



Public Employees for Environmental Responsibility

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Before the U.S. Department of the Interior

U.S. Fish & Wildlife Service (USFWS)
WASHINGTON, D.C.

ANDREW ELLER, Jr. and
PUBLIC EMPLOYEES FOR
ENVIRONMENTAL
RESPONSIBILITY

Complainant,

v.

DEPARTMENT OF INTERIOR
Agency.

Dkt. No. _____

July 28, 2004

*Data Quality Act Appeal to FWS decision
of previously-submitted Data Quality Act
Challenge*

APPEAL OF
ANDREW ELLER and PUBLIC EMPLOYEES FOR ENVIRONMENTAL
RESPONSIBILITY (PEER)
PURSUANT TO THE DATA QUALITY ACT OF 2000

To: *Correspondence Control Unit
Attention: Information Quality Complaint Processing
U.S. Fish and Wildlife Service
1849 C Street, NW Mail Stop 3238-MIB
Washington, DC 20240*

Pursuant to Section (b), Data Quality Act of 2000 and Part IV (6) U.S. Fish and Wildlife Service Information Quality Guidelines, Andrew Eller and Public Employees for



Environmental Responsibility (PEER) hereby appeals the U.S. Fish & Wildlife Service (USFWS) decision to reject a challenge regarding the data compilation, manipulation and conclusions drawn there from by the USFWS, as detailed infra.

I. Description of appeal

On May 4, 2004, Andrew Eller and PEER challenged the Finding under the Data Quality Act (DQA)). The Complaint (attached) argued that FWS is using flawed science in assessing the habitat and population trends of the endangered Florida panther. Studies relied upon by FWS to make decisions about proposed development in Southwest Florida inflate panther population and inaccurately minimize habitat by –

- Equating daytime habitat use patterns (when the panther is at rest) with nighttime habitat use patterns (when the panther is most active);
- Assuming that all known panthers are breeding adults, discounting juvenile, aged and ill animals; and
- Using population estimates, reproductive rates, and kitten survival rates not supported by field data.

The USFWS response (Response) to the Eller/PEER Complaint, dated July 7, 2004, stated in relevant part that —

“We acknowledge that despite being published in peer-reviewed scientific journals, some of the information you are challenging has, over time, been determined to have limitations...”

While we are encouraged that USFWS, in their reply to our Data Quality Act Challenge, has acknowledged the substance of errors in the administrative record of the Florida panther, unfortunately the agency has not recognized the need for timely correction of these errors,

proposing 2006 as a tentative date to put documents before the public that reflect the current consensus of peer-reviewers and the panther recovery community.

We herein appeal the agency's refusal of redress under the Data Quality Act. We describe misunderstandings, inaccuracies, and inconsistencies in the USFWS response to our Challenge, address specific points raised under Statements of Error, and summarize our requests for redress.

II. Description of why appellants are affected persons under DQA guidelines.

Public Employees for Environmental Responsibility (PEER) is a non-profit organized in the District of Columbia to hold government agencies accountable for enforcing environmental laws, maintaining scientific integrity, and upholding professional ethics in the workplace. PEER has thousands of employee and citizen members nationwide, including employees both within FWS and in other public agencies whose work with the Florida panther is affected by the information that is the subject of this complaint. PEER also represents a number of public employees who contend that the FWS stance on the Florida panther is intellectually dishonest and is the result of political pressure. In addition, PEER members include citizens who have dedicated their careers to researching the Florida panther. USFWS's reliance on the information cited in this complaint negatively affects the ability of reputable scientific study to address issues concerning the Florida panther.

I, Andrew C. Eller, Jr., appellant, qualify as an affected person under the provisions of the USFWS DQA guidelines. From November 1998 through February 2003 I worked as a Fish and Wildlife Biologist in Naples, Florida, the Western Everglades and authored several biological opinions on developments that required Corps of Engineers dredge and fill permits. The biological opinions were written under provisions of section 7 of the Endangered Species Act for the endangered Florida panther. The information used and disseminated by the USFWS directly affected my ability to perform my job:

A. Substituting Political Science for Biological Science

A principal reason for pursuing the Challenge was a desire to reduce pressures on biologists at the Vero Beach office of the USFWS to ignore sound panther science.

Co-author Eller has experienced considerable pressure (a) to express no views that counter the flawed science the office has used in the past and (b) to shade or misrepresent science in the course of his work. Eller was ordered to incorporate flawed information in biological opinions under threat of insubordination. He was later removed from panther work altogether because supervisors feared that he might write a jeopardy biological opinion, which was forbidden in the office. He was instructed not to talk about panthers to colleagues lest he "contaminate their views."

We seek to avoid another situation in which USFWS biologists who understand and value science are overruled by supervisors who do not. Careers should not be put in jeopardy when biologists attempt to do their job conscientiously. By pursuing the Data Quality Challenge we hoped that administrators would acknowledge peer-reviewed consensus about data sufficiency issues and use the information to make better-informed panther recovery decisions.

Along with other USFWS biologists, I believe the Vero Beach office of USFWS is not doing an effective job with regard to resource protection, particularly in the case of the Florida panther. Pressure to ignore relevant scientific information or massage this information to minimize assessed impacts has led to an uncomfortable work environment in which biologists who have not yet chosen to transfer out of the office or leave the agency often feel they are walking a tight-rope. One misstep could end a career in the USFWS.

We welcomed the convening of the MERIT Panther Subteam to sort out critical habitat issues, and later the Scientific Review Team (SRT) to resolve what independent scientists on the Subteam regarded as their refutation of the scientific work that has guided USFWS policy and regulatory practice in panther recovery over the past decade. Instances of peer-reviewed literature conflicting with the observations of field biologists were finally exposed

as bad science by the SRT due to unacknowledged exclusion of data, faulty assumptions, mis-citations, unwarranted extrapolation and inappropriate methods of analysis.

As claimed, there was no evidence to support PHEM rules that restricted panthers to a 90-meter radius of large forest patches. The field biologists who had been arguing for years that panthers are not forest obligates were right after all. Skeptics of the forest obligate view who had been bemused that anyone could hold such far-fetched opinions were astounded to learn that these ideas had guided regulatory assessments, and were outraged when the USFWS seemed unwilling to give up such convenient, if illogical, methodologies. Instead of welcoming the resolution of errors, Vero Beach supervisors stonewalled experts on their Panther Subteam, refusing to comment on peer-reviews, and pressured USFWS biologists to ignore sound panther science.

B. Failure to Incorporate Peer Reviews

Several USFWS actions prompted us to file the Challenge. Primary among these was the USFWS decision not to allow Subteam members to incorporate peer-review comments to the Draft Conservation Strategy, available since November 2002 and February 2003, that confirm serious errors in the science that guides USFWS panther recovery decisions. The agency also decided not to respond in any formal way to the Scientific Review Team (SRT) report, which confirmed the existence of those errors and identified new ones. The report eloquently expressed the indignation of scientists over serious breeches of the scientific method. In comments to the press, USFWS representatives mischaracterized the substance and significance of SRT findings, portraying errors as due to work becoming outdated by new information.

Our concern was that the USFWS decision not to incorporate peer-review comments into the Draft Conservation Strategy and to not discuss which, if any, SRT findings were accepted or rejected indicated that the USFWS had decided not to acknowledge errors in the science that had guided their recovery efforts or the implications of these errors.

This concern is understandable, given persistent efforts by USFWS representatives to keep material that conflicted with “best available science” (i.e., the flawed science that supported the forest obligate theory) out of the Draft Conservation Strategy. The agency has refused to resolve contradictory material in the Draft, excluded Subteam members from input or review of ongoing USFWS panther work, and removed from panther projects a USFWS biologist (Eller) who understood the implications of the errors to the panther recovery program.

C. USFWS Is Inducing Its Biologists to Violate the Law

This Challenge is an effort to draw attention to the effect bad science has had on USFWS section 7 consultations and to ameliorate that effect by correcting misinformation in the administrative record. See Appendix 1 for a more detailed discussion.

When a Federal agency proposes an action, they are required by the Endangered Species Act to consult with the USFWS to assure that the proposed action does not jeopardize the Florida panther. The Service works with the Federal agency and the applicant to avoid and minimize impacts to the species. This is usually achieved by modification of the project. In those instances where impacts to the species cannot be avoided or minimized by modification it may be appropriate to compensate those impacts by protecting panther habitat offsite and in an area that will benefit the species.

