

SUE MARD
R



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Rocky Mountain Arsenal National Wildlife Refuge
Building 111
Commerce City, Colorado 80022-1748
Telephone (303) 289-0232
Fax (303) 289-0579

IN REPLY REFER TO:

RECEIVED

December 20, 1995

DEC 27 1995

OFFICE OF THE
ATTORNEY GENERAL
NATURAL RESOURCES SECTION

Ms. Denise Link 8HWM-SR
U.S. Environmental Protection Agency
999 18th Street, Suite 500
Denver, Colorado 80202-2466

Dear Denise:

The U.S. Fish and Wildlife Service is responding to the letter dated October 26, 1995, containing Environmental Protection Agency comments regarding the Service's Biomonitoring Program for Rocky Mountain Arsenal National Wildlife Refuge (BMP). General and specific comments are enclosed.

The Service hopes that many of the technical issues identified by EPA, in the October 26, 1995 letter, were clarified by Service staff at the November 28, 1995, meeting between our respective staffs. In addition, the Service appreciates EPA's follow-up letter of December 8, 1995 in which EPA acknowledges that some comments were made in error. However, the Service believes that it must respond to specific statements made by EPA regarding the BMP because there are still some significant misunderstandings between our respective agencies regarding the philosophy, methods, studies, and role of the BMP.

SUSAN
Did we get this?
No


In the Service's opinion, the EPA needs to be more realistic about the feasibility of work that is suggested, considering both the realities of field biology and costs. Many of the comments in the subject letter would imply a scope of work that is unrealistic within the constraints of funds and personnel that are currently available. EPA comments also suggest studies that are beyond the needs and interests of the Service and appear to be only directed toward EPA goals ignoring the needs and responsibilities of the Service. There are fundamental differences between regulators and trustees regarding risk assessment (predicting the probability an effect will occur), and biomonitoring (actual documentation of effect). Although there are areas of overlap and mutual interest, the Service believes that there is and should be a separation between biomonitoring for trustee issues (i.e., Natural Resource Damage Assessment, wildlife management, revegetation monitoring, etc.) and biomonitoring for risk assessment.

In order for our respective agencies to work effectively and cooperatively, each agency's roles and responsibilities must be considered and acknowledged by the other. One of the reasons that our two agencies have had

misunderstandings in the past was due to poor communication between our respective staffs. The Service is committed to working closely and cooperatively with EPA to reach common ground and move beyond past differences to new levels of collaboration and coordination.

If you have any questions, please call me at 289-0232.

Sincerely,

for 
L. Ronel Finley
Coordinator - Ecological Services

Copies Furnished:

- Ms. Laura Williams, U.S. Environmental Protection Agency, 999 18th Street, Suite 500, Denver, Colorado 80202
- Mr. Mike Anderson, Shell Oil Company, 1700 Lincoln Street, Suite 4100, Denver, Colorado 80202
- Mr. Jeff Edson, Colorado Department of Health and the Environment, 4300 Cherry Creek Drive South, Denver, Colorado 80222-1530
- Ms. Vicky Peters, Colorado Attorney General's Office, 1525 Sherman Street, 5th, Denver, Colorado 80203
- Mr. Charles Scharmann, Program Manager Rocky Mountain Arsenal, Building 111, Commerce City, Colorado 80022-1748
- Ms. Laura Di Norcia, Program Manager Rocky Mountain Arsenal, Building 111, Commerce City, Colorado 80022-1748
- Document Tracking Center, Office of the Program Manager for Rocky Mountain Arsenal, Building 111, Commerce City, Colorado 80022-1748

USFWS RESPONSES TO EPA
OCTOBER 26, 1995 COMMENTS

General Comments:

1) Cover letter, second paragraph, last line:

The Service did not ignore EPA comments. The Service responded to EPA's original comments in a letter dated December 13, 1993. If EPA suggested a revision to a BMP investigation, the Service took that proposed change under advisement. If that change was not incorporated it was because the Service did not agree with EPA from a technical standpoint.

