# SUPPLEMENT TO THE ENVIRONMENTAL ASSESSMENT: REDUCING AQUATIC RODENT DAMAGE THROUGH AN INTEGRATED WILDLIFE DAMAGE MANAGEMENT PROGRAM IN THE STATE OF LOUISIANA

**United State Department of Agriculture**
**Animal and Plant Health Inspection Service**
**Wildlife Services**

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## I. INTRODUCTION

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program prepared an environmental assessment (EA) to evaluate potential impacts to the quality of the human environment from the implementation of a management program to address damage to property, agricultural resources, natural resources, and threats to human safety caused by beaver (*Castor canadensis*), nutria (*Myocastor coypus*), and muskrats (*Ondatra zibethicus*); hereafter, referred to collectively as aquatic rodents (USDA 2005). The EA evaluated the need for aquatic rodent damage management and assessed potential impacts on the human environment to meet that proposed need. The proposed action alternative in the EA evaluates an integrated damage management program in Louisiana to fully address the need for resolving damage caused by aquatic rodents while minimizing impacts to the human environment.

## II. HISTORICAL AQUATIC RODENT DAMAGE MANAGEMENT

Section 1.1 of the EA provides a historical perspective of aquatic rodent damage management in Louisiana and some of the damage management programs that have been attempted in other States to alleviate damage. The alleviation of damage or other problems caused by or related to the behavior of wildlife is termed wildlife damage management and is recognized as an integral component of wildlife management (The Wildlife Society 1992). The imminent threat of damage or loss of resources is often sufficient for individual actions to be initiated and the need for damage management is derived from the specific threats to resources. Those species have no intent to do harm. They utilize habitats (*e.g.*, reproduce, walk, forage) where they can find a niche. If their activities result in lost economic value of resources or threaten human safety, people characterize this as damage. When damage exceeds or threatens to exceed an economic threshold and/or pose a threat to human safety, people often seek assistance. The threshold triggering a request for assistance is often unique to the individual person and can be based on many factors (*e.g.*, economic, social, aesthetics). Therefore, how damage is defined is often unique to the individual person and damage occurring to one individual may not be considered damage by another individual. However, the use of the term "*damage*" is consistently used to describe situations where the individual person has determined the losses associated with wildlife is actual damage requiring assistance (*i.e.*, has reached an individual threshold). The term "*damage*" is most often defined as economic losses to resources or threats to human safety but could also include a loss in aesthetic value and other situations where the actions of wildlife are no longer tolerable to an individual person.

The need for action to manage damage and threats associated with aquatic rodents in Louisiana arises from requests for assistance[1] received by WS to reduce and prevent damage from occurring to four major categories: agricultural resources, natural resources, property, and threats to human safety.

[1]WS only conducts aquatic rodent damage management after receiving a request for assistance. Before initiating damage management activities, 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 would allow to be used on property they own and/or manage.

WS continued to assist those cooperators requesting assistance with damage caused by beaver, nutria, and muskrats in Louisiana from federal fiscal year (FY)[2] 2005 through FY 2010. Those persons requesting assistance reported damages to timber, roads, crops, pasture, and drainage control devices, primarily from beaver burrowing into embankments, beaver gnawing on and felling trees, and from flooding caused by beaver impounding water through dam building.

WS provided both technical assistance and direct operational assistance as described in the EA from FY 2005 through FY 2010. Technical assistance provides those persons interested with information and recommendations on preventing wildlife damage and effective methods for resolving damage which are legally available for use. This information can then be employed by those persons experiencing wildlife damage to effectively resolve damage without WS' direct involvement.

Direct operational assistance occurs when WS is directly involved with employing methods to resolve, alleviate, or reduce threats associated with beaver, nutria, and muskrats. As directed by the selected alternative, WS applies multiple methods as part of an integrated damage management program to resolve requests for assistance. WS' technical assistance and direct operational programs are discussed in detail in the EA (USDA 2005) along with WS' programmatic FEIS (USDA 1997). WS' activities from FY 2005 through FY 2010 are summarized below:

**Summary of WS' Aquatic Rodent Damage Management Activities in Louisiana during FY 2005**

WS provided both technical assistance and direct management activities in FY 2005 as described in the EA. Technical assistance provides those persons interested with information and recommendations on preventing wildlife damage and effective methods for resolving damage legally available. This information can then be employed by those persons experiencing wildlife damage to effectively resolve that damage without WS' direct involvement. WS continued to provide technical assistance to cooperators interested in the management of damage caused by aquatic rodents through disseminating leaflets, demonstrations, and providing information on methods available to manage damage. A total of 91 technical assistance projects were conducted regarding beaver damage management with 34 projects conducted for nutria and four for muskrat in FY 2005.

In FY 2005, the WS program in Louisiana lethally removed 1,396 beaver through trapping and shooting to alleviate damage. Damage from beaver occurred primarily from flooding timber resources along with gnawing and girdling damage. Beaver were also responsible for causing damage by burrowing into water impoundment structures which can lead to structural failure. To manage damage to natural resources and property caused by nutria, WS' lethally removed 106 nutria by shooting and trapping at the request of cooperators. Nutria can burrow into dams weakening the structural integrity which can lead to failure. Nutria cause extensive damage to natural resources through feeding activities that can negatively impact aquatic vegetation. WS did not provide direct control assistance concerning muskrat damage during FY 2005. WS verified and cooperators reported approximately $1,178,094.50 in damages and losses from beaver, nutria, and muskrat in Louisiana during FY 2005 (see Table 1). The highest damage levels report or verified by WS occurred to timber resources where the impounding of water by beaver can result in flooding damage to timber. In addition, the girdling, gnawing, and felling of trees associated with beaver can also cause damage to timber resources.

[2]The federal fiscal year begins on October 1 and ends on September 30 the following year.

**Table 1 – Economic losses to resources caused by aquatic rodents in Louisiana and damage prevented from WS' activities during FY 2005**

| Resource | Economic Loss[1] | Resources Protected[2] |
|---|---|---|
| **Roads/Bridges** | **$30,000** | **$1,268,800** |
| **Timber** | **$635,182.50** | **$141,922** |
| **Dams/Ditches** | **$105,712** | **$18,000** |
| **Crops** | **$6,700** | **$150,000** |
| **Other** | **$400,500** | **$400** |
| **TOTAL** | **$1,178,094.50** | **$1,579,122** |

[1]Resources damaged as reported by a cooperator or verified by WS through site visits

[2]Damage to resources prevented from occurring through WS' damage management activities

To alleviate flooding and damage occurring from beaver dams impounding water, WS' used binary explosives to removed 131 beaver dams in FY 2005 and used hand tools to rake out an additional 55 beaver dams.

**Summary of WS' Aquatic Rodent Damage Management Activities in Louisiana during FY 2006**

WS continued to provide technical assistance to cooperators interested in the management of damage caused by aquatic rodents through disseminating leaflets, demonstrations, and providing information on methods available to manage damage. A total of 175 technical assistance projects were conducted regarding beaver damage management with 13 projects conducted for nutria in FY 2006. WS' did not receive requests for technical assistance regarding muskrat damage in FY 2006.

In FY 2006, the WS program lethally removed 1,204 beaver through trapping and shooting to alleviate damage. Damage from beaver occurred primarily from cutting and gnawing damage to timber resources along with flooding damage. Beaver were also responsible for causing damage by burrowing into water impoundment structures which can lead to structural failure. To manage damage to natural resources and property caused by nutria, WS lethally removed 27 nutria by shooting and trapping at the request of cooperators. Nutria can burrow into dams weakening the structural integrity which can lead to failure. Nutria cause extensive damage to natural resources through feeding activities that can negatively impact aquatic vegetation. WS verified and cooperators reported approximately $551,406 in damages and losses from beaver and nutria in Louisiana during FY 2006 (see Table 2). WS received no requests for direct assistance to manage damage caused by muskrats in FY 2006.

**Table 2 - Economic losses to resources caused by aquatic rodents in Louisiana and damage prevented from WS' activities during FY 2006**

| Resource | Economic Loss[1] | Resources Protected[2] |
|---|---|---|
| **Roads/Bridges** | **$132,000** | **$1,841,280** |
| **Timber** | **$181,985** | **$378,092** |
| **Dams/Ditches** | **$230,821** | **$76,350** |
| **Other** | **$6,600** | **$500** |
| **TOTAL** | **$551,406** | **$2,296,222** |

[1]Resources damaged as reported by a cooperator or verified by WS through site visits

[2]Damage to resources prevented from occurring through WS' damage management activities

To alleviate flooding, WS removed 90 beaver dams using explosives and 32 dams using hand tools in FY 2006. Beaver dams impound water which causes flooding to roads and other resources. Beaver dams would be removed at the request of the property owner under a cooperative service agreement.

**Summary of WS' Aquatic Rodent Damage Management Activities in Louisiana during FY 2007**

WS continued to provide both technical assistance and direct operational assistance in FY 2007 as described in the EA. WS' continued to provide technical assistance to cooperators interested in the management of damage caused by aquatic rodents through disseminating leaflets, demonstrations, and providing information on methods available to manage damage. A total of 296 technical assistance projects were conducted regarding beaver damage management with 38 projects conducted for nutria and two for muskrat in FY 2007.

In FY 2007, the WS program lethally removed 1,419 beaver through trapping and shooting to alleviate damage. Damage from beaver occurred primarily from flooding timber resources along with gnawing and girdling damage. Beaver were also responsible for causing damage by burrowing into water impoundment structures. To manage damage to natural resources and property caused by nutria, WS lethally removed 193 nutria by shooting and trapping at the request of cooperators to alleviate burrowing damage and threats to natural resources. Also, WS lethally removed three muskrats causing burrowing damage to pond dams. WS verified and cooperators reported approximately $1,159,140 in damages and losses from beaver, nutria, and muskrat in Louisiana (see Table 3).

**Table 3 – Economic losses to resources caused by aquatic rodents in Louisiana and damage prevented from WS' activities during FY 2007**

| Resource | Economic Loss[1] | Resources Protected[2] |
|---|---|---|
| **Roads/Bridges** | **$234,000** | **$1,219,200** |
| **Timber** | **$147,040** | **$390,565** |
| **Dams/Ditches** | **$726,800** | **$116,450** |
| **Crops** | **$3,000** | **$4,000** |
| **Other** | **$48,300** | **$5,000** |
| **TOTAL** | **$1,159,140** | **$1,735,215** |

[1]Resources damaged as reported by a cooperator or verified by WS through site visits

[2]Damage to resources prevented from occurring through WS' damage management activities

To alleviate flooding, WS removed 106 beaver dams using explosives and 50 dams using hand tools in FY 2007. Dams were removed to alleviate flooding damage to roads and other resources.

