

# STATE OF ALASKA

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**GOVERNOR**

## **ANILCA IMPLEMENTATION PROGRAM**

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September 7, 2006

Gregory Siekaniec  
Refuge Manager  
Alaska Maritime National Wildlife Refuge  
2355 Kachemak Bay Drive, Suite 101  
Homer, Alaska 99603-8021

Dear Mr. Siekaniec:

The State of Alaska reviewed the August, 2006 Environmental Assessment (EA) for the Alaska Maritime National Wildlife Refuge Rat Eradication Field Efficacy Trial. This letter contains the consolidated comments of the State's resource agencies. The EA provides basic information about the need for the action and implementation of the proposed trial field project. As a trial project, we understand that the Service is slowly moving towards an understanding of the best methodologies for site-specific eradication and to address concerns of what will likely be a many year effort to rid the Aleutian Islands of rats.

Compliance with the Coastal Zone Management Act and the Alaska Coastal Management Program will be addressed separately by others in the Office of Project Management and Permitting. Please direct any questions regarding the ACMP program or a review of this project to Nicole Allison at (907) 269-7475.

### **Summary**

The State is fully supportive of the Service's overall efforts to eradicate rats from the Aleutian Islands and elsewhere in Alaska and return those affected areas to their natural productivity. Our comments below are provided to assist the Service in implementing a successful project. The trial will provide the Service with the tools necessary to better deal with a particularly injurious invasive species over a wide area. We recognize that the use of the poison brodifacoum is not without risks to non-target wildlife, and in some instances can be quite injurious to localized populations. With the experience gained through this trial study, the Service will be better able to understand and inform the public of the impacts and to subjectively weigh the costs and benefits of a multi-year project covering a much larger area.

## **Basis for These Comments**

The proposed trial involves an Integrated Pest Management approach focusing on use of rodenticides. For the benefit of lay readers of this letter, rodenticide-type pesticides are substances or a mixture of substances intended to destroy, repel or prevent the expansion of rodents, or mitigate their impacts. These substances are designed to kill things, hence the “cide” suffix, and are highly regulated at federal, state and local levels. The federal Environmental Protection Agency (EPA) is responsible for the registration, classification, sale, distribution and use of all pesticides in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). For a pesticide to be registered, sold and used in the U.S., the risks and benefits of use must be rigorously evaluated. Labels are written and designed to mitigate the risks associated with the use of a particular pesticide. The pesticide’s benefits can only be obtained without undue risk to the user and the environment when used according to label instructions. All pesticide labels have the statement, ***“It is a violation of Federal law to use this product in a manner inconsistent with this labeling.”*** The State’s Pesticide Program is housed within the Alaska Department of Environmental Conservation (ADEC). Through a cooperative agreement with EPA, ADEC has the authority to enforce the federal laws (FIFRA) as well as the stricter state Pesticide Control laws detailed in 18 AAC 90. ADEC reviewed the EA from both a legal perspective and keeping in mind the protection of human health, safety, and welfare, animals, and the environment by ensuring the proper use, sale, distribution, and disposal of pesticides.

The benefits of this project – and potential future projects – to the State and the Alaska Maritime Refuge are unquestionable; however, the benefits must be achieved with minimal risk or adverse effects. We anticipate this project will expand significantly over time through more knowledge and experience. The success of eradication programs are at times difficult to quantify and may need to be evaluated on a more subjective basis. Most of the 250 plus successful invasive rodent eradication plans were conducted outside the United States and therefore followed different laws and policies. Eight eradication projects have been successfully conducted in the United States, but climate and other local conditions were significantly different from Alaska.

## **General Comments**

Our general concerns involve potential short and long term effects on non-target organisms and potential effects on the health and quality of the environment, all of which can be mitigated by proper training, defined procedures, proper use, storage, disposal and adequate monitoring. Although addressed in the proposal, we would like to re-emphasize the following points: See associated references for each in the Appendix.

