

DECISION AND FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT: MANAGEMENT OF CROW DAMAGE IN THE STATE OF MARYLAND

I. PURPOSE OF THE EA

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program has prepared an Environmental Assessment (EA) to analyze the potential environmental and social impacts to the quality of the human environment from resolving damage and threats to agricultural resources, property, natural resources, and human safety associated with American crows (*Corvus brachyrhynchos*) and fish crows (*Corvus ossifragus*) in Maryland (USDA 2009)¹. The EA documents the need for crow damage management in the State and assesses potential impacts on the human environment of four alternatives to address that need. WS' proposed action in the EA would continue an integrated damage management program to fully address the need to manage damage associated with crows while minimizing impacts to the human environment.

The EA evaluated the issues and alternatives associated with WS' potential participation in managing damage and threats caused by crows in the State. The EA was prepared by WS in cooperation with the United States Fish and Wildlife Service (USFWS) to determine if the proposed action could have a significant impact on the quality of the human environment. In addition, the Maryland Department of Natural Resources (MDNR) was consulted and reviewed the EA during the development of the document.

The EA was prepared to: 1) facilitate planning and interagency coordination, 2) streamline program management, 3) evaluate the potential environmental consequences of the alternatives related to the issues of managing damage caused by crows, and 4) clearly communicate to the public the analysis of individual and cumulative impacts.

II. NEED FOR ACTION

The need for action arises from requests for assistance received by WS to reduce and prevent damage associated with crows from occurring to four major categories: agricultural resources, natural resources, property, and threats to human safety. WS only conducts crow damage management after receiving a request for assistance. Before initiating crow damage management activities in the State, a Memorandum of Understanding, cooperative service agreement, or other comparable document must be signed between WS and the cooperating entity which lists all the methods the property owner or manager will allow to be used on property they own and/or manage.

Damage to agricultural resources occurs primarily from crows consuming crops or feeding on livestock feed. Accumulations of fecal droppings under areas where crow roosts can pose threats to human safety when accumulations occur in public-use areas. In addition, crows can pose threats to aircraft when aircraft strike crows at or near airports. Property damage occurs from fecal droppings that accumulate under roosts that can cause damage, is aesthetically displeasing, and can lead to constant cleaning. Damage to natural resources can occur from the predatory behavior exhibited by crows. Crows are known to feed on other wildlife, such as bird eggs, nestlings, and small mammals. Of concern is the predatory behavior of crows on threatened and endangered species.

¹Copies of the EA are available for review from the State Director, USDA/APHIS/WS, 1568 Whitehall Road, Annapolis, Maryland 21409 or by visiting the APHIS website at http://www.aphis.usda.gov/wildlife_damage/nepa.shtml.

WS' activities would only be conducted when requested by those entities when damage is occurring to agricultural resources, natural resources, property, or posing a threat to human safety. WS may also be requested to participate in disease surveillance and monitoring in the event of a disease outbreak or potential outbreak in the crow population.

III. SCOPE OF ANALYSIS

This EA evaluates crow damage management as conducted by WS to reduce threats to human safety and to resolve damage to property, natural resources, and agricultural resources wherever such management is requested by a cooperator. If the analyses in the EA indicates the preparation of an Environmental Impact Statement (EIS) is not warranted and a Finding of No Significant Impact (FONSI) is signed by the decision-maker for the EA, the analyses in the EA would remain valid until WS, in consultation with the USFWS and the MDNR, determines that new needs for action, changed conditions, new issues, or new alternatives having different potential environmental impacts must be analyzed. The analyses in this EA are intended to apply to any action taken by WS to alleviate crow damage that may occur *in any locale* and at *any time* within Maryland.

IV. PUBLIC INVOLVEMENT

The pre-decisional EA² was made available to the public for review and comment by a legal notice published for three consecutive days in *The Capitol* newspaper beginning on November 9, 2009. A notice of availability and the pre-decisional EA were also made available for public review and comment on the APHIS website at http://www.aphis.usda.gov/wildlife_damage/nepa.shtml beginning on November 9, 2009. A letter of availability was also mailed directly to agencies, organizations, and individuals with probable interest in crow damage management in the State. The public involvement process ended on December 8, 2009. WS received one comment letter during the public involvement period. The comment letter was reviewed for substantive issues and alternatives which were considered in developing this Decision for the EA. The comments received during the public involvement process and WS' responses to those comments can be found in Appendix A of this document.

V. DECISIONS TO BE MADE

Based on the scope of the EA, the decisions to be made are: 1) should WS conduct crow damage management to alleviate damage to agriculture, property, natural resources, and to reduce threats to human safety, 2) should WS conduct disease surveillance and monitoring in the crow population when requested by the MDNR, the USFWS, or other agencies, 3) should WS implement an integrated wildlife damage management strategy, including technical assistance and direct operational assistance, to meet the need for crow damage management in Maryland, 4) if not, should WS attempt to implement one of the alternatives to an integrated damage management strategy as described in the EA, and 5) would the proposed action result in adverse impacts to the environment requiring the preparation of an EIS.

VI. RELATIONSHIP OF THE EA TO OTHER ENVIRONMENTAL DOCUMENTS

WS has developed a programmatic Final Environmental Impact Statement (FEIS) that addresses the need for wildlife damage management (USDA 1997). The FEIS contains a detailed discussion of the potential impacts to the human environment from wildlife damage management methods and techniques employed

²Before a Decision for the EA is issued, the EA is considered pre-decisional. After the development of the EA by WS and consulting agencies and after public involvement in identifying new issues and alternatives, WS issues a Decision. Based on the analysis in the EA after public involvement, a decision is made to either publish a Notice of Intent to prepare an Environmental Impact Statement or a Finding of No Significant Impact statement will be signed and noticed to the public in accordance to the NEPA, the Council of Environmental Quality regulations, and APHIS' NEPA implementation regulations.

by WS, including methods used to manage damage associated with crows. Pertinent information in the FEIS has been incorporated into the EA and this Decision by reference.

In addition to WS' programmatic FEIS, the WS program in Maryland has also prepared an EA to evaluate wildlife damage management activities at the Baltimore/Washington International Thurgood Marshall Airport. The EA was developed to evaluate wildlife damage management activities at the airport to reduce damage and threats associated with aircraft striking wildlife at or near the airport.

VII. AUTHORITY AND COMPLIANCE

WS is authorized by law to reduce damage caused by wildlife through the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C. 426-426b), as amended and the Act of December 22, 1987 (101 Stat. 1329-331, 7 U.S.C. 426c). Management of migratory birds, including crows, is the responsibility of the USFWS. As the authority for the management of crow populations in the State, the USFWS was involved in the development of the EA and provided input throughout the EA preparation process to ensure an interdisciplinary approach according to the National Environmental Policy Act (NEPA) and agency mandates, policies, and regulations. The MDNR is responsible for managing wildlife in the State of Maryland, including crows. The MDNR establishes and enforces regulated hunting seasons in the State, including a season that allows for the take of crows. Information from the USFWS and the MDNR has been provided to WS to assist in the analysis of potential impacts of WS' proposed activities on the crow population in the State.

The EA and this Decision ensures WS' actions comply with the NEPA, with the Council on Environmental Quality (40 CFR 1500), and with APHIS' NEPA implementing regulations (7 CFR 372). All crow damage management activities, including disposal requirements, are conducted consistent with: 1) the Endangered Species Act of 1973, 2) Migratory Bird Treaty Act, 3) Executive Order (EO) 12898³, 4) EO 13045⁴, 5) EO 13186⁵, 6) the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and 7) federal, state, and local laws, regulations and policies.