**Summary of WS' Aquatic Rodent Damage Management Activities in Louisiana during FY 2008**

WS continued to assist those cooperators requesting assistance with damage caused by beaver, muskrats, and nutria in Louisiana during FY 2008. Those persons requesting assistance reported damages to timber, roads, crops, pasture, and drainage control devices, primarily from flooding caused by beaver impounding water through dam building. Over $2 million in damages associated with aquatic rodents were reported to WS by cooperators or was verified by WS during site visits. Activities conducted by WS during FY 2008 prevent further economic losses to resources estimated at $11.5 million (see Table 4). WS' activities prevented further damage from occurring to primarily timber resources associated with flooding from beaver dams.

In FY 2008, the WS program conducted 233 technical assistance projects involving beaver damage management. WS also conducted 31 projects involving nutria damage and one project associated with damage caused by muskrats.

WS also continued to employ direct operational damage management activities in which WS was directly involved with employing methods to alleviate damage caused by aquatic rodents at the request of the cooperator. WS continued to employ those methods available for preventing and resolving damage as described in the EA during FY 2008. To resolve requests for assistance to prevent or resolve damage, WS lethally removed 1,196 beaver in FY 2008 by shooting, snares, and through the use traps which were described in the EA. Beaver were lethally removed primarily to prevent and resolve damage that occurred from beaver burrowing into earthen embankments causing damage to roads and drainage systems, from flooding of agricultural resources and timberland, from tree loss due to beaver cutting or girdling trees, and damage to landscape plantings. WS' also lethally removed a total of 152 nutria in Louisiana during FY 2008 through the use of shooting and traps. Nutria were lethally removed to reduce overgrazing of native vegetation. When occurring in high densities, nutria can denude areas of aquatic vegetation which is often required by native fish and wildlife species.

**Table 4 – Economic losses to resources caused by aquatic rodents in Louisiana and damage prevented from WS' activities during FY 2008**

| Resource | Economic Loss[1] | Resources Protected[2] |
|---|---|---|
| **Roads/Bridges** | **$137,450** | **$1,428,300** |
| **Timber** | **$1,785,649** | **$8,511,841** |
| **Dams/Ditches** | **$123,450** | **$667,050** |
| **Crops** | **$1,000** | **$701,700** |
| **Other** | **$8,000** | **$211,000** |
| **TOTAL** | **$2,055,549** | **$11,519,891** |

[1]Resources damaged as reported by a cooperator or verified by WS through site visits

[2]Damage to resources prevented from occurring through WS' damage management activities

To alleviate flooding and damage occurring from beaver dams impounding water, WS used binary explosives to removed 82 beaver dams in FY 2008 and used hand tools to rake out an additional 64 beaver dams.

**Summary of WS' Aquatic Rodent Damage Management Activities in Louisiana during FY 2009**

Both operational assistance and technical assistance were provided to those persons requesting assistance with resolving damage caused by aquatic rodents in Louisiana during FY 2009. Damages reported to and verified by WS occurred primarily from beaver flooding resources causing damage to trees and damage threats associated with beaver burrowing into earthen embankments. WS conducted 212 technical assistance projects involving beaver damage management in FY 2009. WS also conducted 34 technical assistance project involving damage associated with nutria in Louisiana during FY 2009.

In FY 2009, the WS program lethally removed 1,001 beaver through trapping and shooting to alleviate damage. Beaver were lethally removed primarily to prevent and resolve damage that occurred from beaver burrowing into earthen embankments causing damage to roads and drainage systems, from flooding of agricultural resources and timberland, from tree loss due to beaver cutting or girdling trees, and damage to landscape plantings. To manage damage to natural resources and property caused by nutria, WS' lethally removed 166 nutria by shooting and trapping at the request of cooperators. Nutria can burrow into dams weakening the structural integrity which can lead to failure. Nutria cause extensive damage to natural resources through feeding activities that can negatively impact aquatic vegetation. WS' was not requested to perform muskrat damage management during FY 2009. WS' verified and cooperators reported approximately $782,350 in damages and losses from beaver, nutria, and muskrat in Louisiana (see Table 5).

**Table 5 – Economic losses to resources caused by aquatic rodents in Louisiana and damage prevented from WS' activities during FY 2009**

| Resource | Economic Loss[1] | Resources Protected[2] |
|---|---|---|
| **Roads/Bridges** | **$120,000** | **$1,716,700** |
| **Timber** | **$501,200** | **$18,260,454** |
| **Dams/Ditches** | **$157,150** | **$621,500** |
| **Crops** | **$1,000** | **$785,260** |
| **Other** | **$3,000** | **$3,105,000** |
| **TOTAL** | **$782,350** | **$24,488,914** |

[1]Resources damaged as reported by a cooperator or verified by WS through site visits

[2]Damage to resources prevented from occurring through WS' damage management activities

To alleviate flooding, WS' removed 101 beaver dams using explosives and 88 dams using hand tools in FY 2009. Beaver dams impound water which causes flooding to roads and other resources. Beaver dams would be removed at the request of the property owner under a cooperative service agreement.

**Summary of WS' Aquatic Rodent Damage Management Activities in Louisiana during FY 2010**

WS continued to assist those cooperators requesting assistance with damage caused by beaver, muskrats, and nutria in Louisiana during FY 2010. Those persons requesting assistance reported damages to timber, roads, crops, pasture, and drainage control devices, primarily from flooding caused by beaver impounding water through dam building. WS' provided technical assistance to cooperators interested in the management of damage caused by aquatic rodents through disseminating leaflets, demonstrations, and providing information on methods available to manage damage. A total of 291 technical assistance projects were conducted regarding beaver damage management with 32 projects conducted for nutria and one for muskrat in FY 2010.

In FY 2010, the WS program in Louisiana lethally removed 896 beaver through trapping and shooting to alleviate damage. Beaver were lethally removed primarily to prevent and resolve damage that occurred from beaver burrowing into earthen embankments causing damage to roads and drainage systems, from flooding of agricultural resources and timberland, from tree loss due to beaver cutting or girdling trees, and damage to landscape plantings. To manage damage to natural resources and property caused by nutria, WS' lethally removed 136 nutria by shooting and trapping at the request of cooperators. To alleviate damage to ponds due to burrowing, three muskrats were lethally removed by WS' during FY 2010. WS' verified and cooperators reported approximately $954,050 in damages and losses from beaver, nutria, and muskrat in Louisiana (see Table 6).

**Table 6 – Economic losses to resources caused by aquatic rodents in Louisiana and damage prevented from WS' activities during FY 2010**

| Resource | Economic Loss[1] | Resources Protected[2] |
|---|---|---|
| **Roads/Bridges** | **$297,800** | **$443,421** |
| **Timber** | **$420,200** | **$9,033,885** |
| **Dams/Ditches** | **$233,250** | **$467,838** |
| **Crops** | **$0** | **$616,080** |
| **Other** | **$2,800** | **$665,900** |
| **TOTAL** | **$954,050** | **$11,227,124** |

[1]Resources damaged as reported by a cooperator or verified by WS through site visits

[2]Damage to resources prevented from occurring through WS' damage management activities

To alleviate flooding damage, WS removed a total of 207 beaver dams in the State during FY 2010. Explosives were used to remove 97 beaver dams while hand tools were employed to breach an additional 110 beaver dams.

## III. BEAVER, NUTRIA, AND MUSKRAT ACTIVITY IMPACTS TO THE ENVIRONMENT AND SOCIETAL ATTITUDES

Section 1.2 of the EA describes the many beneficial aspects of aquatic rodents as well as damage associated with aquatic rodents to property, agricultural resources, natural resources, and threats to human safety. The information provided in Section 1.2 of the EA is still appropriate and reflective of the damages caused by aquatic rodents as well as the many beneficial aspects that aquatic rodents provide.

## IV. SCOPE AND PURPOSE

The purpose of the EA remains as addressed in section 1.3 of the EA (USDA 2005). This supplement to the EA examines potential environmental impacts of the proposed action alternative as it relates to new information that has become available from public comments, research findings, and data gathering since the issuance of the Decision and Finding of No Significant Impact (FONSI) in 2005. In addition, this supplement will clearly communicate to the public the analysis of individual and cumulative impacts of the proposed action since 2005 and document the analyses of WS' aquatic rodent damage management activities in Louisiana since the Decision/FONSI was issued in 2005 to ensure program activities remain within the impact parameters analyzed in the EA.

This supplement will analyze WS' beaver, nutria, and muskrat damage management activities in Louisiana since the 2005 Decision/FONSI was signed for the EA to: 1) facilitate planning and interagency coordination, 2) streamline program management, 3) ensure WS' activities remain within the scope of analyses contained in the EA, and 4) clearly communicate to the public the analysis of individual and cumulative impacts of the proposed action since 2005.

## V. NEED FOR AQUATIC RODENT DAMAGE MANAGEMENT IN LOUISIANA

The need for action to manage damage and threats associated with aquatic rodents in Louisiana arises from requests for assistance[3] received by WS to reduce and prevent damage associated with aquatic rodents from occurring to four major categories: agricultural resources, natural resources, property, and threats to human safety. The need for action was addressed in section 1.4 of the EA and remains appropriate to the analyses in the EA and this supplement to the EA. The damage reported to and verified by WS and the resources protected associated with aquatic rodent damage management activities conducted from FY 2005 through FY 2010 was also addressed previously in the supplement to the EA (see Section II above).

## VI. PROPOSED ACTION

The proposed action alternative was briefly described in Section 1.5 of the EA and further described in Chapter 3 of the EA. The Decision and FONSI for the EA selected the proposed action alternative which implemented an adaptive integrated approach to managing damage associated with aquatic rodents in the State. The proposed action alternative continued the implementation of an adaptive integrated approach utilizing non-lethal and lethal techniques, as deemed appropriate using the WS Decision Model, to reduce

[3] WS only conducts aquatic rodent damage management after receiving a request for assistance. Before initiating damage management activities, 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 and threats caused by aquatic rodents in Louisiana. A major goal of the program would be to resolve and prevent aquatic rodent damage and to reduce threats to human safety. To meet this goal, WS, in consultation the Louisiana Department of Wildlife and Fisheries (LDWF), continues to respond to requests for assistance with, at a minimum, technical assistance, or when funding is available, operational damage management assistance. Funding could occur through federal appropriations or from cooperative funding. The adaptive approach to managing damage associated with aquatic rodents would integrate the use of the most practical and effective methods to resolve a request for damage management as determined by site-specific evaluation to reduce damage or threats to human safety for each request.

