

ARBOVIRUS TASK FORCE

FINAL REPORT

November 1, 2007



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Glossary of Terms

| <i>Entity</i> | <i>Acronym</i> |
|--|----------------|
| Arboviral Illness Task Force | AITF |
| Arbovirus Task Force | ATF |
| Department of Environmental Services | DES |
| Department of Health and Human Services | DHHS |
| Department of Agriculture, Markets, and Food | DAMF |
| Department of Resources and Economic Development | DRED |
| Eastern Equine Encephalitis | EEE |
| Fish and Game Department | F&G |
| Mosquito Control District | MCD |
| Natural Resources Conservation Service | NRCS |
| University of New Hampshire | UNH |
| West Nile virus | WNV |

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Introduction

Objectives

This final report accomplishes several objectives; namely to:

- Provide a summary of major arboviral control activities that occurred within the state since the issuance of the Arboviral Task Force (ATF) Interim Report.
- Ensure that all of the duties assigned to the Task Force under Chapter 284, Laws of 2006 have been addressed.
- Describe the current policy that controls the application of insect control pesticides on lands and wetlands owned by the Fish and Game Department.
- Clarify the process by which the Department of Agriculture, Markets, and Food issues pesticide application permits.
- Provide a final list of Findings.
- Provide a final list of Recommendations, including action on the 9 remaining proposed recommendations and review and update of the interim recommendations.

Duties Assigned

In order to successfully complete this final report of the Arbovirus Task Force as required by Chapter 284, Laws of 2006, each of the duties assigned by the Legislature must be met and a final report issued no later than November 1, 2007. The duties assigned to the Task Force are as follows:

- I. Determine the coordination of and planning for mosquito control efforts, including a method to enable communities throughout the state to form mosquito control districts, or to be able to join together informally to file joint applications to engage in larvicide or adulticide spraying.
- II. Determine who should have certain mosquito control responsibilities according to expertise throughout the state.
- III. Review and, if necessary, streamline state governmental processes required to implement mosquito control programs.
- IV. Plan and coordinate public education and outreach regarding mosquito-borne illness.
- V. Apply for funding from private and public sources for the purposes of responding to arbovirus threats.
- VI. Determine a method to enable communities to order the removal of standing water hazards on private property and to levy fines on the property owner if necessary.
- VII. Establish a mechanism to work with landowners for determining when a pond, marsh land, or wetland on private property is found to be creating a standing water hazard and a method to permit local communities to receive assistance from the fish and game department and the department of environmental services to determine if the standing water hazard can be removed.

VIII. Establish procedures for determining what, if any, mosquito control efforts will be undertaken in state parks.

IX. Establish a mechanism to protect certified organic farms from being treated with products that would void their certification.

Approach

In order to approach the above tasks in an organized manner, the Task Force initially formed 4 subgroups that were tasked with studying in detail one or more of the duties as assigned above and reporting back on recommended positions for the full Task Force to consider.

Following the above strategy, the Task Force identified 29 potential recommendations to improve arbovirus management in the state. At its meeting of October 2006, the ATF voted to act on 20 of these recommendations. These preliminary recommendations, along with Task Force findings, were released in an Interim Report dated November 1, 2006. Due to lack of time, nine recommendations were not acted upon prior to the November 1, 2006 deadline. Further discussions on these remaining recommendations were deferred to the second year of the Arboviral Task Force, and are addressed in this Final Report.

Clarification of pesticide application process

One conclusion reached by the Arboviral Task Force is that significant public uncertainty remains regarding the current process of deciding when insect control pesticides may be applied to state-owned lands. In an effort to clarify this process, this final report contains the steps that are followed in reaching a decision to apply pesticides to Fish and Game lands. The report recommends a process for developing mosquito control policy on lands owned by other state agencies. The report also presents the process by which the Department of Agriculture issues permits for pesticide application.

Policy for the control of mosquitoes on wildlife refuges reviewed

A citizen's advocacy group, Mothers Against EEE, brought to the attention of the Arboviral Task Force a recently published draft policy for the management of mosquitoes on federal wildlife refuges operated by the US Fish and Wildlife Service. Given the relevance of this draft policy to the work of the Task Force, this document was reviewed in detail and a summary is included in this final report.

Science Subcommittee established

As the Arboviral Task Force renewed its work in September of 2007, there was a general consensus that the underpinnings of any arboviral management policy needed to be based on the best available science. Given the continuing evolution of arboviral disease, the Task Force decided to create a Science Subcommittee to review the current state of arbovirus science and report back to the full Task Force with its recommendations. The work of the Science Subcommittee and its findings and recommendations are reported elsewhere in this report.

Arboviral Control Activities Update

The following bullets summarize significant arboviral prevention/control actions or activities that occurred between November 1, 2006 and November 1, 2007.

- **Funding:** Through the Mosquito Control Fund, established by statute in 2006, NH DHHS provided \$89,432 during 2006 to towns and cities as 25% reimbursement for mosquito control activities. During 2007, NH DHHS anticipates awarding approximately \$240,000 as reimbursement for mosquito control activities.
- **Legislation:**
 - Amendment to RSA 141-C:24 to clarify that a mosquito control district established under RSA 430:13 may apply for monies from the Mosquito Control Fund.
 - Repeal of RSA 430:46, I(e) to ensure all mosquito control and abatement activities are regulated by existing permit requirements.
 - Prior to emergency rules expiring, DHHS promulgated rules He-P 308 (Financial Assistance to Partially Fund Towns or Cities for Mosquito Control Activities); effective 1/13/07.
- **State and Local Plan Development and Review:** Of the 20 recommendations accepted by the Arboviral Task Force in its interim report, State agencies completed or actively addressed 17 of the recommendations.
- State agencies were involved in numerous interagency and local meetings, correspondence, presentations, and press releases. Partners and/or recipients of the materials included the Departments of Education, DHHS, DES, F&G, DAMF, DRED, local health officers, local elected officials, health care providers, private veterinary practitioners, school nurses and administrators, summer camp directors, visitors to State Welcome Centers, parks within DRED management, the NH Farm Bureau, and the general public. See Appendix A for a listing of arboviral educational materials available from NH DHHS.
- An interagency group was established to draft a policy addressing emergency aerial pesticide application for mosquito control.
- NH Fish and Game Commission adopted a new policy to address insect control on department-owned properties.
- DRED completed a mosquito control plan for property under the control of DRED. It is pending review by the Attorney General's office and will be further reviewed by the working group in arboviral policy on state owned lands discussed below.
- **Surveillance:** Regional arboviral surveillance for EEE and WNV remained robust with over 10,000 mosquito pools, 160 humans, 30 birds, and 8 non-human mammals tested during 2007. There was also an increase in the number of towns locally funding surveillance and control activities.
- **Response to EEE/WNV activity:** Following the detection of arboviral activity, NH DHHS and DAMF were actively engaged in interagency and local correspondence, local surveillance needs, and assistance with local prevention and response.
- Governor Lynch asked Senator Hassan to lead a group of state agencies in preparing a coordinated arboviral policy for state-owned lands. The Governor has asked that this policy be completed by January 15, 2008, in order to have a plan in place prior to spring arboviral-related activities.

Science Subcommittee

As described in the Introduction Section above, the Science Subcommittee was formed by the ATF to recommend the goals and scope of further scientific review on all vector-borne diseases to help the state develop sound policy for prevention and response. The following individuals comprised the subcommittee:

- Steve Crawford, DVM, New Hampshire State Veterinarian
- Joe Moore, VMD, NH Veterinary Diagnostic Laboratory
- Jason Stull, VMD, MPVM, Department of Health and Human Services
- Jim Oehler, Fish and Game Department
- Timothy Drew, Department of Environmental Services
- John Burger, University of New Hampshire
- Kyle Lombard, Department of Resources & Economic Development
- Michael Morrison, President, Municipal Pest Management Services, Inc.
- Robert Goodrich, Community Member

Research Methods

The Science Subcommittee was formed at the October 4, 2007 meeting of the ATF and was charged with developing a list of questions regarding EEE/WNV ecology, vector surveillance, and control that require further exploration. The subcommittee was further charged with developing recommendations for compiling answers to those questions. The list of questions and recommendations are included in this final report to the legislature.

Because of the short timeframe, members of the subcommittee were asked to individually draft a list of questions that, based on their knowledge and experience, would help to better inform public policy regarding EEE/WNV control and prevention and would be appropriate for a science committee to address. Those questions were condensed to a list of twelve by eliminating questions that were outside the scope of the subcommittee, eliminating those that were readily answerable given currently available information, and combining others.

In order to further define the Subcommittee's questions, presentations were requested by Dr. Jason Stull (NH DHHS), Mike Morrison (a local mosquito contractor) and Dr. Richard Pollack (Laboratory of Public Health Entomology, Harvard School of Public Health). Topics addressed during these presentations included existing state and local roles and approach to arboviral surveillance in NH, approach to modeling arboviral disease risk, the efficacy of vector control strategies, and non-target impacts of *Bacillus thuringiensis israelensis* (*Bti*) larvicide. See Appendix B for the Organizational Meeting Notes for the October 18, 2007 Subcommittee meeting for the details of these presentations.

