by setting aside a mere 800 acres for panthers. FWS acknowledged that at least 8 panthers have been found on or near the project site (BiOp, Jan. 30, 2002) representing approximately 10 percent of the entire south Florida panther population.

To overcome FWS biologists' resistance to the mine, known as Fort Myers Mine #2, Florida Rock Industries lobbied FWS officials in Washington, D.C. and Atlanta (see, e.g., Letters from Florida Rock Industries to Members of Congress, and from Members of Congress to FWS's Washington, D.C.

USFWS Biological Opinions (6/00-Present)



Legend

- Biological Opinions
- State of Florida Managed Areas

Florida Panther Habitat Preservation Plan

- Priority 1 Panther Habitat
- Priority 2 Panther Habitat

MERIT Conservation Strategy

- Primary Zone
- Secondary Zone

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Map Created with ESRI ArcGIS 9.0
Using data provided by Florida Fish and Wildlife Conservation Commision, Florida Natural Areas Inventory and Florida Geographic Data Library

Map 3

and Atlanta Offices, on file with the authors). In addition, Florida Rock sent FWS an analysis of the project prepared by Dr. Maehr. Dr. Maehr acknowledged that the project site "overlaps extensively" with mapped areas characterized as important to the panther by the Florida Fish & Wildlife Conservation Commission (Cox et al. 1994), and he conceded that these maps represented the best available scientific information. Nonetheless, he concluded that it was "unlikely" that the mine would "negatively affect the property's long-term ability to support the panther." According to Dr. Maehr, the land where the mine would be built is largely agricultural and "panthers avoid such herbaceous habitats." (See Sept. 7, 2000, Letter from D. Maehr to K. Passarella).

In January 2002, FWS approved the project. (BiOp, Jan. 30, 2002). NWF, FWF, and the Florida Panther Society wrote to FWS, explaining that it failed to address the science showing that panthers in fact use diverse habitats, the project site's priority status under the FWS's recovery plan, and the cumulative effects such projects will have on the panther. These groups requested that FWS reinitiate consultation with the Corps and reevaluate its approach. This request was denied. On February 6, 2003, in reliance on FWS's biological opinion, the Corps issued its permit for Fort Myers Mine #2 (Feb. 6, 2003, Corps Permit and Environmental Assessment).

In August 2004, the U.S. District Court for the District of Columbia ruled that FWS's conclusion that this massive mine would not jeopardize the panther's survival was "arbitrary and capricious" (*Nat'l Wildlife Fed'n v. Norton*, 332 F. Supp. 2d 170 (D.D.C. 2004)). The court held that FWS did not adequately consider the cumulative impact from this and other such projects in panther habitat. Moreover, the court noted that FWS failed to explain how the science comported with its no jeopardy conclusion. Because the Corps issued its permit based on this arbitrary "no jeopardy" finding, the court invalidated both agency decisions and remanded each for reconsideration (Id.). Although FWS has not yet issued its revised panther impact analysis, this analysis—as well as all future panther analyses—must now reconcile permitting decisions with a regional panther conservation strategy.

Bowing to Political Pressure, Rationalizing with "Science"

Time and again, these examples show that when FWS has been called upon to protect panther habitat from proposed development projects, it has allowed the projects to go forward with little or no mitigation. FWS has faced enormous pressure from politically-connected developers to approve their projects, and it has repeatedly bowed to that pressure. The ESA provides important checks and balances to prevent powerful developers from using their clout to secure projects that undermine species conservation. As noted above, it requires that federal agencies conserve endangered species using the best available science

(ESA § 7) and, in tandem with the Administrative Procedure Act, it allows citizens to overturn arbitrary decisions in court (ESA § 11). However, this system of checks and balances has broken down in the case of the Florida panther, largely due to the agencies' ability to rationalize its decisions with Dr. Maehr's PHEM and related methodologies.

INACTION IN THE FACE OF MOUNTING SCIENTIFIC CRITICISMS

A series of scientific reports and legal and Congressional actions have forced FWS to finally distance itself from the PHEM habitat evaluation methodologies. Unfortunately, although independent scientists and others have identified steps that could be taken to ensure that unsound science does not continue to infect panther conservation policy in the future, FWS has not changed any of the permitting practices or procedures that have proved so harmful to the Florida panther.

The beginning of the end for the PHEM methodologies was in 1999, around the time that the NWF team announced its litigation plans. Apparently in response to the NWF 60-day letter of intent to sue, U.S Fish and Wildlife Service formed a new "panther subteam" of the Multispecies Ecosystem Recovery Implementation Team (MERIT) for south Florida's listed species, and charged the team with developing a landscape level strategy for the conservation of the Florida panther population that could be applied in the regulatory context (See Int. Def. Ex. 6 at 2, FWS meeting minutes stating that the subteam was formed by FWS to address need for "discrete maps that will have application as regulatory tools").

Four individuals with panther-related expertise were appointed to the subteam: veteran panther houndsman and field biologist Roy McBride; Big Cypress National Preserve field biologist Deborah Jansen; panther modeler from the University of Tennessee, Jane Comiskey; and biologist/consultant Dr. David Maehr. The subteam also included individuals with other areas of expertise, such as Population Viability Analysis and Geographic Information Systems modeling, who relied upon the four panther experts for information about panther behavior, habitat use, and interpretation of telemetry data.

The debates within the MERIT panther subteam revealed a serious fault line within the scientific community. On one side was Dr. Maehr, with nearly a decade's worth of peer-reviewed, published papers on panther biology, who argued that the Florida panther is a forestcentric animal that rarely wanders more than 90 meters from large forest patches. His PHEM model effectively rules out the need for developers to protect or fully compensate for the loss of any habitats other than forest patches larger than 500 km^2.