Under the proposed action alternative, WS could respond to requests for assistance by: 1) taking no action, if warranted, 2) providing only technical assistance to property owners or managers on actions they could take to reduce damages caused by aquatic rodents, or 3) provide technical assistance and direct operational assistance to a property owner or manager experiencing damage. WS has implemented the proposed action alternative between FY 2005 and FY 2010 in the State to alleviate damage and threats of damage (see Section II above).

## VII. OBJECTIVES FOR THE LOUISIANA WS BEAVER, NUTRIA, AND MUSKRAT DAMAGE MANAGEMENT PROGRAM

The EA identified three objectives for aquatic rodent damage management conducted by WS in the State (see section 1.6 of the EA). Those objectives were to (1) resolve as many beaver, nutria, and muskrat damage problems that time, funding, and labor would allow, (2) respond to individual damage complaints within a two week time period, and (3) maintain the take of non-target otters (*Lutra canadensis*) during beaver, nutria, and muskrat damage management operations below 5% of the total otter harvest.

During all activities conducted from FY 2005 through FY 2010, WS continued to respond to all request for assistance involving aquatic rodents and was able to respond to requests for assistance within two weeks of receiving the request.

## VIII. RELATIONSHIP OF THE DOCUMENTS TO OTHER ENVIRONMENTAL DOCUMENTS

***WS' Programmatic Environmental Impact Statement:*** WS has developed a programmatic Final Environmental Impact Statement (FEIS) that addresses the need for wildlife damage management in the United States (USDA 1997). The FEIS contains detailed discussions of potential impacts to the human environment from wildlife damage management methods used by WS. Information from WS' programmatic FEIS has been incorporated by reference into the EA along with this supplement to the EA.

## IX. DECISIONS TO BE MADE

Based on agency relationships, Memorandums of Understanding (MOUs), and legislative authorities, WS was the lead agency for the EA, and therefore, responsible for the scope, content, and decisions made. The LDWF is responsible for managing wildlife in the State of Louisiana, including the establishment and enforcement of regulated hunting and trapping seasons in the State. WS' activities to reduce and/or prevent aquatic rodent damage in the State have been and would continue to be coordinated with the LDWF which ensures WS' actions would be incorporated into population objectives established for wildlife populations in the State.

Based on the scope of the EA and this supplement to the EA, the decisions to be made are: 1) should WS continue to implement an integrated wildlife damage management strategy, including non-lethal and lethal damage management methods, to meet the objectives for beaver, nutria, and muskrat damage management in Louisiana, 2) if not, should WS attempt to implement one of the alternatives to an

integrated wildlife damage management strategy as described in the EA, and 3) would the proposed action or the other alternatives have significant impacts on the quality of the human environment requiring preparation of an Environmental Impact Statement (EIS).

## X. SCOPE OF ANALYSIS

The EA and this supplement to the EA evaluate aquatic rodent damage management activities in Louisiana to reduce damage and threats when requested. The scope of analysis remains valid as addressed in the EA unless otherwise discussed in this supplement.

### Actions Analyzed

The EA and this supplement evaluate the need for aquatic rodent damage management to reduce damage to agricultural resources, natural resources, property, and threats to human safety within the State of Louisiana wherever such management is requested by a cooperator. The EA and this supplement discuss the issues associated with conducting aquatic rodent damage management in the State to meet the need for action and evaluate different alternatives to meet that need while addressing those issues.

WS uses a decision model based on a publication by Slate et al. (1992) which involves evaluating each request for assistance, taking action, evaluating the action, and monitoring results of the actions taken. Slate et al. (1992) provides more detail on the processes used in WS' Decision Model. WS' programmatic FEIS (USDA 1997) also provides more detail and examples of how the model is used. WS' personnel use the Decision Model to develop the most appropriate strategy to reduce damage and to determine potential environmental effects from damage management actions (Slate et al. 1992, USDA 1997, USDA 2005).

### Native American Lands and Tribes

The WS program in Louisiana would only conduct damage management activities when requested by a Native American Tribe and only after a Memorandum of Understanding (MOU) or cooperative service agreement has been signed between WS and the Tribe requesting assistance. Therefore, the Tribe would determine when WS' assistance is required and what activities would be allowed. Because Tribal officials would be responsible for requesting assistance from WS and determining what methods would be available to alleviate damage, no conflict with traditional cultural properties or beliefs would be anticipated. Those methods available to alleviate damage associated with aquatic rodents on federal, state, county, municipal, and private properties under the alternatives analyzed in the EA would also be available for use to alleviate damage on Tribal properties when the use of those methods have been approved for use by the Tribe requesting WS' assistance. Therefore, the activities and methods addressed under the alternatives would include those activities that could be employed on Native American lands, when requested and agreed upon.

### Period for which the EA is Valid

If the analyses in this supplement indicate an EIS is not warranted, the EA, as supplemented, would remain valid until WS, in consultation with the LDWF, determines that new needs for action, changed conditions, new issues, or new alternatives having different environmental impacts must be analyzed. At that time, the analysis in the EA and this supplement would be reviewed and further supplemented pursuant to the National Environmental Policy Act (NEPA). Review of the EA and this supplement would be conducted to ensure that the EA is sufficient. This process ensures the EA is complete and still appropriate to the scope of aquatic rodent damage management activities conducted by WS in Louisiana.

**Site Specificity**

The EA and this supplement analyze the potential impacts of aquatic rodent damage management and address activities on those properties currently under a MOU or cooperative service agreement with WS where activities have been and currently are being conducted. The EA and this supplement also address the impacts of aquatic rodent damage management where additional agreements may be signed in the future. Because the proposed action is to reduce damage and because the program's goals and directives would be to provide services when requested, within the constraints of available funding and workforce, it is conceivable that additional damage management efforts could occur at additional locations in the State. Thus, the EA and this supplement anticipate the potential expansion and analyze the impacts of such efforts as part of the program.

Planning for the management of wildlife damage must be viewed as being conceptually similar to federal or other agency actions whose missions are to stop or prevent adverse consequences from anticipated future events for which the actual sites and locations where they would occur are unknown but could be anywhere in a defined geographic area. Examples of such agencies and programs include fire and police departments, emergency clean-up organizations, and insurance companies. Although some of the sites where wildlife damage would occur can be predicted, all specific locations or times where such damage would occur in any given year cannot be predicted. The EA emphasizes major issues as they relate to specific areas whenever possible; however, many issues apply wherever aquatic rodent damage and the resulting management occur, and are treated as such. The standard WS Decision Model (Slate et al. 1992, USDA 1997, USDA 2005) would be the site-specific procedure for individual actions conducted by WS in Louisiana.

The analyses in the EA and this supplement to the EA are intended to apply to any action that may occur in any locale and at any time within Louisiana. In this way, WS believes it meets the intent of the NEPA with regard to site-specific analysis and that this is the only practical way for WS to comply with the NEPA and still be able to accomplish its mission.

**Public Involvement**

The EA was made available to the public for a 36-day comment period by a legal notice published in *The News-Star, The Town Talk, Capital City Press, The Times, Lake Charles American Press,* and *The Times-Picayune* on March 21, 2005. A letter of availability for the EA was also mailed directly to agencies, organizations, and individuals with probable interest in the proposed program. A total of two comment documents were received from the public during the public involvement process. Comments from the public involvement process were reviewed for substantive issues and alternatives which were considered in developing the Decision for the EA. Based upon those comments, several minor editorial changes were incorporated into the EA. Those minor changes enhanced the understanding of the proposed program, but did not change the analysis provided in the EA.

After consideration of the analysis contained in the EA and review of public comments, a Decision and FONSI for the EA was issued on May 6, 2005. The Decision and FONSI selected the proposed action alternative which implemented an integrated damage management program in Louisiana using multiple methods to adequately address the need to manage damage caused by aquatic rodents.

This supplement to the EA, along with the EA and the 2005 Decision/FONSI, will be made available for public review and comment through the publication of a legal notice announcing a minimum of a 30-day comment period. The legal notice will be published at a minimum in *The Advocate* and posted on the APHIS website located at http://www.aphis.usda.gov/wildlife_damage/nepa.shtml according to WS' public notification requirements (72 FR 13237-13238). A notice of availability for this supplement to the

EA will also be directly mailed to agencies, organizations, and individuals with probable interest in the proposed program. Comments received during the public involvement process will be fully considered for new substantive issues and alternatives.

## XI. AFFECTED ENVIRONMENT

Upon receiving a request for assistance, beaver, nutria, and muskrat damage management could be conducted on private, federal, state, tribal, county, and municipal lands in Louisiana to protect agricultural and natural resources, property, roads, bridges, railroads, and to reduce threats to public safety. Areas of the proposed action could include state and interstate highways and roads, and railroads and their right-of-ways where beaver, nutria, and muskrat activities cause damage or threats of damage. Areas may also include property in or adjacent to subdivisions, businesses, and industrial parks where beaver impound water and gnaw on or fell trees. Additionally, affected areas could include timberlands, croplands, and pastures that experience financial losses from beaver flooding or gnawing. The proposed action also could include private and public property where beaver, nutria, and muskrat burrowing causes damage to dikes, ditches, ponds and levees, and where feeding causes agricultural crop losses and negatively impacts wildlife, including threatened and endangered (T&E) species.

WS has reviewed the affected environment during evaluations of program activities under the proposed action through annual monitoring reports and this supplement. The affected environment has not changed since the implementation of the proposed action and continues to be as addressed in the EA.

## XII. ISSUES ANALYZED IN DETAIL

Issues are concerns of the public and/or professional community raised regarding potential adverse effects that might occur from a proposed action. Such issues must be considered in the NEPA decision-making process. Issues relating to the reduction of wildlife damage were raised during the scoping process for WS' programmatic FEIS (USDA 1997) and were considered in the preparation of the EA. Those issues are fully evaluated within WS' programmatic FEIS which analyzed specific data relevant to WS' programmatic activities at the time of preparation. Issues related to managing damage associated with aquatic rodents in Louisiana were developed by WS in consultation with the LDWF. The EA was also made available to the public for review and comment to identify additional issues.

The issues analyzed in detail are discussed in Chapter 2 of the EA (USDA 2005). Alternatives developed and identified during the development of the EA to address those issues are discussed in Chapter 3 of the EA (USDA 2005). The following issues were identified during the scoping process for the EA:

- Issue 1 - Effects on beaver, nutria, and muskrat populations
- Issue 2 - Effects on plants and other wildlife species, including T&E species
- Issue 3 - Effects on public and pet health and safety
- Issue 4 - Humaneness of methods to be used
- Issue 5 - Effects on wetlands
- Issue 6 - Economic losses to property
- Issue 7 - Impacts to stakeholders, including aesthetics

Based on those damage management activities conducted previously by WS since the 2005 Decision and FONSI were signed and in consultation with the LDWF, no additional issues have been identified that require detailed analyses. Those issues identified during the development of the EA remain applicable and appropriate to resolving damage and threats of damage associated with aquatic rodents in the State.