1. Toxicity: Brodifacoum is a very potent poison, toxic to rats at low dosages (<1 ppm), and to other species (mammalian and avian) at similar dosages.
2. Long half life: The effects of brodifacoum can persist for weeks to months. (Brodifacoum has been found to be retained in both mammalian and avian liver for 6-12 months). The effects of sublethal dosages on non-target species are cumulative.
3. Bioaccumulation: Brodifacoum has been found in tissues of poisoned animals as well as in different arthropods which lived/fed in baited soil. Rats poisoned with brodifacoum

were found to have whole carcass tissue residues ranging from 1.57-3.5 mg/kg. The residues in specific tissues (such as liver or the GI tract) could be higher.

4. Risk of secondary exposure: Several researchers have demonstrated a risk to raptors with secondary exposure to brodifacoum. Deaths have been seen in owls consuming poisoned mice. In one field efficacy study using brodifacoum to extirpate rats, bald eagles were found to have detectable brodifacoum residues. Although none were found clinically affected, there is a risk – especially if birds are exposed multiple times.

In light of these concerns, we request further emphasis on monitoring impacts to no-target species, specifically by using multiple non-target islands as controls. In addition to potential risk to granivorous species, species such as caribou could be affected. Although specific studies of the effects of anticoagulant rodenticides on caribou have not been done, abortions and other problems have been reported in sheep and goats exposed to brodifacoum. Additional control islands may provide information on non-target species such as ptarmigan, marine mammals, shore birds and waterfowl (especially those listed as threatened or endangered), caribou, reindeer and fox. We realize that some of these wildlife populations may not be present within the study area during the application period; but potential impacts to larger areas will need to be fully understood as the Service builds upon the experience gained in this trial project.

We recommend including the genetic testing of rats on islands within the field trial area in the study. This would assist in determining if rats form different sub populations and – if populations are found following treatment – whether they were from rats that avoided eradication or are newly-established populations, possibly from other nearby islets. Given the potential for rats to swim from nearby islets this testing may be a useful tool in understanding how eradication implementation methods might be improved.

Because of the risk of secondary exposure, the timely collection of carcasses is important. Although intensive collection is planned in this trial, it is not clear whether similar intensity of carcass collection will be done if brodifacoum is used at a larger scale. If carcasses are not collected, exposure (and risk) to non-target species will be higher than estimated in this study.

We understand that there are no anadromous streams within the trial study area and the bait/grain combination makes contamination of the water column remote. However, the unintentional entry of brodifacoum into streams or ponds elsewhere under future phases of this long-term project is not adequately addressed. Separate from this study, we recommend the Service develop long term monitoring protocols that will detect and measure levels of brodifacoum in the water column and develop an understanding of impacts to fish, particularly salmonids.

The EA lacks discussion of impacts to humans, and does not include an ANILCA 810 subsistence analysis. An existing human population base in the area is known to hunt, particularly for caribou and ptarmigan. The potential for impacts to humans is slight, but should be addressed in the FONSI. We recommend including a public education and outreach component to the field trial to inform the public about this particular project, and regional rat eradication in general, as experience is gained and the eradication program expands.

The project must continue to use state-registered rodenticides. “Restricted-Use” classification rodenticides are very potent and therefore require pesticide applicator training and certification.

For example, rodenticides must be stored as required by the labels and state regulations, required records must be maintained and made available for inspection, and decontamination supplies must be available along with a spill response plan. We appreciate that many USFWS personnel are already trained and certified regarding these requirements. In addition, we recommend antidotes be available on-site given the area's remoteness. We also recommend genetic testing and careful monitoring for potential "resistance" to the rodenticides. The applications should also be timed to minimize exposure and disturbance to non-target species.

### **Wilderness and Helicopters**

We request the Finding of No Significant Impact (FONSI) clarify an erroneous or misleading discussion about use of helicopters within designated wilderness areas. Page 15 currently says:

Wilderness area impacts – The Wilderness Act (16 U.S.C. 1121 (note)) states that "there shall be no... use of motorized equipment" or "landing of aircraft" within designated wilderness. Exceptions to this act are made when, in the course of effectively managing a wilderness, it is shown that the minimum tool necessary to carry out a reasonable management action would normally be banned from the area under the Act. Since the helicopter would have to fly over wilderness at low altitude to effectively broadcast bait, a minimum tool justification would have to be completed by the AMNWR manager.