On the other side were McBride, Comiskey, and Jansen as well as FWS biologists. McBride provided the subteam with three field reports that brought years of first-hand experience to bear on the question of panther demographics and habitat use (McBride 2003, 2002, 2001), challenging the PHEM concept of panther habitat suitability. In 2002, Comiskey, McBride, and Everglades National Park biologist Oron Bass, Jr. collaborated on a seminal paper critiquing the assumptions underlying PHEM (Comiskey et al. 2002). The group argued that the panther is a habitat generalist, using and benefiting from the mosaic of habitats within extensive home ranges, countering Dr. Maehr's contention that the panther is a forest obligate. They found that the forest obligate theory was based on a biased sample of the available panther data, failure to identify location error, and incorrect use of daytime telemetry to make inferences about panthers' nighttime movements.

FWS Chooses the Side of Discredited Science

Ignoring even their own staff biologists' concerns, FWS officials elected to continue using the PHEM methodology. In multiple subsequent biological opinions, FWS approved development projects in panther habitat and required little or no mitigation for the resulting habitat destruction and fragmentation. It rationalized its failure to protect panther habitat by suggesting that, as argued by Dr. Maehr, habitat is of little value to the panther without large contiguous forests. (BiOp for Florida Rock Industries Fort Myers Mine #2, Jan. 30, 2002).

Senator Lieberman Weighs in

In 2002, National Wildlife Federation, Florida Wildlife Federation, and the Council of Civic Associations issued a report entitled *Road to Ruin*, detailing panther habitat destruction from FWS's and the Corps' refusals to address the cumulative effects of development in southwest Florida (Goldman-Carter et al. 2002). Citing the evidence in this report, on August 7, 2003, Senator Joseph Lieberman (D-CT) sent letters to the agencies with detailed questions about the agencies' failures.

In October and November, 2003, respectively, the Corps and FWS responded, in essence, that Senator Lieberman's concerns were unwarranted. FWS acknowledged that it used Dr. Maehr's methodologies in determining the responsibilities of permit applicants. However, it did not acknowledge that these methodologies were in any way controversial. (Nov. 11, 2003, Letter from FWS to Sen. Lieberman)

Findings of the Scientific Review Team

In response to the burgeoning scientific issues, FWS and Florida Fish and Wildlife Conservation Commission agreed to convene an independent team of scientists. In April 2002, in order to review the scientific literature, the two agencies assembled the Scientific Review Team (SRT), consisting of four individuals (Dr. Paul Beier, Dr. Michael Vaughan, Dr. Michael Conroy, and Dr. Howard Quigley) with diverse expertise in panther ecology and related fields. After extensive study, written questions, and interviews with many of the key players, the SRT issued a draft report in July 2003 and the final report in December 2003 (Beier et al. 2003).

The SRT report is a powerful indictment of the science underlying the PHEM methodology. By inference, the report also raises serious questions about (1) the system of checks and balances that should have prevented or corrected serious errors in such a visible, well-funded, and well-staffed recovery effort and (2) the scientific integrity of officials at FWS and the Corps, the two agencies that elected to use the PHEM methodology to justify extensive destruction of panther habitat while refusing to respond to critiques of that methodology from reputable scientists (including agency staff) and conservation organizations.

The SRT analysis of panther literature is quite detailed and cannot be fully summarized in this brief report. The SRT explored the methodologies of virtually every prominent contemporary scientist that has published work on Florida panther habitat, prey, genetics and biomedical issues. Because Dr. Maehr is the most frequently-published panther scientist and the most controversial one, the SRT focused extensively on his work. Among other things, the SRT report (Beier et al. 2003) finds:

"[T]he most influential paper on panther habitat use (Maehr and Cox 1995)" excluded data from roughly 6,000 radio telemetry locations without acknowledging doing so. This was "the most serious case of selective use of data," creating "serious bias" in the paper's conclusions (Id. at 4)

The PHEM model for deciding panther mitigation relies on several conclusions from the Maehr and Cox 1995 study that are "unsound." "Particularly unsound conclusions" are that panthers are reluctant to use

areas farther than 90 meters from forest cover, panthers require forest blocks greater than 500 km^2, and panthers are forest obligates (Id. at 8).

Dr. Maehr's assertion that panthers avoid traveling more than 90 meters from forest is based on telemetry data collected only during daytime hours, even though the panther is most active at night. Dr. Maehr has repeatedly failed to acknowledge this crucial limitation in his data (Beier et al. at 7) – a fact that the SRT referred to as "disturbing" in its draft report (Id. at 7).

Based on these and other methodological flaws, panther managers should "cease" using the PHEM model and Dr. Maehr's recommendations regarding both panther travel distance from the forest and minimum forest patch size (Id. at 19, 69).

Maehr's population viability analysis, which concludes that the panther has a virtually 100 percent probability of persistence for 100 years, lacks the necessary sensitivity analysis. For example, no such analysis was done concerning Maehr's projection of high (80 percent) kitten survival. The data suggest that if kitten survival were less than 60 percent, the panther population would experience negative growth rates and rapid extinction (Id. at 29).