## XIII. ADDITIONAL ISSUES USED TO DEVELOP MITIGATION

Several additional issues were identified related to the need to resolve aquatic rodent damage management and were discussed in Section 2.3 of the EA (USDA 2005). Those issues were related to compliance with relevant federal, state, and local laws and regulations, including relevant Executive Orders. Those issues were used to develop standard operating procedures which were identified and addressed in Chapter 3 of the EA (USDA 2005). Those issues and measures have been reviewed and are still appropriate to the need for action.

## XIV. ISSUES CONSIDERED BUT NOT IN DETAIL WITH RATIONALE

In addition to the issues considered in detail, five other issues were considered in Section 2.4 of the EA, but were not analyzed in detail with the rationale provided in the EA. WS has reviewed the issues not considered in detail as described in the EA and has determined that the analyses provided in the EA is still appropriate regarding those issues.

## XV. ALTERNATIVES ANALYZED IN DETAIL

The alternatives considered and evaluated using the identified issues are described and discussed in detail in Chapter 3 of the EA (USDA 2005). In addition, Chapter 4 of the EA analyzes the environmental consequences of each alternative as those alternatives relate to the issues identified (USDA 2005). Appendix D of the EA provides a description of the methods that could be used or recommended by WS under each of the alternatives. The EA describes five potential alternatives that were developed to address the issues identified above. Alternatives analyzed in detail include:

- Alternative 1: No WS Beaver, Nutria, or Muskrat Damage Management in Louisiana
- Alternative 2: Only Lethal Beaver, Nutria, and Muskrat Damage Management
- Alternative 3: Fully Integrated Beaver, Nutria, and Muskrat Damage Management for all Public and Private Land (No Action/Proposed Action)
- Alternative 4: Technical Assistance Only
- Alternative 5: Non-lethal Beaver, Nutria, and Muskrat Damage Management

## XVI. ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

Six additional alternatives were considered, but not analyzed in detail in the EA. Alternatives considered but not analyzed in detail are discussed in Section 3.6 of the EA (USDA 2005). WS has reviewed the alternatives not analyzed in detail in the EA and has determined that the analyses provided in the EA have not changed and are still appropriate.

## XVI. STANDARD OPERATING PROCEDURES

Standard operating procedures (SOPs) improve the safety, selectivity, and efficacy of wildlife damage management activities. The WS program in the State of Louisiana uses many such SOPs which are discussed in detail in Chapter 3 of the EA (USDA 2005) and in Chapter 5 of WS' programmatic FEIS (USDA 1997). Those SOPs would be incorporated into activities conducted by WS when addressing aquatic rodent damage management in the State.

## XVII. ENVIRONMENTAL CONSEQUENCES FOR ISSUES ANALYZED IN DETAIL

The major issues are discussed in detail in Chapter 2 of the EA (USDA 2005). Alternatives developed and identified during the development of the EA to address those issues are discussed in Chapter 3 of the

EA (USDA 2005). Potential impacts associated with Alternative 1, Alternative 2, Alternative 4, and Alternative 5 on the human environment related to the major issues have not changed from those described in the EA and thus do not require additional analyses in this supplement. Chapter 4 of the EA contains a detailed discussion and comparison of the identified alternatives and the major issues (USDA 2005). The issues were identified as important to the scope of the analysis in the EA (40 CFR 1508.25). Alternative 3 (proposed action/no action), as described in the EA, addresses requests for aquatic rodent damage management in the State using an integrated damage management approach by WS to reduce threats of damage to agricultural resources, natural resources, property, and threats to human safety. The following is an analysis of potential impacts for each of the major issues analyzed in the EA since the completion of the EA and this supplement to the EA as related to Alternative 3 (proposed action/no action alternative):

**Issue 1 - Effects on beaver, nutria, and muskrat populations**

A common concern when addressing damage associated with wildlife species are the effects on the populations of those species from methods used to manage damage. The integrated approach of managing damage associated with wildlife described in the EA under the proposed action alternative could involve the use of both non-lethal and lethal methods to resolve requests for assistance. Although non-lethal methods can disperse wildlife from areas where application occurs, wildlife is generally unharmed. Therefore, adverse effects are not often associated with the use of non-lethal methods.

Of primary concern is the magnitude of take on a species' population from the use of lethal methods. Lethal methods are employed to remove an individual or those individuals responsible for causing damage and only after requests for such assistance are received by WS. The use of lethal methods would therefore result in local population reductions in the area where damage or threats were occurring. The number of target species removed from the population using lethal methods under the proposed action would be dependent on the number of requests for assistance received, the number of individuals involved with the associated damage or threat, and the efficacy of methods employed.

The analysis for magnitude of impact on populations from the use of lethal methods generally follows the process described in WS' programmatic FEIS (USDA 1997). Magnitude is described in WS' programmatic FEIS as "*...a measure of the number of animals killed in relation to their abundance*." Magnitude may be determined either quantitatively or qualitatively. Quantitative determinations are based on population estimates, allowable harvest levels, and actual harvest data. Qualitative determinations are based on population trends and harvest data when available. Generally, WS only conducts damage management associated with species whose population densities are high. WS' take is monitored by comparing numbers of animals 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).

The EA evaluated a lethal take of up to 5,000 beaver, up to 1,500 muskrats, and up to 1,500 nutria annually by WS in Louisiana to alleviate damage. The EA evaluated potential impacts to those species' populations and found that when WS' activities are conducted within the scope analyzed in the EA, those activities would not adversely impact the populations of those species in Louisiana (USDA 2005). WS' SOPs are designed to reduce the effects on wildlife populations and are discussed in Chapter 3 of the EA (USDA 2005).

WS has provided direct damage management and technical assistance in response to requests for assistance in Louisiana since the completion of the EA. Descriptions and application of direct damage management and technical assistance projects are discussed in detail in Chapter 3 of the EA (USDA

2005). All wildlife damage management activities conducted by WS were pursuant to applicable federal, State, and local laws and regulations.

***Beaver Population Impact Analysis***

Beaver can be found statewide in Louisiana wherever suitable habitat exists. The LDWF has reported the statewide beaver population as stable (N. Kinler, LDWF, personal consultation with D. LeBlanc, WS', January 3, 2005) and determined there is no evidence to suggest that human mediated mortality resulting from regulated fur harvest and damage management would be detrimental to the survival of the beaver populations in the State of Louisiana. The current population of beaver in the State is unknown.

Beaver population estimates are often derived from density estimates for beaver based on the number of beaver colonies per a linear unit of measure (*e.g.*, stream miles) or per unit of area (*e.g.*, habitat) (Baker and Hill 2003). Beaver densities specific to Louisiana are currently unavailable. Beaver densities by habitat calculated from other studies in the United States and Canada have ranged from 0.4 beaver colonies per square mile to a high of 12 beaver colonies per square miles (Novak 1987). Density estimates in the United States and Canada based on stream miles have ranged from 0.5 beaver colonies per stream mile to two beaver colonies per stream mile (Novak 1987). To derive a population estimate, the number of beaver per colony must also be known. Currently, the average number of beaver per colony in Louisiana is unknown. From other studies, the average size of beaver colonies has ranged from 3.2 beaver to 9.2 beaver per colony (Novak 1987). In the southeastern United States, the average number of beaver per colony in Alabama was estimated at 4.6 beaver (Wilkinson 1962) and the average beaver per colony in Georgia was estimated at 5.3 beaver (Parrish 1960). There are over 8.8 million acres of wetlands in Louisiana (Hefner et al. 1994) including an estimated minimum of 66,000 miles of streams and rivers (USEPA 1998). Using a conservative estimate of three beaver per family group and an abundance of 0.5 families per stream mile the minimum statewide beaver population estimate for Louisiana could be 99,000 beaver (USDA 2005).

The total number of beaver lethally removed by WS from FY 2005 through FY 2010 is shown in Table 7. The highest annual take level of beaver by WS occurred in FY 2007 when 1,419 beaver were taken. Since FY 2005, WS has lethally removed a total of 7,112 beaver in Louisiana to alleviate damage associated with flooding, burrowing, and damage to trees.

**Table 7 - Beaver lethally taken by method in Louisiana from FY 2005 through FY 2010 by WS**

| | Method | | | | |
|---|---|---|---|---|---|
| **Fiscal Year** | **Body Gripping** | **Foothold Trap** | **Cable Restraint** | **Shooting** | **TOTAL** |
| **2005** | 987 | 188 | 122 | 99 | **1,396** |
| **2006** | 838 | 195 | 56 | 115 | **1,204** |
| **2007** | 890 | 271 | 97 | 161 | **1,419** |
| **2008** | 660 | 118 | 273 | 145 | **1,196** |
| **2009** | 556 | 121 | 220 | 104 | **1,001** |
| **2010** | 464 | 160 | 222 | 50 | **896** |

The LDWF, with management authority over beaver, currently allows beaver to be harvested for pelts during a regulated harvest season and, on privately owned property where beaver are causing damage, beaver are considered a nuisance species and may be taken at any time via defined legal methods. As shown in Table 8, an estimated 13,021 beaver pelts have been harvested in Louisiana during the regulated season since 2005. Nuisance take is not reported; therefore, no estimates are available. When compared to the regulated harvest take, WS' take has not exceeded 43.6% of the estimated annual harvest of beaver in the State and has averaged 35.3% from 2005 through 2010.

**Table 8 – Estimated beaver harvest and WS' take of beaver in Louisiana, 2005 - 2010**

| Year | Harvest[a,b] | WS' Take[c] | Total Take | WS % Take |
|---|---|---|---|---|
| **2005** | 2,645 | 1,396 | 4,041 | 34.5% |
| **2006** | 2,481 | 1,204 | 3,685 | 32.7% |
| **2007** | 2,480 | 1,419 | 3,899 | 36.4% |
| **2008** | 2,597 | 1,196 | 3,793 | 31.5% |
| **2009** | 1,658 | 1,001 | 2,659 | 37.6% |
| **2010** | 1,160 | 896 | 2,056 | 43.6% |
| **TOTAL** | **13,021** | **7,112** | **20,133** | **35.3%** |

[a]Harvest data reported by calendar year

[b]Harvest data provided by the LDWF

[c]WS' take is reported by FY

If populations of beaver have remained relatively stable at 99,000 beaver in Louisiana, WS' highest level of annual take that occurred in FY 2007 would represent 1.4% of the estimated population. The highest level of overall take from fur harvest and WS' take occurred in 2005 when 4,041 beaver were harvested. With an estimated 4,041 beaver taken in 2005 and a stable beaver population, the overall take of beaver would represent 4.1% of the estimated population in the State. The number of beaver taken for damage management by other entities in Louisiana is unknown. However, the LDWF has determined that there is no evidence to suggest that human mediated mortality resulting from regulated fur harvest and damage management activities, including removal by WS, would be detrimental to the survival of the beaver populations in the State of Louisiana (N. Kinler, LDWF, personal consultation with D. LeBlanc, WS', January 3, 2005). An allowable harvest level for beaver has been estimated at 30% of the population (Novak 1987). The total known take of beaver in the State has not exceeded 30% of the estimated statewide population of beaver in Louisiana.