VIII. AFFECTED ENVIRONMENT

Upon receiving a request for assistance, crow damage management activities could be conducted on federal, state, tribal, municipal, and private properties in Maryland. The areas of the proposed action could include areas in and around commercial, industrial, public, and private buildings, facilities and properties and at other sites where crows may roost, loaf, feed, nest, or otherwise occur. Examples of areas where crow damage management activities could be conducted are, but are not necessarily limited to: agricultural fields, vineyards, orchards, farmyards, dairies, ranches, livestock operations, aquaculture facilities, fish hatcheries, grain mills, grain handling areas, railroad yards, waste handling facilities, industrial sites, natural areas, government properties and facilities, private properties, corporate properties, schools, hospitals, parks, woodlots, recreation areas, communally-owned homeowner/property owner association properties, wildlife refuges, wildlife management areas, and airports.

³ Executive Order 12898 promotes the fair treatment of people of all races, income levels, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

⁴ Executive Order 13045 ensures the protection of children from environmental health and safety risks since children may suffer disproportionately from those risks.

⁵ Executive Order 13186 directs federal agencies to protect migratory birds and strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and minimize the take of migratory birds through enhanced collaboration. A national-level MOU between the USFWS and WS is being developed to facilitate the implementation of Executive Order 13186.

IX. ISSUES ADDRESSED IN THE ANALYSIS OF ALTERNATIVES

Issues related to crow damage management were initially defined and preliminary alternatives were identified through cooperation with the USFWS and consultation with the MDNR. The pre-decisional EA was made available to the public for review and comment through notices published in local media and through direct notification of interested parties. Comments from the public involvement process were reviewed for substantive issues and alternatives which were considered in developing this Decision for the EA.

The EA describes in detail the issues considered and evaluated in Chapter 2 (USDA 2009). The following issues were identified as important to the scope of the analysis (40 CFR 1508.25) with each alternative evaluated in the pre-decisional EA relative to the impacts on the major issues:

- Issue 1 - Effects on Crow Populations
- Issue 2 - Effects on Non-target Wildlife Species Populations, Including T&E Species
- Issue 3 - Humaneness and Animal Welfare Concerns of Methods
- Issue 4 - Effects on the Aesthetic Values of Crows
- Issue 5 – Effects on the Aesthetic Value of Property
- Issue 6 - Effects of Management Methods on Human Health and Safety
- Issue 7 - Effects on the Regulated Harvest of Crows

X. ISSUES CONSIDERED BUT NOT IN DETAIL

In addition to those issues analyzed in detail, several issues were identified during the development of the EA but were not considered in detail. The rationale for the decision not to analyze those issues in detail is discussed in the EA. Those issues not analyzed in detail were:

- Appropriateness of Preparing an EA (Instead of an EIS) For Such a Large Area
- WS' Impact on Biodiversity
- A Loss Threshold Should Be Established Before Allowing Lethal Methods
- Bird Damage Management Should Not Occur At Taxpayer Expense
- Cost Effectiveness of Management Methods
- Effectiveness of Bird Damage Management Methods
- Bird Damage Should Be Managed By Private Nuisance Wildlife Control Agents
- Effects from the Use of Lead Ammunition in Firearms
- Impacts of Dispersing a Crow Roost on People in Urban/Suburban Areas
- A Site Specific Analysis Should be Made for Every Location Where Crow Damage Management Could Occur
- Relocation of Crows Causing Damage

XI. ALTERNATIVES THAT WERE FULLY EVALUATED

The following four alternatives were developed to respond to the issues identified in Chapter 2 of the EA (USDA 2009). A detailed discussion of the effects of the alternatives on the issues is described in the EA under Chapter 4; below is a summary of the alternatives.

Alternative 1 – No Crow Damage Management Conducted by WS

Under the no involvement alternative, WS would not be involved with any aspect of crow damage management activities in Maryland. All requests for assistance received by WS would be referred to the

USFWS and/or the MDNR. The take of crows could continue to occur under this alternative when damage or threats were occurring in accordance with the depredation order established for blackbirds, including crows (50 CFR 21.43). Crows could also be harvested during the regulated hunting season in the State. Most of the methods described in Appendix B of the EA under this alternative to alleviate crow damage and threats would be available under any of the alternatives. The only methods that would not be available to manage damage caused by crows under this alternative would be the avicide DRC-1339 and the repellent mesurol.

Alternative 2 - Crow Damage Management by WS through Technical Assistance Only

Under the technical assistance only alternative, WS would address every request for assistance with technical assistance only. Technical assistance would provide those persons seeking assistance with information and recommendations on crow damage management that those cooperators could employ without WS' direct assistance. Technical assistance could be employed through personal or telephone consultations and through site visits. Under this alternative, the immediate burden of resolving threats or damage associated with crows would be placed on those persons experiencing damage. Those persons could employ those methods recommended by WS, could employ other methods, or could take no action.

Crows could still be lethally taken to alleviate damage under this alternative when committing or about to commit damage or posing a human safety threat in accordance with the blackbird depredation order. Crows could also be lethally taken under the regulated hunting season in the State. Similar to Alternative 1, DRC-1339 and mesurol would not be available under this alternative to those persons experiencing crow damage. All other methods described in Appendix B of the EA would be available to those persons experiencing damage.

Alternative 3 - Continuing the Current Integrated Approach to Managing Crow Damage (Proposed Action/No Action)

The proposed action would continue the current program of employing an integrated damage management approach using methods, as appropriate, to reduce damage associated with crows in the State. An integrated damage management strategy would be recommended and used, encompassing the use of practical and effective methods of preventing or reducing damage while minimizing harmful effects of damage management measures on people, other species, and the environment. Non-lethal methods would be given first consideration in the formulation of each damage management strategy, and would be recommended or implemented when practical and effective before recommending or implementing lethal methods. However, non-lethal methods would not always be applied as a first response to each damage problem. The most appropriate response could often be a combination of non-lethal and lethal methods, or there could be instances where application of lethal methods alone would be the most appropriate strategy.

All methods addressed in Appendix B of the EA could be employed by WS to resolve requests for assistance to manage damage associated with crows in the State. Using the WS Decision model discussed in the EA, WS would employ methods singularly or in combination in an integrated approach to alleviate damage caused by crows.

Alternative 4 - Use of Non-lethal Methods Only

Under this alternative, only non-lethal management approaches would be used or recommended by WS. Both technical assistance and operational damage management services would be provided using non-lethal methods to resolve requests for assistance. Requests for lethal wildlife damage management services would be referred to other entities.

The only methods that would not be available to WS under this alternative would be DRC-1339. Mesurool could be used by WS to alleviate crow predation of eggs under this alternative. However, DRC-1339 and mesurool would not be available to entities other than WS under this alternative. Crows could be lethally taken under this alternative by those persons experiencing damage caused by crows. The lethal take of crows could occur under the blackbird depredation order despite WS' lack of involvement in the use of lethal methods. Crows would also continue to be lethally taken during the regulated hunting season in the State.