During consultation with the Federal action agency the USFWS evaluates the direct, indirect, and cumulative effects of the proposed action against the environmental baseline for the species to determine whether or not the action will jeopardize the Florida panther. The direct effects are those associated with immediate implementation of the proposed action. The indirect effects of the proposed action are those that are reasonably certain to occur but later in time. The cumulative effects are comprised of all non-Federal actions reasonably certain to occur in the project vicinity, specified on a case-by-case basis as the action area. The environmental baseline consists of the past and present impacts of all Federal and non-Federal actions and other human activities in the action area.

The information used and disseminated by the USFWS is relevant to establishing the environmental baseline and to rational evaluation of the direct and indirect effects of the Federal action and the cumulative effects of all-non Federal actions.

Proper definition and characterization of panther habitat is key to assessing the rate of habitat loss versus the rate of habitat protection and the amount of land needed to secure the south Florida panther population. The amount of land needed to secure a panther population large enough to withstand environmental disturbances and disease, while providing the individuals needed to reestablish two additional populations within its historic range, is in turn determined by demographic parameters that relate to population viability such as kitten survival, sub-adult recruitment into the breeding population, male-to-female sex-ratios, fecundity, and adult mortality. These parameters can tell us whether the population is on a trajectory toward extinction or recovery. It is imperative that demographic parameters based on field data be used in population viability analyses to accurately portray the current status of the population so that management decisions regarding habitat protection and habitat management are efficient and effective. Without sufficient habitat all other aspects of the panther recovery program are moot.

III. Misrepresentations and inaccuracies in Agency response

Protecting the role of science in policy is a meaningless concept if the interpretation of science is itself determined by non-scientific policy concerns. We understand that scientific concerns may at times be outweighed by other concerns, but it is never acceptable to misrepresent science.

The USFWS response to our Challenge appears to reflect a lack of consensus about how to respond to contested issues of panther science. Some responses show confusion regarding specific details; errors acknowledged in one section are defended in another. In addition, the preparers are understandably reluctant to admit the degree to which USFWS has used bad science and ordered biologists to use bad science long after it was known to be critically flawed and not just outdated.

USFWS has replied defensively as if they were asked: "What did you know and when did you know it?" When USFWS became aware of these data quality problems is not at issue. What is at issue is that the agency continues to use and/or disseminate the flawed information. Our Challenge focused on clarifying what the agency understands and accepts as sound science now. Our concern is that USFWS use sound science in the future and correct any misimpressions that have resulted from the agency's use of flawed science in the past.

In its response, USFWS stresses its leadership role in resolving scientific issues related to panther recovery. It is an accepted part of USFWS tradition, cited even by the Director in his 2003 Thanksgiving message, that the agency sometimes has to be forced to move in the right direction: "Although often out of our control and directed by the courts, we have made strides with our endangered species program." We note that USFWS convened the MERIT Panther Subteam in response to pressure from environmental groups preparing a lawsuit over failure to protect habitat. Subteam members subsequently pressured USFWS to convene the SRT to resolve cases where independent Subteam members disagreed strongly with the science that guided USFWS recovery policies.

Our Challenge is the next step in this process, providing the needed impetus to correct misinformation in the Florida panther administrative record. The fruits of the efforts conducted over the past five years to resolve this issue will be to provide a defensible new scientific baseline that will allow us to move forward in panther recovery.

A. Misrepresentations in USFWS Response

USFWS has misinterpreted our request to "excise cited misinformation from ... documents or retract those documents." The agency has apparently interpreted this as a request to revisit consultations, which was not our intent. We were asking that these documents be corrected (e.g. by appending an explanation of any erroneous information) OR, that they not be further disseminated (i.e., retracted).

The subject of assessing the degree to which USFWS decisions were guided by bad science and of the possible need to revisit consultations is one USFWS should evaluate on its own, and do so with more candor than has been shown in the agency's response to our Challenge. The response, which is often contradictory, claims that: (1) the agency was using what it considered to be best available science at the time, (2) the agency understood the limitations of the science being used; and, (3) other sources of information were incorporated in decision-making

USFWS have made a most unconvincing case that sources of information that differed significantly from Maehr and Cox (1995) were used, or that these sources had an affect on changing the outcomes of consultations. For example, it is our understanding that the FWC (1998) GIS map, mentioned but not described in the USFWS response as an alternate source of information, uses habitat rankings based on daytime telemetry, following Maehr's approach. It does not, therefore, constitute a qualitatively different source of information.

If USFWS understood that Dr. Maehr's research and resulting papers were flawed, the agency should have allowed the Subteam to examine panther habitat evaluation methods. When peer-reviewers confirmed errors in the Draft Conservation Strategy related to Machr's work, USFWS should have welcomed their input and corrected the material in a timely manner. Since some USFWS biologists understood that Maehr's work was flawed, but administrators refuse to acknowledge these problems, biologists were pressured to ignore the problem. These are matters for USFWS to consider in assessing the amount of damage done to the panther recovery program, and in formulating plans to avoid similar conflicts between science and policy in the future.

Unfortunately, the USFWS response focuses on defending decisions in biological opinions. In narrowly focusing on a concern we did not raise, USFWS fails to address adequately our central request under the Data Quality Act: the request to correct known misinformation in material the agency uses or disseminates. To the degree that USFWS has addressed this request in their response, key agency actions are misrepresented. USFWS claims to have incorporated, to the extent practicable, habitat-related peer-review comments

in the Draft Conservation Strategy. Subteam members have long urged that comments from Paul Beier that do not require re-analysis of data be incorporated. USFWS inaccurately claims to have done this. Furthermore, USFWS plans to release the Draft Conservation Strategy document for public comment this fall. In addition to not including peer-review comments, the draft report contains errors and contradictory material that could reinforce misconceptions held by the public and further obfuscates the issues scientists have fought so hard to clarify. USFWS offers no explanation for delays in correcting the Draft Conservation Strategy and no assessment of the damage that could be done to the recovery of an endangered species by leaving flawed information in circulation until 2006, the projected correction date. It is our understanding that the Data Quality Act does not allow such delays.

B. Misinformation in USFWS response

We have selected three instances of inaccuracies in the USFWS response that illustrate both the resistance within the Vero Beach Office to correcting misinformation related to panthers and the dilemma biologists face in attempting to restore sound science. We recognize that scientific input is but one factor that decision-makers weigh, but that input itself must not be misrepresented.

The inaccuracies in the USFWS response we describe below could mislead the reader about the actions and intentions of the Vero Beach Office and whether outside intervention as provided under the DQA is needed to redirect the course of the Office. These examples also indicate problems with the flow of information within USFWS, reflecting a tendency for information to be filtered as it moves up the chain of command, and a decision at some level of the hierarchy to choose spin over accuracy.

As a mechanism for encouraging accuracy in such responses, we suggest that all relevant personnel sign a statement that the information contained in the final response is complete and accurate based on their own experience and knowledge, or add comments that supplement or explain any material that conflicts with their knowledge or experience.

The complainant has risked his career in raising issues related to the use of flawed information in section 7 consultations. We request that USFWS remove factual errors about the correction process from his path.

1 Peer-reviews of Draft Conservation Strategy

USFWS states in both the cover letter and Attachment 1 of their response to our Challenge that peer-review comments to the Draft Conservation Strategy from Paul Beier (Professor of Conservation Biology and Wildlife Ecology, School of Forestry, Northern Arizona University) that did not involve re-analysis have been incorporated into the Draft Strategy. This statement is incorrect. In fact, none of Dr. Beier's comments have been incorporated.

Subteam members have urged that Dr. Beier's comments be incorporated from the time they were first received in February 2003. Comments that do not involve re-analysis could be easily addressed in a short time and would greatly improve the quality and consistency of the Draft Conservation Strategy. At a time when USFWS should be trying to ensure that all interested parties understand the peer-review consensus regarding panther science, the agency has chosen to circulate within the recovery community and release to the public a draft with contradictory material and errors that could be easily corrected.

At first the Subteam was told that incorporation of comments was being delayed because of the urgency of getting the document out to public review (originally scheduled for February 2003). A year and a half later, the document has still not been released, so this explanation is no longer reasonable. By falsely claiming to have incorporated Beier's comments that did not require re-analysis, USFWS has avoided explaining why the agency has refused to take this good-faith step toward sound science.