WS' annual take of beaver in Louisiana has been within annual take levels analyzed in the EA. When compared to the estimated population of beaver in the State based on a stable population and when compared to the overall harvest of beaver taken in the State, the magnitude of WS' annual take has been low. WS' activities did not adversely affect beaver populations in Louisiana based on the limited number of beaver taken by WS, the unlimited take allowed by the LDWF, and the concurrence of the LDWF that WS' activities would not adversely affect beaver populations in the State.

***Muskrat Population Impact Analysis***

Similar to beaver populations, the current population of muskrats in Louisiana is unknown. The LDWF allows muskrats to be harvested in the State during a harvest season in which there is no limit on the number of muskrats that can be taken. The LDWF reported the statewide muskrat population is stable (N. Kinler, LDWF, personal consultation with D. LeBlanc, WS', January 3, 2005) and determined there is no evidence to suggest that human mediated mortality resulting from regulated fur harvest and damage management would be detrimental to the survival of the muskrat populations in the State of Louisiana.

WS has lethally removed a total of six muskrats in the State from FY 2005 through FY 2010. As shown in Table 9, the highest level of take by WS occurred in FY 2007 and FY 2010 when three muskrats were lethally taken during each year which represents 0.1% of the total take of muskrats in the State during 2007 and 1.3% during 2010. Between 2005 and 2010, WS' take of muskrats has averaged 0.1% of the total muskrats taken in the State annually. The EA evaluated an annual take of up to 1,500 muskrats by WS to alleviate damage.

**Table 9 – Estimated muskrat harvest and WS' take of muskrats in Louisiana, 2005 - 2010**

| Year | Harvest[a,b] | WS' Take[c] | Total Take | WS' % Take |
|---|---|---|---|---|
| **2005** | 2,356 | 0 | 2,356 | 0.0% |
| **2006** | 145 | 0 | 145 | 0.0% |
| **2007** | 2,234 | 3 | 2,237 | 0.1% |
| **2008** | 218 | 0 | 218 | 0.0% |
| **2009** | 47 | 0 | 47 | 0.0% |
| **2010** | 222 | 3 | 225 | 1.3% |
| **TOTAL** | **5,222** | **6** | **5,228** | **0.1%** |

[a]Harvest data reported by calendar year

[b]Harvest data provided by the LDWF

[c]WS' take is reported by FY

WS' total take of muskrats from FY 2005 through FY 2010 was below the level of annual take evaluated in the EA. Based on the limited take occurring by WS annually, WS' take of six muskrats has not adversely affected muskrat populations in the State. In addition, WS' take has not limited the ability to harvest muskrats during the regulated harvest season based on the limited take occurring by WS. WS' take when compared to the take during the harvest season could be considered of low magnitude.

***Nutria Population Impact Analysis***

Nutria are considered a non-native species in Louisiana which can be lethally taken throughout the year without a limit on the number that can be taken. The current population of nutria in the State is unknown. The total known take of nutria in Louisiana, including take by WS, from 2005 through 2010 is shown in Table 10. Since 2005, a total of 1,630,564 nutria have been taken in the State during the harvest season and by WS. From FY 2005 through FY 2010, WS has lethally removed a total of 920 nutria in the State. WS' annual take of nutria, including nutria taken as non-targets, has averaged 0.06% of the total known take of nutria in the State. The highest level of take of nutria by WS occurred in FY 2007 when 208 nutria were taken which represented 0.06% of the estimated total take of nutria in the State in 2007.

**Table 10 – Estimated nutria harvest and WS' take of nutria in Louisiana, 2005 to 2010**

| Year | Harvest[a,b] | WS' Take[c] | Total Take | WS' % Take |
|---|---|---|---|---|
| **2005** | 297,535 | 193 | 297,728 | 0.06% |
| **2006** | 168,843 | 54 | 168,897 | 0.03% |
| **2007** | 375,683 | 208 | 375,891 | 0.06% |
| **2008** | 308,212 | 152 | 308,364 | 0.05% |
| **2009** | 334,038 | 175 | 334,213 | 0.05% |
| **2010** | 445,963 | 138 | 446,101 | 0.03% |
| **TOTAL** | **1,629,644** | **920** | **1,630,564** | **0.06%** |

[a]Harvest data reported by calendar year

[b]Harvest data provided by the LDWF

[c]WS' take is reported by FY

Based on the non-native status of nutria, any take could be considered as providing some benefit to the native environment. Nutria often compete with other native wildlife for resources, primarily food. Nutria have been implicated in declines in muskrat populations in many areas where nutria occur. Therefore, any take by WS when considered with the take occurring from other sources could be considered as providing some benefit to the native environment.

WS' annual take of nutria has been within the take level analyzed in the EA in which the LDWF concluded that WS' annual take would not adversely affect nutria populations in the State. Based on the limited take occurring of nutria in the State and the non-native status of nutria, WS' annual take has not adversely affected nutria populations in Louisiana.

**Issue 2 - Effects on plants and other wildlife species, including T&E species**

The issue of non-target species effects, including effects on T&E species arises from the use of non-lethal and lethal methods identified in the alternatives. The use of non-lethal and lethal methods has the potential to inadvertently disperse, capture, or kill non-target wildlife. WS' SOPs are designed to reduce the effects of damage management activities on non-target species' populations. To reduce the risks of adverse effects to non-target wildlife, WS selects damage management methods that are as target-selective as possible or applies such methods in ways that reduces the likelihood of capturing non-target species. Before initiating management activities, WS also selects locations which are extensively used by the target species and employs baits or lures which are preferred by those species. Despite WS' best efforts to minimize non-target take during program activities, the potential for adverse effects to non-targets exists when applying both non-lethal and lethal methods to manage damage or reduce threats to safety. WS' unintentional take of non-targets from FY 2005 through FY 2010 are shown in Table 11.

Non-target take by WS occurs primarily during activities to reduce damage associated with beaver in the State. Since FY 2005, WS' unintentional take included 21 alligators, 63 river otters, 86 raccoons, and 44 turtles in the State during beaver damage management activities. In addition, 198 nutria were caught while conducting beaver damage management. Since beaver were the target species while conducting these activities nutria are considered non-targets. Considering nutria are a non-native species creating extensive damage to natural resources in Louisiana any take by WS' could be considered as providing some benefit to the native environment. Other non-target species have also been lethally taken by WS during damage management activities in limited situations, including armadillos, bobcats, bass, mink, skunks, and opossum.

**Table 11 – WS' lethal non-target take by species in Louisiana from FY 2005 through FY 2010**

| | Fiscal Year | | | | | | |
|---|---|---|---|---|---|---|---|
| **Species** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **TOTAL** |
| **American Alligator** | 1 | 1 | 5 | 3 | 5 | 6 | **21** |
| **Armadillo** | 0 | 0 | 0 | 0 | 0 | 1 | **1** |
| **Bobcats** | 1 | 0 | 1 | 1 | 0 | 0 | **3** |
| **Largemouth Bass** | 0 | 0 | 0 | 0 | 1 | 0 | **1** |
| **Mink** | 1 | 0 | 1 | 0 | 0 | 1 | **3** |
| **Nutria** | 145 | 27 | 15 | 0 | 9 | 2 | **198** |
| **River Otter** | 8 | 8 | 7 | 17 | 11 | 12 | **63** |
| **Raccoon** | 19 | 16 | 12 | 11 | 16 | 12 | **86** |
| **Striped Skunk** | 0 | 0 | 0 | 0 | 1 | 0 | **1** |
| **Turtles**[1] | 12 | 8 | 5 | 4 | 9 | 6 | **44** |
| **Virginia Opossum** | 0 | 0 | 0 | 0 | 1 | 1 | **2** |

[1] WS' information tracking systems does not distinguish by species.

Unintentional non-targets live-captured by WS' during aquatic rodent damage management activities have been released when deemed appropriate for the survival of the animal (see Table 12). From FY 2005 through FY 2010, a total of 28 alligators, seven raccoons, seven river otters, and 33 turtles were caught and released alive while conducting beaver damage management activities. During FY 2009, a cooperator's dog was live-captured in a foothold trap set for beaver. The owner violated Parish leash

laws by allowing the dog to roam free and trespass onto the adjacent property where WS had been requested to conduct beaver damage management activities. The dog recovered quickly after being treated by a veterinarian for minor injuries.

**Table 12 – Non-targets captured and released by WS during aquatic rodent damage management activities in Louisiana from FY 2005 through FY 2010**

| | Fiscal Year | | | | | | |
|---|---|---|---|---|---|---|---|
| **Species** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **TOTAL** |
| **American Alligator** | 5 | 1 | 5 | 6 | 7 | 4 | **28** |
| **Dog** | 0 | 0 | 0 | 0 | 1 | 0 | **1** |
| **Frog**[1] | 0 | 0 | 0 | 0 | 2 | 0 | **2** |
| **Raccoon** | 2 | 2 | 1 | 1 | 1 | 0 | **7** |
| **River Otter** | 0 | 0 | 0 | 3 | 3 | 1 | **7** |
| **Turtles**[1] | 11 | 5 | 5 | 1 | 6 | 5 | **33** |

[1]WS' information tracking systems does not distinguish by species

Population impact analyses for species lethally taken during aquatic rodent damage management activities are addressed below.

***Non-target Species' Population Impact Analyses***

Similar to the analyses of take on the populations of target species addressed under Issue 1, of primary concern with the unintended take of non-targets is the magnitude of take on those species' populations. As shown in Table 11, WS' lethal take of any single species of non-targets since FY 2005 has not exceeded 20 individuals, except for American alligators, nutria, river otters, raccoons, and turtles. For those species in which WS' unintentional take did not exceed 20 individuals from FY 2005 through FY 2010, WS' take did not adversely affect those species' populations based on the limited take that occurred. Many of the mammal species unintentionally lethally taken by WS can be harvested in the State during regulated hunting and trapping seasons. Nine-banded armadillos (*Dasypus novemcinctus*), bobcats (*Lynx rufus*), mink (*Mustela vison*), striped skunks (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*) are all species in which harvest seasons exist in Louisiana. WS' unintentional take of those species when compared to the harvest level of those species would be of low magnitude. WS' activities did not limit the ability to harvest those species during the regulated season given the limited take occurring by WS. WS' take of one largemouth bass (*Micropterus salmoides*) in FY 2009 did not adversely affect largemouth bass populations.