XII. ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

Additional alternatives were also evaluated but not considered in detail in the EA with rationale provided in the EA (USDA 2009). The alternatives analyzed but not in detail include:

- Non-lethal Methods Implemented Before Lethal Methods
- Use of Lethal Methods Only
- Trap and Relocate Only
- Reducing Damage by Managing Bird Populations through the Use of Reproductive Inhibitors
- Compensation for Bird Damage

XIII. MINIMIZATION MEASURES AND STANDARD OPERATING PROCEDURES

Minimization measures are any features of an action that serves to prevent, reduce, or compensate for impacts that otherwise might result from that action. The current WS program, nationwide and in Maryland, uses many such minimization measures and standard operating procedures. Minimization measures and standard operating procedures are discussed in detail in Chapter 5 of WS' programmatic FEIS (USDA 1997) and in Chapter 3 of the EA (USDA 2009). Those minimization measures and standard operating procedures would be incorporated into activities conducted by WS when addressing crow damage and threats in Maryland.

XIV. ENVIRONMENTAL CONSEQUENCES FOR ISSUES ANALYZED IN DETAIL

The EA analyzes the environmental consequences of each alternative in relation to the issues identified to provide information needed for making informed decisions in selecting the appropriate alternative to address the need for action. The following resource values in Maryland are not expected to be significantly impacted by any of the alternatives analyzed in the EA: soils, geology, minerals, water quality/quantity, flood plains, wetlands, critical habitats (areas listed in threatened and endangered (T&E) species recovery plans), visual resources, air quality, prime and unique farmlands, aquatic resources, timber, and range.

Chapter 4 of the EA analyzes the environmental consequences of each alternative in comparison to determine the extent of actual or potential impacts on those major issues identified in the EA. The proposed action/no action alternative serves as the baseline for the analysis and the comparison of expected impacts among the alternatives. The analysis also takes into consideration mandates, directives, and the procedures of WS, the USFWS, and the MDNR. The analyses in Chapter 4 of the EA indicate the potential impacts to the quality of the human environment would be similar across the alternatives.

Issue 1 – Effects on Crow Populations

Crows that could be taken by WS under the proposed action could be taken by those persons experiencing damage or threats in the absence of WS' direct involvement since the take of crows can occur under the blackbird depredation order when found committing or about to commit damage or posing a threat to

human safety without the need for a depredation permit from the USFWS. Since the lack of WS' direct involvement does not preclude the taking of crows by those persons experiencing damage or threats associated with crows, WS' involvement in the taking of those crows under the proposed action would not be additive to the number of crows that could be taken by other entities in the absence of WS' involvement. In addition, most non-lethal and lethal methods available for resolving damage or threats associated with crows would be available under any of the alternatives. The avicide DRC-1339 and the repellent containing mesurol would be the only methods that would not be available under all of the alternatives. The use of DRC-1339 would only be available under the proposed action while mesurol would only be available under the proposed action (Alternative 3) and the non-lethal methods only alternative (Alternative 4). Therefore, WS' use of those methods available under all of the alternatives would not be additive to the environmental status quo since those methods could be employed by any entity experiencing damage.

Crows can be taken in Maryland during a regulated hunting season that is regulated by the MDNR under frameworks issued by the USFWS pursuant to the Migratory Bird Treaty Act. The harvest of crows during the annual hunting season in the State since 2004 has been estimated to range from 13,208 crows harvested in 2006 to a high of 41,975 crows harvested in 2008 with an average of 25,101 crows harvested annually (USDA 2009). Hunters have harvested 125,509 crows between 2004 and 2008 during the regulated harvest season. In addition to take occurring during the regulated season, take can also occur under the blackbird depredation order when damage is occurring, is about to occur, or when crows pose a threat to human safety (50 CFR 21.43). The number of crows taken annually pursuant to the blackbird depredation order is unknown since take is currently not required to be reported to the USFWS or the MDNR.

Under the proposed action, based on a review of previous activities conducted by WS to alleviate crow damage and in anticipation of an increase in requests for lethal take, WS anticipates that future lethal take will not exceed 8,000 crows (combined fish crows and American crows) annually in the State of which less than 500 will be fish crows. WS may also be requested to assist with sampling and managing the spread of diseases found in free-ranging crow populations. In the case of a disease outbreak, WS could lethally take crows for sampling and/or to prevent further spread of diseases. However, sampling is more likely to occur after a mortality event or after the crows have been harvested during the regulated season.

The number of American crows and fish crows observed in Maryland during the breeding season has shown a general increasing trend for both species in the State. Data from the Breeding Bird Survey (BBS) shows the number of American crows observed in the State has increased 0.8% annually since 1966 while the number of fish crows observed has increased 3.0% annually since 1966 (Sauer et al. 2008). The number of fish crows observed during winter surveys has also shown a general increasing trend in the State since 1966 while the number of American crows observed wintering in the State has been cyclical with a general stable trend since 1966 (National Audubon Society 2002). The population of American crows in the State has been estimated at 160,000 crows while the fish crow population has been estimated at 16,000 crows (Rich et al. 2004).

Based on a population estimated at 160,000 American crows and a stable population trend, WS' proposed take of up to 8,000 crows annually, if all crows taken were American crows, would represent 5% of the estimated statewide American crow population. If up to 500 fish crows are taken annually by WS, WS' take would represent 3% of the estimated population of fish crows in the State based on a stable population.

The annual take of crows in the State during the regulated season has averaged 25,101 crows (combined take) since 2004. The number of each crow species taken during the regulated harvest season is unknown but are combined when take is estimated. If the average number of crows taken annually since 2004 is

representative of the number of crows taken in the State, the cumulative take of crows from the harvest season and from WS' take would be estimated at 33,101 crows annually. If all crows taken during the harvest season were American crows and if all crows taken by WS were also American crows, an annual harvest of 33,101 crows would represent 20.7% of the estimated American crow population in the State. Although some take of fish crows during the hunting season likely occurs, the actual number taken is unknown but is likely a small percentage of the number of crows taken.

If the population ratio of American crows to fish crows in the State is an indication of the number of fish crows taken annually in the State during the regulated harvest season, an estimated 2,501 fish crows are harvested annually in the State. If up to 500 fish crows were taken annually and if 2,501 fish crows were harvested annually, the cumulative take would represent 18.8% of the estimated fish crow population.

The number of crows taken annually under the blackbird depredation order in the State by entities other than WS for damage management purposes is unknown. The reporting of take under the depredation order is not currently required. However, the take of crows under the depredation order by other entities is likely to be a small contributor to the cumulative take of crows annually. Although some take is likely to occur, take is not expected to reach a high magnitude.

Given that the number of American crows and fish crows observed during statewide surveys are showing increasing trends (National Audubon Society 2002, Sauer et al. 2008), the populations of those crow species have not declined since those population estimates were calculated and have likely remained at least stable. WS' take is monitored by comparing numbers of birds killed with overall populations or trends in populations to assure the magnitude of take is maintained below the level that would cause significant adverse impacts to the viability of native species populations (USDA 1997). Magnitude is defined as a measure of the number of animals killed in relation to their abundance. In this analysis, magnitude is evaluated first in terms of total harvest or population trend, then in terms of WS' proposed annual take of crows. Magnitude is determined either quantitatively or qualitatively. The quantitative method is more rigorous and used when allowable harvest, state population level, and harvest data is available. Qualitative methods are based on state population trends and harvest data or regional population trends and population modeling.