The USFWS response is correct in saying that comments from two other reviewers were incorporated. However, USFWS should have clarified this statement to note that these two reviewers did not address the habitat issues being challenged. Mark Shaffer (Defenders of

Wildlife, DC Office) confined his comments to the Population Viability Analysis. Michael Scott (Leader Idaho Cooperative Fish and Wildlife Research Unit) primarily addressed statistical issues, suggesting more discussion of the variation around population estimates.

Another set of reviews was also not incorporated. Kautz et al. (2002), which summarized the methodology used in the Draft Conservation Strategy, was submitted to the journal "Biological Conservation" in July 2002. The journal reviewers pointed out contradictions in the document that were consistent with the concerns of independent Subteam members, and requested revision of the manuscript (Wright, November 8, 2002). The article was never revised to incorporate peer-review comments and was not resubmitted for publication, raising doubt about USFWS willingness to accept the opinion of peer-reviewers with regard to the flawed science guiding the panther recovery program.

To demonstrate that the Draft Conservation Strategy contains a sound understanding of panther habitat issues, the USFWS response to our Challenge quotes extensively from the chapter on panther ecology written by Subteam members Roy McBride, panther field biologist, and Jane Comiskey, panther modeler and data specialist.

The preparers of the USFWS response were surely aware that the view of panther ecology presented in the McBride/Comiskey chapter differs substantially from material found elsewhere in the document. Preparers of the response should have been made aware that USFWS at one point removed this chapter from the Draft for that reason. The Draft sent out to reviewers Scott, Shaffer and Beier in June 2002 did not contain the McBride/Comiskey chapter. USFWS removed the chapter without consulting or notifying the authors and without removing their names. It was replaced with a chapter that differed considerably in substance, assembled by a Subteam member with no panther expertise. Only after Comiskey and McBride asked that their names be removed and reviewers be notified of the circumstances surrounding the substitution was their chapter sent to Dr. Beier (August 19, 2002). The McBride/Comiskey chapter was sent only to Dr. Beier, as the other two reviewers did not deal with habitat issues.

Subteam members anticipated that peer-reviewers would resolve the contradictions between the McBride/Comiskey chapter, from which USFWS often quotes in their response, and the habitat information/references in other sections of the Draft Conservation Strategy. Reviewers did resolve these differences in favor of a holistic and consistent view of habitat, confirming the concerns of McBride and Comiskey about data sufficiency issues.

“The Panther Subteam was tasked with presenting USFWS with a peer-reviewed document. This task will not be completed until the Subteam has been allowed to incorporate peer-review comments and otherwise resolve the inconsistencies throughout the Draft Conservation Strategy. While the unanimity of reviewers has been encouraging, the unexplained delays have cast doubt on whether USFWS will allow the Subteam to finish its work.”

USFWS refusal to take this good-faith step has been seen by some as indicating that the agency will not accept peer-review commentary on the flawed science the agency has used. This was a primary motivating factor for our Challenge. Without speculating on how or why the preparers of the USFWS response could get such a key piece of information wrong, we can only hope USFWS will be more candid in answering the detailed questions posed by Senator Joseph Lieberman of the Senate Committee on Governmental Affairs regarding peer-review of the Draft Conservation Strategy and other irregularities of the “open and collaborative” Subteam proceedings.

2 Miscitation of McBride

The McBride personal communication reference was in relation to the extant population and was a personal verification by the biologist that the number 78 was correct. The Service contacted McBride to verify the number because the exact population of panthers changes with some regularity as animals die and kittens are born. In retrospect the Service should have also cited this written report (under Statement of Error #12).

This is not an accurate explanation of the Vero Beach Office's directive to cite the reports of field biologist and hounds man Roy McBride as personal communications rather than as written reports. When complainant Eller was instructed to cite McBride only as a personal communication in biological opinions, he was told that it was because McBride's reports were gray literature (not peer-reviewed).

Citations to McBride's written reports in the Panther Subteam's Conservation Strategy drafts were also edited by the USFWS Subteam leader to cite them only as personal communications. One member, Jane Comiskey, objected strongly to these edits and to USFWS' failure to cite the written reports in biological opinions. When she asked for an explanation the USFWS Panther Subteam Leader told her that Dr. Maehr had made the case to the Vero Beach Field Supervisor that McBride's reports (gray literature) countered Maehr's peer-reviewed work and that citing them as reports implied that they carried a weight and status comparable to Maehr's work. Maehr reportedly convinced the Supervisor that McBride's reports should be cited only as personal communications, and he subsequently instructed the office to follow this practice (although other gray literature continued to be cited correctly and listed in the Literature Cited section of the document). Subteam member Comiskey protested in writing (May 2002) that this policy was patently absurd and had no basis in scientific convention. The policy was subsequently changed.

During Maehr's tenure as FWC panther leader, McBride's contract with the FWC apparently forbade him from publishing journal articles related to his work with panthers. However, McBride remains the source for documented counts of the panther population. He performs daily year-round field surveys throughout panther range and is responsible for the location and capture of all panthers in South Florida. His expertise, based on 49 years of worldwide field experience, is legendary. The fact that McBride's accounts are recorded in gray literature while Maehr's are peer-reviewed does not change the fact that McBride is the sole reliable source of the information in question. His expert opinion is supported by 23 years of field observations in Florida, while Maehr's published statements about population size and the trailing behavior of hounds are speculative and hypothetical.

Maehr also complained about use of McBride's reports in comments to Subteam drafts, contending that FWC Panther Section Leader Darrell Land should be cited for the documented population count, although Land had no direct role in developing it. Land subsequently requested that McBride include his count in the FWC annual report, and USFWS now cites Land et al. for that information, although the correct citation would be McBride IN Land et al. In a recent press statement to UPI, USFWS spokesperson Bert Byers inaccurately attributed the field/capture work on which the documented count is attributed to Land.

This incident is symptomatic of the breakdown in the flow of information from panther monitoring work to published literature to decision-making. USFWS issues permits to monitor panthers and has a responsibility to see that monitoring is conducted safely and effectively, a role that should keep the agency sufficiently in touch with the monitoring program to be aware of who performs various tasks and what sources of information are reliable. In fulfilling their responsibilities, USFWS should have been aware of the clear differences in the published literature they were using to make management decisions and the accumulated knowledge of field biologists with regard to the definition of panther habitat and other population issues. In resolving these differences, they would have found that the data being generated in the monitoring program fully support the views of field biologists.

3. Breeding versus total adults

“While we acknowledge a discrepancy arose between the total panther population and the breeding population of panthers. As shown in the text, the Service did equate the number of total panthers in the current population, at the time the biological opinion was written, as meeting the minimum number of 50 breeding adults needed to ensure demographic and genetic health in the current population. The Service biologist became aware of this discrepancy in mid-2002 and removed the text in the succeeding biological opinions.”

As with other instances of errors, our concern is that the public be notified that the information in this text is erroneous, because a biological opinion containing this error is

still being disseminated to the public (see e.g. http://hpm.saj.usace.army.mil/issueweb/Sparrow/fiopeis/Appendices/Appendix%20B/csss_iop_bo_fin.pdf).

In this case, USFWS acknowledges the error, but in describing what appears to be a reasonable course of action to correct the error, omits key elements of the story. Complainant Eller was the biologist in question and he voiced concerns about this paragraph when it was given to him in December 2001 with instructions to "put it in and don't ask questions." It became part of the "template" for panther biological opinions and appeared in at least four of them. Subteam member Comiskey complained about this paragraph in May 2002 when reading it in a biological opinion. NWF voiced similar concerns in comments related to the Florida Rock Biological Opinion in June 2002. No biological opinions were issued over the summer of 2002. Complainant Eller removed the paragraph of his own accord in September 2002, thinking no one would mind after substantive objections had been raised and the nature of the errors had been explained to the Vero Beach Office. He was, however, questioned about removal of the paragraph and then instructed to restore it to the biological opinion in progress. He did not argue the point further in the meeting, but did not put the paragraph back in. McBride's 2002 report came out soon afterward, describing the error and putting the USFWS on notice that "such a comparison is inaccurate."