***Alligator Population Impact Analysis***

American alligators can be found statewide in Louisiana wherever suitable habitat exists. The LDWF allows alligators to be taken during a regulated harvest season each year and properly licensed nuisance alligator trappers may take alligators that the LDWF consider a threat to humans, pets, and other resources. The current alligator population in Louisiana is unknown. As shown in Table 13, since FY 2005, WS has lethally taken 21 alligators while conducting aquatic rodent damage management. As previously mentioned, WS also live-captured and released an additional 28 alligators since FY 2005.

From 2005 through 2010, during the LDWF regulated harvest season, a total of 167,535 alligators were harvested in the State. WS' non-target take of 21 alligators during this same time frame would represent 0.013% of the total alligators lethally taken in the State. Given the lethal take during the regulated hunting season for alligators in the State, WS' limited take of alligators has not adversely affected

alligator populations nor has the non-target take of alligators by WS limited the ability to harvest alligators during the regulated hunting season.

**Table 13 – Estimated alligator harvest compared to WS' take of alligator in Louisiana, 2005 - 2010**

| Year | Harvest[a,b] | WS' Take[c] | Total Take | WS' % Take |
|---|---|---|---|---|
| **2005** | 31,175 | 1 | 31,176 | 0.003% |
| **2006** | 30,854 | 1 | 30,855 | 0.003% |
| **2007** | 35,011 | 5 | 35,016 | 0.014% |
| **2008** | 35,627 | 3 | 35,630 | 0.008% |
| **2009** | 9,126[d] | 5 | 9,131 | 0.055% |
| **2010** | 25,742[e] | 6 | 25,748 | 0.023% |
| **TOTAL** | **167,535** | **21** | **167,556** | **0.013%** |

[a]Harvest data reported by calendar year
[b]Harvest data provided by the LDWF
[c]WS' take is reported by FY
[d]Worldwide economic recession caused alligator hide demand to decline dramatically (LDWF 2010)
[e]Estimate as of January 2010

WS would continue to release alligators live-captured during aquatic rodent damage management activities unless directed by the LDWF to euthanize those alligators captured by WS.

***River Otter Population Impact Analysis***

River otter can be found statewide in Louisiana wherever suitable habitat exists. The LDWF allows river otter to be taken during a regulated trapping season each year with no limit on the number of otter that can be taken during the season. The current otter population in Louisiana is unknown. As shown in Table 14, the highest annual take level of otters by WS occurred in FY 2008 when 17 otters were unintentionally taken.

**Table 14 – Estimated otter harvest compared to WS' take of otter in Louisiana, 2005 - 2010**

| Year | Harvest[a,b] | WS' Take[c] | Total Take | WS % Take |
|---|---|---|---|---|
| **2005** | 5,285 | 8 | 5,293 | 0.2% |
| **2006** | 4,363 | 8 | 4,371 | 0.2% |
| **2007** | 1,348 | 7 | 1,355 | 1.0% |
| **2008** | 1,989 | 17 | 2,006 | 1.0% |
| **2009** | 1,000 | 11 | 1,011 | 1.1% |
| **2010** | 959 | 12 | 971 | 1.2% |
| **TOTAL** | **14,944** | **63** | **15,007** | **0.4%** |

[a]Harvest data reported by trapping season
[b]Harvest data provided by the LDWF
[c]WS' take is reported by FY

Since FY 2005, WS' unintentional take of otters has averaged 0.4% of the total known take of otter when WS' take is combined with otter taken during the open harvest season in the State. The magnitude of WS' unintentional take of river otters during beaver damage management activities is low. Based on the unlimited take allowed by the LDWF during the open otter harvest season and the low magnitude of WS' take when compared to the total known take of otter, WS' unintentional take of otters has not adversely affected river otter populations in the State. WS' take of otter has not limited the ability of those persons interested to harvest otter during the open season based on the low magnitude of WS' activities on otter populations.

***Raccoon Population Impact Analysis***

Raccoons can be found statewide in Louisiana wherever suitable habitat exists. The LDWF allows raccoon to be taken during regulated trapping and hunting seasons each year with no limit on the number of raccoon that can be taken during the trapping season. The current raccoon population in Louisiana is unknown. As shown in Table 15, the highest annual take of raccoons by WS' occurred in FY 2005 when 19 raccoons were unintentionally taken which represented 0.2% of the raccoons harvested in the state during the 2005 season. Between 2005 and 2010, WS' unintentional take of raccoons during aquatic rodent damage management activities has averaged 0.2% of the annual harvest of raccoons in the State.

**Table 15 – Estimated raccoon harvest compared to WS' take of raccoons in Louisiana, 2005 - 2010**

| Year | Harvest[a,b] | WS' Take[c] | Total Take | WS' % Take |
|---|---|---|---|---|
| **2005** | 8,443 | 19 | 8,462 | 0.2% |
| **2006** | 9,185 | 16 | 9,201 | 0.2% |
| **2007** | 6,204 | 12 | 6,216 | 0.2% |
| **2008** | 11,956 | 11 | 11,967 | 0.1% |
| **2009** | 5,299 | 16 | 5,315 | 0.3% |
| **2010** | 4,755 | 12 | 4,767 | 0.3% |
| **TOTAL** | **45,842** | **86** | **45,928** | **0.2%** |

[a]Harvest data reported by harvest season

[b]Harvest data provided by the LDWF

[c]WS' take is reported by FY

The magnitude of WS' non-target take of raccoons during aquatic rodent damage management activities in the State has been low when compared to the annual harvest of raccoons during the regulated hunting and trapping season. WS' limited take of raccoons has not limited the ability to harvest raccoons during the regulated season.

***Turtle Population Impact Analysis***

From FY 2005 through FY 2010, 44 turtles were unintentionally lethally taken by WS during aquatic rodent damage management activities in Louisiana. WS' highest level of take occurred in FY 2005 when 12 turtles were lethally taken. Take consists primarily of common snapping turtles during beaver damage management activities. Since FY 2005, 33 turtles have been captured and released during aquatic rodent damage management activities in Louisiana. Common snapping turtles can be harvested in Louisiana with no limit on the number of turtles that can be harvested. The annual harvest of common snapping turtles is currently unknown. Similarly, the population of snapping turtles in the State is currently unknown.

Take of other turtle species has occurred during beaver damage management activities. Similar to snapping turtles, the populations of other turtles in the State is currently unknown. One freshwater species of turtle, the ringed map turtle (*Graptemys oculifera*), is Federal and State listed as threatened in Louisiana. In addition, several marine turtles and the gopher tortoise (G*opherus polyphemus*) are also Federal and State listed species in Louisiana. No known take of any Federal or State listed turtles has occurred by WS' during aquatic rodent damage management activities in the Louisiana.

WS' annual take of turtles since FY 2005 did not reach magnitudes that would adversely impact populations in Louisiana. All precautions are taken to avoid capture of turtles during activities to alleviate damage caused by aquatic rodents. Over 42% of the turtles captured were released unharmed.

Given that turtle densities in Louisiana are not considered to be low and the limited take of turtles of any given species by WS, WS' aquatic rodent damage management activities did not adversely affect turtle populations in Louisiana.

While every precaution is taken to safeguard against taking non-targets during operational use of methods and techniques for resolving damage and reducing threats caused by wildlife, the use of such methods can result in the incidental take of unintended species. Those occurrences are minimal and should not affect the overall populations of any species. WS' take of non-target species during activities to reduce damage caused by aquatic rodents is expected to be extremely low. WS would continue to monitor the take of non-target species to ensure program activities used in aquatic rodent damage management do not adversely impact non-targets. WS' activities are not likely to adversely affect the viability of any wildlife populations from damage management activities.

The EA concluded that WS' damage management activities would not adversely affect non-target wildlife species, including threatened and endangered species throughout the State when those activities were conducted within the scope analyzed in the EA. Methods used by WS' are essentially selective for target species when applied appropriately. In addition, WS' adheres to those SOPs discussed in the EA to minimize the potential for non-target take.

***Threatened and Endangered Species Analyses***

A review of T&E species listed by the LDWF, the United States Fish and Wildlife Service, and the National Marine Fisheries Service showed that additional listings have occurred since the completion of the EA. Those species include the gray wolf (*Canis lupis*), jaguar (*Panthera onca*), Mississippi gopher frog (*Rana capito sevosa*), smalltooth sawfish (*Pristis pectinata*), and pondberry (*Lindera melissifolia*). All of the species added to the list are not found in the State of Louisiana, except for the smalltooth sawfish. WS determined that program activities, based on those methods described in the EA, would have no effect on those species listed as threatened and endangered in Louisiana that do not occur in the State, including any designated critical habitat. The no effect determination is based on those species being absence from the State based on the current known distributions of those species.

The smalltooth sawfish historically has occurred in the shallow coastal waters of the Gulf of Mexico from Texas to Florida and the shallow coastal areas along the Atlantic Ocean from Florida to New York. WS' activities to resolve damage or threats associated with aquatic rodents are not those that cause major disturbances to habitat or the introduction of pollutants into the waters where sawfish are known to occur. Current populations of smalltooth sawfish are only known to occur off the southern coasts of Florida with no verified catches of sawfish occurring in Louisiana since 1978 (National Marine Fisheries Service 2009). Based on the current known range of the smalltooth sawfish being restricted to peninsular Florida, WS' aquatic rodent damage management activities conducted pursuant to the EA would have no effect on the smalltooth sawfish.

Program activities and methods have not changed from those analyzed in the EA. Thus, WS' determination that aquatic rodent damage management activities would not likely adversely affect T&E species in Louisiana is still valid and appropriate for the proposed action as addressed in the EA.

*Native Plant Species* - As described in the EA, removal of beaver, nutria, and muskrats and breaching/removing beaver dams would be beneficial to some native plant species that may be killed by foraging aquatic rodents and beaver related flooding and inundation. Some native plants may be trampled as WS' employees walk into sites or take an All Terrain Vehicle (ATV) into sites. Disturbance to most sites from entering and exiting is minimal. Some native vegetation may be disrupted from the blasting of

dams as debris falls immediately around the area. Generally, the debris is scattered out around the site and is not overly destructive to surrounding vegetation

Program activities and their potential impacts on plant and other wildlife species have not changed from those analyzed in the EA. The effects on this issue are expected to remain insignificant.