A MERIT Subteam member and two FWS biologists have taken a close look panther habitat evaluation (Comiskey et al., 2004, "Evaluating impacts to Florida panther habitat: how porous is the umbrella?") Their paper examines how the errors in Maehr and Cox (1995) gave rise to flawed PHEM rules in Maehr and Deason (2002). Application of PHEM to the Daniels Parkway Extension project is described, for which "no net loss of habitat" was claimed although the amount of compensation assessed was only 2% of the size of the project site. PHEM rules excluded even the largest forest patch (120 ha) from compensation. The authors consider the long-term consequences for the panther of applying such a methodology across the landscape of southwest Florida. An FWS spokesman conceded that FWS is still using parts of Maehr and Cox (1995) that the agency still considers valid, although it is difficult to identify a part that is not affected by the litany of errors critics have found in this paper ("Flawed Study May Imperil Florida Panther Habitat." November 27, 2004).

The SRT report is significant because it exposed the flawed science that has been used by the federal agencies in deciding mitigation requirements and other crucial panther management issues. The SRT report also provides useful guidance on how to ensure

that sound science is adopted in the future. In addition to calling for the abandonment of PHEM and its underlying assumptions, the SRT offers a host of solid recommendations for future data collection, research, planning and management. Some of these recommendations are featured in the concluding section of this paper.

Data Quality Act Challenge.

In May 2004, FWS biologist Andrew Eller and Public Employees for Environmental Responsibility (PEER) filed a Data Quality Act challenge, asking FWS to take timely corrective action with regard to misinformation in panther documents, including the Multi-Species Recovery Plan for South Florida, Draft MERIT Florida Panther Landscape Conservation Strategy, and several biological opinions before any further dissemination or use in decision-making.

Under the Data Quality Act of 2000, FWS is required to use "reliable methods and data sources" to ensure the "quality, objectivity, and integrity" of information it uses as the basis of agency decisions. According to the Act, FWS has 60 days to respond to challenges to its science, and may not continue to use or disseminate science that has been found to be in error.

In its July response to the PEER/Eller Data Quality Act challenge, the FWS conceded most of the errors identified by PEER/Eller and acknowledged that information upon which it has relied in the past has "limitations" as identified by the Scientific Review Team. However, rather than taking immediate action to correct these "limitations," the agency asserted that it would prefer to await the upcoming revision of the Multi-Species Recovery Plan for South Florida in 2006. The panther cannot wait much longer: action to protect essential panther habitat from development threats must start now.

Meanwhile, on November 5 2004, FWS terminated panther biologist Andrew Eller, an 18-year FWS veteran.

Senator Lieberman Weighs in . . . Again.

In June 2004, Senator Joseph Lieberman sent a second letter to FWS seeking detailed information on how the agency ensures policies are based on the best available science, how it protects against the biases of people who are involved in the agency's scientific findings, and what the agency is doing to address the problems and recommendations outlined in the SRT report.

Among the letter's 25 pointed questions, Senator Lieberman raised concerns that FWS reportedly edited Florida Panther Landscape Conservation Strategy drafts to delete references to data errors and a new habitat definition. Lieberman also expressed concern that if FWS continued to allow a high rate of development compensated for by a low rate of habitat conservation, a significant amount of remaining panther habitat would be lost.

In July 2004, FWS responded. Although the agency admitted that it has no substantive disagreements with the SRT report, and that it no longer assumes panthers (1) avoid areas more than 90-m from forests, (2) require minimum sizes of forest patches, or (3) use PHEM, FWS also states that it "does not plan to discontinue all use of literature criticized within the SRT report because some of the information within the criticized literature has value." It also maintains that it will not correct past biological opinions or "make drastic changes in the permit consultation process" for development actions affecting the panther. In response to Lieberman's concerns for reducing or reversing the trend in habitat loss, the agency replied that it believes that its current approach will maintain sufficient habitat to ensure panther survival in south Florida.

Unfortunately, the FWS responses to Senator Lieberman's questions do not demonstrate a real commitment to using sound science to manage panthers or their habitat.

Nationwide Permits: Unfettered Development in Panther Habitat

National Wildlife Federation and the Florida Panther Society have also challenged the Corps' refusal to undertake an ESA consultation with FWS regarding the impacts of "nationwide" permits on the panther. Nationwide permits are issued by the Corps at the national level allowing dredging and filling of wetlands for certain categories of development (e.g., utility lines), with virtually no site-specific environmental review. Under the Clean Water Act, the Corps is authorized to issue such permits if it finds that the category of activities permitted will cumulatively have a minimal impact on the environment. Unfortunately, the Corps has unlawfully used this authority to allow development in panther habitat with virtually no measures to minimize or avoid harmful impacts. A decision in this case is due in the next few months.

Court Affirms FWS's Failure to Use Sound Science.

In the August 2004 *Florida Rock* decision discussed above, a federal judge ruled that FWS was "arbitrary and capricious" in determining that a massive 5,200-acre rock mine would not jeopardize the survival of the panther. The district court held that FWS did not meaningfully address the cumulative impact of the project and other development activity in the area on the panther. Moreover, the judge determined that FWS failed to demonstrate that the agency's "no jeopardy" biological opinion was consistent with its own panther science. Because the Corps issued its permit on the basis of an arbitrary and capricious "no jeopardy" BiOp, the court also revoked the Corps permit. As a result of this litigation, FWS has revised BiOps for several pending permits in panther habitat. These BiOps undoubtedly will face further scrutiny from members of the public and the scientific community, to ensure that federal agencies are using the best available science to manage panthers and their habitat.

In summary, FWS's approaches to permitting of development in and around panther habitat has now been discredited by independent scientists, its own panther biologist, the Ranking Member of the Senate Government Affairs Committee, and a federal court. Action by FWS to fix these flawed approaches is now long overdue. Recommendations on how to do so are set forth at the conclusion of this paper.