Recommendations of the Science Subcommittee

Following these presentations, the list of questions was reviewed by Subcommittee members and was unanimously approved at the Subcommittee's October 25, 2007 meeting. Based on this assessment, the Science Subcommittee recommends the following:

Review of existing science

The Science Subcommittee recommends that the Arboviral Illness Task Force (AITF) compile existing information on WNV/EEE with respect to disease ecology, methods and utility of disease surveillance, important mosquito vectors, and disease control and prevention strategies. Compiling this information will be helpful in further evaluating and informing the state and local response to arboviral diseases and relevant public policies. The NH Arboviral Illness Task Force (AITF) was established in 2000 to provide expertise in helping to minimize the risk to NH citizens of being exposed to and infected with mosquito-borne diseases. Since 2005, the Commissioner of NH DHHS has annually convened this Task Force to develop and improve a statewide coordinated strategy to reduce the risk of EEE and WNV in NH. See Appendix C for a more detailed description of the AITF.

The Science Subcommittee further recommends that in the process of compiling their information, the AITF should pay special attention to the following questions posed by the Science Subcommittee. Currently, these topics are either poorly understood or there are relevant differences in opinions among experts. The Science Subcommittee believes the answers to these questions could have significant ramifications on how state and local officials address EEE/WNV disease prevention and control in New Hampshire. In addition, the Subcommittee recommends that topics for which sufficient information is not currently available, be targeted through future research endeavors.

Surveillance

- 1) How can we best structure arboviral surveillance in NH to ensure the most effective use of limited resources, while gaining advanced warning for the region and magnitude of activity (e.g. only concentrate on specific mosquito species, investigate other trapping locations or methods, etc)?
- 2) How can we best integrate the known imperfections of EEE/WNV surveillance with regional control and prevention programs? How do we impress upon towns/cities the concept of regional risk? How do we do this while ensuring IPM (Integrated Pest Management) strategies?
- 3) What trigger points (criteria) should be used to determine when larval and/or adult mosquito control is indicated on local and state-owned land?

Disease Risk

- 4) What is the level of risk reduction attained from the various control and prevention strategies (e.g., adulticiding, larviciding, personal protection, outreach and education, wetland management, etc.)?
- 5) Is it possible to develop a EEE/WNV disease risk model to better predict where disease occurrence may be more prevalent? Factors to include in developing a risk model include current and future potential weather patterns, wetland types, abundance, and distribution, past disease occurrence, mosquito abundance and species distribution, and current and future land uses. Such a risk model would aid in targeting regional control and prevention activities and be useful in evaluating possible effects of weather and environmental changes.

6) What level of disease risk is an appropriate goal for which to strive and what criteria should be used to determine that goal?

Vector Ecology

7) Have humans altered upland and wetland ecosystems to favor mosquitoes and if so, are there means to restore those ecosystems to reduce mosquito populations?

8) Is the amplification cycle of EEE/WNV viruses in New Hampshire unique in terms of mosquito species that are involved, timing of infection, etc. and are there weak points in the amplification cycle or in the spatial patterns of mosquitoes that could be exploited to more effectively and efficiently reduce mosquito populations?

Vector Control – Efficacy

9) How much existing mosquito breeding habitat is being treated and how much would need to be treated to reduce the risk of arboviruses? Are there locations (e.g., hard-to-reach swamps) in which treatment could dramatically reduce disease risk?

10) What is the effectiveness of larviciding and adulticiding in reducing mosquito populations given New Hampshire's forested condition, dispersed human population, fragmented land ownership patterns, challenging mosquito population dynamics and habitat ecology?

Vector Control – Nontarget Impacts

11) What are the short and long term impacts of using adulticides and/or larvicides (including Bti) repeatedly in lentic wetland environments over successive years? Factors to consider include direct mortalities of non-target organisms and food web effects on both invertebrates and vertebrates in both fresh and saltwater wetland systems. What is the potential for the development of pesticide resistance to these mosquito control products for both target and nontarget species?

Vector Control – Nonchemical Options

12) What techniques are appropriate for wetland management that would lead to a reduction in mosquito populations and enhance or at least not degrade the public and natural resource values of those wetland systems?

Review of USFWS Draft Policy for Mosquito Management

At the request of the Mothers Against EEE and in an effort to address the need for the development of a State-owned land mosquito control policy, the ATF reviewed the “Draft Mosquito and Mosquito-borne Disease Management Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997”, developed by Department of the Interior, Fish and Wildlife Service (Appendix D). Several ATF members also discussed the policy with Michael Higgins, U.S. Fish and Wildlife Service representative.

This draft policy is aimed at managers of refuges on units of the National Wildlife Refuge System with the purpose of providing direction and procedures for making determinations regarding if and how to manage mosquito populations on lands administered within the Refuge System. Overall, the ATF found the draft policy to be a useful comprehensive list of components that should be incorporated into a mosquito control plan for state-owned lands, including education, surveillance, and threshold-driven prevention and control activities. The ATF noted the critical importance of a required, written, approved mosquito control plan for all lands in which a Public Health Threat has been declared.

The ATF found that many of the mosquito control plan requirements and actions as discussed in the draft policy are currently recommendations in existing NH State Plan guidelines, such as the DHHS State of New Hampshire Arboviral Illness Surveillance, Prevention and Response Plan. Furthermore, the well-defined, location-specific, quantitative thresholds discussed in the draft policy, although excellent in theory, are rarely implementable as the association between these variables and human disease risk is often poorly understood. The ATF finds this draft policy to be a useful tool toward the development of a State-owned land mosquito control policy, but as a stand-alone policy will not adequately address NH’s arboviral public health risks.

Summary of Department of Agriculture Pesticide Application Permit Process

Overview of regulatory process

In New Hampshire, Mosquito-control programs involving pesticides might require that the applicator possess a Special Permit issued by the New Hampshire Department of Agriculture, Markets and Food, Division of Pesticide Control (the Division). The need for, and nature of any such permit will depend on the manner and location of any proposed mosquito-control program. Pesticide applications to water (larviciding), aerial applications of pesticides (larviciding and/or adulticiding), and applications made along rights-of-way (adulticiding) require a Special Permit. Applications to private properties (that don't involve treatment of water) may, in general, be done without such permit. The authority for and procedures governing the issuance of such permits lie in RSA 430:28-50, and the Administrative Rules of the Pesticide Control Board, CHAPTERS Pes 100 – 1100. The exact process will vary, depending on the proposed activities and the circumstances surrounding them. Such things as lead times, which agencies must review applications, and notification requirements vary for different situations. Whether or not the applications are being made under a public health threat or emergency will also bear on the procedures and time lines. With the above in mind, following is a summary of the steps and procedures involved in the procurement of such permits.

Apply for the permit

This *must* be done on a form provided by the Division. In the case of mosquito control programs by municipalities, the application may be submitted by the municipality itself, or by a commercial pesticide applicator on behalf of such municipality. If the municipality submits the application, it shall state in the application which licensed pesticide applicator(s) will do the work. An original and 4 copies are generally required. The body of the application must include a list of the pesticides to be used, copies of their complete labels, and detailed maps of the proposed treatment sites, among other information. New in 2007 is a requirement that the applicant log on to a Natural Heritage Bureau datacheck website (<http://www2.des.state.nh.us/OneStop/>) to determine if endangered species might be put at risk by the proposed application. If no such risk is perceived, a letter is generated stating so and that must be included in the permit application. If risk is recognized, the applicant must submit \$25.00 for a more complete assessment of potential risks, and the documentation stemming from this must be included in the application package. Lead time for submitting applications will depend on the type of program. Aerial applications require a 120-day lead time (Pes 506.02(c)); larviciding (applications to surface waters) by governmental agencies (which includes municipalities) require a 30-day lead time (Pes 604.01(b)(2), otherwise a 90 day lead time is required – Pes 602.01(e)); adulticiding only (if to right of way) requires a 60-day lead time (Pes 505.05(b)(2)). In the event of a declared public health emergency, all lead-time requirements are nullified.

With regard to aerial applications, there is also a requirement that applicants, at the time they submit the application to the Division, provide public notice of the pending application to town officials (in the towns where treatment will occur), cooperative extension, and landowners within 1320 feet of the treatment area. They shall also publish such notice in a newspaper of general circulation in the area(s) to be treated. These notices shall offer persons 15 days within which to submit written comments to the Division. In the event of an aerial application to residential areas,

a public hearing *shall* be scheduled prior to approval of any special permit. The details regarding such an application and hearing are specified in Pes 506.04. In the event of a declared public health emergency, such notice and hearing requirements are waived.

Permit applications are reviewed by Division and other agencies.

On receipt by the Division, applications are reviewed for completeness, and then copies are forwarded to other agencies for their review. Aerial applications have the longest list of reviewers, which are: DRED; DAMF, Division of Plant Industry; DES; F&G; and DHHS, Office of Management, Bureau of Health-Risk Assessment (Pes 506.01(a)) At the very least (if not aerial) applications are reviewed by DES, DRED, F&G, and the Division. Once all reviews are received (30 days is the normal turn-around time for reviews – although this is not a rule requirement), the Division completes its review - folding in all of the reviews by the other agencies - and writes and issues the permit. The permit will state conditions under which the pesticide applications are to be made. These conditions have the weight of rule and are enforceable by the Division. In the event of public health emergencies, the agencies target a 12-hour turn-around time, and the permits are issued immediately thereafter. Should numerous permit applications be received at the same time under emergency conditions, this turn-around time will likely be longer than 12 hours.