2) General comments #2:

The Service provided responses to similar comments made by EPA in a December 13, 1993 letter. To reiterate, the Service has incorporated components into the BMP to characterize exposure for sentinel species. Soil samples are/were collected for small mammal studies, (small mammal community investigation, deer mouse enclosures and pocket gophers) and badgers. Prey items are/were collected for kestrels, starlings, magpies, great horned owls, and badgers. Radio telemetry studies are conducted on several sentinel species to determine where individuals feed/forage on the Arsenal. This information coupled with existing soil and prey data should adequately characterize exposure. The Service agrees with EPA that there are limitations in using RI and CMP data. However, the Service does not believe that these data should be thrown out. The Service believes that these data are useful in helping to characterize exposure in wildlife and the Service will continue to use these data. The Service has also supplemented the existing soil data with new sampling efforts when necessary. Finally, the Service does not believe that it is the responsibility of the BMP, or the Service for that matter, to characterize the spatial variability and extent of soil contamination. That effort falls under the realm of the RI.

4) General comment #4:

The Service disagrees with EPA comments that wildlife health (normal or expected survival), is a vague and subjective concept and therefore is not operational or useful as an assessment endpoint in wildlife toxicology. What other relevant assessment endpoint is there? From the Service's perspective, wildlife health is the ultimate measure of contaminant effects upon wildlife. The Service is primarily interested in determining deviations from the norm which could be a result of contaminant exposure. The Service agrees with the EPA comment that the assessment endpoint is too vague to determine a lack of effect. Neither the Service nor anyone else can prove that there are no effects, just as EPA cannot assure the public of zero risk. Attempting to prove the negative case is a logical fallacy.

5) General comment #5:

The three objectives of the BMP simply incorporate the five from the draft BMP. There seems to be a basic misunderstanding by EPA on the BMP. The current BMP comes to an end in 1996/97. The information gathered (useful endpoints, tools, species, etc.) will be used to establish a benchmark and

develop a longterm monitoring program. This program will be designed, as the Service has always intended, to measure pre-and post-remediation trends in contamination and effects. Obviously, a new BMP will need to be developed to measure post-remediation trends.

6) General comment #6:

The Service sees little difference in the intent of the original and final version of Objective (b).

7) General comment #7:

The Service disagrees with EPA's comment. A major foundation of the BMP sentinel species program is to investigate health effects as they occur through a continuum of potential exposures from the most highly contaminated areas to the least contaminated areas. Generally, this approach allows the Service to look at effects in the highly contaminated central core (areas of high risk), the uncontaminated periphery (areas of low risk), and all areas in between. The predictions of the IEA played a major role in the design of the BMP and that is why some of the sentinel species are the same as in the IEA. Nest boxes, enclosures, trapping grids, etc., were placed specifically in response to known soil concentrations or areas of predicted risk on the Arsenal. In addition, each sentinel species investigation attempts to measure a variety of effects and biological responses, characterize exposure via telemetry, prey collections, soil sampling, and the use of existing soil data. All these data can then be input into a GIS data base to establish a geographical distribution of exposure, response, and effect.

The use of the Allowable Activities Map to characterize exposure had been deleted from the owl study plan but remained in the BMP by mistake.

8) General comment #8:

The Service believes that the assessment endpoint, wildlife health, is matched to the appropriate scale. The scale is the Arsenal which had been mentioned several times in the BMP. Although the scale is the Arsenal, the BMP does detect effects to wildlife populations and individuals in areas of much smaller scale (e.g., starlings in Section 36, kestrels in Sections 2 and 35). The Service believes that mark-recapture studies of small mammals, post-fledging survival studies of magpies and great horned owls, and the starling investigation will shed some light on whether wildlife populations in the central core are self supporting or are maintained by continuous immigration from other areas. Whether the core area is a sink or not is irrelevant. These areas will be remediated because all Parties agree they pose excessive risk to humans and wildlife.