"It is important to note that many of these cats are not breeders. Some are past breeding age; some are too young to breed; some have reproductive deficiencies that preclude breeding or diminish breeding potential; some are geographically isolated from mates. Caution must, therefore, be exercised when comparing the CVP to suggested minimum viable population sizes (MVPs). Most MVP estimates make assumptions that are inconsistent with known demographic attributes and habitat conditions of the South Florida population. For example, MVPs generally assume that half the population is made up of regularly-breeding females, that no habitat loss will occur, that there is equal random access to mates, no genetic effects of inbreeding, and no man-made or geographic impediments to movement (e.g. highways, Shark River Slough). Recent USFWS biological opinions have suggested that last year's CVP of 78 panthers (McBride

2001) provides a surplus of 28 cats when compared to an MVP of 50 panthers. Such a comparison is inaccurate.” (McBride 2002, p. 4)

Ascertaining the degree to which the panther population meets standards of viability is critical to guiding recovery decisions. We describe this incident in some detail because it goes to the heart of the dilemma that biologists face when they are instructed to misrepresent data that are intended to support rather than thwart panther recovery.

IV. Complaints’ Rebuttal to FWS Responses on Statements of Error

Below we provide comments to specific FWS responses to Statements of Error in our Challenge:

A. Day Counted as Night

USFWS acknowledges the errors associated with using daytime telemetry to characterize nighttime activity and habitat use, but makes an (unconvincing) case that it did not base its conclusions in ESA consultations solely on the cited studies, but used other available information as well.

USFWS then describes in detail the disagreements during each consultation between consultants and Service biologists about the value of forested and non-forested habitat to the Florida panther. The USFWS response in essence documents that this has been an issue in urgent need of resolution since at least 1998. The Service does not make a convincing case that “additional habitat information” was used successfully to challenge consultants’ assessments. In the case of Florida Rock, for example, the Service requested a conservation easement on un-mined lands, recognizing the need for spatial extent of range and use of non-forested habitats, but the applicant refused that request. The Service should welcome rather than delay resolution of these issues. The Draft Conservation Strategy has actually been in internal review since November 2001, with one revision by the Subteam to incorporate non-habitat comments in August 2002. What has been the point of almost three years of internal review of a document in which available peer-

review comments related to the key topic of panther/habitat associations have not been incorporated?

“At that time, the best available scientific data regarding preferred panther habitat was the FWC's telemetry data and Dr. Maehr's early work (MSRP on 4-120). However, the Multi-species Recovery Plan does recognize that panthers travel through agricultural and other disturbed habitats at night.”

The FWC (and NPS) telemetry data are the only telemetry data available; however, reliable information has been available to USFWS throughout the monitoring period regarding the nature and limitations of these data (e.g. time of collection relative to activity cycles of the panther). Dr. Maehr's work, until recently, was the most visible interpretation of these data, but biologists within recovery agencies have long realized the shortcomings of his work, noting contradictions between (a) published conclusions about movement patterns/habitat preferences and (b) the accumulated knowledge and field observations of biologists in the monitoring program. USFWS should at least have welcomed Subteam progress in that direction rather than fighting it, and should have welcomed peer-review comments that would put panther science on a sound footing, rather than delaying their incorporation. It is now clear that the utility of Dr. Maehr's interpretation of telemetry data is limited to identifying the panther's preference for day-use sites and maternal dens within a subset of the panther's range. It is also clear that this interpretation of habitat preference has been inappropriately used by private sector consultants for habitat evaluations used in section 7 consultations and accepted by FWS, despite the reservations expressed by FWS biologists, Subteam members and peer-reviewers, over the years.

Puma concolor is one of the most widely distributed mammals in the world and can be found throughout North, Central, and South America. It is a habitat generalist; adaptable to the habitat of its prey and capable of living in forests, swamps, deserts, mountains, or prairies whether the climate is hot or cold, wet or dry. An investigation of published and unpublished records found that Florida panthers have been reported historically in every

major terrestrial habitat type in the state, showing no strong habitat preference (McCauley 1977).

The published idea that the Florida panther is a habitat specialist, a forest obligate, is contrary to everything that is known about the species. Post-publication peer-review (Beier et al. 2003, Comiskey et al. 2002, and Comiskey et al. 2004) has found this position to be based on flawed science, including unacknowledged data omissions, inappropriate methods, and unstated, unsupported assumptions. The Service has attributed the errors in panther science to a natural process of evolving ideas. Piffle. This is not the case. This is, and has been, science turned on its head.

As with other instances of errors, our main concern is that the public be notified that the information is erroneous, because material that "counts day as night" is still being disseminated to the public.

B. Definition of "habitat" and description of habitat model in Draft Conservation Strategy

The Panther Subteam reached a consensus at their final August 2002 meeting that a clear definition and consistent use of the term "habitat" was essential to the Conservation Strategy. The Subteam also reached consensus about what elements the definition should contain. Members Comiskey and Kautz were assigned to frame the definition, which they did. USFWS was to incorporate the material from Comiskey and Kautz in the Draft Conservation Strategy circulated for internal review between August and December 2002. The definition was removed during internal agency review of the Draft and inconsistent uses of the term throughout the document were not resolved. It is unclear what benefits are associated with releasing a Draft Conservation Strategy to the public for comment that does not contain an explicit definition of habitat for the benefit of the readers.

Comiskey et al. (2004) suggested the following definition:

Panther habitat encompasses the spatial domain, landscape features, and biotic components, including vegetative cover and prey species, needed to sustain all life history requirements, providing food and shelter and supporting characteristic movement for hunting, breeding, and dispersal.

The USFWS response under this Statement of Error indicates that the definition of habitat to which the document defaults is the one implied by rules of the habitat model presented in the Draft Conservation Strategy. USFWS representatives should recognize the inconsistencies associated with the Strategy model. The model identifies land covers associated with daytime telemetry, although the text never explicitly acknowledges that fact, referring to it as a "habitat" model as if land covers that fall outside its rules are not panther habitat. It is true that the model does a better job at identifying day-use habitat than other models, by accounting for spatial error of telemetry locations and using less stringent forest patch size rules, but precise use of terminology associated with the model is essential, and should be addressed before the Draft Conservation Strategy is released.

In a charged environment in which views and perceptions are already clouded by misinformation, it would be irresponsible for USFWS to release a document to the public that presents a model without explicitly describing what it identifies and the limitations associated with its rules. Accurate description of the model would not affect delineation of the Priority Zones, as the uses of the model to help refine the outer boundaries of the Zones were appropriate. The primary method used by the Subteam to delineate Priority Zones was historical intensity of use, determined by the home range overlay method presented at the March 1, 2001 Subteam meeting and described in the Draft Landscape Conservation Strategy.

C. Inconsistent uses of "habitat" in the Draft Conservation Strategy.

As with other instances of erroneous and inconsistent use of terminology, USFWS responds as if using terminology correctly in one part of a document balances or validates erroneous uses elsewhere in the document. As one reviewer noted, the Conservation

Strategy was the product of a committee that did not always agree (Wright 2003), and resolving inconsistencies through incorporation of peer-review comments is essential. Comments that could easily be incorporated without re-analysis of data would greatly improve the quality of the document released to the public, and would increase the focus and value of public comments by eliminating confusion associated with inconsistent uses of terms.

D. "Preferred" and "avoided" habitat.

As with other instances of erroneous and inconsistent use of terminology, USFWS responds as if acknowledging reservations or errors in one part of a document validate uncritical application of the material elsewhere in the document. After USFWS expressed reservations about the use of "preferred" and "avoided" habitat in the Florida Rock biological opinion, the document reverted to the use of these terms derived from habitat selection studies based on daytime telemetry, and accepted the applicant's forest-only compensation offer for impacts to panthers.

E. Biased view of panther habitat associations.

The example USFWS offers to support their point (that their documents show an unbiased understanding of habitat issues) proves the opposite, and provides a counter-case about why known errors should have already been corrected in the Draft Conservation Strategy, before language from the document is used elsewhere.

The passage from the Draft Conservation Strategy that the USFWS offers to show the document's grasp of habitat issues contains language flagged by Subteam members and by Paul Beier in his review of the document. We also used this passage in our Challenge to show that misinformation from the Draft Conservation Strategy is already being disseminated in other forms. This passage is currently being disseminated on a USFWS web site (USFWS Florida panther fact-sheet. [online] URL: <http://northflorida.fws.gov/Panther/panther-factsheet.htm>):

“Various authors (e.g., Belden et al. 1988, Maehr et al. 1991, Maehr and Cox 1995, Comiskey et al. 2002) also make the point that panthers often utilize non-forest cover types interspersed in landscapes dominated by forests.”