Applicator conducts notification.

This varies with type of application, but generally includes newspaper notices, notices to beekeepers, municipalities, etc. These notices are not made until the permit is issued, will include a list of the pesticides to be applied, anticipated treatment dates (or program start date), locations to be sprayed, and a statement that persons may request their property not be sprayed. Such requests must be honored, and a list of such persons must be maintained by the applicant. In the event of a public health emergency, an abbreviated notification process under Pes 505.06(p-r), which requires a 12-hour lead-time, shall be followed.

Applicator conducts program.

Applications shall be made as per the conditions of the special permit and all applicable rules and regulations. Permits generally require the applicator provide the Division 48-hour advanced notice (by telephone) of intent to commence spray activities. In the event of applications to state-owned lands, conditions shall be specified in the permit as to when this will be allowed. Applicators, via permit conditions, are also required to submit to the Division a record of spray activities conducted under a permit, a summary of survey data, and an assessment of the effectiveness of the program.

NH Fish and Game Department Insect Control Policy

On March 28, 2007, NH Fish and Game Dept. adopted a new policy to address insect control on department-owned properties (Appendix E). The following summarizes the basic elements of this policy, but both the Fish and Game Department and the ATF agree that further amendments of the policy may be necessary.

Mosquito Surveillance

Mosquito surveillance can occur on Fish & Game properties using methods approved by the NH Department of Health & Human Services. No prior approval to perform mosquito trapping is required, however, the F&G Dept. should be contacted with the trap location and intended duration of use. At the conclusion of the WNV/EEE season, a summary of surveillance activities and disease positive results (if any) should be forwarded to the F&G Dept.

Larviciding

The F&G Dept. will allow the larvicide methoprene in artificial water receptacles such as old tires, barrels, and manmade water catch basins at any time. Methoprene is not allowed in natural wetlands and waterbodies.

Two biological larvacides, *Bacillus thuringiensis israelensis* (Bti) or *Bacillus sphaericus*, may be used on natural wetlands when:

1. A wetland is located in a buffer surrounding the location where disease-positive mosquitoes were trapped in any of the preceding three years or the current year. The buffer corresponds to the maximum flight range of the mosquito species that tested positive for either EEE or WNV (generally 1/4 - 5 miles depending on the species); OR
2. A wetland is located within a 5-mile buffer surrounding the location of a disease-positive human, horse, or other mammal.

Adulticiding

Adulticides may be used in situations where the area proposed for treatment is contained within the location of a Public Health Threat as declared by the Commissioner of NH Health and Human Services and the area is near a location of high public use (e.g., school, sports complex, etc.).

How to Get Approval for Treatment

Municipalities wishing to control mosquitoes on Fish & Game property must obtain a pesticide permit from the Division of Pesticide Control. Thereafter, the town or city should contact the F&G Dept. requesting permission to treat Department properties. Their request should be accompanied by a map showing the location of wetlands on Fish & Game properties to be treated, the types of pesticides to be used, the location of high public use areas (e.g., schools, ball parks, etc.) if adulticides are to be used, and a description of surrounding properties to be treated.

Findings

As described in the Introduction, the Arboviral Task Force reviewed the findings presented in the Interim Report. After this review, the following represents the final Findings of the Task Force.

1. The Task Force finds that statutory authority exists under RSA 147:1 and RSA 47:12 for the adoption of standing water hazard control ordinances for towns and cities respectively.
2. The Task Force finds that there is some existing statutory authority that allows the Departments of Environmental Services and Fish & Game to advise communities and landowners as to the impact of ameliorating standing water hazards. Because of the statutory duties and expertise of these two agencies, their input is appropriately focused in the potential environmental impacts of removing standing water hazards.
3. The Task Force finds that there are also other organizations that can help communities evaluate potential standing water hazards, such as the UNH Cooperative Extension Service, the Natural Resources Conservation Service, and Conservation Districts, and encourages communities and landowners to take advantage of these resources.
4. The Task Force finds that neither the Department of Environmental Services nor the Fish & Game Department have requested that the ATF support additional statutory authority or funding to provide these services. (However, the Fish and Game Department did note that if staff were to be assigned to this effort without additional funding, other program areas would be negatively impacted.)
5. While recognizing that organic farmers in compliance with Section 205.672 will not lose certification due to a federal or state emergency pest or disease treatment program, the Task Force finds that the loss of marketable organic produce would nonetheless have a financial impact on such farmers.
6. The Task Force finds that RSA 53-A:3 provides the authority for two or more public agencies in the state to enter into an agreement for joint or cooperative action that would presumably include the filing of joint applications for larviciding and adulticiding.
7. The Task Force finds that while the state has made many efforts to reduce the risk of arboviral illness there remains an ongoing need to ensure that these activities are well coordinated, well communicated, and transparent to the public.
8. The Task Force finds that while a mechanism for regular communication and sharing of expertise between agencies and government bodies, both state and local, is not in place at this time, the work of the Task Force demonstrates the statewide and local benefits of ongoing dialogue.
9. The Task Force finds that without a mechanism to support ongoing communication and sharing of expertise, the issue of arboviral illnesses will continue to be an emotional and contentious one on the local level.
10. The Task Force finds that while the duties of the All Health Hazards Regions (AHHRs) established for the purpose of overseeing the development of regional public health emergency

plans are relevant to the control of arboviral illness, more formal assignment of duties would require either that these Regions be recognized in law and or that existing contracts be amended.

11. The Task Force finds that overall educational efforts and materials delivered in NH are consistent with those provided by other states in the region. The materials available for the public and other state agencies are, for the most part, adequate.

12. The Task Force finds that there is a continuing need to provide arboviral information to appropriate municipal officials so that prevention methods are followed and town-based mosquito surveillance and prevention programs are financed as needed.

13. The Task Force finds that mosquito surveillance is a valuable educational tool. Mosquito surveillance not only allows for a rapid detection of mosquito-borne diseases, it promotes continued awareness as test results become available throughout the season. Mosquito-borne diseases such as EEE and WNV draw public attention at times when human and/or non-human mammal cases are detected. When there are not such cases for long periods of time, it is possible that communities may choose not to finance mosquito surveillance during these perceived “lower risk” periods. ATF members are concerned about identifying mechanisms to maintain the interest and attention of the public/municipalities while these diseases go through periods of low incidence.

14. The Task Force finds that sustainable, long-term mosquito surveillance is an important component in local education and outreach efforts.

15. The Task Force finds that it is paramount that communities and individual citizens receive timely and appropriate educational messages to assist in making personal and community-based decisions regarding arboviral disease surveillance, prevention, and control. It is particularly important that schools communicate this knowledge at both the beginning and end of the school year, as the risk of contracting arboviral illness is greatest in the summer and fall.

16. The Task Force finds that policy makers, researchers, and educators would benefit from a comprehensive overview of our current knowledge base on locally important mosquito-borne diseases (i.e., EEE and WNV).

Recommendations

This is the updated and final list of the recommendations that have been accepted by the Arboviral Task Force. Recommendations are grouped by subject area as set forth by Chapter 285.4, Laws of 2006, but are numbered consecutively in order to avoid ambiguity.

284:7,I. Determine the coordination of and planning for mosquito control efforts, including a method to enable communities throughout the state to form mosquito control districts, or to be able to join together informally to file joint applications to engage in larvicide or adulticide spraying.

1. **The Task Force recommends** a coordinated effort by state agencies and institutions to assist Mosquito Control Districts (MCDs) in developing local expertise in mosquito surveillance, control, and prevention. One means of developing this expertise may be through the Regional Planning Commissions (RPCs). Established under RSA 36:45-53, RPCs enable municipalities and counties to join together to, among other duties, facilitate the wise and efficient expenditure of public funds. RPC members have access to a number of planning and advisory services. RPCs should be consulted about the appropriateness of their involvement in these activities.

2. **The Task Force recommends** the organization of mosquito control efforts through adequately funded pre-existing regional entities that may include RPCs or All Health Hazards Regions (AHHRs).

3. **The Task Force recommends** the reactivation of the State Committee for Mosquito Control established under RSA 430:10. The duties of the reactivated committee should be to provide oversight and coordination of interagency efforts with regard to mosquito prevention and control. Further, the Task Force recognizes that this reactivation may require legislative efforts to revise the membership and duties so that they reflect current best practices and the importance of public health.

284:7,II. Determine who should have certain mosquito control responsibilities according to expertise throughout the state.

4. **The Task Force recommends** that, over the long term, the state should consider taking responsibility through an existing state agency for mosquito trapping and development of entomology expertise as necessary to better identify risks for arbovirus diseases and to target those risks accordingly.

5. **The Task Force recommends** that the DHHS investigate sources of revenue to fund effective, long-term mosquito surveillance.

6. **The Task Force recommends** that the Arboviral Illness Task Force (AITF), established in 2000 by the Department of Health and Human Services, review the current knowledge and address future needs of EEE and WNV ecology, disease, prevention, and control in New Hampshire so that accurate and timely information can be used to guide personal, local, and State responses to these diseases. This review should encompass the subject areas recommended by the ATF Science Subcommittee as set forth in this Final Report, and may require that the AITF

meet more than annually. Health protection measures should continue while the scientific review is in process.