Specific comments:

Great horned owl

1) Conducting a power calculation will not change the sample size or relevance of the great horned owl study. The great horned owl was selected to evaluate its use as a sentinel species on the Arsenal because it is a top level predator and the IEA/RC predicts that this species is at great risk. In

addition, this species is protected by the Migratory Bird Treaty Act and as such, the Service has an obligation to determine current and future contaminant related effects whether or not the sample size is conducive to high power statistical analysis.

2) The great horned owl investigation has changed considerably since its inception. The original graduate student resigned early in the study. Both the original student and the current student have had great difficulty in capturing adult owls, the dosing experiments have been dropped, and in 1995, great horned owls experienced very low reproduction (those owls that did nest were successful). The current student will return in early 1996 to continue radio telemetry of adults, collect reproductive data, fledgling survival data, contaminant residues in blood, etc. The future of the great horned owl as a sentinel species is still under consideration.

Bald eagle:

1) The goal of this investigation is to monitor population trends, habitat use, and management. The Service has no intention to expand this program. EPA must recognize that the Service is not obligated to conduct investigations or monitoring programs solely for EPA risk assessment needs. The Service has other responsibilities under the Endangered Species Act, Migratory Bird Treaty Act, Fish and Wildlife Coordination Act, NEPA, and as a Natural Resource Trustee and land use manager of the Arsenal.

Other population and Community level studies:

1) See previous comment. This statement reveals a misunderstanding of the point of these studies and the overall BMP. They are intended to provide background information that will allow for reasonable judgment about the effects on these species from a variety of causes, including contamination.

American kestrel study:

EPA must understand that the 1994 Annual Progress Report is just that, not a final product.

1) The Service does not understand the reviewer's logic. The segregation of dieldrin concentrations in eggs and other tissues is striking. Those kestrel samples collected in or near areas of high predicted risk had high dieldrin concentrations. Those samples collected in areas of low or marginal predicted risk had little or no detectable concentrations of dieldrin.

2) The reviewer seems insensitive to the need to separate kestrel boxes by a minimum distance to limit intra-specific competition, as well as logistical consideration (trapping adults, conducting ligatures, attaching transmitters, etc.) for box locations where access would not involve excessive nest disturbance. With reference to figure 9 of the kestrel study plan, locations of boxes in the centers of sections would do little to change the hazard index at the nest box sites. The effect would be, however, to reduce the number of boxes from 37 to 26. The fact that some kestrels may forage off-site is irrelevant. The data clearly support the contention that dieldrin exposure is not occurring and that contaminant effects are not measurable at those boxes.

- 3) The opinion that the telemetry protocol (systematic tracking for 1 hr/wk) provided almost no useful information on exposure ranges is incorrect. It is apparent that the reviewer made these comments prior to evaluating the data generated. These data indicate that kestrels forage in much smaller areas than assumed in the IEA/RC. The Service did change the telemetry protocol (random relocations) because of concerns over differing interpretations of kestrel activity. However, the random relocation method confirmed the previous results.
- 4) Analytical results from ligatures were provided in table 1-5 on page 1-13 in the FY94 Report.
- 5) EPA is incorrect. The Service proposes to use existing soil data and radio telemetry data to assess exposure of kestrels in relation to soil contaminant patterns. This can be done easily through the use of GIS.
- 6) As stated in the BMP (page 97) and Service comments dated December 13, 1993, the dosing studies will be conducted with nestlings. The Service believes that 21 day dosing studies of kestrel nestlings are appropriate to evaluate dose-response relationships in nestlings. Wild kestrel nestlings are used to monitor contaminant uptake and trends and a variety of biological endpoints. The nestlings are collected 21d post-hatch.
- 7) There was no element to determine post-fledging survival and dispersal of kestrels in the BMP. The pages that the reviewer refers to in the BMP (pp. 100-101) are pages from the European starling study plan.
- 8) Monitoring the survival/mortality of adult kestrels has been conducted with limited success during the breeding season through the use of radio-telemetry and nest monitoring. The Service documented only two cases of adult kestrel mortality during the 1993/94 field seasons (see page 1-12 of the FY94 Report). The Service documented at least five cases of adult mortality during the 1995 field season. All five cases occurred in the central core (in areas of high predicted risk) and analytical and/or necropsy results in at least three cases indicate that dieldrin poisoning was highly probable. There are cases where mortality may be suspected, but has not been documented.
- 9) For the purposes of the FY94 report, EROD activity was reported because PROD activity is often highly correlated with EROD activity in avian species.
- 10) The values in table 1-2 are not typographical errors. According to the statistical analysis of the reproductive data, productivity in the central core of the Refuge was significantly higher than the periphery (Wilcoxon-rank sum, $z = -3.41$, $p < 0.05$). There were seven nest failures in the periphery and only two in the core. The five failures in the periphery had considerable influence on the statistical analyses. In 1993, nest success was significantly lower in the core than the periphery (Wilcoxon rank-sum, $z = -5.79$, $p < 0.05$). There were seven nest failures in 1993, five in the core and two in the periphery.
- 11) Figure 1-4 is an evaluation of the relationship between the concentration of dieldrin in one egg (the one collected when the clutch was near complete) and the number of young fledged. The egg with the highest concentration (actually a composite of two eggs) was not used in the data analysis because