Both Comiskey and Beier pointed out to USFWS that none of the sources cited support the idea that panthers require landscapes dominated by forests. The conservation implications of such passages are clear. Accepting the view that panthers require landscapes dominated by forest eliminates most of south Florida from consideration as panther habitat, including most of the occupied range. This view also supports the PHEM rules (Maehr and Deason 2002) that eliminates non-forest from consideration in ESA section 7 consultations and reduces compensation for forest patches smaller than 600 ha, forest patches greater than 90 meters apart, and forest patches that are not oak hammock.

If the language in this passage had been corrected after a Subteam member and a peer-reviewer flagged it, this misinformation would not have been disseminated on the USFWS web site or in the USFWS response to our Challenge (!)

F. Uncritical references to Maehr and Cox (1995).

As in other cases, USFWS provides examples of correct usage as if demonstrating understanding of the errors in Maehr and Cox (1995) in some parts of a document excuse uncritical references and use of erroneous information and conclusions elsewhere. For example, Paul Beier's review comments to the Draft Conservation Strategy requested that results from Maehr and Cox (1995) be removed from comparison tables in the Strategy, where they are uncritically included and referenced.

G. Distance Panthers are Found From Forest

We did not mean “referenced” in this context to indicate that Maehr and Deason (2002) were explicitly cited in the Draft Conservation Strategy. This section of the

Strategy proposes to determine the distance panthers are found from forest by computing the proximity of daytime telemetry locations to forest, which is the same methodology used by Maehr and Deason (2002) to conclude that panthers stay within 90 meters of forest.

“This analysis revealed that 95 percent of all telemetry locations were within 150-200 meters of forest patches, and 99 percent of all locations were within 800 meters (Table 11). These telemetry data reflect daytime use of panthers, and although nighttime use could be substantially different, these data reflect the best information on panther habitat usage available at this time.”

The fact that USFWS repeats this text without acknowledging its error indicates to us that they still do not understand the data sufficiency issue that applies to this argument. Daytime telemetry locations not only do not provide the best information on the distance panthers move from forest, they provide NO information on this subject. We urge USFWS to remove this section from the Strategy, as Subteam members urged, and to instruct any Service personnel who deal with panther issues about why it is in error.

See Appendix 2 for an example that examines data sufficiency issues associated with telemetry studies that monitor only a part of the activity cycle of humans.

Has there ever been a time when USFWS representatives did not understand that panthers require and move about within extensive home ranges? Has there ever been a time when Service representatives accepted the notion that panthers stay within 90 meters of forest or that the distance daytime telemetry locations fall from forest is indicative of how far panthers move from forest? USFWS seem to be answering both yes and no to these questions, but more disturbingly, also answering both yes and no as to whether USFWS currently understands these issues.

On the subject of "best available science," USFWS policy (59 FR 34271) requires that such information be reliable and credible as well as available. As the SRT observed:

“To be considered ‘best available science’ a published paper must completely identify data used and data available, justify selective use of data, acknowledge the limitations of diurnal data, account for location error, and use the animal as the sampling unit. Most published papers on habitat use by panthers, including Maehr and Cox (1995) and papers relying on it, do not meet these criteria. These publications should not be used by management agencies to make decisions that affect the persistence of the Florida panther or to justify any action that may be detrimental to Florida panthers.”

H. Estimates of demographic parameters for the Pre-introgression panther population are not supported by data.

A recurrent problem with discredited panther literature is the practice of selective use of data to draw a conclusion different than would be reached if the entire body of data (available at the time) were considered.

The Subteam requested raw data from the Florida Fish and Wildlife Conservation Commission (FWC) so they could examine the basis in data for estimates in the Maehr et al. PVA analysis. FWC declined to provide the data, but promised to perform the analyses for the Subteam and supply parameter estimates backed by data. These estimates were never provided, and USFWS did not pursue the request. Consequently, various PVA simulations have been run with estimates of population parameters that are based on speculation, while a large body of field data has been ignored.

As the agency in charge of panther recovery, and the agency that grants permits for the monitoring of panthers, USFWS should be concerned about the breakdown in the flow of information from field and telemetry monitoring to literature to policy. We suggest that this concern be pursued in the context of a Lessons Learned exercise to identify how panther science/policy went so far astray. USFWS should then institute checks to prevent this from happening again.

I. Uncritical references to Maehr et al (2002) in the Draft Conservation Strategy.

As in other cases, USFWS provides examples of correct usage as if demonstrating understanding in some parts of the document excuses misuse of terminology elsewhere. Subteam members who understand the need for precise language have requested that they be allowed to edit the Draft Conservation Strategy to use terminology correctly and consistently throughout the document, a process that would require little time. This step should be taken before the Draft is released to the public, as required by the Data Quality Act.

J. Comparing known population (including non-breeding panthers) with estimates of minimum viable population.

We welcome the USFWS acknowledgment of this error. The public must be notified that this comparison is invalid, as a biological opinion containing this information is still being disseminated to the public (e.g. http://hpm.saj.usacc.army.mil/issueweb/Sparrow/fiopeis/Appendices/Appendix%20B/css_s_iop_bo_fin.pdf).

We are unconvinced by the USFWS' arguments that this supposition of surplus panthers played no role in their decisions to rule "no jeopardy" in the projects for which this comparison was used. The degree to which populations meet various standards of viability are clearly relevant to their ability to withstand environmental disturbances, disease, inbreeding, and habitat loss.

Much can be learned about the struggle between science in policy in the Vero Beach Office by examining how this error arose and how it was removed from the template for biological opinions. See detailed discussion in "Inaccuracies" Section.

K. Using the term “individuals” when “breeding adults” should be used.

As in other cases, USFWS provides examples of correct usage as if demonstrating understanding in some parts of the document excuses misuse of terminology elsewhere. Subteam members who understand the need for precise language have requested that they be allowed to edit the Draft Conservation Strategy to use terminology correctly and consistently throughout the document, a process that would require little time. This step should be taken before the Draft is released to the public, as required by the Data Quality Act.

L. Misciting information from Roy McBride as a personal communication.

The USFWS answer to this question evades discussion of the indefensible directive from the Supervisor of the Vero Beach Office that McBride's reports should not be cited in any USFWS document because they are gray literature. Service policy (59 FR 34271) clearly indicates that gray literature is an acceptable source for information used in the decision making process. The USFWS Subteam leader edited citations to his written report out of the Draft Conservation Strategy at one point. A Subteam member changed this directive only after vigorous protest. See detailed discussion in Section II.

M. Refusal to incorporate Peer-review comments to the Draft Conservation Strategy

“Since the Conservation Strategy is a product of a highly qualified team of panther biologists and landscape ecologists, the Service believes that it is based upon the best available scientific information.”

The Panther Subteam was a team of experts who disagreed strongly about panther science. These disagreements are now embedded in the Draft Conservation Strategy. Independent Subteam members and every peer-reviewer have noted serious errors and contradictory material in the Draft that should be corrected before the public is further misled about panther habitat requirements and population viability. Subteam members

have requested that they be allowed to incorporate peer-review comments that do not require re-analysis before the document is released to the public. We support that request, and the Data Quality Act requires that this step be taken. In the year and a half since peer-review comments were received, on the document, the data could have been properly analyzed, written up, and possibly even peer-reviewed and published.

“.. we are interested in obtaining comments from the broad scientific community and general public to ensure the highest level of quality possible. Therefore, we plan on noticing the Conservation Strategy in the Federal Register to obtain the widest array of review possible.”

Errors in the Conservation Strategy have already been identified and confirmed. Releasing a document with long-known errors to the public and waiting until 2006 to address the errors hardly seem to be effective strategies to produce an urgently needed habitat conservation strategy for an endangered species. Waiting so long to address serious errors, some of which were identified as early as 1999 by the Service's own biologists, has raised questions about whether USFWS managers understand the scientific issues. If they do realize the magnitude and significance of errors, questions are raised about why they would delay rather than embrace their correction. The Service's ambivalence may reflect an effort to avoid controversy by balancing conflicting points of view and contradictory interpretations of scientific data. However, this case hinges on indisputable issues of data sufficiency that invalidate the science USFWS has been using.

“We incorporated many of Dr. Beier's suggestions and comments as appropriate.”

This statement is inaccurate. None of Dr. Beier's comments were incorporated. Refusal of USFWS to allow the Subteam members to incorporate peer-review comments and the USFWS decision to disseminate the Draft Conservation Strategy to the public with known errors/misinformation is one reason for our Challenge and for the perception within the panther recovery community that USFWS fails to understand the nature and implication of errors.