7. **The Task Force recommends** that the N.H. Local Government Center and N.H. Association of Counties should be made aware of the issue of mosquito-related standing water hazards so as to direct inquiries from its members to appropriate state agencies.

8. **The Task Force recommends** that RSA 141-C:25 be amended so that municipalities will be eligible for reimbursement for mosquito control activities that occur prior to a Public Health Threat declaration under RSA 141-C:25,III.(a).

284:7,III. Review and, if necessary, streamline state governmental processes required to implement mosquito control programs.

9. **The Task Force recommends** adding a specific reference in the pesticide control rules and/or in RSA 430 so that decision makers can consider both the public health risks and benefits of potential pesticide applications along with other criteria when evaluating a pesticide application request.

10. **The Task Force recommends** the Division of Pesticide Control consider the adoption of a tiered permitting process that simplifies the annual renewal of Special Permits for mosquito control.

284:7,IV. Plan and coordinate public education and outreach regarding mosquito-borne illness.

11. **The Task Force recommends** that the current arboviral disease education practices at the local and state levels continue, but with certain revisions of, and additions to, educational materials and approaches to better encourage local communities to become better prepared for detecting and responding to arboviral threats. An example of an appropriate addition would include the adoption of the “7Ds” as cited on the Mothers Against EEE website (<http://momsagainsteee.com/>). An example of additional educational outreach would be to engage groups such as the New Hampshire Hospital Association and the NH Medical Society.

12. **The Task Force recommends** training community members (i.e., local veterinarians, physicians, Health Officers) to present information to local decision makers regarding the appropriate response to the threat of arboviral illnesses.

13. **The Task Force recommends** that educational approaches at the local level should be tailored depending on need – what works in one town may not work well in another.

14. **The Task Force recommends** the creation of a website where the public could go for a comprehensive source of information regarding arboviral illnesses. Currently, the DHHS website serves this purpose. Links to related topics such as the status of pesticide application permits would help local residents track mosquito control efforts in their communities.

15. **The Task Force recommends** that the DAMF post the status of pesticide application permits on its web site.

16. **The Task Force recommends** making sure that local education efforts begin in November prior to town meeting time in order to facilitate informed budgetary decisions.

17. **The Task Force recommends** maintaining mosquito surveillance during those years in which the risk of human infection is perceived to be low as surveillance provides early warning, awareness, and educational benefits.

18. **The Task Force recommends** the development of educational components with a personal touch (e.g. how these diseases have touched or changed the lives of NH residents and animal owners). The intent of this personalized education is to encourage individuals to act to reduce risks and that their efforts will be based objective information.

19. **The Task Force recommends** that the existing local public education efforts continue as a means of controlling standing water hazards.

284:7,V. Apply for funding from private and public sources for the purposes of responding to arbovirus threats.

20. **The Task Force recommends** that the application for funding from private and public sources should fall to state or local agencies acting within their legal scope of authority for arbovirus control.

284:7,VI. Determine a method to enable communities to order the removal of standing water hazards on private property and to levy fines on the property owner if necessary.

21. **The Task Force recommends** that ordinances adopted by municipalities that provide for fines for standing water hazards occurring in artificial containers (e.g., used tires, recycling containers, bird baths) should apply only during such times as the Commissioner of DHHS has determined a public health threat pursuant to RSA 141-C:25, III(a) and in situations in which evidence exists of mosquito larvae on the property in question.

284:7,VII. Establish a mechanism to work with landowners for determining when a pond, marsh land, or wetland on private property is found to be creating a standing water hazard and a method to permit local communities to receive assistance from the fish and game department and the department of environmental services to determine if the standing water hazard can be removed.

22. **The Task Force recommends** that communities and landowners work with organizations such as the UNH Cooperative Extension Service and the Natural Resources Conservation Service, and conservation districts for assistance in the evaluation of potential standing water hazards. Further, the Task Force recommends that readers refer to the policy letters received from the Fish and Game Department and the Department of Environmental Services that are attached to the ATF Interim report dated November 1, 2006.

284:7,VIII. Establish procedures for determining what, if any, mosquito control efforts will be undertaken in state parks.

23. **The Task Force recommends** that, consistent with the Governor's request dated October 24, 2007, the Department of Resources and Economic Development (DRED) develop with the NH Department of Fish and Game, Health and Human Services, Agriculture, and Environmental Services, a coordinated plan for determining when to initiate mosquito control activities on its state owned land, including the state park system, and the Task Force further supports the Governor's request that a coordinated plan be developed for determining when to initiate mosquito control activities on all state owned land.

284:7,IX. Establish a mechanism to protect certified organic farms from being treated with products that would void their certification.

24. **The Task Force recommends** that when aerial spraying is the method of choice in responding to an emergency, certified organic farms should be identified, buffer zones established, and global positioning or other technology should be used to establish “no-spray” zones. Spray these areas only as a last response after other means of control are exhausted.

25. **The Task Force recommends** that any such treatment program should be conducted in a manner to minimize the effect on certified organic farms, including using the minimum amount of product required, limited use of USDA National Organic Program prohibited materials in areas surrounding organic farms, providing a sufficient buffer distance to prevent drift from occurring onto organic farms, and favoring the use of pest control materials that would not be considered prohibited under the rules for organic farming, such as certain biologically derived pesticides.

26. **The Task Force recommends** education and outreach to organic farmers and organic farmer’s organizations regarding scientifically documented natural means of mosquito control.

27. **The Task Force recommends** that the Pesticide Control Division make ongoing efforts to notify certified organic farmers if spraying is scheduled to occur on their property.

Conclusions

Over the course of the last two years, the Arboviral Task Force has worked hard to ensure that New Hampshire improves its response to arboviral illness. The Task Force believes that the state has made progress in its efforts to educate the general public, policy makers who share responsibility for the prevention and response to these diseases, as well as local officials who have prevention and response roles as well. There is also better coordination between and among the state agencies with shared prevention and response responsibilities.

That being said, each and every member of the Task Force understands the full impact of this disease when it strikes, and believes that the state must continue to improve its efforts to avoid any additional cases. It is also possible that other mosquito-borne illnesses will be detected in our state as population increases, mosquito vectors and habitats modify or evolve, and diagnostic tools improve. Lessons learned from responding to EEE and WNV will be useful as we respond to other mosquito-borne public health threats. We note in particular that such public health threats do not confine themselves to political borders, and that the state should continue to work with regional entities to determine ways in which we can develop effective, efficient, and targeted methods to protect citizens of our state and region from mosquito-borne disease.

APPENDIX A

Arboviral Educational Materials Currently Available From New Hampshire Department of Health and Human Services (NH DHHS)

(Additional resources are available from other State agencies)

Educational materials available from the NH DHHS website or by contacting the NH DHHS Arboviral Coordinator*

1. Fact Sheets

- Eastern Equine Encephalitis Fact Sheet
- West Nile virus Fact Sheet

2. Frequently Asked Questions (FAQs)

People

- West Nile virus and Eastern Equine Encephalitis Infection and Breast Feeding
- West Nile virus and Eastern Equine Encephalitis and Hunters
- School, Day Camps, Day Care Centers and West Nile virus and Eastern Equine Encephalitis

Animals

- Arboviruses and Birds: West Nile virus and Eastern Equine Encephalitis
- Dead Bird Handling Instructions
- West Nile virus and Eastern Equine Encephalitis in Dogs and Cats
- West Nile virus and Eastern Equine Encephalitis in Horses

Mosquito Control

- West Nile virus and Eastern Equine Encephalitis and Mosquitoes in New Hampshire
- Reducing the Risk of Infection from Mosquitoes Around Your Home and Community
- Control of Adult Mosquitoes to Reduce Transmission of West Nile virus and Eastern Equine Encephalitis
- Pyrethroid Insecticides for Mosquito Control
- Larvicides
- Vectobac (*Bacillus thuringiensis israelensis*)

3. Posters and InfoCards

- Insect-borne Disease in New Hampshire – Don't Let Them Bug You
- Prevent Diseases Caused by Mosquito Bites
- Protect Yourself Against West Nile virus and Other Mosquito-borne Diseases
- Preventing Mosquito and Tick Bites

4. PowerPoint for Cable Access Stations

- Protect Yourself Against Eastern Equine Encephalitis and West Nile virus

5. Professional resources

Letter to NH veterinarians regarding Eastern Equine Encephalitis and WNV
Letter to health care providers regarding Eastern Equine Encephalitis and WNV
Information Regarding Human and Animal Arboviral Testing

6. Local Plan Development and Response

Arboviral Illness Surveillance, Prevention, and Response Plan
Arboviral Plan Supplement

*NH DHHS website: <http://www.dhhs.state.nh.us>; NH DHHS Arboviral Coordinator can be reached at 603-271-4496

APPENDIX B

Task Force to Facilitate A Coordinated Local, Regional, and State Response to Arboviruses in
New Hampshire
Chapter Law – 284:5
Year 2006

SCIENCE SUBCOMMITTEE

Organizational Meeting Notes

October 18, 2007

Members Present: James Oehler, Jason Stull, Kyle Lombard, Mike Morrison, Robert Goodrich, and Joe Moore for Steve Crawford.