ROAD NOT YET TAKEN: PANTHER REINTRODUCTION

Since the approval of the first Florida Panther recovery plan in 1981, FWS has recognized that the ultimate recovery of the Florida panther depends not only on protecting the south Florida population, but also on reintroducing two additional populations. Yet, despite the fact that reintroduction is listed as a priority in the current panther recovery plan, FWS has taken few actions to make it a reality. The SRT pointed to this lack of progress, stating it was "dismayed" that "little substantive work has been done on identifying reintroduction sites and preparing for the social and political challenges involved in such an effort." Based on its interviews, the SRT concluded that FWS "has not been strongly committed to the reintroduction effort." Although a 1994 FWS report (Jordan 1994) provided "a start" in identifying reintroduction sites, none of the tasks targeted in the Jordan report for completion by February 1996 have been completed, and some tasks may not even have been started (Beier et al. 2003).

In the mid-1990s, the Florida Fish and Wildlife Conservation Commission, became the lead agency on panther reintroduction. The FWC's Reintroduction Feasibility Study (Belden & McCown 1996) concluded that reintroduction is biologically feasible. However, social and political issues arose during the study, due in part to a minimal and ineffective public outreach and community involvement plan. Indeed, the social issues were dealt with only once, at community workshops in 1998. Overall, FWC was not equipped with the public relations training or communications plan to address the small but vocal group of opposition.

In 1999, FWS re-asserted the lead role in panther reintroduction. Planning did not start until 2001 with the formation of a new recovery team that is currently completing a full revision of the 1995 recovery plan. In 2002, FWS again initiated a Habitat Assessment of Potential Reintroduction Sites. The project, headed by Cindy Thatcher (Department of Forestry, Wildlife and Fisheries, University of Tennessee), Joe Clark and Frank van Manen (USGS Southern Appalachian Field Lab, University of Tennessee), identifies and ranks potential reintroduction sites in the southeastern United States based on biological and physical characteristics of panthers and the study area.

In 2004, the US Geological Survey released a report entitled, "Habitat Assessment to Identify Potential Sites for Florida Panther Reintroduction in the Southeast" (Thatcher et al. 2003). This study identifies eleven potential reintroduction sites within the panther's historic range with favorable habitat conditions (Thatcher et al. 2003). The sites are ranked as high, moderate, or low based on criteria including area of public lands, prey density, livestock density, major and minor road density, and human density. For each site, the study identifies the benefits and drawbacks for consideration in choosing the best location for successful panther reintroduction. The study also concludes that the next steps in reintroduction planning should include evaluation of public attitudes toward reintroduction at potential sites.

While the reintroduction site assessment addresses biological issues, it is also important to address the social and political issues of restoring panthers to the southeastern U.S.

Potential Reintroduction Site	Rank
Ozark National Forest	High
Ouachita National Forest	High
South Central Arkansas	Moderate
South Arkansas (Felsenthal NWR)	Moderate
Louisiana (Kisatchie NF)	Moderate
Mississippi/Louisiana (Homochito NF)	Low
Southwest Alabama	High
Southeast Alabama	Low
Southern Tennessee/ Northern Alabama	Low
Apalachicola National Forest	Moderate
Okefenokee NWR	Moderate

In 2002, FWS's Jacksonville Field Office submitted two proposals for panther recovery efforts: the first was for a series of 4 stakeholder working group meetings to be held in the southeastern U.S.; the second was for developing a communications plan for reintroduction. Neither proposal received funding from the FWS Regional Office. As a result, in 2003 FWS's field staff revised their plans, proposing a combined project that focuses primarily on building a communications plan. Unfortunately, the Regional Office declined to fund the revised project.

Panthers are running out of time. Habitat destruction in south Florida continues to diminish this endangered big cat's chances for long-term recovery. Steps need to be taken now to effectively plan reintroduction components of the recovery process, which will likely take 3 to 5 years to complete before reintroduction can begin.

Public Supports Panther Recovery Efforts

According to a 1995 statewide survey regarding Florida panthers, 91 percent of respondents supported efforts to recover Florida panthers and 83 percent supported reintroduction efforts (Duda & Young 1995). A similar survey targeting counties near a proposed panther-reintroduction area in north Florida found 75 percent of residents in favor of reintroduction (Cramer 1995).

In a June 2004 poll of Florida hunters and anglers by Bellweather Research & Consulting on behalf of NWF, 75% of those polled said they favor restoring panthers to portions of northern Florida and adjacent Georgia.

Despite broad support for panther recovery, top management at FWS and FWC appear unwilling to commit to the reintroduction measures needed to ensure the species' long-term survival.

SUCCESSES TO BUILD UPON

So far, this report has emphasized the obstacles conservationists have faced in attempting to secure protection and recovery of the panther and its habitat. If the absence of additional information, readers might conclude that the challenges for panther survival and recovery are just too great and that progress in the face of powerful political forces apparently hostile to endangered species protection is impossible. However, as the following examples demonstrate, panther survival and recovery remains an achievable goal.

Success #1: Genetic Restoration

By the early 1990s, panther managers were deeply concerned about inbreeding depression within the isolated, small population of panthers, estimated to be between 30 to 50 individuals. Individual fitness problems arising from this genetic problem were many, including heart deformities, low sperm count, malformed sperm, and cryptorchidism (a condition in which one or both testicles fails to descend) (Roelke et al. 1993, cited in Beier et al. 2003).

In 1994, the four federal and state agencies primarily responsible for panther management adopted a genetic restoration plan involving translocation of nearby Texas cougars (*Puma concolor stanleyana*) to south Florida. In early 1995, eight females were released into south Florida, and 5 of these successfully mated with Florida panthers (Land et al. 2003, App. III). As a result of this effort, the Florida panther population has shown increased fitness (Beier et al. 2003), and some 80 to 100 individuals now live in the wild (Land et al. 2003).