Correcting policies and practices in which bad science has become embedded requires a clear understanding of errors. Refusing to address peer-review comments to the Draft Conservation Strategy before it is disseminated contributes to the mistaken view of panther science held by those who have relied on literature by Maehr and colleagues for information about panthers.

See Number 3 (*supra*) for a more detailed discussion of this point.

V. Corrective Relief

Given the deficiencies outlined above, a strong response is in order. The USFWS must (1) respond to the report of the Scientific Review Team, (2) allow the Panther Subteam to incorporate peer-review comments to the Draft Conservation Strategy, (3) correct the cited misinformation, (3) request that its counterpart federal agencies cease disseminating cited misinformation in their reports, (4) inform counterpart Florida state agencies and county governments of the extent to which the cited misinformation is repeated in their reports, (5) notify editors of journals and books that have published erroneous material about panthers to make them aware that these errors may have compromised the peer-review process and to request that appropriate measures be taken to correct misinformation, and (6) pursue a Lessons Learned process so that the agency and the scientific community can learn from this episode and prevent similar problems from occurring in the future.

1. Respond to the Report of the Scientific Review Team.

The Federal government (OMB 2004) has suggested minimum requirements for the peer review of influential scientific information, in part to avert the possibility that an agency might use public funds to conduct an inquiry into the science they use and then

ignore at their discretion conclusions, those that are likely to affect policy decisions and change prevailing agency practices:

"When the agency uses a [peer-review] panel ... the agency must also prepare a written response to the peer review report, indicating whether the agency agrees with the reviewers and what actions the agency has taken or plans to take to address the points made by reviewers. The agency is required to disseminate the peer review report and the agency's response to the report on the agency's web site, including all the materials related to the peer review such as charge statement, peer review report, and agency response to the review."

We ask that the USFWS respond to the report of the Florida Panther Scientific Review Team (Beier et al. 2003) in this manner, indicating whether the agency agrees with the report and what steps the agency plans to take in response to its findings.

2. Incorporate Peer-review Comments in Draft Conservation Strategy.

The MERIT Panther Subteam was convened to deliver a peer-reviewed habitat conservation strategy to USFWS. Allow them to complete their task by incorporating peer-review comments into the Draft Conservation Strategy.

3. Correct Misinformation in USFWS Publications.

USFWS should either excise the cited misinformation from documents listed in the DQA Challenge, amend them with an explanation of errors, or retract those documents in their entirety from dissemination:

4. Notify Federal Agencies of DQA Violations

USFWS should notify the U.S. Army Corps of Engineers that information violating the DQA is being disseminated in the Corps publications relating to the Southwest Florida Environmental Impact Statement and Panther Key.

In addition, USFWS should notify the Environmental Protection Agency, Federal Highway Administration and the Natural Resources Conservation Service that those agencies might be disseminating information found to be in violation of the DQA.

5. Inform State and County Agencies of Misinformation

USFWS should contact the following state agencies and inform them that they may be disseminating information that has found to be in violation of the DQA:

- Florida Fish and Wildlife Conservation Commission;
- Florida Department of Environmental Protection;
- South Florida Water Management District; and
- Florida Department of Community Affairs.

USFWS should similarly notify Collier County, Hendry County and Lee County of its findings of misinformation in the panther administrative record. In the case of the FWC, which monitors panthers under USFWS permits, the agencies should conduct a joint evaluation of the contribution of FWC staff to supporting and publishing misinformation about panthers.

6. Notify Editors of Journals and Books That Have Published Erroneous Material About Panthers

USFWS should contact the editors of the journals and publishers listed in the DQA Challenge that have disseminated information that has been found to be in violation of the DQA.

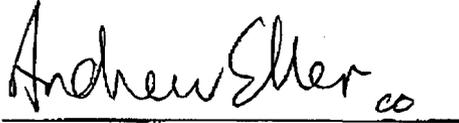
7. Pursue a Lessons Learned Process

Take steps to enable the agency and the panther recovery program to learn from this episode and prevent similar problems in the future by pursuing a Lessons Learned process to examine how such problems arose in a well-funded, fully-staffed, long-running recovery program with strong public awareness and support. An examination of circumstances surrounding the origin, identification, and correction of errors would be beneficial for both the agency and the scientific community.

Conclusion

USFWS ambivalence, duplicity, and lassitude prompted us to file the Data Quality Act complaint. Despite concerns raised by agency biologists as early as 1998 in the Daniels Parkway consultation, written comments provided by the Service to Dr. Maehr in 2000, debate among members of the Florida Panther Subteam from 1999 through 2002, and publication of peer-reviewed journal articles by Comiskey et al. (2002), Beier et al. (2003), and Comiskey et al. (2004) that explicitly describe the genesis, nature, and implications of USFWS errors associated with panther habitat characterizations and demographic parameters, the USFWS has yet to impartially resolve this issue which is critical to defensible panther management. Instead, the agency continues to use and disseminate flawed information. In its response, USFWS states that they will take this new information into consideration and will revise key documents such as the Florida Panther Recovery Plan and South-Florida Multi-Species Recovery Plan and the Landscape Conservation Strategy by 2006! The Data Quality Act does not allow such a delay.

Respectfully submitted,

Handwritten signature of Andrew C. Eller, Jr. in cursive, with a horizontal line underneath.

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Additional References

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Kerkhoff, A. J. 1997. Toward a panther-centered view of the forests of South Florida. Masters thesis. University of New Mexico, Albuquerque, NM.

McCauley, M.N. 1977. Current Population and Distribution Status of the Panther, *Felis concolor*, in Florida. Unpubl. MS Thesis, Univ. of South Florida. Tampa, FL. 58 pp.

Wright, R.G. November 8, 2002. Anonymous reviewer comments to Kautz et al., submitted to *Biological Conservation*.

Appendix 1. ESA / Environmental Baseline

The Endangered Species Act recognizes five primary reasons why a species may be listed as threatened or endangered: (a) the present or threatened destruction, modification, or curtailment of habitat or range, (b) over-utilization for commercial, recreational, scientific, or educational purposes, (c) disease or predation, (d) the inadequacy of existing regulatory mechanisms, and (e) other natural or manmade factors.

The USFWS cited persecution (over-utilization) as the primary reason for listing the Florida panther as endangered in 1967. Habitat loss, range-wide depletion of its primary prey the white-tailed deer, and persecution were later recognized as reinforcing causes that reduced the panther to an inbred population isolated in southern Florida. A genetic restoration program has improved the reproductive vigor of the species and the population has been increasing since 1995. However, habitat loss still remains a persistent and difficult problem to address, since much of occupied panther habitat is privately owned and subject to development.

The Endangered Species Act authorizes the Secretary of Interior to acquire by purchase, donation, or otherwise, lands, waters, or interest therein to conserve fish, wildlife, and plants including those listed as threatened or endangered. The Endangered Species Act therefore provides a proactive means by which the USFWS can protect habitat for listed species such as the Florida panther, e.g. acquisition of the 26,400-acre Florida Panther National Wildlife Refuge in 1986.

The Endangered Species Act also stipulates that activities financed, authorized, or executed by a Federal agency shall not jeopardize the continued existence of a threatened or endangered species. Today, habitat lost to developments that have been issued a wetland dredge and fill permit by the Army Corps of Engineers is the primary threat to the Florida panther. This development, in some instances, may also be facilitated by Federal funds disbursed from the Federal Highway Administration for

the construction of improved, expanded, or new roads and highways in panther habitat.

When a Federal agency proposes an action they are required by the Endangered Species Act to consult with the USFWS to assure that the proposed action does not jeopardize the Florida panther. The Service works with the Federal agency and the applicant to avoid and minimize impacts to the species. This is usually achieved by modification of the project. In those instances where impacts to the species cannot be avoided or minimized by modification it may be appropriate to compensate those impacts by protecting panther habitat offsite and in an area that will benefit the species.

During consultation with the Federal action agency the USFWS evaluates the direct, indirect, and cumulative effects of the proposed action against the environmental baseline for the species to determine whether or not the action will jeopardize the Florida panther.