The Subcommittee began compiling information on some of the questions it posed regarding EEE/WNV prevention and control. Jason Stull from DHHS explained DHHS' role in surveillance, while Mike Morrison explained a contractor's role. Dr. Richard Pollack from the Laboratory of Public Health Entomology, Harvard School of Public Health provided his perspective on a number of topics including disease risk modeling, efficacy of mosquito control techniques, and impacts of Bti, among others. More detailed notes on these topics follow.

Surveillance

DHHS Role

Main surveillance roles include developing/implementing protocols for sample collection and submission, performing sample testing, disseminating results to inter and extra-agency partners, assessing local surveillance efforts and supplement when indicated, monitoring efforts and results for trends, and convening the Arboviral Illness Task Force to review and obtain comments on the above. Further information is provided below:

DHHS' role includes developing protocols for collecting and testing adult mosquitoes from light traps and other types of adult mosquito traps. These protocols include outlining what mosquito species should be tested. Currently testing begins June 1 and ends when mosquito control contractors are no longer seeing high mosquito numbers (usually around mid-October). DHHS concentrates on testing *Culiseta melanura* and *Cs. morsitans* early in the season (i.e., June 1 – July 1). After July 1, DHHS accepts additional species including bridge vectors. Jason also explained the reporting that is triggered by positive tests. Notices of disease positive mosquitoes are sent to the local animal control officer who then reports the information to town officials. Notices are also sent to Arboviral Task Force members, and others. The State veterinarian has similar responsibilities when animals test positive for WNV or EEE.

DHHS does not provide guidance on the recommended number of traps/town, trap placement, or other such standards. DHHS has a limited budget to supplement town-sponsored surveillance with state-sponsored efforts. For example, state-sponsored trapping may be employed if EEE is detected in one town and trapping efforts are low or non-existent in surrounding towns. Historically, emergency trapping is usually done over a two-week period following a positive disease result. DHHS contracts emergency trapping with mosquito control contractors.

DHHS also tracks mosquito population levels and trap effort on a regional basis as one indicator of disease risk. DHHS uses contractor data to do this.

Contractor Role

Mike explained that towns contract with mosquito control contractors like himself to do both surveillance and control of mosquitoes. A number of different traps can be used to collect adult mosquitoes for disease testing. Among them are light traps, resting box traps, and gravid (aka “stinky”) traps. Gravid traps are best for surveilling mosquito species associated with WNV. Resting box traps are very good for surveilling *Cs. melanura*, one of the primary species associated with amplifying EEE virus in nature. Light traps are effective for surveilling a wide range of species.

Light traps are typically deployed at eye level. However since *Cs. melanura* feeds primarily on birds, there is some thought to trying to deploy them at tree canopy level where birds roost. However, there are obvious logistical barriers with trying to do this.

Traps are typically checked once per week and usually 2-3 traps are deployed in each town. Trapped adults are transported to DHHS’ lab for disease testing as soon after collection as possible. Specimens have to be kept cold through transport and testing.

Risk Modeling

Dr. Pollack explained that it is possible to develop a risk model, but any model will not be good for pinpointing potential disease locations. Models have obvious limitations. It is often difficult to populate risk models with useful data. Data is often lacking. Therefore, educated guesses are often incorporated. Risk models can be useful for testing questions like, “What would happen if we reduced the population of mosquito species x?” The impact of weather (e.g., rain fall and hydrologic factors) is important to address in such models.

Vector Control Efficacy

Dr. Pollack explained that *Cs. melanura* is the primary player in enzootic transmission. It primarily feeds on birds, but approximately 20% of blood meals are known to come from mammals. Some traditional methods of mosquito larvae and adult control are not effective with controlling *Cs. melanura* because the species occurs in out of the way places. Mike has found them occurring primarily in crypts under sphagnum mounds in hemlock stands. If larvicides can be applied to those crypts *Cs. melanura* can be controlled but it is a labor-intensive undertaking. Given that controlling *Cs. melanura* is difficult, it may prove reasonable to also target bridge vectors.

The epidemic (bridge) vectors for EEE likely depend on location and ecology. According to Dr. Pollack, in this area they are *Aedes vexans*, *A. canadensis*, and *Coquillettidia perturbans*. *A. vexans* occurs primarily in river floodplains that occasionally get inundated with water. If inundation lasts long enough, millions of adults can hatch. If water recedes fast enough and soil dries up again, millions of larvae will be stranded and will not develop into adults. Mosquito control agents have 1-3 days after inundation to deliver Bti before adults begin hatching. In Massachusetts, helicopters or fixed winged aircraft are commonly used to deploy Bti in such situations.

Cq. perturbans is another species that has been implicated as a major player in EEE transmission. *Cq. perturbans* occurs in freshwater cattails stands. Dr. Pollack doesn’t believe it is as important as some of his colleagues in other states. This species is difficult to control. Best control can be had from draining breeding sites.

Dr. Pollack addressed the question of triggers for larviciding and spraying in Massachusetts. He categorized some as nuisance triggers and others as more objective, such as mosquito abundance, virus activity, weather, and human population density. In areas of increased human population density, triggers may be different than those in which the human density is lower. He also suggested that mosquito control activities might result in reduction of 1-12 cases per year, although the origin of those figures is unclear.

Mike mentioned that less than 1% of mosquito breeding sites are treated in any town. Dr. Pollack explained that if treatment is targeted at correct habitats at correct times then treatment can be effective at reducing larvae of target species. Does that result in fewer adults? That is unsure.

Impacts of Bti

Dr. Pollack chaired a committee for MA Department of Public Health to look at this issue. Bti directly impacts mosquitoes, nonbiting midges, and black flies. He believes any collateral damage is minimal and insignificant. You may have to be careful in certain types of vernal pools under certain conditions, but for most other wetlands systems there should be little concern. Dr. Pollack questions some of the sampling techniques of the few long-term studies reviewed in Boisvert and Boisvert that indicate potential for nontarget impacts.

He went on to state that there are few specific predators of mosquitoes. Anything that feeds on mosquitoes are generalist predators that can move to other prey species if mosquitoes are limiting. We may be perturbing wetland systems through human landuse, but many of those perturbations are resulting in more mosquitoes.

The goal of control programs is not to prevent every human case of EEE (of course that would be ideal), but rather to reduce peak transmission risk and thus numerous human cases. Can't eliminate EEE or prevent the odd case of EEE. A long-term, sustained program is critical to success.

He made it clear that there are a number of different opinions on all of these issues and offered his assistance in further discussing any of them in the future. He also felt that NH should develop a EEE/WNV control plan and clearly "define our goal" before we proceed with developing a plan for reaching that goal. Dr. Pollack felt that an on-site visit of the NH endemic area would allow better assessment of current or planned surveillance/control.

APPENDIX C

Description of the Arbovirus Illness Task Force

The New Hampshire Arboviral Illness Task Force (AITF) was established in 2000 to provide expertise in helping to minimize the risk to NH citizens of being exposed to and infected with mosquito-borne diseases. Membership of the AITF includes representatives of State Agencies (DRED, DAMF, F&G Dept, DES, DHHS, Dept of Education), local public health entities, University of New Hampshire (entomologists, Veterinary Diagnostic Laboratory personnel, Cooperative Extension coordinators), mosquito contractors, and relevant organizations (NH Audubon Society, NH Veterinary Medical Association, USDA). Since 2005, the Commissioner of New Hampshire Department of Health and Human Services has annually convened this Task Force to develop and improve a statewide coordinated strategy to reduce the risk of Eastern Equine Encephalitis (EEE) virus and West Nile virus (WNV) in NH. Information provided from ATF and AITF meetings, as well as Department and federal program analyses is used to guide NH DHHS' annual arboviral-related activities and development of a State Arboviral, Illness Surveillance, Prevention and Response Plan.

APPENDIX D

**DEPARTMENT OF THE INTERIOR, Fish and Wildlife Service [1018-AT72]
Draft Mosquito and Mosquito-Borne Disease Management Policy Pursuant to the
National Wildlife Refuge System Improvement Act of 1997 (as published in the Federal
Register / Vol. 72, No. 198 / Monday, October 15, 2007 / Notices)**

| Permit No. | Applicant | Receipt of application FEDERAL REGISTER notice | Permit issuance date |
|--------------|------------------------------|--|----------------------|
| 156814 | David L. Duncan | 72 FR 39830; July 20, 2007 | September 5, 2007. |
| 152774 | Eric K. Schnelle | 72 FR 33242; June 15, 2007 | July 26, 2007. |
| 152402 | Gary D. Young | 72 FR 31090; June 5, 2007 | August 23, 2007. |
| 154555 | Herbert Rudolf | 72 FR 31601; June 7, 2007 | September 5, 2007. |
| 154496 | Scott A. Huebner | 72 FR 33242; June 15, 2007 | August 9, 2007. |
| 156806 | Donald Thompson | 72 FR 37795; July 11, 2007 | September 5, 2007. |
| 155649 | Elizabeth C. Harris | 72 FR 39829; July 20, 2007 | September 6, 2007. |
| 690038 | U.S. Geological Survey | 72 FR 25328; May 4, 2007 | August 30, 2007. |
| 071799 | Jennifer Miksis-Olds | 72 FR 39829; July 20, 2007 | August 30, 2007. |
| 156394 | Raymond Cuppy | 72 FR 37039; July 6, 2007 | September 5, 2007. |

Dated: September 21, 2007.
Lisa J. Lierheimer,
*Senior Permit Biologist, Branch of Permits,
 Division of Management Authority.*
 [FR Doc. E7-20233 Filed 10-12-07; 8:45 am]
BILLING CODE 4310-55-P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

Issuance of Permits

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of issuance of permits for marine mammals.