Although now generally recognized as a success, genetic restoration initially met with some opposition, including Dr. Maehr.who argued that the panther was demographically fit prior to the Texas cougar releases (Beier et al. 2003). His conclusions, however, largely were based on erroneous scientific assumptions. According to the SRT Report, Dr. Maehr's estimates of high kitten survival rates among the purebred panthers are "indefensible." (Beier et al. 2003 at 49). Likewise, Dr. Maehr's analysis of population dynamics misinterpreted the relevant data to erroneously infer positive population growth. This mistaken inference is significant because the "entire body of evidence" supporting Dr. Maehr's argument that Florida panthers were demographically fit prior to translocation "hinges on this misinterpretation." (Beier et al. 2003 at 47). Ultimately, the SRT rejected each of the arguments that Dr. Maehr lodged against the program, determining that genetic restoration "has been an undeniably helpful step, and probably a necessary condition for panther recovery." (Beier et al. at 39).

Although continued monitoring is necessary to determine whether panthers are manifesting traits suggesting the return of inbreeding depression, the genetic restoration program so far has proven to be an unqualified success.

Success #2: Wildlife Crossings

According to the Florida Department of Transportation, for the past 50 years, the state has built an average of 4.5 miles of high-speed paved road per day (White and Ernst 2003). This expanding network of highways has a severe impact on wildlife (Schaefer et al. 2003), especially animals such as the panther that travel great distances. Vehicle collisions are one of the leading known causes of panther mortality (FWS 1999). Wildlife crossings are essential for providing safe passage for the panther and other animals.

Florida was one of the first states to construct wildlife crossings. In the 1980s, as part of a settlement of an ESA enforcement action filed by NWF, FWF, Florida Audubon Society and other conservation groups to protect the Florida panther from the proposed conversion of a small state road known as Alligator

Alley to a four-lane interstate highway (I-75), the Federal Highway Administration and the Florida Department of Transportation designed and began construction of twenty-four underpasses for panthers and other wildlife. Senator Bob Graham (D-FL) secured an amendment to the federal highway bill in 1987 that allowed tolls to be collected on I-75 to pay for the crossings (States News Service, April 2, 1987). To channel the animals to the underpasses, the agencies built an 11-foot-high chain link fence topped with three strands of barbed wire. Today, there are 20 underpasses along Alligator Alley (I-75) and four on State Road 29 (See Map 4).

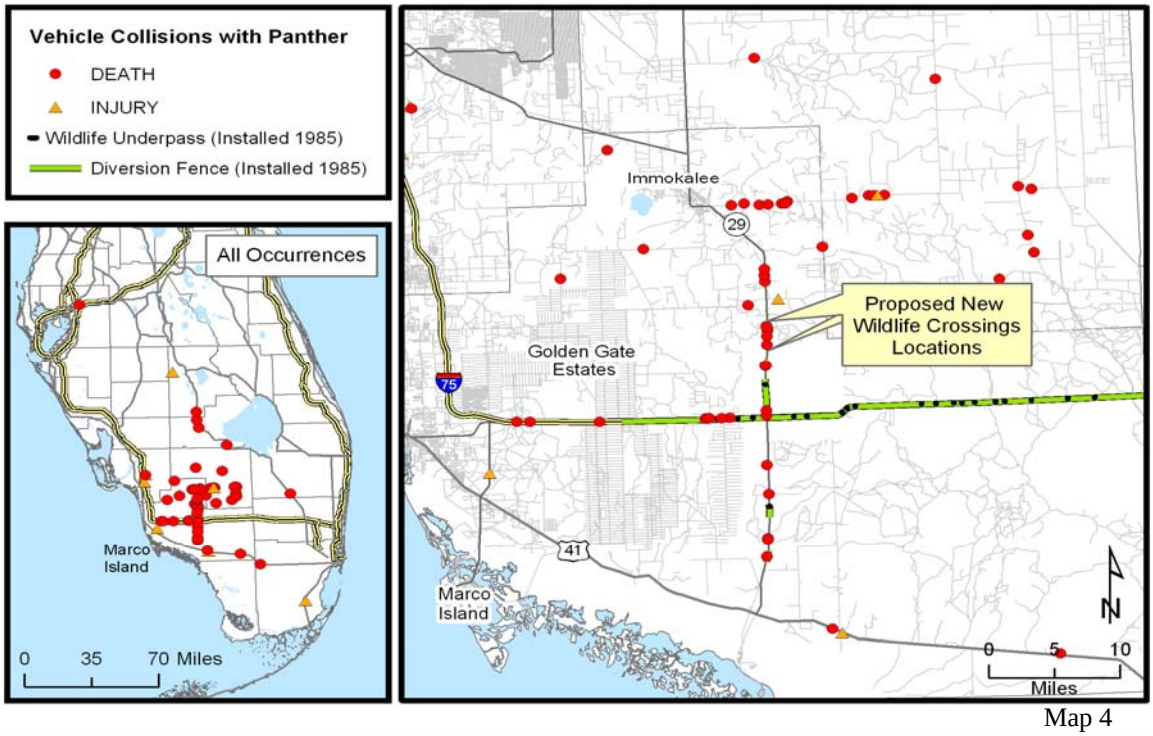
As a result of a legal action by Florida Wildlife Federation and others, Collier County is now also evaluating rural road segments for panther crossings. The first road to be addressed is Route 846 east of Immokalee, a lethal transportation corridor owned and maintained by the County where seven panthers have been killed by vehicles.