The use of population trends as an index of magnitude is based on the assumption that annual harvests do not exceed allowable harvest levels. State wildlife management agencies act to avoid over-harvests by restricting take (either through hunting season regulation and/or permitted take) to ensure that annual harvests are within allowable harvest levels. The criteria for determining total harvest magnitude on the basis of animal population trends have been defined in WS' programmatic FEIS (USDA 1997) as: 1) if the population is increasing, the magnitude of take is low; 2) if the population is stable, the magnitude of take is moderate; and 3) if the population is decreasing, the magnitude is high. Since trend data indicates that American crow populations and fish crow populations are showing increasing trends, the magnitude of take that has occurred has been low (which allows the population to increase). From 2004 through 2008, the average annual cumulative take (harvest take and WS' take) of crows, if all crows taken were American crows, represent 15.7% of the statewide population. Under the proposed action, the proposed take of crows by WS when combined with the average annual harvest take of crows, if all crows taken were American crows, would represent 20.7% of the estimated statewide population. Therefore, under the proposed action, the take of American crows annually would increase approximately 5.0% compared to the previous levels of take. If fish crows are included in the take, the percentage of take of American crows would likely be lower.

In addition, the magnitude ratings for the proposed program are based on the following criteria: 1) if the proposed take is less than or equal to 33% of the total harvest of a species, the magnitude of take would be considered low, 2) if the proposed take is greater than 33% but less than or equal to 66% of the total

harvest of species, the magnitude is considered moderate if the total harvest rating is high or low if the total harvest rating is moderate, and 3) if the proposed take is greater than 66% of the total harvest, the magnitude is considered equivalent to the total harvest rating (USDA 1997). If 8,000 American crows are taken annually by WS under the proposed action, WS' take would represent 24.1% of the total harvest based on the average take of crows annually during the harvest season. Therefore, WS' take, if 8,000 American crows were taken, would be of low magnitude.

If up to 500 fish crows were taken annually by WS under the proposed action, WS' take would represent 16.7% of the total harvest based on the average take of fish crows in the State during the regulated season if the population ratio of American crows to fish crows is reflective of the ratio of species harvest. Since the take of fish crows, based on the best available information, is below 33% of the total harvest, WS' proposed take would be of low magnitude.

Issue 2 - Effects on Non-target Wildlife Species Populations, Including T&E Species

Another issue often raised is the potential impacts to populations of wildlife that could be taken as non-targets during damage management activities. While every effort is made to minimize the risks of lethally taking non-target wildlife, the potential does exist for the unintentional take of non-targets during damage management activities. Since FY 2004, no non-targets are known to have been killed by WS during crow damage management activities conducted by WS. Methods available to address crow damage would be similar across all the alternatives. Therefore, risks to non-targets from the use of those methods would be similar across alternatives. The only method available under the proposed action that would not be available under any of the other alternatives would be DRC-1339 treated bait. Mesurol would be available under the proposed action and the non-lethal only alternative. Although some risks do occur from the use of DRC-1339, those risks are minimal when used according to label directions and given the differential toxicity of the chemical to birds and mammals. Similarly, the EA found that the use of mesurol, when used according to label requirements, would not increase risks to non-targets. Based on consultation with the USFWS and the MDNR, the proposed action will not adversely affect T&E species in the State when activities are conducted within the scope analyzed in the EA.

Issue 3 - Humaneness and Animal Welfare Concerns of Methods

The issue of humaneness was also analyzed in detail in relationship to the alternatives. Since many methods addressed in Appendix B of the EA are available under all the alternatives, the issue of method humaneness would be similar for those methods across all the alternatives. As stated previously mesurol and DRC-1339 are the only two methods that would not be available under all the alternatives. Mesurol is generally regarded as a non-lethal method since the ingestion of eggs treated with mesurol by crows can cause nausea which is intended to discourage crows from feeding on eggs of T&E species. Since recovery of the crows ingesting mesurol occurs, the method is generally regarded as humane. Although the mode of action of DRC-1339 is not well understood, it appears to cause death primarily by nephrotoxicity in susceptible species and by central nervous system depression in non-susceptible species (Decino et al. 1966, Westberg 1969, Schafer 1984). Birds ingesting a lethal dose of DRC-1339 treated bait become listless and lethargic, and a quiet death normally occurs in 24 to 72 hours following ingestion. This method appears to result in a less stressful death than which probably occurs by most natural causes, which are primarily disease, starvation, and predation. In non-sensitive birds and mammals, central nervous system depression and the attendant cardiac or pulmonary arrest is the cause of death (Felsenstein et al. 1974).

Issue 4 - Effects on the Aesthetic Values of Crows

Crows often provide aesthetic enjoyment to many people in Maryland through observations, photographing, and knowing they exist as part of the natural environment. Under all the alternatives, methods available that could be employed are intended to make resources unavailable or unattractive. Therefore, the use of methods often results in the removal of crows from the area where damage is occurring or the dispersal of crows from an area. Since methods available are similar across the alternatives, the use of those methods would have similar potential impacts on the aesthetics of crows. However, even under the proposed action alternative, the dispersal and/or take of crows under the alternatives will not reach a magnitude that would prevent the ability to view crows outside of the area where damage was occurring. The effects on the aesthetic values of crows would therefore be similar across the alternatives and would be minimal.

Issue 5 – Effects on the Aesthetic Value of Property

Under the alternative analyzed, the effects on the aesthetic value of property would be similar amongst the alternatives. If methods are used correctly and as intended, a reasonable expectation that those methods will be effective in reducing damage is warranted. Since methods would be similar across all the alternatives, the effects on the aesthetic value of property would be similar. Under the proposed action, the use of DRC-1339 and mesurol would be available. Mesurol can only be used to condition crows to avoid eating eggs of T&E species. DRC-1339 could be employed under the proposed action to alleviate property damage from crows. If other methods were ineffective at resolving damage to the level desired or required by the property owner and the use of DRC-1339 was effective in reducing that damage, the availability of DRC-1339 under the proposed action could provide for a higher benefit to the aesthetic value of property compared to the other alternatives.

Issue 6 - Effects of Management Methods on Human Health and Safety

The threats to human safety of methods available would be similar across the alternatives since those methods would be the same across the alternatives. However, the expertise of WS' employees in using those methods available likely will reduce threats to human safety since WS' employees are trained and knowledgeable in the use of those methods. If methods are used incorrectly or without regard for human safety, risks to human safety would increase under any of the alternatives that those methods could be employed. The EA determined that the availability of DRC-1339 and mesurol under the proposed action would not increase risks to human safety from the use of those methods under the alternative. Although risks do occur from the use of those methods, following label requirements and when used in consideration of human safety, those methods do not pose additional risks to human safety beyond those associated with the use of other methods.

Issue 7 - Effects on the Regulated Harvest of Crows

The magnitude of take addressed in the proposed action would be low when compared to the mortality of crows from all known sources. When WS' proposed take of crows was included as part of the known mortality of crows and compared to the estimated population, the impact on those species' populations was below the level of removal required to lower population levels.

With oversight of crow populations by the USFWS and the MDNR, the number of crows allowed to be taken by WS will not limit the ability of those interested to harvest those crow species during the regulated season. All take by WS will be reported to the USFWS and the MDNR annually to ensure take by WS is incorporated into population management objectives established for crow populations. Based on the limited take proposed by WS and the oversight of by the USFWS and the MDNR, WS' take of

crows annually will have no effect on the ability of those interested to harvest crows during the regulated harvest season.