SUMMARY: The following permits were issued.

ADDRESSES: Documents and other information submitted with these applications are available for review, subject to the requirements of the Privacy Act and Freedom of Information Act, by any party who submits a written request for a copy of such documents to: U.S. Fish and Wildlife Service, Division of Management Authority, 4401 North

Fairfax Drive, Room 700, Arlington, Virginia 22203; fax 703/358-2281.

FOR FURTHER INFORMATION CONTACT: Division of Management Authority, telephone 703/358-2104.

SUPPLEMENTARY INFORMATION: Notice is hereby given that on the dates below, as authorized by the provisions of the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361 *et seq.*), the Fish and Wildlife Service issued the requested permits subject to certain conditions set forth therein.

Marine Mammals

| Permit No. | Applicant | Receipt of application FEDERAL REGISTER notice | Permit issuance date |
|--------------|------------------------|--|----------------------|
| 153572 | Gregory L. Pope | 72 FR 31601; June 7, 2007 | August 9, 2007. |
| 155528 | Michael G. West | 72 FR 37795; July 11, 2007 | September 19, 2007. |
| 156520 | Christopher Ring | 72 FR 39829; July 20, 2007 | September 25, 2007. |
| 157475 | Philip E. Carlin | 72 FR 39829; July 20, 2007 | September 19, 2007. |

Dated: September 28, 2007.
Lisa J. Lierheimer,
*Senior Permit Biologist, Branch of Permits,
 Division of Management Authority.*
 [FR Doc. E7-20236 Filed 10-12-07; 8:45 am]
BILLING CODE 4310-55-P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[1018-AT72]

Draft Mosquito and Mosquito-Borne Disease Management Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997

AGENCY: Fish and Wildlife Service, Department of the Interior.

ACTION: Notice.

SUMMARY: We propose to establish policy that refuge managers will follow concerning mosquito and mosquito-borne disease management on units of the National Wildlife Refuge System. The National Wildlife Refuge System Administration Act (Administration Act), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act),

provides the Refuge System mission. That mission is to “administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” In addition, each refuge “shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established.” We cannot fulfill this mission unless we provide consistent direction to refuge managers and manage the Refuge System as a national system. Therefore, we are developing policies to provide refuge managers clear direction and procedures for making determinations regarding wildlife conservation and public uses of the Refuge System and individual refuges. This draft policy describes the process we will follow to determine if and how to manage mosquito populations on lands administered within the Refuge System. We propose to incorporate this policy as part 601, chapter 7 of the Fish and Wildlife Service Manual.

This draft policy states that “we will allow populations of native mosquito species to function unimpeded unless they cause a human and/or wildlife health threat.” While we recognize mosquitoes are a natural component of most wetland ecosystems, we also recognize they may represent a threat to human and/or wildlife health. We may allow management of mosquito populations on Refuge System lands when those populations pose a threat to the health and safety of the public or a wildlife population. This draft policy outlines the procedures refuge managers will follow in planning and implementing mosquito and mosquito-borne disease management within the Refuge System.

DATES: Comments must be received by November 29, 2007.

ADDRESSES: You may submit comments on this draft policy by mail to Michael Higgins, Biologist, National Wildlife Refuge System, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 670, Arlington, Virginia 22203; by fax to 703-358-2248; or by e-mail to refugesystempolicycomments@fws.gov.

FOR FURTHER INFORMATION CONTACT:

Michael J. Higgins, U.S. Fish & Wildlife Service, National Wildlife Refuge System, 177 Admiral Cochrane Drive, Annapolis, MD 21401, telephone: 410-573-4520, fax: 410-269-0832.

SUPPLEMENTARY INFORMATION: The Improvement Act amends and builds on the Administration Act (16 U.S.C. 668dd-668ee) and provides an organic act for the Refuge System. It states that the Refuge System mission "is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats for the benefit of present and future generations of Americans." It directs us to manage each refuge to fulfill the Refuge System mission as well as the specific purpose(s) for which the refuge was established. The Improvement Act provides compatibility standards for refuge uses and directs the Secretary of the Interior to "ensure that the biological integrity, diversity, and environmental health of the System are maintained."

We based this draft policy for mosquito and mosquito-borne disease management within the Refuge System on these directives. Effective mosquito control results in the removal of a high percentage of one or more target species, although usually temporarily. In addition, one or more nontarget species may be adversely affected by mosquito control practices. The altered ecological communities that may result can impact biological integrity and diversity through disruptions in food webs and other ecological functions. Therefore, we must carefully evaluate any actions we propose to take.

This draft policy states that "we will allow populations of native mosquito species to function unimpeded unless they cause a human and/or wildlife health threat." While we recognize mosquitoes are a natural component of most wetland ecosystems, we also recognize they may represent a threat to human and/or wildlife health. We may allow management of mosquito populations on Refuge System lands when those populations pose a threat to the health and safety of the public or a wildlife population. This draft policy outlines the procedures refuge managers will follow in planning and implementing mosquito and mosquito-borne disease management within the Refuge System.

The draft policy relies on using scientific principles to identify and respond to public and wildlife health threats from refuge-based mosquitoes.

Health threat categories will be identified based on local conditions and the local history of mosquito-associated health threats. We will use local monitoring data of mosquitoes and disease to determine the current threat level and the corresponding appropriate refuge response. During this process, we will work closely with Federal, State, and/or local public health authorities that have expertise in vector-borne diseases and State fish and wildlife agencies in developing mosquito management plans prior to an outbreak of mosquito-borne disease and in determining when human or wildlife health threats or high risk human health situations exist.

Refuges with current mosquito control or mosquito monitoring programs must prepare a mosquito management plan. In addition, refuges where a State or local public health agency identifies a potential health threat must prepare a mosquito management plan. A potential health threat does not imply a need to manage mosquitoes on a refuge, but it does trigger the planning process for monitoring and potential management. Because not all refuges are located in areas where mosquito management is an issue, the draft policy does not require every refuge to prepare a mosquito management plan. As a result, there may be cases where an outbreak of mosquito-borne disease occurs at or near a refuge that has not developed such a plan. We included a section that describes the procedures we would follow in such high health risk situations.

The draft policy includes procedures to follow to reduce threats from refuge-based mosquitoes. These procedures follow an integrated pest management approach and include nonpesticide actions that may be taken to reduce mosquito production.

The purpose of this policy is to provide refuge managers with a process to follow in planning and implementing mosquito and mosquito-borne disease management. Each refuge manager must consider the refuge establishing purposes as well as local conditions when following these procedures.

Comment Solicitation

We seek public comments on this draft mosquito and mosquito-borne disease policy and will consider comments and any additional information received during the 45-day comment period. You may submit comments on this draft policy by mail to Michael Higgins, Biologist, National Wildlife Refuge System, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 670, Arlington, Virginia

22203; by fax to 703-358-2154; or by e-mail to refugesystempolicycomments@fws.gov. Please submit Internet comments as an ASCII file, avoiding the use of special characters and any form of encryption. Please also include "Attn: 1018-AT72" and your full name and return mailing address in your Internet message. If you use only your e-mail address, we will consider your comment to be anonymous and will not consider it in the final rule. If you do not receive a confirmation from the system that we have received your Internet message, contact us directly at (703) 358-2036. You may hand deliver comments to the address listed above.

Our practice is to make comments, including names and addresses of commenters, available for public review during regular business hours. Individual commenters may request that we withhold their home address from the record, which we will honor to the extent allowable by law. In some circumstances, we would withhold from the record a commenter's identity, as allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. However, we will not consider anonymous comments. We will make all comments from organizations or businesses and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Required Determinations*Regulatory Planning and Review (Executive Order (E.O.) 12866)*

In accordance with the criteria in Executive Order 12866, this document is not a significant regulatory action and does not require an assessment of potential costs and benefits under section 6(a)(3) of that Order. The Office of Management and Budget (OMB) makes the final determination under E.O. 12866.

(1) This document would not have an annual economic effect of \$100 million or adversely affect an economic sector, productivity, jobs, the environment, or other units of the government. A brief assessment to clarify the costs and benefits associated with this proposed policy follows.

Proposed Change

Existing Departmental and refuge policies do not address mosquito management in detail and do not provide standard procedure for determining what measures to take on refuges regarding management of

mosquito and mosquito-borne disease. The draft policy provides a standard process to follow and criteria to consider when making such decisions. The draft policy would provide for consistency in protecting wildlife and habitats and in making provisions for protecting public health from mosquito-borne health threats.

This draft policy would affect refuges that have prevalent mosquito populations. The variation from status quo at a refuge will depend on how different current procedures at that refuge are from the procedures that would be followed under a standardized process. In addition, local conditions vary from year to year, and the responding management actions must also vary. Based upon past implementation of mosquito control, we expect affected refuges to include those located in California, Washington, Oregon, Idaho, Texas, Michigan, South Carolina, Florida, Louisiana, New York, Connecticut, Massachusetts, New Jersey, Delaware, Pennsylvania, Colorado, Utah, and Montana. Approximately 60 refuges would be affected by this draft policy. Currently, approximately 40 refuges implement various mosquito control activities.