Although vehicle mortality remains one of the highest known causes of panther death, no panthers have been killed where underpasses and fencing have been installed. The wildlife crossing project for panthers has become an international model, studied by engineers and ecologists in Canada, Mexico, Australia and countries throughout Europe (Richey 1999).

Meanwhile, work proceeds on additional wildlife crossings. Florida Department of Transportation recently announced that it will install two new wildlife crossings on State Road 29 north of I-75. Construction is funded for 2005, and with the current schedule construction the crossings are expected to be complete by late 2006.

In addition, two reports have been developed: "Proposed Wildlife Crossings Design and Coordination Report" and "The Florida Department of Transportation State Road 29 Panther Crossings Case Study." The case study documents the process for implementing wildlife crossings and how the most recent SR 29 wildlife crossings have been developed. These two additional crossings make a total of six underpasses on SR29.

Florida Fish and Wildlife Conservation Commission completed an analysis in 2004 that identifies road segments where panther crossings should be evaluated for reducing road mortality and maintaining a connected landscape as development ensues in southwest Florida. Criteria included panther



Map 4

mortality locations and landscape features where panthers cross roads. In addition to saving panther lives, several major conservation lands could be linked including Big Cypress National Preserve, Florida Panther National Wildlife Refuge, Fakahatchee Strand State Preserve, Okaloacoochee Slough State Forest, and Corkscrew Ranch Ecological Watershed (CREW). The final report is expected in early 2005.

Success #3: Florida Panther National Wildlife Refuge / Friends of the Refuge

Established in 1989, the Florida Panther National Wildlife Refuge protects 26,400 acres of panther habitat. In any given month, five to eleven panthers use the refuge for hunting, daybedding, denning, or traveling to other areas. (See http://floridapanther.fws.gov)

In addition to protecting panther habitat, the refuge now has its own support organization. The Friends of the Florida Panther Refuge has initiated several projects to increase understanding and appreciation of the panther. Their recent accomplishments include the Panther Posse program, which educates students, teachers, and the community about the panther, its habitat and the other plants and animals; and the Refuge Remote Video project, which documents panther activity, providing the first natural video footage of panthers in the wild (see http://www.floridapanther.org).

Success #4: PantherNet

In 1999, the Florida Fish and Wildlife Conservation Commission launched PantherNet, a multidisciplinary interactive website funded by proceeds of the Florida panther license plate. Developed by Florida State University in conjunction with FWC's Advisory Council, this website provides valuable information and activities on the natural history of the Florida panther, its habitat, threats to its survival, and history and conservation efforts.

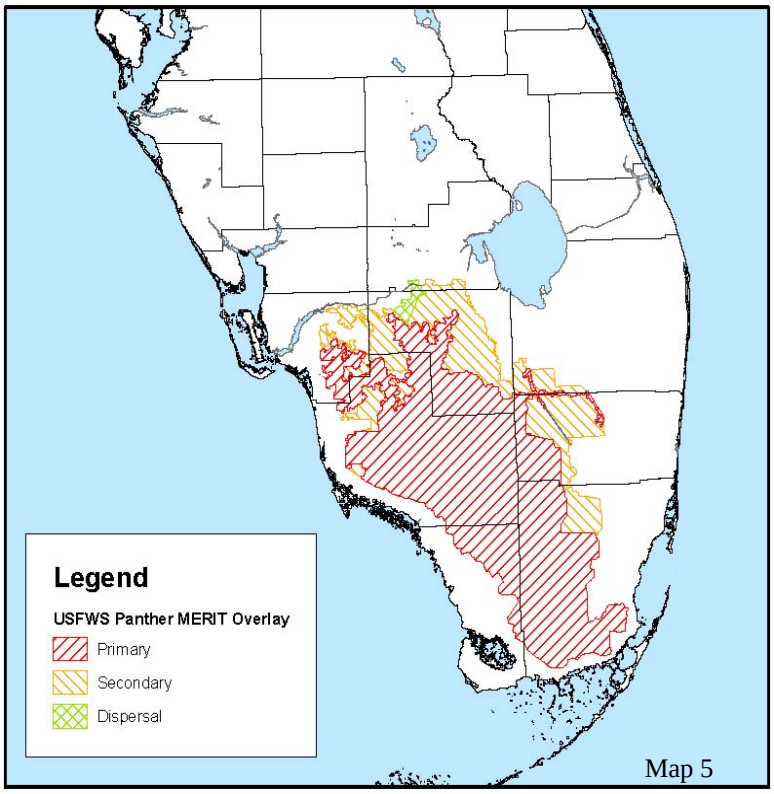
Success #5: MERIT Landscape Conservation Strategy and Panther Habitat Map

As noted above, FWS's formation of the MERIT Panther Subteam provided a forum for concerns about panther science to be raised and debated. These

debates helped to elevate the serious deficiencies with Maehr's methodologies (and FWS's and the Corps' use of those methodologies) in the larger scientific community. As a result, there is an emerging consensus within the scientific community that corrective action must now be taken.

Of course, the mission of the MERIT Subteam was not simply to debate panther science, but to develop a model with which panther science could be applied in everyday situations involving FWS reviews of proposed development permits and habitat acquisitions. In August 2002, the MERIT Subteam rose to this challenge, producing a Draft Landscape Conservation Strategy with a map that provides clear direction to FWS about the habitat needs of the panther (See Map 5).