To correct this statement, the FONSI should clarify that the Wilderness Act prohibitions only apply to activities on the ground, i.e. helicopter *landings*. Neither the Wilderness Act nor the Service's enabling legislation provide for refuge control of *overflights*. Management of the airspace over refuges, including designated wilderness, is exclusively the domain of the Federal Aviation Administration, which has no such motorized access prohibitions. Further, both the Wilderness Act and ANILCA provide exceptions where the use of motorized equipment and aircraft landings within these areas is allowable, although these provisions are not relevant to this trial since no landings are proposed. Finally, the Wilderness Act does not require a "minimum tool justification" for overflights; although internal Service policy does call for the conduct of a minimum requirement analysis of refuge administrative activities, which may reasonably address the potential impacts from low-level use of helicopters.

While hand broadcast methods proposed in Alternative A seem adequate to spread bait in this small field trial, we agree that future use of helicopters to spread bait seems the only feasible application method on the larger islands. Perhaps the next phase of the rat eradication effort could be a second discrete trial to test and fine-tune the helicopter application methodology in a slightly larger area before launching large-scale efforts.

Thank you for the opportunity to provide these comments. If you have any questions, please let me know and I will put you in touch with appropriate contacts who can address them.

Sincerely,



Sally Gibert

ANILCA Implementation Program Coordinator

## Appendix 1: Page-Specific Comments

Note: Many of these page-specific comments are related more to the long-term project to expand rat eradication efforts on the refuge. We hope they will be useful in refining project design and future environmental analysis.

Page 2 – All *aerial* broadcasts of rodenticides in Alaska require a permit from ADEC, which includes a public notice and hearing with opportunities for review and comment. At this stage we do not have an EPA-approved Section 3 registration rodenticide product label that is necessary for a permit application. Applications must be submitted well in advance of the proposed project for a defined term. Issued permits are also subject to the adjudicatory and court appeal process. A number of the page-specific comments below shed light on the kinds of information that ADEC will require in order to process a permit for future aerial application.

Page 4 – We are concerned that the hand broadcast technique could “mimic” an aerial technique. There are “drift models” available to predict potential drift and movement but they may not be applicable for pellets. Permit applications for aerial application must include the height of the helicopter over the ground. Rodenticide labels require that the bait not be directly applied to water, therefore we recommend conducting trial air application using non-toxic placebo bait so that drift can be accounted for in the final application.

Page 4, Overview – The document does not provide information regarding rat immigration and emigration rates between the field test islands, other islands in the area and Adak Island. If rats commonly swim between these islands, the test results may be confounded. We request this issue be addressed in the FONSI.

Page 5 – Who would have access to the sampling, degradation, and movement data?

Page 5, Bait application rate – The manufacturer’s recommended application rate is a maximum of 17 pounds per acre; however, lower rates could be satisfactory in some circumstances. Since the EA does not discuss the process for selecting the maximum application rate, we request this be addressed in the FONSI.

Page 5, Non-target impacts – We request that references throughout the document to “arthropods” be changed to a more inclusive reference to “invertebrates.” Other locations we noticed with “arthropods” include pages 29, 41, and 42.

Page 6 – The study methodology should clarify the starting point for measuring the 2-meter marine buffer zone. In the absence of specifics, we are guessing this will be the mean high tide water line. Two meters may not be sufficiently protective for an aerial application. ADEC has issued permits in the past with stipulations requiring larger minimum buffers for aerial applications. In another example, the U.S Supreme Court required buffers of 20 yards for ground applications and 100 yards for aerial applications for certain pesticides to protect salmon streams. For the larger project in the future, the scope and size of surface water buffer zones should also be addressed.

Page 9 – We question whether a ground broadcast “economically” mimicking an aerial broadcast is an accurate assumption, as the application techniques would be difficult to directly compare.

Page 10 – We are specifically concerned about secondary exposure to ravens and the role of the federal Migratory Treaty Act.