Costs Incurred

Any costs related to this rulemaking would be borne by each individual refuge and would generally involve costs associated with planning and developing mosquito management plans. No additional costs are expected to be incurred by State or local agencies beyond their usual monitoring costs. The distribution of information would be mostly limited to refuge personnel discussing with visitors the risks and precautions at visitor centers. We expect informing the public about mosquito populations and any possible health risks to incur minimal costs, if any. Refuge personnel would continue to take measures to manage mosquito populations during their normal activities. These standard measures would include such actions as removing artificial breeding sites. State and local officials would predominantly conduct monitoring and surveillance, which are voluntary activities. About 40 refuges currently issue special use permits for monitoring and surveillance activities. Refuges issue special use permits for activities conducted on the refuge. A permit contains guidelines and/or restrictions that apply to a specific activity. For those refuges that may allow new monitoring or surveillance, each permit would require approximately 8 hours by refuge personnel. Thus, approximately 160

hours would be allocated by refuge personnel to complete the permits (20 refuges \times 8 hours). These permit requirements would occur annually, depending on the mosquito population levels. Each contingency plan would be specific to each refuge and would be a one-time cost. Currently, about four to five refuges have already constructed mosquito management plans. We estimate that each plan would require approximately 40 hours by refuge personnel. Accordingly, about 2,200 hours would be allocated to complete the contingency plans by the affected refuges (55 refuges \times 40 hours).

Benefits Accrued

(1) This draft policy provides policy and procedures for refuge personnel to follow in making provisions to protect public health from mosquito-related health threats. This draft policy follows the requirements of the Administration Act, as amended, by requiring that activities associated with mosquito management be compatible with refuge purposes. It provides a procedure to follow Systemwide. This will ensure consistency in the process, although the outcome will vary based on refuge purposes and local conditions. We do not expect visitation to refuges to change as a result of this draft policy.

(2) This draft policy will not create inconsistencies with other agencies' actions. This draft policy pertains solely to the management of the Refuge System. In the event that the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity in a refuge to protect the health and safety of the public or any fish or wildlife population, we will work with the appropriate agency to ensure consistency.

(3) This draft policy will not materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients. This draft policy does not affect entitlement programs.

(4) This draft policy will not raise novel legal or policy issues. This draft policy provides a procedure for refuge managers to follow in mosquito management throughout the Refuge System.

Regulatory Flexibility Act

Under the Regulatory Flexibility Act (as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the

effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions) (5 U.S.C. 601 *et seq.*). However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule would not have a significant economic impact on a substantial number of small entities. Thus, for a regulatory flexibility analysis to be required, impacts must exceed a threshold for "significant impact" and a threshold for a "substantial number of small entities." SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule would not have a significant economic impact on a substantial number of small entities. We certify that this rule would not have a significant economic effect on a substantial number of small entities as defined under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). An initial/final regulatory flexibility analysis is not required. The following discussion explains our certification.

SBREFA does not explicitly define either "substantial number" or "significant economic impact." Consequently, to assess whether a "substantial number" of small entities is affected by this designation, it is necessary to consider the relative number of small entities likely to be impacted in the area. Similarly, the relative impact on the revenues of small entities is used in determining whether or not entities incur a "significant economic impact." Small entities include small organizations, such as independent nonprofit organizations, and small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents, as well as small businesses (13 CFR 121.201).

Because this draft policy is not expected to affect activities in the surrounding area or to incur costs to the public, it would not have a significant effect on small businesses engaged in activities around the impacted refuges. Small governmental jurisdictions and independent nonprofit organizations are not expected to be affected. Therefore, we certify that this document would not have a significant economic effect on a substantial number of small entities as defined under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*). No further regulatory flexibility analysis is required. Accordingly, a small entity compliance guide is not required.

The proposed policy is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. We anticipate no

significant employment or small business effects. This draft policy:

(1) Does not have an annual effect on the economy of \$100 million or more.

(2) Will not cause a major increase in costs or prices for consumers, individual industries, Federal, State, and/or local government agencies, or geographic regions. This draft policy should have no effect on the costs or prices.

(3) Does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States-based enterprises to compete with foreign-based enterprises. This draft policy does not make major changes to current policy. It simply provides a more consistent process for all refuge managers to follow in managing mosquito populations on refuges. Therefore, this document will have no measurable economic effect on the wildlife-dependent industry, which has annual sales of equipment and travel expenditures of \$72 billion nationwide.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501, *et seq.*), this draft policy applies to management of federally owned refuges, and it does not impose an unfunded mandate on State, local, or tribal governments or the private sector of more than \$100 million per year. The draft policy does not have a significant or unique effect on State, local, or tribal governments or the private sector.

Takings (E.O. 12630)

In accordance with E.O. 12630, the draft policy does not have significant takings implications. This draft policy will affect only how refuge managers plan actions to manage mosquitoes and mosquito-borne diseases on refuges.

Federalism Assessment (E.O. 13132)

This draft policy does not have sufficient federalism implications to warrant the preparation of a federalism assessment under E.O. 13132. In preparing this draft policy, we received input from State and local governments.

Civil Justice Reform (E.O. 12988)

In accordance with E.O. 12988, the Office of the Solicitor has determined that the draft policy does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the order. The draft policy will clarify established procedures for managing refuge lands.

Energy Supply, Distribution, or Use (E.O. 13211)

On May 18, 2001, the President issued E.O. 13211 on regulations that significantly affect energy supply, distribution, and use. Under E.O. 13211 agencies must prepare statements of energy effects when undertaking certain actions. Because this draft policy only provides procedures for managing mosquitoes and mosquito-borne disease on refuges, it is not a significant regulatory action under E.O. 12866 and is not expected to significantly affect energy supplies, distribution, and use. Therefore, this action is not a significant energy action and no statement of energy effects is required.

Consultation and Coordination With Indian Tribal Governments (E.O. 13175)

In accordance with E.O. 13175, we evaluated possible effects on federally recognized Indian tribes and determined that there are no effects. We coordinate management actions on refuges with tribal governments having adjoining or overlapping jurisdiction. This draft policy is consistent with and not less restrictive than tribal reservation rules.

Paperwork Reduction Act

This draft policy does not contain any information collection requirements other than those already approved by the Office of Management and Budget under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*) (OMB Control Number 1018-0102). See 50 CFR 25.23 for information concerning that approval. An agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

Endangered Species Act Section 7 Consultation

The Service has determined that this draft policy will not affect listed species or designated critical habitat. Therefore, consultation under section 7 of the Endangered Species Act is not required. The basis for this conclusion is that the draft policy establishes the process for determining when a mosquito and mosquito-borne disease management plan must be completed. The ultimate decision to allow or otherwise implement a particular action is the causative agent with respect to affecting listed species or their critical habitat. We will conduct section 7 consultations when developing comprehensive conservation plans and step-down management plans, including mosquito and mosquito-borne disease management plans, for refuges.

National Environmental Policy Act (NEPA)

We ensure compliance with NEPA (42 U.S.C. 4332(C)) when developing refuge comprehensive conservation plans and step-down management plans, including mosquito and mosquito-borne disease management plans. In accordance with 516 DM 2, appendix 1.10, we have determined that this policy is categorically excluded from the NEPA process because it is limited to policies, directives, regulations, and guidelines of an administrative, financial, legal, technical, or procedural nature or the environmental effects of which are too broad, speculative, or conjectural to lend themselves to meaningful analysis. Site-specific proposals, as indicated above, will be subject to the NEPA process.

U.S. Fish and Wildlife Service

Draft Mosquito and Mosquito-Borne Disease Management Policy (601 FW 7)

U.S. Fish and Wildlife Service

National Wildlife Refuge System

7.1 What is the purpose of this chapter?

This chapter provides policy for refuge managers to help them determine how and when to manage mosquito populations on lands administered within the National Wildlife Refuge System (Refuge System).

7.2 What is the mosquito and mosquito-borne disease management policy?

A. It is Refuge System policy to allow populations of native mosquito species to exist unimpeded unless they pose a specific wildlife and/or human health threat. We recognize that mosquitoes are a natural component of most wetland ecosystems, and that they also may represent a threat to human and wildlife health.

B. When necessary to protect the health and safety of the public or a wildlife population, we allow management of mosquito populations on Refuge System lands using effective means that pose the lowest risk to wildlife and habitats.

C. Before we use any method to manage mosquito populations within the Refuge System, we must determine that it is compatible with the purpose(s) of an individual refuge and the Refuge System mission and complies with all applicable Federal laws. We can make an exception to this policy in the event that the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity in a refuge to protect the health and safety of the

public or any fish or wildlife population.

D. Except during high risk disease situations where we need to take action quickly, we must give full consideration to the integrity of nontarget populations and communities when considering compatible habitat management and pesticide uses for mosquito control. Mosquito control procedures must also be consistent with integrated pest management (IPM) strategies and with existing pest management policies of the Department of the Interior (DOI) and the Fish and Wildlife Service (Service) (517 DM 1 and 30 AM 12). Even during high risk disease situations we require mosquito population monitoring data that indicate intervention is necessary, as well as appropriate pesticide review, although these will be expedited so that any necessary intervention measures will not be delayed (see section 7.17)

E. We allow pesticide treatments for mosquito population control on Refuge System lands only when local, current mosquito population monitoring data have been collected and indicate that refuge-based mosquito populations are contributing to a human or wildlife health threat.