The direct effects are those associated with immediate implementation of the proposed action. The indirect effects of the proposed action are those that are reasonably certain to occur but later in time. The cumulative effects are comprised of all non-Federal actions reasonably certain to occur in the project vicinity, specified on a case-by-case basis as the action area. The environmental baseline consists of the past and present impacts of all Federal and non-Federal actions and other human activities in the action area. The information used and disseminated by the USFWS is relevant to establishing the environmental baseline and rational evaluation of the direct, indirect, and cumulative effects of the Federal action.

Properly defining and characterizing panther habitat is key to assessing the rate of habitat loss versus the rate of habitat protection and the amount of land needed to secure the south Florida panther population. The amount of land needed to secure a panther population large enough to withstand environmental disturbances and disease,

while providing the individuals needed to reestablish two additional populations within its historic range, is in turn determined by demographic parameters such as kitten survival, sub-adult recruitment into the breeding population, male-to-female sex-ratios, fecundity, and adult mortality that relate to population viability. These parameters can tell us whether the population is on a trajectory toward extinction or recovery. It is imperative that demographic parameters based on field data be used in population viability analyses to accurately portray the current status of the population so that management decisions regarding habitat protection and habitat management are efficient and effective. Without sufficient habitat all other aspects of the panther recovery program are moot.

Appendix 2. Third-party comments, critique of Maehr draft

Despite the Service's caveats that third-party comments were not considered by the Service in their response, it is our view that the Service should have vetted these comments for relevance and accuracy before introducing them into a response to a Data Quality Act challenge, including annotations to those comments they chose to submit regarding (a) their relevance and (b) points of Service concurrence/disagreement. The introduction of more misinformation into the process of error correction is irresponsible.

While some of the third-party comments seem to be well-meaning defenses of Dr. Maehr, most do not demonstrate a knowledge of panthers, panther data, or of the publications and issues in question. None demonstrate an understanding of the nature or purpose of a Data Quality Act or the Eller/PEER Challenge. Some disagree strongly with SRT findings, while others are completely unaware of the SRT review. It is noteworthy that the only comment authors who are qualified to address SRT critiques of Maehr's habitat work (FWC Panther Section Leader Darrell Land and Asst. Leader David Shindle) do not do so. No comments address the validity of challenged PHEM rules or the conservation implications of their acceptance by the Service.

For example, authors commenting on habitat issues should be familiar with PHEM rules and should be aware that the SRT found no support for PHEM's 90-meter rule that reduces compensation for forest patches that are more than 90 meters from other forest patches) or for the PHEM rule that reduces compensation for forest patches smaller than 600 ha. They should demonstrate an understanding of the implications of applying such rules across the landscape of south Florida. In the application of PHEM to the Daniels Parkway project, the 90 meter rule led to dropping the largest forest patch from consideration because it was more than 90 meters from other patches, substantially reducing compensation. Anyone who considers that the problem can be resolved by increasing the 90 meter range to 200 meters to

compensate for the spatial error associated with telemetry collection demonstrates a fundamental misunderstanding of the problem: the distance panthers move from forest cannot be determined by analyzing the distance daytime telemetry locations fall from forest, regardless of whether spatial error is incorporated. Understanding the ecological, monitoring, and data sufficiency issues associated with this question should be a requisite for working in panther recovery, and we wish it were a requisite for responding to our Challenge.

In support of the 90-meter PHEM rule, Maehr and Deason (2002) cite Maehr and Cox (1995) as demonstrating that panthers remain within 90 meters of forest patches. With regard to this citation, the SRT report noted: "The peer-review process ... failed to detect that later manuscripts inappropriately cited Maehr and Cox (1995) as supporting conclusions not stated therein - such as panthers being 'reluctant to cross' 90 m of nonforest, perhaps because reviewers assumed Maehr would not misinterpret his own work."

A persistent thread in third-party comments is the characterization of such factual statements about panther literature and the peer-review process as a personal attack on Dr. Maehr, although no one has raised ethical issues or charged deliberate misrepresentation of panther data for financial gain on his part. In response to both the SRT report and the DQA Challenge, considerable time and attention has been diverted from resolving scientific issues to defending the author's motives and ethics, in part because there is no specific venue for the understandable urge to voice support for a colleague/co-author. Rather than continue to muddle the resolution of substantive issues, supporters might consider requesting an ethical inquiry in order to establish that no codes of professional ethics have been violated. Such an inquiry would clear the air and allow the separation of ethical from scientific issues that we have striven to maintain.

A second persistent thread, one that is relevant to the FWS claim that the challenged science was best available science at the time it was written, is the

discounting of field expertise and gray literature in comparison to peer-reviewed speculation. While speculation is an important aspect of science, peer-review of an article that contains speculation does not transform that speculation into fact. When speculation is counter to expert opinion and field observations, expertise takes precedence over peer-reviewed speculation.

For example, speculation by Maehr or current Panther Leader Darrell Land regarding documented population size over the monitoring period or observations made while following hounds over nighttime scent trails left by panthers does not change the fact that field biologist and veteran houndsman Roy McBride is the only credible source of such information. It is McBride who follows the hounds, and it is McBride who produces the yearly documented count of panthers based on his extensive field surveys. Maehr and Land recognized this in citing a pers. com. from McBride in their 1999 PVA draft as their only source for claiming the population was increasing from the early to mid-1990's, prior to genetic restoration. They failed to remove this citation in the 2002 publication of their PVA paper after McBride disputed it strongly at the 1999 Gainesville PVA meeting, in Panther Subteam meetings, in his field reports, and even in a court declaration (McBride 2001).

As the agency that grants monitoring permits and applies information gained from monitoring to panther recovery, FWS should be familiar enough with monitoring practices and personnel to know and consult valid sources of expertise, and to take corrective action when published literature conflicts with field observations. A draft analysis by David Maehr, "Florida Panther Aerial Telemetry Data Related to Habitat and Activity Patterns," is appended to his third-party comments to the USFWS response to Eller/PEER. Maehr analyzes panther activity levels and habitat observations associated with radiolocations taken at different times, concluding "forest cover remains the dominant habitat used regardless of time."

We respond in some detail to this draft, as it raises some of the same concerns associated with previous analyses used by the USFWS: omission of information with

which reviewers and USFWS personnel may not be familiar and unstated, unsupported assumptions.

* A positive reading for "activity" does not necessarily indicate non-resting habitat use. Radio-collar activity switches record head movement and are therefore activated by grooming and other stationary activities as well as by walking.

* Regarding use of observer-recorded habitat codes associated with telemetry locations, observers most often do not see the panther but make a subjective judgment about where the panther is located. As reviewer Paul Beier noted in his comments on the Panther Subteam's Draft Conservation Strategy: "The habitat telemetry codes... suffer from the defect that there is an undeniable bias of the observer in the airplane; from personal experience, I know there is a strong temptation to 'hear the strongest signal' from the habitat patch that I 'know' the animal prefers."

* Maehr's draft implies that Eller/PEER contend that no panther movement or activity occurs during the day ("...specious claims by ... Eller and PEER that daytime telemetry data represent only resting locations of panthers). Eller/PEER cite Maehr (1990) to establish that panthers are typically at or near their daytime resting sites when telemetry data are collected: "During limited 24-hour monitoring of panthers in the late 1980s, measurable shifts in location were rarely seen during the day, while nighttime travel distances of 20 km were not unusual (Maehr et al. 1990)." The differences in distance moved in daytime vs. night indicate that activity/habitat associations documented by daytime telemetry are not equivalent to nighttime habitat use. Eller/PEER discuss the "known activity bias of these telemetry data toward resting cover" and contend that movement is greater and habitat use is broader during hours of peak activity, as indicated by field observations, tracking by hounds in early morning hours (following scent trails left at night), and GPS observations of related Western subspecies of Puma.

According to a personal communication from Maehr (Kerkhoff 1997):

"At the time of [telemetry] observation, panthers were generally seeking or had established their day rest site (D. Maehr, personal communication). The aggregate of panther locations thus represents the distribution of rest sites panther's use as they move about their home ranges. The temporal scale of sampling thus determined in part the phenomena expressed by the data (sensu Allen and Starr 1982), allowing habitat selection below the scale of the home range to emerge."

While there are many reasons to examine the various types of habitat selection below the scale of the home range, habitat evaluation for the purposes of assessing impacts to panthers of land use changes must consider impacts to the mosaic of habitats within the home range, including impacts to day-use sites. Eller/PEER does not object to properly described analyses of day-use telemetry locations - we do object to using habitat rankings derived from these analyses to define the totality of habitat types and configurations that qualify for compensation under the ESA.