Unfortunately, the Strategy has since been held up by FWS in internal review, without any move by FWS to either adopt the document or identify any inadequacies. Nearly two and one-half years after it was drafted, FWS has not released it for public review or comment. Although the document was submitted for peer review and included in the SRT review, FWS has never incorporated peer reviewers' or the SRT reviewers' comments. This 2-1/2 year delay, coming at a time when habitat continues to be destroyed as a result of unwise permitting decisions, represents a tragic state of paralysis at FWS. However, this failure to act should not detract from the efforts of the MERIT Subteam, which rose to the challenge of defining the panther's habitat needs amidst a swirl of debate.



Map 5

Success #6: Scientific Review Team Report

As discussed above, the SRT has greatly advanced the cause of panther conservation by issuing its comprehensive report on panther science in December 2003. Although it remains unclear whether FWS and other agencies will adopt the SRT's recommendations, the SRT's contribution to scientific understanding must alone be considered a success story.

Success #7: Local Government Actions

In 1999, as the result of legal action by the Florida Wildlife Federation, Florida Department of Community Affairs, and Collier County Audubon Society, Governor Jeb Bush and the Florida Cabinet imposed a building moratorium across Collier County's rural lands and mandated the county develop a plan that protects the habitat of panthers and other listed species.

Collier County's recently adopted habitat plan protects over 100,000 acres through transfer of development rights and a stewardship program that rewards landowners for protecting and enhancing panther habitat. Camp Keais Strand and Okaloacoochee Slough, two important panther travel corridors, are protected through the county's plan. Although in their infancy, these incentive-based programs show great promise and similar stewardship programs are under consideration by other Florida counties.

Success #8: Habitat Assessment to Identify Potential Sites for Florida Panther Reintroduction in the Southeast

In 2002, the FWS-led Florida Panther Recovery Team commissioned Thatcher et al. to conduct a GIS analysis of potential reintroduction sites in the southeastern United States. As discussed above, the final report, released in 2004, identifies and ranks feasibility of 11 sites as high, moderate, or low. The study also analyzes data from two FWC-led experimental reintroductions of Texas cougars in North Florida, focusing on release procedures, landscape characteristics, and social factors that affected release success.

While the Thatcher et al. report does not identify a preferred reintroduction site, it does represent one step forward in the reintroduction planning on the part of the FWS. However, it remains to be seen whether the FWS will follow through on the "lessons learned" from the experimental releases by preparing for reintroduction with a solid communications plan and local community involvement.

WHAT'S NEXT FOR THE FLORIDA PANTHER?

The events and issues we have documented in this report are part of the ongoing process of panther recovery. Those interested in panther conservation will continue to observe, participate in, and document this process, working toward recovery goals that will bring the panther back to occupy its place in our landscape. The following are of particular interest.

Agency response to court decision revoking Florida Rock mine permit.

The response of U.S. Fish and Wildlife Service and the Army Corps of Engineers to the 2004 decision in *NWF v. Norton* will indicate whether recent events have put regulatory aspects of habitat conservation on a sound path. The approaches taken toward jeopardy and incidental take determinations in pending and future biological opinions will be closely examined for signs of a long-range plan for panther survival and recovery.

MERIT Conservation Strategy and Habitat Conservation Assessment Tool.

In parallel with the MERIT Landscape Conservation Strategy effort, FWS has been developing the Habitat Conservation Assessment Tool for determining compensation for impacts to panther habitat when, after being minimized to the maximum extent practicable, the adverse effects of a proposed action cannot be avoided. According to FWS statements, the Tool "uses concepts found within the Conservation Strategy" (See letter from Sam Hamilton, Regional Director, FWS, to Laura Hartt, NWF (Nov. 4, 2004)). According to FWS, the Tool goes beyond the geographic scope of the Draft Conservation Strategy by assessing areas further northward as well as areas outside the Primary, Secondary, and Dispersal zones. Together, the Tool and the Strategy will define panther habitat and what is meant by a target number of panthers.

Because the Tool relies in part on the Strategy, some of the errors within the Strategy will likely be reflected in the Tool. Unfortunately, unlike the Strategy, the Tool has yet to undergo a scientific peer review. In spite of this, FWS has used the Tool in conjunction with the preparation of several Biological Opinions (See letter from Sam Hamilton, Regional Director, FWS, to Wes Woolf, NWF (August 25, 2004)). FWS contends that the purpose of this use was "solely to verify the accuracy of the Tool and did not affect the content of the Biological Opinions." Of course, the recent Florida Rock decision casts doubt on the accuracy of those BiOps, meaning that the accuracy of the Tool is also in question.

FWS asserts that current regulatory practices and the Tool are based on the Draft Conservation Strategy, but until peer-review comments are incorporated and the documents are released for public review, the public has no way of assessing the soundness of this integrated approach to habitat conservation. FWS has promised to release the Tool for public comment sometime in early 2005 ("Adoption of panther plan delayed" *Ft. Meyers News* (Ft. Myers) Nov. 9, 2004). Prior to the Tool's release, the FWS should allow the MERIT Panther Subteam to incorporate long-

available peer-review comments into the Draft Conservation Strategy and then release the Strategy and Tool for public review. Otherwise, agency biologists will continue to be caught between science and politics until FWS's approach to panther science is publicly defined and brought into alignment with that of peer-reviewers and MERIT Panther Subteam experts.

Appeals of PEER/Eller DQA Challenge and termination of employment.

The remedies requested in the Data Quality Act Challenge filed by Andrew Eller and PEER were denied by USFWS, although much of the substance of the challenge was conceded by the agency. PEER/ Eller have filed an appeal (July 28, 2004) (See http:// www.peer.org/FWS/PantherDQAAppeal.htm), which is currently being evaluated by a 3-person scientific panel headed by Dan Ashe, Science Advisor to FWS Director Steve Williams. A favorable resolution would provide a clear signal that science has a protected place in panther recovery.