**Issue 3 - Effects on public and pet health and safety**

The EA concluded that the effects of WS' aquatic rodent damage management activities when conducted within the scope analyzed would have no adverse impact on human safety or pet safety. WS' implementation of the proposed action from FY 2005 through FY 2010 did not result in any adverse impacts to human or pet safety although a cooperator's dog was live captured in, and released from, a foothold trap set for beaver. The cooperator violated Parish leash laws by allowing the dog to roam free and trespass onto the adjacent property WS' was working. The dog recovered quickly after being treated by a veterinarian for minor injuries. The methods available for use to manage damage caused by aquatic rodents in the State remain as addressed in the EA. Therefore, the potential impacts of program activities on human health and safety have not changed from those analyzed in the EA. Impacts of the program on this issue are expected to remain insignificant.

**Issue 4 - Humaneness of methods to be used**

As discussed in the EA, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal. People may perceive the humaneness of an action differently. The challenge in coping with this issue is how to achieve the least amount of animal suffering within the constraints imposed by current technology.

Some individuals believe any use of lethal methods to resolve damage associated with wildlife is inhumane because the resulting fate is the death of the animal. Others believe that certain lethal methods can lead to a humane death. Others believe most non-lethal methods of capturing wildlife to be humane because the animal is generally unharmed and alive. Still others believe that any disruption in the behavior of wildlife is inhumane. With the multitude of attitudes on the meaning of humaneness, the analyses must consider the most effective way to address damage and threats caused by wildlife in a humane manner. WS' is challenged with conducting activities and employing methods that are perceived to be humane while assisting those persons requesting assistance to manage damage and threats associated with wildlife. The goal of WS' is to use methods as humanely as possible to effectively resolve requests for assistance to reduce damage and threats to human safety. WS' continues to evaluate methods and activities to minimize the potential pain and suffering of those methods addressed when attempting to resolve requests for assistance.

As mentioned previously, some methods have been stereotyped as "*humane*" or "*inhumane*". However, many "*humane*" methods can be inhumane if not used appropriately. For example, a cage trap is generally considered by most members of the public as "*humane*" since an animal is live-captured. Yet, without proper care, live-captured wildlife in a cage trap can be treated inhumanely if not attended to appropriately.

Therefore, WS' mission is to effectively address requests for assistance using methods in the most humane way possible that minimizes the stress and pain of the animal. WS' personnel are experienced and professional in their use of management methods. When employing methods to resolve damage to resources or threats to human safety, methods are applied as humanely as possible. Methods used in aquatic rodent damage management activities in Louisiana since the completion of the EA and their potential impacts on humaneness and animal welfare have not changed from those analyzed in the EA.

No new methods were identified in this supplement that would alter the analysis contained in the EA on the issue of method humaneness. Therefore, the analyses of the humaneness of methods used by WS' to manage damage and threats caused by aquatic rodents have not changed from those analyzed in the EA.

**Issue 5 - Effects on wetlands**

Beaver dams in Louisiana are removed by hand or with explosives with the purpose of returning streams, dikes, culverts, and irrigation canals to their original channel. Dams are removed in accordance with provisions of the Clean Water Act. As described in the EA, WS often receives requests for assistance soon after the initiation of damage caused by beaver. Therefore, dams that are breeched by WS' are created as a result of recent beaver activity and have not developed into wetlands subject to regulations under the Clean Water Act. Since beaver dams removed by WS' are recently occurring and have not established wetland characteristics, WS' beaver damage management activities are not negatively affecting the statewide status of wetlands. Dams are removed or breeched to alleviate flooding damage and to restore original channels.

Program activities and their potential impacts on wetlands have not changed from those analyzed in the EA. No new methods, circumstances, or regulations have been implemented since the implementation of the proposed action addressed in the EA and the Decision. The EA concluded that WS' beaver dam removal/breaching activities should have minimal impact on wetlands. The impacts of WS' aquatic rodent damage management activities on wetlands are expected to remain insignificant.

**Issue 6 - Economic losses to property**

Another issue often raised is the negative economic impact that aquatic rodents have on resources and whether damage management strategies are effective at reducing damages occurring to acceptable levels. The effectiveness of any damage management program could be defined in terms of losses prevented or risks potentially prevented. Effectiveness is based on the species responsible for the damage, how accurately practitioners diagnose damage, how actions are implemented to correct or mitigate risks and damages, how quickly damage is reduced or prevented, and finally the duration damage or threats are resolved after employing methods. To determine that effectiveness, WS' must be able to complete management actions expeditiously to minimize harm to non-target animals and the environment, while at the same time, using methods as humanely as possible.

During the reporting period, WS' activities reduced or eliminated aquatic rodent damage to property including timber, crops, landscaping, levee damage to private and public ponds and lakes, roads, bridges, culverts, and ditches. For example, once beaver and associated dams were removed, damage from beaver burrowing into embankments, damage from beaver gnawing and felling trees, and flooding damage from beaver impounding water were alleviated since beaver and dams were no longer present at the location to cause damage. Therefore, those methods used to remove beaver from the site and to remove the beaver dam were effective in alleviating damage.

Aquatic rodents could potentially re-inhabit those areas where WS' activities alleviated damages previously. The amount of time before aquatic rodents repopulate areas where damages were previously reduced would be dependent on available habitat and densities in the area where damage was occurring. However, the repopulation of areas by beaver, muskrats, or nutria in areas where damages were previously alleviated does not indicate methods and techniques are ineffective at reducing damage. The issue is the limited availability of methods to prevent damage from occurring initially or from re-occurring once alleviated. Those methods available to prevent damage which were described in Appendix D of the EA are often costly and impracticable when application is required over large areas, are ineffective at preventing damage, or would require drastic habitat modifications (USDA 2005). No

additional methods have become available since the completion of the EA that would increase the effectiveness of preventing damage from occurring or from re-occurring once alleviated.

Program activities and the potential economic impacts to property have not changed from those analyzed in the EA. During the reporting period, WS reduced or alleviated aquatic rodent damage to property including timber, crops, landscaping, levee damage to private and public ponds and lakes, roads, bridges, culverts, and ditches. From FY 2005 to FY 2010 cooperator reported and WS' verified resource losses totaled $6,680,589. During the same time frame, direct control activities provided by WS' resulted in a documented savings (losses prevented) to the same resources of $52,846,488. The effects of WS' activities on this issue are expected to remain insignificant.

**Issue 7 - Impacts to stakeholders, including aesthetics**

The EA concluded the effects on aesthetics would be variable, depending on the damage situation, stakeholder's values towards wildlife, and their compassion for those persons who are experiencing damage from aquatic rodents. The ability to view and enjoy the aesthetic value of beaver, muskrats, or nutria at a particular site would be somewhat limited if the animals were removed. However, new beaver, muskrats, or nutria would most likely use the site in the future, although the length of time until they arrive is variable, depending on the site, time of year, and population densities in the surrounding areas. The opportunity to view beaver, muskrat, and nutria is available if a person makes the effort to visit sites outside of the damage management area.

WS' in Louisiana only conducts beaver, nutria, and muskrat damage management at the request of the affected home/property owner or resource manager. Upon receiving a request for assistance, WS' addresses issues/concerns and explanations are given for all damage management activities. Management actions are carried out in a caring, humane and professional manner. Methods employed to resolve or alleviate damage have not changed from those analyzed in the EA. The potential impacts to stakeholders and aesthetics of conducting aquatic rodent damage management have not changed from those analyzed in the EA. The effects of WS' activities on this issue are expected to remain insignificant.

## XVIII. CUMULATIVE IMPACTS

Cumulative impacts, as defined by the Council on Environmental Quality (CEQ) (40 CFR 1508.7), are impacts to the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts may result from individually minor, but collectively significant, actions taking place over time.

WS' wildlife damage management activities would be the primary federal program with damage management responsibilities; however, other private entities may conduct similar activities in Louisiana. Through ongoing coordination with the LDWF, WS is aware of such activities and may provide technical assistance in such efforts. WS does not normally conduct direct damage management activities concurrently with other entities in the same area, but may conduct activities at adjacent sites within the same timeframe. The potential cumulative impacts analyzed below could occur either as a result of WS' program activities over time or as a result of the aggregate effects of those activities combined with the activities of other agencies and individuals.

Chapter 4 of the EA provides further information and analyses on potential cumulative impacts of the proposed action. The following resource values in the State are not expected to be significantly impacted from cumulative activities conducted pursuant to any of the alternatives analyzed: soils, geology, minerals, water quality/quantity, flood plains, wetlands, critical habitats (areas listed in threatened and

endangered species recovery plans), visual resources, air quality, prime and unique farmlands, aquatic resources, timber, and range. Those resources will not be analyzed further. The activities proposed in the alternatives would have a negligible cumulative effect on atmospheric conditions including the global climate. Meaningful direct or indirect emissions of greenhouse gases would not occur as a result of any of the alternatives. Those alternatives would meet the requirements of applicable laws, regulations, and Executive Orders including the Clean Air Act and Executive Order 13514.

**Issue 1 - Effects on beaver, nutria, and muskrat populations**

Evaluation of WS' activities relative to wildlife populations indicated that program activities would have no cumulative adverse effects on populations in Louisiana. WS' actions would be occurring simultaneously, over time, with other natural processes and human-generated changes that are currently taking place. Those activities include, but are not limited to:

- Natural mortality of wildlife
- Mortality of wildlife from harvest seasons and illegal take
- Human-induced mortality through private damage management activities
- Human and naturally induced alterations of wildlife habitat
- Annual and perennial cycles in population densities

All those factors play a role in the dynamics of wildlife populations. In many circumstances, requests for assistance arise when some or all of those elements have contrived to elevate target species populations or place target species at a juncture to cause damage to resources. WS' actions taken to minimize or eliminate damage are constrained as to scope, duration and intensity, for the purpose of minimizing or avoiding impacts to the environment. WS evaluates damage occurring, including other affected elements and the dynamics of the damaging species; determines appropriate strategies to minimize effects on environmental elements; applies damage management actions; and subsequently monitors and adjusts/ceases damage management actions (Slate et al. 1992, USDA 1997, USDA 2005). This process allows WS to take into consideration other influences in the environment, such as those listed above, in order to avoid cumulative adverse impacts on target species.

With management authority over wildlife populations, the LDWF can adjust take levels, including the take of WS, to ensure population objectives for aquatic rodents are achieved. Consultation and reporting of take by WS would ensure the LDWF considers any activities conducted by WS.

