



Shaping the future for birds

April 11, 2011

Regulatory Public Docket
US Fish and Wildlife Service
Pacific Reefs National Wildlife Refuge Complex
300 Ala Moana Blvd., Room 5-231
Honolulu, HI 96850

Re: Palmyra Atoll National Wildlife Refuge, U.S. Pacific Island Territory; Nonnative Rat Eradication Project, Draft Environmental Impact Statement (FWS-R1-R-2011-N011)

American Bird Conservancy (ABC) welcomes the opportunity to comment on the effort to eradicate rats from Palmyra Atoll (Palmyra), as it is an important center of biodiversity and species abundance in the Central Pacific area. Specifically, we support the Alternative C (aerial broadcast with capture of shorebirds) for the eradication effort to minimize effects on nontarget species.

Capture and holding: As stated above, we support the option with proactive mitigation of risk for shorebirds, both out of specific concern for the birds in question, especially the Bristle-thighed Curlew, which is estimated to have only 2600 breeding pairs and which is listed on the ABC/Audubon WatchList 2007 and is considered Vulnerable by the IUCN Red List. Bristle-thighed Curlews potentially face high mortality if not captured and removed from the island during eradication. We believe it is incumbent on the project to take all possible active measures to avoid non-target mortalities. We also found the experts listed in the Appendix 1 and 2 to be an excellent list of people, which should inspire confidence in the level of planning and outreach that has gone on thus far in the project. We appreciate that the capture methods have not yet been finalized in the Draft EIS.

ABC also believes there are serious risks to the shorebirds under any scenario, and suggest consideration of the following in continued planning:

- 1) ABC has been in contact with Peter Doherty, Virginia Beach, VA, who produces capture nets specifically designed for shorebirds. We have informed him of this project and he is willing to provide expertise, if needed. Mr. Doherty's expertise in capturing shorebirds could be of value in this project.
- 2) Long-legged waders are extremely difficult to capture and hold and can be subject to high rates of mortality during capture and in captivity. It may be useful to try to manage expectations by providing a tentative estimate of mortality in both processes, based on available data.
- 3) There are few shorebirds in captivity, but one of the largest we know of is the flock of about 35 birds in Monterey Bay aquarium, which included a curlew for the past 20 years, and several other large-bodied waders. International Bird Rescue Research in Cordelia, California also has expertise in handling birds for rehabilitation after oil spills, and has developed techniques to house difficult species. The plan may wish to draw on the expertise of those managers.
- 4) We have concerns about the cement slab on which it is proposed to maintain the birds on Cooper Island, because curlews tend to develop foot problems in uniform substrates without tidal action.

- 5) We have been in contact with Dr. Lesanna Lahner, School of Veterinary Medicine, Univ. Wisconsin, Madison, who will be the supervising veterinarian monitoring the curlews for physiological effects during their captivity. She has plans to monitor fecal corticosteroids, fecal parasites, and blood for CBC and chemistry profiles. ABC thinks this could be a very useful monitoring program to evaluate these fragile birds in captivity and to develop additional expertise for future captive holding of vulnerable birds during island eradications.
- 6) We expect the risk of conspecific aggression to be low among these birds, because of the timing of the operation and because most will not yet be of breeding age, but if the birds are held in some sort of aviary, provisions should be made for separating some birds and providing a visual barrier for any aggressive individuals.
- 7) One interesting option for the capture and holding of the curlews may be to place them on a nearby islet or rock, if such a place were available and not subject to baiting. The birds may be rendered flightless by plucking a few primaries, which would begin to grow back immediately, though the birds may require supplemental feeding. Flightlessness should not provide a huge obstacle for these birds, because they are accustomed to losing their ability to fly during the molt.

The preparations and prior studies provided in the Appendices to the Draft EIA show great attention to detail and extensive planning to overcome the significant obstacles presented by the large number of land crabs on Palmyra Atoll. The field studies to determine the amount of rodenticide bait needed to insure adequate coverage of all rat territories appear to have been well planned and executed. It is indeed unfortunate that such large amounts of rodenticide bait will be needed to overcome the scavenging by land crabs, but the proponents have presented a good case for the need for their recommended applications.

American Bird Conservancy does have concerns as to the fate of rodenticide bait and metabolism by crabs and other organisms on Palmyra, and the level of knowledge of the mass balance of bait and metabolic products produced when ingested and subsequently excreted by crabs. The potential toxicity of excreted metabolic residues of brodifacoum is of particular concern. After the rat eradication successfully completed on Rat Island, AK, residues of difenacoum and bromodialone were detected in tissues of gulls (Ebbert and Huntington 2010). Both of these rodenticides or close analogs appear to be metabolic products of brodifacoum (see Figure 1). Debromination of brodifacoum at position ① produces difenacoum, which would be a plausible metabolic route in many animals. Similarly, Coumatetralyl would be produced by hydrolytic removal of the bromobiphenyl chain at position ②. Hydrolysis of the -naphthyl moiety of brodifacoum at position ③ would produce a close structural analog of bromodialone. Hydroxycoumarin would be produced through hydrolysis at position ④ of the molecule. Any of these catalytic reactions could be plausible metabolic routes leading to toxic residues in tissues or excreta of crabs or cockroaches. It is equally plausible that crabs metabolize brodifacoum and excrete only a small fraction of any toxic product in their feces, in which case the risk will be minimized.