XV. CUMULATIVE IMPACTS OF THE PROPOSED ACTION

No significant cumulative environmental impacts are expected from any of the four alternatives, including the proposed action. Under the proposed action, the lethal removal of crows by WS would not have significant impacts on statewide crow populations when known sources of mortality are considered. No risk to public safety is expected when activities are provided and accepted by requesting individuals in Alternative 2, Alternative 3, and Alternative 4 since only trained and experienced personnel would conduct and recommend damage management activities. There is a slight increased risk to public safety when persons who reject assistance and recommendations and conduct their own activities, and when no assistance is provided in Alternative 1. In all Alternatives, however, it would not be to the point that the impacts would be significant. The analysis in this EA indicates that an integrated approach to management damage and threats caused by crows will not result in significant cumulative adverse impacts on the quality of the human environment.

XVI. DECISION AND RATIONALE

Based on the analyses of the alternatives developed to address those issues in the EA, including individual and cumulative impacts of those alternatives, the following decision has been reached:

Decision

I have carefully reviewed the EA prepared for this proposal and the input from the public involvement process. I find the proposed program to be environmentally acceptable, addressing the issues and needs while balancing the environmental concerns of management agencies, landowners, advocacy groups, and the public. The analyses in the EA adequately addresses the identified issues which reasonably confirm that no significant impact, individually or cumulatively, to wildlife populations or the quality of the human environment are likely to occur from the proposed action, nor does the proposed action constitute a major federal action. Therefore, the analysis in the EA remains valid and does not warrant the completion of an EIS.

Based on the analyses in the EA, the issues identified are best addressed by selecting Alternative 3 (Proposed Action/No Action) and applying the associated mitigation measures discussed in Chapter 3 of the EA. Alternative 3 successfully addresses (1) crow damage management using a combination of the most effective methods and does not adversely impact the environment, property, human safety, and/or non-target species, including T&E species; (2) it offers the greatest chance of maximizing effectiveness and benefits to resource owners and managers while minimizing cumulative impacts on the quality of the human environment that might result from the program's effect on target and non-target species populations; (3) it presents the greatest chance of maximizing net benefits while minimizing adverse impacts to public health and safety; and (4) it offers a balanced approach to the issues of humaneness and aesthetics when all facets of those issues are considered. Further analysis would be triggered if changes occur that broaden the scope of crow damage management activities in the State, that affect the natural or human environment, or from the issuance of new environmental regulations. Therefore, it is my decision to implement the proposed action (Alternative 3) as described in the EA.

Finding of No Significant Impact

Based on the analyses provided in the EA, there are no indications that the proposed action (Alternative 3) will have a significant impact, individually or cumulatively, on the quality of the human environment. I

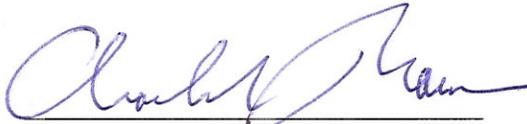
agree with this conclusion and therefore, find that an EIS should not be prepared. This determination is based on the following factors:

1. Crow damage management as conducted by WS in the State is not regional or national in scope.
2. The proposed action would pose minimal risk to public health and safety. Risks to the public from many of the methods described in the EA were determined to be low in a formal risk assessment (USDA 1997).
3. There are no unique characteristics such as park lands, prime farm lands, wetlands, wild and scenic areas, or ecologically critical areas that would be significantly affected. Built-in mitigation measures that are part of WS' standard operating procedures and adherence to laws and regulations will further ensure that WS' activities do not harm the environment.
4. The effects on the quality of the human environment are not highly controversial. Although there is some opposition to crow damage management, this action is not highly controversial in terms of size, nature, or effect.
5. Based on the analysis documented in the EA and the accompanying administrative file, the effects of the proposed damage management program on the human environment would not be significant. The effects of the proposed activities are not highly uncertain and do not involve unique or unknown risks.
6. The proposed action would not establish a precedent for any future action with significant effects.
7. No significant cumulative effects were identified through this assessment. The EA analyzed cumulative effects of WS' crow damage management on target and non-target species populations and concluded that such impacts were not significant for this or other anticipated actions to be implemented or planned within Maryland.
8. The proposed activities would not affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, nor would they likely cause any loss or destruction of significant scientific, cultural, or historical resources.
9. WS has determined that the proposed program would not adversely affect any federal or state listed threatened or endangered species. This determination is based upon concurrence from the USFWS that the program will not likely adversely affect any threatened or endangered species in Maryland.
10. The proposed action would be in compliance with all federal, State, and local laws.
11. No significant cumulative effects were identified by this assessment or other actions implemented or planned within the area.

Rationale

The rationale for this decision is based on several considerations. This decision takes into account public comments, social/political and economic concerns, public health and safety, and the best available science. The foremost considerations are that: 1) crow damage management will only be conducted by WS at the request of landowners/managers, 2) management actions are consistent with applicable laws, regulations, policies and orders, and 3) no adverse impacts to the environment were identified in the

analysis. As a part of this Decision, the WS program in Maryland will continue to provide effective and practical technical assistance and direct management techniques that reduce damage.



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12/17/09
Date

LITERATURE CITED

- Decino, T.J., D.J. Cunningham, and E.W. Schafer. 1966. Toxicity of DRC-1339 to starlings. *Journal of Wildlife Management* 30:249-253.
- Felsenstein, W.C., R.P. Smith, and R.E. Gosselin. 1974. Toxicological studies on the avicide 3-chloro-toluidine. *Toxicology and Applied Pharmacology* 28:110-1125.
- National Audubon Society. 2002. National Audubon Society. The Christmas Bird Count Historical Results. www.audubon.org/bird/cbc. Accessed on October 26, 2009.
- Sauer, J.R., J.E. Hines, and J. Fallon. 2008. The North American Breeding Bird Survey, Results and Analysis 1966 - 2007. Version 5.15.2008. USGS Patuxent Wildlife Research Center, Laurel, Maryland.
- Schafer, E.W., Jr. 1984. Potential primary and secondary hazards of avicides. *Proc. Vert. Pest Conf.* 11:217-222.
- Rich, T.D., C.J. Beardmore, H. Berlanga, P.J. Blancher, M.S. W. Bradstreet, G.S. Butcher, D.W. Demarest, E.H. Dunn, W.C. Hunter, E.E. Iñigo-Elias, J.A. Kennedy, A.M. Martell, A.O. Panjabi, D.N. Pashley, K.V. Rosenberg, C.M. Rustay, J.S. Wendt, and T.C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, New York.
- USDA. 1997. Animal Damage Control Program - Final Environmental Impact Statement – Revised. USDA/APHIS/WS-Operational Support Staff, 4700 River Road, Unit 87, Riverdale, Maryland 20737.
- USDA. 2009. Environmental Assessment: Management of crow damage in the State of Maryland. USDA/APHIS/WS, 1568 Whitehall Road, Annapolis, Maryland 21409.
- Westberg, G.L. 1969. Comparative studies of the metabolism of 3-chloro-p-toluidine and 2-chloro-4-acetutoluidine in rats and chickens and methodology for the determination of 3-chloro-p-toluidine and metabolites in animal tissues. M.S. Thesis, University of California-Davis.