these samples were collected after one egg was already collected. The egg sample in question was collected several days post-hatch.

12) The contaminant-enhanced vulnerability to predation component of the great horned owl investigation has been dropped. That portion of the investigation was of primary interest to the graduate student and his graduate committee and was to be the main focus of the Ph.D. dissertation. In reference to EPA comments on conducting an evaluation of great horned owl predation of kestrels, and the degree of contamination of kestrels the Service believes that this evaluation is impossible given the fact that so few predated kestrels are found.

13) The Service stands by its conclusion that kestrel populations at the Arsenal are not being affected by contamination. The EPA reviewer is incorrect in stating that the only endpoints measured and reported were those related to reproduction, EROD, and T and B-cell proliferation. The Service presented 12 years of reproductive data showing that kestrel productivity on the Arsenal tracks very closely (increases and declines) with off-site reference areas. This indicates to the Service that factors other than contaminants are affecting productivity of kestrel populations on the Arsenal and that these factors affect kestrel productivity region-wide. The Service presented considerable amounts of residue data, evaluations of productivity between areas, relationships between residue and productivity, sublethal responses, and a detailed discussion of how dieldrin residues detected in Arsenal kestrel tissues compare to literature values reported to cause effects in other avian species. The Service never stated that there was no potential for some kestrels to be affected by dieldrin. In regard to the Service not evaluating survival, the Service did evaluate adult survival/mortality (see previous comments) and survival rates of nestlings in the core, periphery, and off-Refuge. Evaluating post-fledging survival was only a suggested component of the kestrel study for 1994 and was not conducted because kestrels disperse within a short time after fledging. This rapid dispersal causes inadequate sample sizes to compare post-fledging survival with contaminant exposure. Concerns regarding the effect of putting backpack transmitters on juvenile kestrels also prevented study of post-fledging survival.

Service data show that some areas on the Arsenal indeed pose serious risk to kestrels that inhabit areas near South Plants, Basin A, Section 26, etc. The design of the kestrel study is performing as the Service intended.

14) The Service disagrees with EPA's suggestion that a follow-up study comparing survival of adults and nestlings between boxes of different levels of contamination is needed. First, juvenile kestrels do not exhibit the same levels of philopatry as adult kestrels and adult male kestrels are more likely to return to a nest site than females, thus making any statistically valid conclusion about differential survival rates impossible. Secondly, EPA criticized the Service for not considering the available sample size or calculating the power of the study to detect adverse effects if they should occur (e.g., great horned owl). However, here EPA recommends that the Service embark on a kestrel investigation that will surely fail because of sample size and ecological/behavioral realities. Biological constraints make EPA's suggested study unnecessary and unwise.