Page 11 – We question whether it is possible to reasonably predict the cumulative effects as practically negligible.

Page 27, Environmental Fate of Bait – We are unsure of the duration of the field trial and the Service’s ability to measure the success of the project. For the benefit of future rat eradication efforts, we request the FONSI clarify how the specific time period was chosen and how the duration of the field trial was determined. We would also appreciate an outline of follow-up rat monitoring and/or eradication efforts.

Page 43 – Will the inevitability of very well hidden carcasses, or those that have been eaten by another animal, be factored into non-target mortality assumptions?

Page 44 – How was day 21 selected as the last day for fate monitoring after application?

Page 51 – What will the “warning signs” appropriate to the current project look like as per the label instructions for *Brodifacoum-25/Conservation*?

Page 52 – The *Brodifacoum-25/Conservation* label states a maximum wind speed of 25 mph. State regulations require a maximum wind speed of 7 mph if no wind speed is stated on the label. In this instance, a wind speed is stated on the proposed label but it is much higher than the state maximum. Increased wind speed is directly related to the potential for drift.

Page 52 – How will an adequate burial depth be determined? Has the Service investigated other applicable state regulations that address carcass burial, e.g. ADEC Solid Waste Regulations?

Page 57 – The recommendation is that the whole island should be baited in one day. This may not be possible under certain weather conditions. Does the study protocol address bad weather contingency measures?

Page 58 – Earlier in the document, the marine buffer is stated as 2 meters. On this page the buffer is portrayed as 5 ft. The buffer size and units of measurement should be consistent. There are also some inconsistencies with the number of rats marked 30 or 40. Was this a statistically-derived sample number?

## Appendix 2: References

### 1. Brodifacoum toxicity

Eason, CT and Spurr EB. Review of the toxicity and impacts of brodifacoum on non-target wildlife in New Zealand. *New Zealand Journal of Zoology*, 22:371-379. 1995

### 2. Long half life

Eason, CT, Wright GR, Batcheler D. Anticoagulant effects and the persistence of brodifacoum in possums (*Trichosurus vulpecula*). *New Zealand Journal of Agricultural Research*, 39:397-400. 1996.

Fisher, P, O'Connor, C, Wright, G, Eason, CT. Persistence of four anticoagulant rodenticides in the livers of laboratory rats. Department of Conservation Science Internal Series 139. Department of Conservation, Wellington, NZ. 2003.

Murphy, EC, Clapperton, BK, Bradfield, PMF and Speed, HJ. Brodifacoum residues in target and non-target animals following large-scale poison operations in New Zealand podocarp-hardwood forests. *New Zealand Journal of Zoology*, 25:307-314. 1998

### 3. Bioaccumulation

Booth, LH, Fisher, P, Heppelthwaite, V and Eason, CT. Toxicity and residues of brodifacoum in snails and earthworms. Series 143. Department of Conservation, Wellington, NZ. 2003

Eason, CT and Spurr EB. Review of the toxicity and impacts of brodifacoum on non-target wildlife in New Zealand. *New Zealand Journal of Zoology*, 22:371-379. 1995

Hoare, JM and Hare, KM. The impact of brodifacoum on non-target wildlife: gaps in knowledge. *New Zealand Journal of Ecology*, 30:157-167. 2006

*Statement: "Rats poisoned with brodifacoum were found to have whole carcass tissue residues ranging from 1.57-3.5 mg/kg"*

Howald GR, Mineau, P, Elliott, JE and Cheng, KM. Brodifacoum poisoning of avian scavengers during rat control on a seabird colony. *Ecotoxicology*, 8:431-447. 1999

### 4. Risk of secondary exposure

Newton, I, Wyllie, I, and Freestone, P. Rodenticides in British barn owls. *Environmental Pollution*, 68: 101-117. 1990.

*Bald eagles*

Howald GR, Mineau, P, Elliott, JE and Cheng, KM. Brodifacoum poisoning of avian scavengers during rat control on a seabird colony. *Ecotoxicology*, 8:431-447. 1999