APPENDIX A

RESPONSES TO COMMENTS ON THE ENVIRONMENTAL ASSESSMENT: MANAGEMENT OF CROW DAMAGE IN THE STATE OF MARYLAND

Comment 1 - Broad scope of the EA

The scope of the EA was discussed in section 1.3 of the EA with the appropriateness of preparing an EA specifically addressed in section 2.3 of the EA. The site specificity of the EA was also addressed in section 1.3 of the EA. In addition, the issue of conducting a site specific analysis for every location where crow damage management activities would be conducted was discussed in section 2.3 of the EA. WS has the discretion to determine the geographic scope of analyses under the National Environmental Policy Act (NEPA) (*Kleppe v. Sierra Club*, 427 U.S. 390, 414 (1976), CEQ 1508.25). Ordinarily, according to APHIS procedures implementing the NEPA, individual wildlife damage management actions may be categorically excluded (7 CFR 372.5(c), 60 FR 6000-6003). The intent of preparing the EA was to determine if the proposed action would potentially have significant cumulative impacts on the environment that would warrant the preparation of an Environmental Impact Statement (EIS) or a finding of no significant impact. The EA addresses potential impacts for the entire State to analyze cumulative impacts which provides for a better analysis when compared to separate analyses conducted in multiple EAs covering smaller areas. If the analyses in the EA determined the proposed action would have a significant environmental impact, a notice of intent to prepare an EIS would be published. The EA would then provide the foundation for the preparation of the EIS (40 CFR 1508.9).

Comment 2 - Necessary information and analysis lacking, inappropriately vague

Responses to individual aspects of this broader comment are address in the following headings:

Vagueness of damage assessment procedures and methods

The need for action to alleviate damage to agricultural resources, property, natural resources, and the need to reduce threats to human safety associated with crows in Maryland was discussed in section 1.2 of the EA. The need for action defines the extent of damages that can occur from crows in the State which defines the underlying need for the proposed action addressed in the EA. Specific examples of crow damage that have occurred in Maryland were also addressed in section 1.2 of the EA.

WS only conducts damage management activities when requested by those persons experiencing damage associated with wildlife. Those persons experiencing damage determine the threshold at which damage management activities should be requested. Some damage and economic loss can be tolerated by cooperators until the damage reaches a threshold where damage becomes an economic burden or poses a risk to human safety. The appropriate level of allowed tolerance or threshold before employing damage management activities would differ among cooperators and damage situations. Therefore, only the presence or absence of damage or threats of damage can be determined by WS. Identifying damage caused by crows is self-evident when crows are present at a location when damage is occurring (*e.g.*, crows using urban roosts where fecal dropping are accumulating or crows observed feeding on a agriculture crop). WS' personnel are trained at identifying wildlife damage and identifying the wildlife species responsible for causing damage. Crows are readily identifiable and the damage caused by crows is well documented (see section 1.2 in the EA).

WS' personnel have prior experience with managing damage associated with crows and are accustomed to addressing damage or threats posed by a variety of wildlife species, including the use of the methods required to effectively resolve or reduce damage. WS' mission is to provide leadership in resolving and

preventing damage to resources and to reduce threats to human safety caused by wildlife, including crows in Maryland.

WS will work cooperatively with those entities requesting assistance to identify damage and to identify the most effective use of methods to prevent damage from occurring, to reduce damage that is occurring, and to reduce threats to human safety associated with crows. WS has extensive expertise in the use of methods and employing those methods to effectively resolve damage and threats associated with wildlife.

As described under the proposed action in section 3.1 of the EA, WS uses a decision model based on a publication by Slate et al. (1992) which involves evaluating each request for assistance, taking action, and evaluating and monitoring results of the actions taken. The published article provides more detail on the processes used in the WS Decision Model. WS' Final Environmental Impact Statement (FEIS) was also referenced in the EA and provides more detail and examples of how the model is used (USDA 1997). WS' personnel use the Decision Model to develop the most appropriate strategy to reduce damage and to reduce potential detrimental environmental effects from damage management actions based on individual requests for assistance.

Specific damage management recommendations vague

WS' methods and standard operating procedures are discussed in section 3.1, section 3.3, and section 3.4 of the EA and are discussed in further detail in Appendix B of the EA. Specific examples of WS' activities in Maryland were provided in section 1.2 of the EA. WS' programmatic FEIS (USDA 1997), which was referenced in the EA, further describes those methods available to resolve or prevent crow damage and to prevent threats to human safety.

WS addresses specific damage management recommendations in the alternatives. The proposed action alternative describes an integrated damage management program which is described in detail in section 3.1 of the EA. An integrated approach to resolving requests for assistance discussed in section 3.1 of the EA describes how all available methods could be applied, individually or in combination, to resolve requests for assistance based on assessing damage through WS' Decision Model. The application of the decision model as part of recommending damage methods was discussed in section 3.1 of the EA. Technical assistance, direct damage management assistance, educational efforts, and research and development, as components of an integrated damage management program, were discussed specifically in section 3.1 of the EA. WS' incorporation of the community based decision making approach to managing crow damage as part of proposed action was also discussed in the EA under the proposed action. Criteria for depopulating crow roosts were also discussed in the EA under the proposed action.

Since individual wildlife damage management actions can be categorically excluded from further analysis according to APHIS regulation for implementing the National Environmental Policy Act, the purpose of the EA as described in section 1.1 of the EA is to 1) facilitate planning, interagency coordination and the streamlining of program management; 2) clearly communicate to the public the analysis of individual and cumulative impacts of program activities; and 3) evaluate and determine if there are any potentially significant or cumulative adverse effects from the proposed program. The EA was prepared to consider potential individual and cumulative effects associated with managing crow damage in Maryland using all available methods. The EA evaluates the use of all methods individually and cumulatively which allows for a more comprehensive and less redundant analysis.

Lack of a description of how a damage management program is applied

In section 3.1 of the EA, WS describes the alternatives in detail, including the methods, procedures, and recommendations that would be available for use to manage damage caused by crows in Maryland under

those alternatives. The EA further describes the decision-making process used by WS when addressing requests for assistance to manage damage caused by crows in Maryland. WS describes strategies employed through an integrated approach to addressing damage caused by crows, including technical assistance recommendations, direct operational assistance, educational efforts, and the research and development of effective damage management methods. WS' further describes decision-making based on community input. Methods available for use to address crow damage are described in section 3.1 with examples of crow damage management projects provided in section 1.2. WS responds to requests for assistance with a site visit or discussion of the damage occurring which defines the extent of the request. Using the decision model, a damage management plan is implemented to achieve the objective of reducing damage or threats of damage. Therefore, the analysis in the EA evaluates the use of methods as though those methods under an alternative would be employed for every request for assistance to evaluate the potential impact parameters of those methods being employed together.

Under the proposed action, an evaluation of all available methods occurs which establishes the maximum potential impact parameters if every method available was employed to resolve every request for assistance. Any use combination of methods (either singularly or collectively) would therefore be below the analyzed maximum potential impact parameters analyzed in the EA.

WS' Decision Model is the implementing mechanism for a damage management program that is adapted to an individual damage situation that allows for the broadest range of methods to be used to address damage or the threat of damage in the most effective, most efficient, and mostly environmentally conscious way available. When a request for assistance is received to resolve or prevent damage caused by crows, WS conducts site visits to assess damage or threats, identifies the cause of the damage, and applies the decision model described by Slate et al. (1992) and in WS' programmatic FEIS (USDA 1997) to apply methods to resolve or prevent damage using those methods available. The WS' process for providing assistance is clearly defined by WS' Decision Model under the proposed action in the EA.

Cost-effectiveness of the program

The cost-effectiveness of the proposed action was identified as an issue during the development of the EA but was not analyzed in detail. The rationale for not analyzing this particular issue was addressed in section 2.3 of the EA.