WS' take of aquatic rodents in Louisiana from FY 2005 through FY 2010 was of a low magnitude when compared to the total known take and the estimated populations of those species. The LDWF considers all known take when determining population objectives for aquatic rodents and can adjust the number of aquatic rodents that can taken during the regulated trapping season and the number of aquatic rodents taken for damage management purposes to achieve the population objectives. Any take by WS would occur at the discretion of the LDWF. Any aquatic rodent population declines or increases would be the collective objective for aquatic rodent populations established by the LDWF through the regulation of take. Therefore, the cumulative take of aquatic rodents annually or over time by WS would occur at the desire of the LDWF as part of management objectives for aquatic rodents in the State. No cumulative adverse impacts on target and non-target wildlife are expected from WS' aquatic rodent damage management actions based on the following considerations:

**Historical Outcomes of WS' Activities to Address Aquatic Rodent Damage in the State**

No cumulative adverse effects have been identified for wildlife as a result of program activities implemented over time based on analyses contained in the EA, from monitoring reports, or from analyses

contained in this supplement. WS continues to implement an integrated damage management program that adapts to the damage situation and the species involved with causing the damage. WS only targets wildlife causing damage and only after a request for assistance is received. All program activities are coordinated with appropriate federal, state, and local entities to ensure WS' activities do not adversely impact the populations of any native wildlife species.

With management authority over those aquatic rodent species addressed in the EA and this supplement to the EA in Louisiana, the LDWF can adjust take levels, including the take by WS, to ensure population objectives for those aquatic rodent species are achieved. Consultation and reporting of take by WS would ensure the LDWF considers any activities conducted by WS.

WS' take has been and would continue to be a small component of the overall harvest of those target aquatic rodent species which is monitored and adjusted by the LDWF to meet management objectives for those populations in the State. Target species' populations in the State continue to remain relatively stable which provides an indication that the cumulative take of those species has not reached a level where an undesirable decline in those species' populations has occurred. WS' reporting of take to the LDWF ensures fluctuations in those species' populations across the State occurs with the knowledge of the LDWF and is considered when setting allowable take levels for those species to meet objectives. WS' activities are conducted on a small portion of the land area of the State and although local declines in some populations could occur from WS' activities, those activities would not reach a level where target species' populations would be adversely affected from those actions.

**SOPs Built into WS' Program**

SOPs are designed to reduce the potential negative effects of WS' actions on wildlife, and are tailored to respond to changes in wildlife populations which could result from unforeseen environmental changes. This would include those changes occurring from sources other than WS. Alterations in program activities are defined through SOPs and implementation is insured through monitoring, in accordance with WS' Decision Model (Slate et al. 1992, USDA 1997, USDA 2005).

**Issue 2 - Effects on plants and other wildlife species, including T&E species**

Potential effects on non-target species from conducting aquatic rodent damage management arise from the use of non-lethal and lethal methods to alleviate or prevent those damages or to alleviate threats of damage. The use of non-lethal methods during activities to reduce or prevent damage caused by target mammal species has the potential to exclude, disperse, or capture non-target wildlife. However, the effects of non-lethal methods are often temporary and often do not involve the take (killing) of non-target wildlife species. When using exclusion devices and/or repellents, both target and non-target wildlife can be prevented from accessing the resource being damaged. Since exclusion does not involve lethal take, cumulative impacts on non-target species from the use of exclusionary methods would not occur, but would likely disperse those individuals to other areas. Exclusionary methods are often expensive and require constant maintenance to ensure effectiveness. Therefore, the use of exclusionary devices would be somewhat limited to small, high-value areas and not used to the extent that non-targets are excluded from large areas that would cumulatively impact populations from the inability to access a resource, such as potential food sources. The use of visual and auditory harassment and dispersion methods are generally temporary with non-target species often returning after the cessation of those activities. Dispersal and harassment do not involve the take (killing) of non-target species and similar to exclusionary methods are not used to the extent or at a constant level that would prevent non-targets from accessing critical resources that would threaten survival of a population.

The use of lethal methods or those methods used to live-capture target species also have the potential to impact non-target wildlife through the take (killing) or capture of non-target species. Capture methods used are often methods that are set to confine or restrain wildlife after being triggered by a target individual. Capture methods are employed in such a manner as to minimize the threat to non-target species by placement in those areas frequently used by target wildlife, using baits or lures that are as species specific as possible, and modification of individual methods to exclude non-targets from capture. Most methods described in Appendix D of the EA are methods that are employed to confine or restrain wildlife that are subsequently euthanized using humane methods since translocation is currently not permitted by the LDWF. With all live-capture devices, non-target wildlife can be released on site if determined to be able to survive following release. SOPs are intended to ensure take of non-target wildlife is minimal during the use of methods to capture target wildlife. The use of firearms is essentially selective for target species since identification of an individual is made prior to the application of the method.

The methods described in Appendix D of the EA all have a high level of selectivity and can be employed using SOPs to ensure minimal impacts to non-targets species. Based on the methods available to resolve aquatic rodent damage and/or threats, WS does not anticipate the number of non-targets taken to reach a magnitude where declines in those species' populations would occur. Therefore, take of non-targets would not cumulatively impact the populations of non-target species. WS has reviewed the T&E species listed by the LDWF, the United States Fish and Wildlife Service, and the National Marine Fisheries Service and has determined that aquatic rodent damage management activities under the proposed action alternative would have no effect on T&E species or their critical habitats listed since the completion of the EA. Cumulative impacts would be minimal on non-targets from any of the alternatives discussed.

**Issue 3 - Effects on public and pet health and safety**

All non-chemical methods described in Appendix D of the EA are used within a limited time frame, are not residual, and do not possess properties capable of inducing cumulative adverse impacts on human health and safety. All non-chemical methods would be used after careful consideration of the safety of those employing methods and to the public. All capture methods would be employed where human activity is minimal to ensure the safety of the public. Capture methods also require direct contact to trigger ensuring that those methods, when left undisturbed would have no effect on human safety. All methods are agreed upon by the requesting entities which would be made aware of the safety issues of those methods when entering into a MOU, cooperative service agreement, or other comparable document between WS and the cooperating entity. SOPs would also ensure the safety of the public from those methods used to capture or take wildlife. A formal risk assessment conducted by APHIS determined that WS' non-chemical methods, when used as intended, would pose a low risk to human safety (USDA 1997). Firearms used to alleviate or prevent damage, though hazards do exist, would be employed to ensure the safety of employees and the public.

Personnel employing non-chemical methods would continue to be trained to be proficient in the use of those methods to ensure safety of the applicator and to the public. Based on the use patterns of non-chemical methods, those methods would not cumulatively impact human safety.

WS has received no reports or documented any adverse effects to human safety from WS' aquatic rodent damage management activities conducted from FY 2005 through FY 2010. No cumulative adverse effects from the use of those methods discussed in Appendix D of the EA are expected given the use patterns of those methods for resolving aquatic rodent damage in the State.

**Issue 4 - Humaneness of methods to be used**

Those methods employed by WS to reduce or prevent damage caused by aquatic rodents are addressed in Appendix D of the EA (USDA 2005) and further described in WS' programmatic FEIS (USDA 1997). WS continued to employ those methods as humanely as possible to minimize suffering and distress. WS also continues to implement SOPs to ensure methods are employed as humanely as possible. WS' SOPs are further discussed in Chapter 3 in the EA (USDA 2005).

WS continues to seek new methods and ways to improve current technology to improve the humaneness of methods used to manage damage caused by aquatic rodents. Cooperation with individuals and organizations involved in animal welfare continues to be an agency priority for the purpose of evaluating strategies and defining research aimed at developing methods.

**Issue 5 - Effects on wetlands**

Beaver dams in Louisiana are removed by hand or with explosives with the purpose of returning streams, channels, dikes, culverts, and irrigation canals to their original channel. Dams have been and would continue to be removed in accordance with provisions of the Clean Water Act. Most dams that WS breaches have been created as a result of recent beaver activity because WS receives most requests for assistance soon after damage has been discovered. These sites do not possess wetland characteristics or the same wildlife habitat values as wetlands. Since these sites are new or at least relatively recently occurring and may be present for only a brief period of time it is safe to convey that WS' beaver damage management activities are not negatively affecting the statewide status of wetlands and do not have a significant impact because sites are generally being returned to an original condition.

Program activities and their potential impacts on wetlands have not changed from those analyzed in the EA. No new methods, circumstances, or regulations have been implemented since the writing of the EA. The EA concluded that WS' beaver dam removal/breaching activities should have minimal impact on wetlands. The impacts of WS' aquatic rodent damage management on wetlands are expected to remain insignificant.

**Issue 6 - Economic losses to property**

Program activities and their potential cumulative impacts on economic losses to property have not changed from those analyzed in the EA. WS' aquatic rodent damage management program activities reduced, prevented, or terminated economic losses. From FY 2005 through FY 2010, WS verified and cooperators reported losses to a variety of resources totaling $6,680,589 in damages. WS' activities prevented the monetary loss of an estimated $52,846,488 in damage to resources. Damage prevented by conducting activities represents the value of the resource that would have been lost had the selected action not been implemented. The total value of resources saved by WS' aquatic rodent damage management activities is greater than the total dollar value spent on cooperative aquatic rodent damage management projects by WS from FY 2005 through FY 2010. WS concludes that the continued implementation of the purposed action is economically justifiable and environmentally insignificant.

**Issue 7 - Impacts to stakeholders, including aesthetics**

The activities of WS would result in the removal of those target aquatic rodent species from those areas where damage or threats were occurring. Therefore, the aesthetic value of those aquatic rodents in those areas where damage management activities were being conducted would be reduced. However, for some people, the aesthetic value of a more natural environment would be gained by reducing densities of those

species, including the return of native wildlife and plant species that may be suppressed or displaced by high densities of those species.

Some people experience a decrease in aesthetic enjoyment of wildlife because they feel that overabundant species are objectionable and interfere with their enjoyment of wildlife in general. Continued increases in numbers of individuals or the continued presence of those species may lead to further degradation of some people's enjoyment of any wildlife or the natural environment. Population objectives are established and enforced by the LDWF through the regulating of take during the statewide hunting and trapping seasons after consideration of other known mortality factors. Therefore, WS has no direct impact on the status of the population of those species since all take by WS occurs at the discretion of the LDWF. Since those persons seeking assistance could remove those species from areas where damage is occurring, WS' involvement would have no effect on the aesthetic value of those species in the area where damage was occurring. Since the removal of those aquatic rodents causing damage can occur by other entities, the removal of those species would likely occur whether WS was involved with taking those species or not.

Therefore, the activities of WS are not expected to have any cumulative adverse effects on this element of the human environment if occurring at the request of a property owner and/or manager and when allowed by the LDWF who are responsible for regulating a resident wildlife species.

## XIX. LIST OF CONSULTANTS, REVIEWERS, AND PREPARERS

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