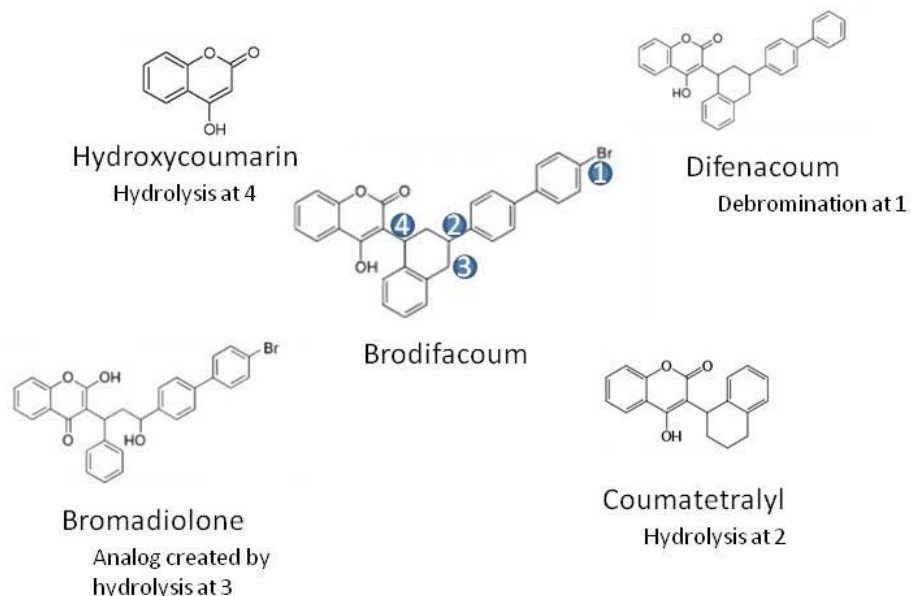


Figure 1: Possible hydrolysis products of brodifacoum which are known active rodenticides or analogs

The metabolic fate of brodifacoum and mass balance of residues were not reported in the prior study given in Appendix F of the Draft EIS. The residue analysis for that study was conducted by the California Animal Health and Food Safety Laboratory at UC Davis, and they may have retained the mass spectrometer reconstructed ion chromatograms, which could identify whether any of these potential metabolic products or other products were present in the crab tissues and excreta analyzed in the 2010 study. We strongly suggest contacting them and trying to have the spectroscopist attempt to determine what metabolic products of brodifacoum were present in the feces in addition to the parent compound. If a mass balance of the rodenticide can be elucidated, it would be very helpful in the risk analysis. Without a study of the fate of brodifacoum ingested by crabs, the fate and residue composition of the large amount of brodifacoum spread over Palmyra Atoll will be unclear. We suggest that when samples are collected and analyzed from the planned Palmyra project, APHIS (and any other lab contracted) report as many residues and metabolic products as possible, and use the information to construct a mass balance. The persistence and toxicity of any identified products should be available from prior studies. We suggest using this data to calculate the expected persistence and toxicity to non-targets (such as curlews) and to hold the curlews in captivity until the toxic residues have dissipated in the Palmyra environment.



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ABC also reviewed "Palmyra Atoll Rainforest Restoration Project: Rat Eradication Monitoring Plan for Alternatives B and C", with particular attention to Section 2.3, Impacts to Target and Non-Target Organisms (Rats, Fish, Geckos, Crabs, Birds). We found that the low level of detail in this document precluded a careful evaluation of the bird monitoring protocols, and suggest that further definition be given to the a) statistical design of the pre- and post-eradication bird monitoring 2) the time frame for evaluation of the persistence of bait in the palm canopy, which should be continued until none is detected or some minimal level is reached. Additionally, we would like to see an evaluation of the shorebird population in subsequent years, though we assume this is part of the long term strategy for documenting the effect of the action on the atoll.

The detail given for the foodweb monitoring was minimal, with only a sketchy description given on where pooled samples will be collected. We believe these should be representative of the entire atoll. 84 samples of non-target terrestrial animals and 80 samples of fish appears to be an adequate number of samples to determine the distribution and fate of rodenticide on the atoll. Also, we recommend that a subset of split samples of the rats, fish, gecko, crabs, and bird samples be sent to the U.S. Geological Survey Madison, WI Lab and the USDA National Wildlife Health Center for independent analyses. We urge the project to attempt to determine a mass balance of the fate and residue products to insure residual toxicity does not remain on the atoll. Finally, we believe that directed searches (as opposed to opportunistic searches) for non-target carcasses be conducted in transects for longer than 10 days after the 2nd application in shore bird roosting sites, and that these also concentrate on places where intoxicated curlews might hide to avoid detection. The monitoring plan does not give detail about how often these searches will be conducted.

In conclusion, ABC supports the effort to eradicate rats from Palmyra, as it is an important center of biodiversity and species abundance. Specifically, we support the Alternative C (aerial broadcast with capture of shorebirds) option listed in the Draft EIS. We believe this project has been organized and planned carefully, although we would like to have a more complete analysis of the fate of rodenticide moving through the Palmyra ecosystem. We would be pleased to offer comments on a more detailed draft of the monitoring procedures.

Sincerely,

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