An analysis of cost-effectiveness in many bird damage management situations is difficult or impossible to determine because the value of benefits may not be readily calculable and personal perspectives differ about damage. For example, the potential benefit of eliminating crows from defecating on public benches could reduce incidences of illness among an unknown number of users. Since some bird-borne diseases are potentially fatal, or severely debilitating, the value of the benefit may be high. However, no studies of disease problems with and without bird damage management have been conducted, and, therefore, the number of cases prevented because of crow damage management are not possible to estimate. Also, it is rarely possible to conclusively prove that birds are responsible for individual disease cases or outbreaks which were also discussed in the EA.

CEQ does not require a formal, monetized cost-benefit analysis to comply with the NEPA (40 CFR 1508.14) and consideration of this issue is not essential to making a reasoned choice among the alternatives being considered. WS' programmatic FEIS states:

“Cost effectiveness is not, nor should it be, the primary goal of the APHIS WS program. Additional constraints, such as the environmental protection, land management goals, and others, are considered whenever a request for assistance is received. These constraints increase the cost of the program while not necessarily increasing its effectiveness, yet they are a vital part of the APHIS WS Program.”

WS is aware of concerns that bird damage management should not be allowed until economic losses become unacceptable. However, this type of policy would be inappropriate to apply to public health and safety situations. In addition, even though some losses can be expected and tolerated, WS has the legal responsibility and direction to respond to requests for crow damage management, and it is program policy to aid each requester to minimize losses. Furthermore, in a ruling for Southern Utah Wilderness Alliance, et al. v Hugh Thompson, Forest Supervisor for the Dixie National Forest, et al., the court denied the plaintiffs' motion for a preliminary injunction to halt the proposed activities. In part, the court found that it was only necessary to show that damage from wildlife is threatened, to establish a need for wildlife damage management (U.S. District Court of Utah 1993).

Duration of action using different approaches

As stated previously and throughout the EA, WS only conducts damage management activities after a request for assistance has been received. WS' objective in responding to requests for assistance is to reduce damage, risks, and conflicts associated with wildlife.

WS' personnel assess the problem and then evaluate the appropriateness and availability (legal and administrative) of strategies and methods based on biological, economic, and social considerations. Following this evaluation, methods deemed to be practical for the situation are incorporated into a damage management strategy. After this strategy has been implemented, monitoring is conducted and evaluation continues to assess the effectiveness of the strategy. If the strategy is effective, the need for further management is ended. In terms of the WS Decision Model, most damage management efforts consist of continuous feedback between receiving the request and monitoring the results of the damage management strategy.

The duration of any approach is linked directly to the effectiveness of the damage management program as defined by the amount of time required to prevent damage which is related to how accurately practitioner's diagnosis the problem, the species responsible for the damage, and how actions are implemented to correct or mitigate risks or damages. The more effective the approach in achieving the desired results, the shorter the duration those methods are employed. The objective under any of the alternatives would be to alleviate or prevent damages from occurring and methods available under the alternatives would be employed until that objective has been achieved. Expertise in employing those methods available to resolve crow damage would likely result in those methods achieving the desired result quicker which would lessen the need to continue the use of those methods. Since most methods available to resolve crow damage would be available under any of the alternatives analyzed, the application of those methods to resolve a request for assistance would be similar across all the alternatives.

Comment 3 - Effectiveness of Proposed Action

As part of an integrated approach to managing crow damage, WS has the ability to adapt methods to damage situations to effectively reduce or prevent damage from occurring. Under the proposed integrated approach, all methods, individually or in combination, could be employed as deemed appropriate through WS' Decision Model to address requests for assistance. WS' objective when receiving a request for assistance under the proposed action is to reduce damage and threats to human safety or to prevent damage from occurring using an integrated approach to managing crow damage (see section 3.1 of the EA). Therefore, under the proposed action, WS would employ methods adaptively to achieve that objective.

The effectiveness of the methods available to manage damage was an issue identified during the development of the EA and was addressed in section 2.3 in the EA. The EA cited numerous studies where the use of damage management methods was effective in reducing crow damage. The use of non-lethal methods in an integrated approach have proved effective in dispersing crows (Gorenzel et al. 2000, Chipman et al. 2008), including the use of crow effigies (Avery et al. 2008), lasers (Gorenzel et al. 2002), and electronic distress calls (Gorenzel and Salmon 1993). As was stated in the EA, very few studies have addressed the effectiveness of lethal methods in reducing crow damage. However, the successful use of lethal methods to manage crow damage has been documented (Boyd and Hall 1987, Gorenzel et al. 2000).

As was discussed in the EA, it is reasonable to anticipate that when those methods are applied as intended in Maryland under the proposed action, that those methods are effective in reducing damage. The effectiveness of methods is considered as part of the decision making-process under WS' use of the Decision Model described in Chapter 3 of the EA for each damage management request based on continual evaluation of methods and results. The prior use of methods by WS in Maryland has proven effective in reducing damage and threats associated with crows in the State. Under the proposed action in the EA, if a method or a combination of methods proves to be ineffective in reducing damage to an acceptable level, additional methods could be employed either singularly or in combination with other methods to achieve a reduction in damage or the threat of damage. Thus, the proposed action would allow for an adaptive management approach that would be based the constant evaluation of the effectiveness of methods in reducing damage based on the WS decision model.

Comment 4 - Field Use of Most Up-to-date Methods

WS uses trained, professional employees to conduct crow damage management programs in Maryland and continues to train employees on newly developed and available techniques. The National Wildlife Research Center (NWRC) functions as the research arm of WS by providing scientific information and development of methods for wildlife damage management that are effective and environmentally responsible. NWRC scientists work closely with WS' state programs, wildlife managers, researchers, and others to develop and evaluate wildlife damage management techniques.

The analysis in the EA is based on the best information and methods available, or that are being developed but not yet available. As mentioned numerous times, WS proposed action in the EA would allow methods to be used in an integrated approach and that WS' Decision Model would allow for the development of management strategies that alleviate damage while minimizing the potentially harmful risks to humans, pets, non-target species, and the environment. Chapter 4 and Appendix B of the EA discuss methods that are currently available as well as products that may be considered should they become available at a future time under the alternatives. WS would annually monitor crow damage management activities in Maryland. During the annual review of activities, any additional methods or information would be identified and addressed. If necessary, the EA would be supplemented pursuant to the NEPA based on the availability of additional methods.

Comment 5 - Missing Alternative

The comment indicated that WS should have evaluated an alternative whereby all non-lethal methods available should be employed prior to the use of lethal methods. An alternative that would employ all non-lethal methods before lethal methods was considered in the EA but was not analyzed in detail (see section 3.2 of the EA). WS' proposed action alternative as outlined in the EA is similar to a non-lethal before lethal alternative because WS encourages and considers the use of non-lethal methods before lethal methods (WS Directive 2.101). Adding a non-lethal before lethal alternative would not add additional information to the analysis for the public or decision-maker. WS recognizes that the most effective

approach to resolving wildlife damage is to use an integrated approach which uses several damage management methods (non-lethal and/or lethal) simultaneously or sequentially. If the requester is already using non-lethal methods or if the birds have habituated to scare tactics, repellents, or other non-lethal dispersal techniques, WS would not consider continuing to implement those techniques because they have not proven effective in those situations. When evaluating methods for a damage situation, WS recognizes that some methods may be more or less effective, or applicable.