Eller, a biologist in the Vero Beach Field Office with 13 years of experience in panther recovery, was served with a 30-day proposal to terminate following the filing of the PEER/Eller DQA Challenge. He was terminated as a FWS employee on November 5, 2004. PEER is handling his whistle blower defense in the appeal of his termination, contending that he was fired because he has spoken out about lapses in panther protection under the ESA. Eller's DQA Challenge and termination case have been chronicled in a series of articles in *Endangered Species and Wetlands Report*, an *Audubon* INCITE article, and numerous news reports, gaining broad public interest and support. The resolution of both his DQA appeal and his personnel case will have far-reaching impacts on panther recovery.

Recovery Plan revision under a new FWS Panther Leader.

We welcome the choice of Chris Belden as FWS panther leader. Belden was the leader of the first panther capture team. He conducted the north Florida introductions and has just completed a comprehensive survey of panther habitat in central Florida. Throughout his career, he has earned respect for both his expertise and his devotion to panther recovery. He is a good choice to provide reintroduction experience, reconnect the panther monitoring program with FWS recovery data needs, and weave the fragmented threads of panther recovery together.

Belden will replace John Kasbohm as leader of the Florida Panther Recovery Team in ongoing revisions to the Recovery Plan. After a slow start, a sound draft of recovery activities was produced, but this task has been stalled since Kasbohm's departure last March. A key challenge will be to assess the data needs for each recovery task, including reintroduction, and plan monitoring activities to fill data gaps. A second challenge will be to allocate recovery responsibilities so that each important task has an identified manager responsible for specific desired outcomes.

Florida Fish and Wildlife Conservation Commision Reorganization.

The administrative reorganization of the FWC to achieve a more research oriented approach will be a welcome one if it translates into gains for the panther research and monitoring program. Commission representatives have at times not played a productive role in resolving scientific disputes, and the flow of information from data gathering to analysis, publication and coordination with recovery policies has not always been a smooth one. Reproductive histories of monitored panthers are still lacking, as is a comparison of purebred and introgressed panther fitness traits considering the full data set. We urge new administrators to become familiar with issues in panther science and become closely involved in the research program.

LESSONS LEARNED, RECOMMNEDATIONS FOR THE FUTURE

Thanks to the Endangered Species Act and the many individuals who work to implement it on the ground, the panther has been brought back from the brink of extinction. The genetic restoration and wildlife crossing initiatives, carried out pursuant to the ESA recovery plan, are just two examples of how substantial progress can be made if people of good faith come together to implement conservation measures that rests on sound science. These actions have been taken with the prodding of citizens' groups and independent scientists, using their full array of enforcement, advocacy and education tools. They also have taken place due to the commitment of the staff of FWS, FWC, and other agencies who are able to overcome resistance within their own agencies and other obstacles and make decisions beneficial to panther conservation. Without these individuals, and without the strength of the ESA, there would be little hope for this unique and treasured wildlife species.

Yet the panther remains at serious risk of extinction due to the refusal of FWS and the Corps to abide by their ESA mandate to protect and conserve the panther using the best available science. Much damage has been done, with many thousands of acres of habitat lost, while these agencies have relied on unsound science and approved one development permit after another. Two teams of scientists have found serious flaws with FWS science, a federal court has found the agency's approach to jeopardy and cumulative effects analysis unsound, and a Data Quality Act Challenge has requested the agency to correct its course.

Fortunately, the scientists on the SRT made sound recommendations that point the way forward, at least from a scientific perspective, to restore sound science and give FWS the tools it needs to protect important panther habitat under imminent threat of development. Recovery agencies appear receptive to these recommendations, but we have not yet seen implementation.

Essential steps we recommend:

- Adopt a new methodology for habitat evaluation that incorporates long-range recovery goals and is based upon the best available science concerning the panther's habitat needs.

- Establish a process to ensure scientific rigor in the future for panther research and monitoring programs and closer integration between data collection and recovery tasks.

- Conduct a "Lessons Learned" exercise to determine how the science that guided panther recovery efforts went so far astray, despite strong public support, ample funding, and a long-term monitoring program that has produced a wealth of information about the panther. Such an effort should identify safeguards and checks and balances to make recovery more immune to this type of disruption and make the process of correction far less arduous.

- Hold a series of stakeholder meetings, and use other communications outreach tools, to achieve broad public support for protection of the south Florida population's remaining habitat.

- Based upon stakeholder input, develop a regional conservation plan that addresses the cumulative effects of development on panther habitat, and integrates protection of the panther's habitat into local growth management plans and transportation decision making.

- Pending preparation of a regional conservation plan, develop regulatory guidance setting forth the procedures through which core habitats will be protected, and development in secondary habitats will be minimized and mitigated. The foundation for this outreach should be the MERIT Subteam's Conservation Strategy and Panther Habitat Map dated August 2002, subject to any improvements that have been identified in the peer review process.

- Hold a series of stakeholder meetings and use other communications outreach tools to achieve broad public support for reintroduction of the Florida panther into suitable regions outside of south Florida. Based upon stakeholder input and scientific habitat assessments, develop a series of recommendations and alternatives for reintroduction sites, and initiate an Environmental Impact Statement process to reach a decision with the broadest possible public input.

- Seek more federal, state and local funding to acquire and protect panther habitat; and develop a strategy for implementing incentive tools for private landowners to restore and manage private land habitats and for securing funding for those incentives.

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