* Readers must read the fine print on the graph (Maehr's Figure 1) to realize that less than 1 percent of observations fall (overnight) between 6 PM and 7 AM. We looked at the same data set and got even fewer observations for the early morning bars: 12 observations (of 14,500+) before 6 AM and 53 between 6 AM and 7 AM (of which only 3 were before 6:45 AM) The statement that "many" aerial telemetry data were collected around sunrise is misleading.

* We caution against applying frequency-of-use data to habitat evaluation under the ESA in the manner of PHEM. PHEM makes the unsupported assumption that land covers visited less frequently than others during the daytime are expendable or unimportant to panthers. A simple example: we may spend the largest percentage of our time at home in the den or bedroom, but less frequent use does not indicate relative unimportance of the kitchen, bathroom, hallways, laundry or furnace room. A male panther may visit a mate only once a month, but the land covers he traverses on the visit are nonetheless essential to the integrity of his home range and breeding activities.

* Maehr notes that Everglades National Park observers did not report activity, and his analysis is limited to observations recorded between 1986 and 1993, before the dramatic panther population increase in Big Cypress National Preserve. Therefore, observations are biased toward areas dominated by forest. For example, virtually all observations made in the densely forested Fakahatchee Strand, regardless of time of day, will be in forest. A needed additional metric for this analysis: the percentage that is forested of the habitat available to each panther included in the analysis.

* Maehr badly mischaracterizes the discussion in Comiskey et al. (2002) in which the authors' reference the method suggested by Rettie and McLoughlin (1999) of using activity buffers that approximate mean moving distance between data collection locations. Maehr confuses spatial error of data collection (200-300 m) with the temporal error associated with monitoring only daytime activities. Increasing the radius for considering habitat use or movement around collection locations from 90 meters to 200-300 meters (to account for the spatial error of data collection) does nothing to address the larger problem of limitations associated time of collection. The latter is a data sufficiency issue. Researchers who draw conclusions about the totality of panther habitat use cannot ignore the indisputable fact that animals must traverse the intervening habitat in moving from one telemetry location to the next.

Third-party responses by Maehr and colleagues imply that the critics of Maehr's work dispute the value of forest to panthers or criticize his work for lacking 24-hour telemetry. In fact, no one disputes the importance of forest. The SRT report strongly affirms the important role of forest, as do McBride's field reports and Comiskey et al. (2002, 2004). Maehr has not been criticized for lacking 24-hour GPS telemetry or any other technological advancement, but for treating daytime telemetry data as if they cover the 24-hour cycle of panther activities and for failing to inform reviewers and readers in his post-1994 papers that telemetry locations were collected in the daytime, when panther's activity levels are low. He is criticized most strongly for concluding that panthers are reluctant to move more than 90 meters from forest at any time of the

day or night, based on the observation that most daytime telemetry locations are within 90 meters of forest, and for applying that metric to habitat evaluation to discount compensation for forest patches separated by more than 90 meters.

The SRT confirmed that:

"Extrapolating daytime telemetry locations to describe 24-hour habitat use by Florida panthers is unjustified, and conclusions based on such extrapolation are unreliable." They found "no basis for the ideas that panthers are reluctant to move greater than 90 m from forest cover, that panthers avoid forest patches smaller than 500 ha, or that BCNP and ENP do not provide useful habitat for panthers. Clearly, panthers use a variety of habitats and survive and reproduce in areas that do not meet the criteria of [Maehr's] PHEM. In fact, we recommend that PHEM not be used to make land management decisions regarding Florida panthers" (Beier et al. 2003).

Noting the indisputable fact that panthers use other land covers in addition to forest does not diminish the importance of forest. What critics object to is PHEM's exclusion of all non-forest from habitat assessment under the ESA, and PHEM's discounting of the value of forest in comparison to an arbitrary "ideal" standard. Panthers are known to use and benefit from a mosaic of land covers, including all sizes of forest patches, and land use modifications that adversely affect these habitats, as well as those that affect large forests, will have an impact on panthers.

Discredited habitat evaluation methods use the following arguments:

- * Land covers associated with most telemetry locations are dominated by forest.
- * Therefore, panthers require a landscape dominated by forest.
- * Therefore, only impacts to forests merit compensation under the ESA.
- * PHEM takes another giant step from any empirical grounding by discounting compensation for forest patches smaller than 600 ha, separated by more than 90 meters from other patches, or of a type other than hardwood hammock.

McBride has pointed out the absurdity of applying such an argument to pumas living in the deserts of the American Southwest, where many miles of barren landscape separate resting sites that make up only a miniscule portion of home ranges. The fact that a particular land cover (e.g. rock falls) dominates day-use sites in a particular environment does not mean that puma require landscapes dominated by that land cover or that only that land cover merits protection.

Those who do not understand the logic behind these points should talk with panther field biologists, tour south Florida panther range, and review visualizations of panther telemetry superimposed on a land cover map of south Florida.

Appendix 3. Example of telemetry study of USFWS employees

Data Sufficiency Issues Associated with Telemetry Monitoring: an Example

An example from another species may help to illustrate the proper use of telemetry data, describing the movement patterns and life cycle needs of monitored animals in the context of "best available science." Consider a field and telemetry monitoring study of USFWS employees, conducted to investigate habitat use and requirements for survival:

Suppose that accumulated observations indicate that the study subjects are typically at rest during the night and that they move about widely during their active daytime hours, performing vital USFWS work in government offices and seeking food and social interactions at locations distant from their homes. In addition to telemetry, available information about the study subjects might include employment records, point of origin of emails and phone calls; auto mileage; locations at which credit cards are used; surveillance cameras at public locations; trailing by investigators during periods not covered by telemetry; and information from other studies of day-workers.

Suppose that investigators collect telemetry observations only during the night, and find that most location data indicate that subjects are within 90 meters of their homes. Consider the type of knowledge investigators could obtain from such data and what relevance it would have to identifying essential habitat components for conservation.

If investigators used an analysis of nighttime telemetry data to determine which components of the study area are used and needed by subjects or how far they are likely to be found from their homes, the shortcomings of a methodology that discounts the wealth of other information about community structure, feeding, breeding, and sheltering needs of workers would be immediately apparent.

Decisions about the impacts of land-use changes to the subjects could not be based on the subjects' nighttime location alone, but would incorporate other relevant information as well. Investigators could not conclude (a) that homes are the only occupied or potential habitat of subjects (b) that subjects stay within 90 meters of their homes, or (c) that loss of offices, roads, schools, and businesses would have no impact on them. Houses or residential enclaves that are more than 90 meters from other houses would not be dropped from consideration on the theory that subjects would not be able to cross 90-meter gaps. Employees would not be terminated because nighttime telemetry did not record productive work activities deserving of government salaries.

Suppose investigators had access to 24-hour telemetry data and found that offices and homes were by far the most frequently visited habitat components. Frequency of use could not be the basis for removing from consideration places where food gathering, social interactions, purchase of goods and services and religious observances occur. Sites for entertainment, courtship, food production, education of offspring, and even burial would merit protection, as would travel routes within the overall activity area.

Clearly, the best available information indicates that neither daytime nor nighttime telemetry alone fully reflects the subjects' movement patterns or habitat use. If land covers near the locations are going to be used to define the totality of habitat use for all life cycle activities, locations must be taken at times that are representative of the spectrum of activities required for survival. Telemetry data collected during one period of a 24-hour activity cycle identify specific components of habitat use for the activities and time periods covered. Subjects move about within extended activity areas and are affected by a range of impacts to the mosaic of land covers and functional aspects of their environment. In reporting the findings of such investigations, authors should clearly note the time of data collection in relation to periods of peak activity, and conclusions should reflect data limitations. Acknowledging that workers use and benefit from offices, roadways, schools, and

markets in addition to homes does not mean that homes are not important or necessary, just that they are not by themselves sufficient for survival.

Similarly, daytime telemetry locations do not reflect and have never reflected the best available information about panther habitat use during periods of nighttime activity or the distance panthers move from forest. The best available information for nighttime activity and habitat use is observations of field signs left during panthers' nighttime movements (e.g. trailing with hounds, described in McBride 2002 and Comiskey et al. 2004), information about related subspecies of puma (Beier et al. 1993), and examination of chronologically sequential daytime telemetry locations within the spatial extent of home ranges (Comiskey et al. 2002). Connecting the dots from day to day indicates that panthers regularly cross large open areas to move from one day-use site to the next.