Comment 6 – Humaneness

The issue of the humaneness of available methods was addressed as a major issue in section 2.2 of the EA and is addressed in relationship to the alternatives in section 4.1 of the EA. The humaneness of methods and actions was specifically addressed in section 4.1.4 of the EA. WS continues to evaluate existing and new methods for animal welfare and humaneness concerns. WS' mission is to reduce damage and provides funding annually to develop and make available more species specific and humane methods. As stated in the EA, people may perceive the humaneness of a method or an action differently and certain methods generally deemed as humane can be inhumane if used inappropriately. WS' goal is to use methods as humanely as possible to effectively resolve requests for assistance to reduce damage and human safety.

While it is regrettable that wild animals die to alleviate damage in some situations, WS believes that if an animal death must occur, then it should occur with a minimum amount of distress and pain, in as short a period of time as practical, and with compassion. WS is trying to achieve a “balance” between the needs of people, recognizing that people are part of the environment, and animals while keeping issues like the protection of the environment, economics, and humaneness in perspective. WS recognizes that animal welfare organizations are concerned that some methods used to manage wildlife damage may expose animals to pain and suffering. WS believes that humaneness of an action or management plan must not only consider the effects of the action on wildlife but also on the people or other species that may be or are affected by wildlife. Ideally, such protection would be achieved through non-lethal means, but when non-lethal means are not practical or effective, lethal means may be the only way to accomplish such damage management. As stated in the EA, the goal of WS in reducing damage caused by wildlife is to apply methods as humanely as possible to effectively resolve requests for assistance.

Comment 7 - DRC-1339

A detailed discussion of DRC-1339 can be found in section 4.1 of the EA and Appendix B of the EA. The risks to non-targets, either through direct ingestion of DRC-1339 treated bait or secondary hazards associated with scavengers feeding on carcasses of birds that have died from consuming DRC-1339 treated bait, was specifically addressed in Section 4.1 of the EA. Concerns raised about the study designs of previous work conducted to evaluate non-target risks associated with DRC-1339 was also directly addressed in section 4.1 of the EA. Measures taken to further minimize the risks to non-targets from the use of DRC-1339 treated bait were addressed in section 3.3 and section 3.4 of the EA.

Toxicity data for DRC-1339 spans nearly 35 years of research and field use. The appropriateness of study designs used to determine acute toxicity to pesticides has many views (Lipnick et al. 1995). The use of small sample sizes was the preferred method of screening for toxicity beginning as early as 1948 (Dixon and Mood 1948). In 1982, the U.S. Environmental Protection Agency (EPA) established standardized methods for testing for acute toxicity that favored larger sample sizes (EPA 1982). More recently, regulatory agencies have again begun to debate the appropriate level of sample sizes in determining acute toxicity based on a growing public concern for the number of animals used for scientific purposes.

Based on these concerns, the Ecological Committee on FIFRA Risk Assessment (ECOFRAM) was established by EPA to provide guidance on ecological risk assessment methods (EPA 1999). The committee report recommended to the EPA that only one definitive LD₅₀ be used in toxicity screening either on the mallard or northern bobwhite and recommended further testing be conducted using the up-and-down method (EPA 1999). Many of the screening methods used for DRC-1339 prior to the establishment of EPA guidelines in 1982 used the up-and-down method of screening (Eisemann et al. 2003).

A review of the literature shows that LD₅₀ research using smaller sample sizes conducted prior to EPA established guidelines are good indicators of LD₅₀ derived from more rigorous designs (Bruce 1985, Bruce 1987, Lipnick et al. 1995). Therefore, acute and chronic toxicity data gathered prior to EPA guidance remain valid and to ignore the data would be inappropriate and wasteful of animal life (Eisemann et al. 2003).

Literature Cited

- Avery, M.L., E.A. Tillman, and J.S. Humphrey. 2008. Effigies for dispersing urban crow roosts. Pp. 84-87 in R.M. Timm and M.B. Madon, eds. Proc. 23rd Vertebr. Pest Conf., University of California-Davis.
- Boyd, F.L., and D.I. Hall. 1987. Use of DRC-1339 to control crows in three roosts in Kentucky and Arkansas. Third Eastern Wildlife Damage Control Conference 3:3-7.
- Bruce, R.D. 1985. An Up-and-Down procedure for acute toxicity testing. *Fundamentals of Applied Toxicology* 5:151-157.
- Bruce, R.D. 1987. A confirmatory study of the Up-and-Down method for acute oral toxicity testing. *Fundamentals of Applied Toxicology* 8:97-100.
- Chipman, R.B., T.L. Devault, D. Slate, K.J. Preusser, M.S. Carrara, J.W. Friers, and T.P. Algeo. 2008. Non-lethal management to reduce conflicts with winter urban crow roosts in New York: 2002 – 2007. Pp. 88-93 in R.M. Timm and M.B. Madon, eds. Proc. 23rd Vertebr. Pest Conf., University of California-Davis.
- Dixon, W. J. and A. M. Mood. 1948. A method for obtaining and analyzing sensitive data. *Journal of the American Statistical Association* 43:109-126.
- Eisemann, J.D., P.A. Pipas, and J.L. Cummings. 2003. Acute and chronic toxicity of compound DRC-1339 (3-chloro-4-methylaniline hydrochloride) to birds. Pp. 49-63 in Linz, G. M., ed., *Management of North American blackbirds*. National Wildlife Research Center, Fort Collins, Colorado.
- Environmental Protection Agency (EPA). 1982. Avian single-dose oral LD₅₀ test, Guideline 71-1. Pages 33-37 in *Pesticide assessment guidelines, subdivision E, hazard evaluation wildlife and aquatic organisms*. U. S. Environmental Protection Agency PB83-153908, Washington D.C.
- Environmental Protection Agency (EPA). 1999. ECOFRAM terrestrial draft report. Ecological Committee on FIFRA Risk Assessment Methods. U. S. Environmental Protection Agency, Washington, D. C. <http://www.epa.gov/oppefed1/ecorisk/terreport.pdf>.

- Gorenzel, W.P., and T.P. Salmon. 1993. Tape-recorded calls disperse American crows from urban roosts. *Wildlife Society Bulletin* 21:334-338.
- Gorenzel, W.P., B.F. Blackwell, G.D. Simmons, T.P. Salmon, and R.A. Dolbeer. 2002. Evaluation of laser to disperse American crows, *Corvus brachyrhynchos*, from urban night roosts. *Int. J. Pest Manage.* 48:327-331.
- Gorenzel, W.P., T.P. Salmon, G.D. Simmons, B. Barkhouse, and M.P. Quisenberry. 2000. Urban crow roosts – a nationwide phenomenon? *Proc. Wildl. Damage Manage. Conf.* 9:158-170.
- Lipnick, R., J. A. Cotrouvo, R. N. Hill, R. D. Bruce, D. A. Stitzel, A. P. Walker, I. Chu, M. Goddard, L. Segal, J. A. Springer, and R. C. Meyers. 1995. Comparison of the Up-and-Down, conventional LD₅₀, and Fixed-Dose Acute Toxicity procedure. *Food Chemistry and Toxicology* 33:223-331.
- Slate, D.A., R. Owens, G. Connolly, and G. Simmons. 1992. Decision making for wildlife damage management. *Trans. N. A. Wildl. Nat. Res. Conf* 57:51-62.
- USDA. 1997. Animal Damage Control Program – Final Environmental Impact Statement (revised). USDA, APHIS, WS-Operational Support Staff. Riverdale, Maryland.