7.3 What is the scope of this policy?

This policy applies to all units of the Refuge System where we have jurisdiction over such actions, whether the Service or an authorized outside agency performs mosquito management.

7.4 What is the authority for this chapter?

The authority for this chapter is the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Administration Act) (16 U.S.C. 668dd–668ee). The Administration Act:

A. Provides authority for adopting rules and establishing policies for managing the Refuge System and governing refuge uses.

B. Prohibits uses that are not compatible with the purpose(s) of an individual refuge and the Refuge System mission.

C. Requires that we administer the Refuge System as “* * * a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” The Administration Act defines wildlife as “any wild member of the animal kingdom.”

D. Directs the Secretary to “* * * ensure that the biological integrity,

diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans.” The Secretary can also allow or initiate activities on a refuge to protect the health and safety of the public or any fish or wildlife population, notwithstanding any other requirements of the Act.

7.5 What other statutes and policies may be relevant to mosquito control and what additional documentation does the Service require to monitor and control mosquitoes within the Refuge System?

A. National Environmental Policy Act (NEPA) (42 U.S.C. 4321–4347).

(1) Categorical Exclusions. Under most circumstances, we may categorically exclude monitoring and surveillance activities under existing DOI NEPA procedures for data collection and inventory. (For more information, see 516 DM 2, Appendix 1.6; 516 DM 8.5B(1); and 516 DM 2, Appendix 2 (categorical exclusions).) In addition, some habitat management actions as described in section 7.9B may be categorically excluded. If a proposed refuge mosquito management activity qualifies as a categorical exclusion, refuges should document it in an environmental action statement (EAS). We generally may not categorically exclude intervention measures such as pesticide applications for mosquito-borne health threats.

(2) Environmental Assessments. Refuges that have completed the NEPA process for mosquito management should ensure that they addressed the environmental consequences of potential intervention measures. Refuges that have not completed the NEPA process for mosquito management should prepare an environmental assessment (EA) if they expect they might need to implement intervention measures, such as applying pesticides. You may reasonably expect that intervention measures are likely if the State or local public health agency has documented a potential health threat from refuge-based mosquitoes (see section 7.13 for information about determining health threats).

(a) In a non-emergency situation, when a State/local public health agency documents a potential threat, you must complete an EA with the appropriate finding before conducting substantial intervention activities.

(b) You must consider local conditions in an EA. When assessing the potential environmental effects of pesticide applications, consider such factors as the:

(i) Spatial and temporal extent of the treatment,

(ii) Toxicity and specificity of the proposed pesticide(s) to fish and wildlife populations,

(iii) Persistence of the proposed pesticide(s), and the

(iv) Alternatives to the proposed action (e.g., different pesticides, using larvicides versus adulticides, compatible habitat management).

(c) To minimize potential impacts, identify and document restricted areas and activities in an EA. If a finding of no significant impact (FONSI) cannot be made, prepare an environmental impact statement (EIS).

(3) NEPA in Emergency Situations. In a situation where there is a high risk for mosquito-borne disease, you may need to take immediate intervention measures without completing a NEPA review. If you cannot categorically exclude the necessary measures, contact the Regional NEPA coordinator for guidance. After the high risk disease situation has ended, you must complete proper NEPA documentation that addresses future mosquito management activities on the refuge.

B. Endangered Species Act (16 U.S.C. 1531–1544). Comply with section 7 for listed and candidate species (refer to the Endangered Species Consultation Handbook, U.S. Fish and Wildlife Service and National Marine Fisheries Service, 1998). Complete section 7 compliance in conjunction with the refuge-specific mosquito management plan (Exhibit 1).

You must submit consultation documents at least 135 days prior to beginning proposed mosquito management activities. The DOI pesticide use policy (517 DM 1) and the Service pest management policy (30 AM 12) do not allow for adverse impacts to listed species from pesticides. If the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity in a refuge to protect the health and safety of the public or any fish or wildlife population before completing Endangered Species Act section 7 compliance, contact the local ES office for recommendations.

C. Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.). On Refuge System lands, we may only use pesticides that are registered with the Environmental Protection Agency. We must apply them according to the pesticide label directions.

D. Compatibility Determination (50 CFR 26.41 and 603 FW 2). We must complete a compatibility determination before we allow an outside agency to perform surveillance and intervention activities unless the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity

in a refuge to protect the health and safety of the public or any fish or wildlife population. See 603 FW 2 for more information on compatibility.

E. Pest Management and Pesticide Use Policies (516 DM 1 and 30 AM 12). Follow all DOI and Service pest management and pesticide use policies. Before applying any pesticide to Refuge System lands, the appropriate Regional or National IPM coordinator must review and approve the pesticide use proposal (PUP). The National IPM coordinator must approve the use of all adulticides. We may expedite PUP approvals during high risk disease situations where we need to take action quickly to protect human or wildlife health. If an outside agency applies pesticides, as is often the case, we require a special use permit (SUP), memorandum of understanding, or other agreement. The agreement must include the justification for pesticide applications, identify the specific areas to be treated, and list any restrictions or conditions that they must follow before, during, or after treatment. Preparation of SUPs, PUPs, and other compliance documentation will be expedited during high risk disease situations so that any necessary intervention measures will not be delayed (see section 7.17)

7.6 What are the principles underlying this policy?

A. Wildlife Conservation.

(1) The Administration Act clearly identifies wildlife conservation as a priority of the Refuge System. House Report 105–106, which accompanies the amendments to the Administration Act, states that “* * * the fundamental mission of our Refuge System is wildlife conservation: Wildlife and wildlife conservation must come first.” The term “wildlife” includes all vertebrate and invertebrate species.

(2) In addition to undertaking the task of wildlife conservation, Refuge System managers must also consider impacts to federally listed threatened and endangered species and candidate species. This is particularly important to refuges established specifically for listed species conservation and recovery. To help determine these impacts, refuge managers can coordinate with local Ecological Services field office staff (both endangered species and environmental contaminants staff), other members of the species recovery team, and the respective State fish and wildlife agencies.

(3) Both the Service and the State fish and wildlife agencies have authorities and responsibilities for managing fish and wildlife on national wildlife refuges as described in 43 CFR part 24.

Consistent with the Administration Act, as amended, the Director interacts, coordinates, cooperates, and collaborates with the State fish and wildlife agencies in a timely and effective manner on the acquisition and management of national wildlife refuges. The Director ensures that Refuge System regulations and management plans are, to the extent practicable, consistent with State laws, regulations, and management plans. We charge refuge managers, as the designated representatives of the Director at the local level, with carrying out these directives. We will provide State fish and wildlife agencies timely and meaningful opportunities to participate in the development and implementation of programs conducted under this policy. The most common method for State fish and wildlife agency involvement is through their participation on the comprehensive conservation plan (CCP) planning teams. We provide an opportunity for the State fish and wildlife agencies to participate in the development and implementation of program changes made outside of the CCP process, including development of mosquito management plans. For health threats involving wildlife, we will consult with the State fish and wildlife agency. Further, we will continue to provide State fish and wildlife agencies opportunities to discuss and, if necessary, elevate decisions within the hierarchy of the Service.

B. Protection of Public Health.

Although the fundamental goal of the Refuge System is wildlife conservation, we are committed to protecting the public from refuge-based mosquitoes that present a threat to human health. We manage such health threats using methods that we determine are compatible with the purpose(s) of the refuge and the mission of the Refuge System. We may make exceptions to this policy in the event that, under the emergency provision of the Administration Act, the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity in a refuge to protect the health and safety of the public or any fish or wildlife population. We recognize that equines may also become infected by certain mosquito-borne diseases. Given that infection by mosquito-borne pathogens in equines and humans represent similar risks to public health, appropriate measures we take to protect human health from these diseases would also offer similar protection to equines.

C. Mosquito Management and the Protection of Biological Integrity,

Diversity, and Environmental Health. We manage mosquitoes in such a way as to meet our statutory obligations to protect the biological integrity of refuges while meeting our policy obligations and our social obligation to protect the health and well-being of the human communities surrounding refuges. Mosquito management strategies and the altered ecological communities that may result can potentially impact the biological integrity, diversity, and environmental health of refuge lands that we must maintain under the Administration Act and 601 FW 3.

(1) Using chemical or other control agents can affect environmental health and possibly impact genetic configuration within species if they develop pesticide resistance.

(2) Removing target and nontarget organisms from ecological communities lowers biological diversity (even though it is usually temporarily) and may impact biological integrity by altering food webs and species composition.

7.7 What terms do you need to know to understand this chapter?

A. Action Threshold. Mosquito population levels that trigger integrated pest management (IPM) actions to manipulate mosquito populations.

B. Adulticide. Killing adult mosquitoes or a pesticide that kills adult mosquitoes.

C. Biological Diversity. The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and communities and ecosystems in which they occur. (See 601 FW 3 for more information on biological diversity.)

D. Biological Integrity. Biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities. (See 601 FW 3 for more information on biological integrity.)

E. Environmental Health. Composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions, including the natural abiotic processes that shape the environment. (See 601 FW 3.)

F. Enzootic. A relatively consistent prevalence of disease in animals. The term is comparable to endemic, but refers to animals.

G. Health Threat. An adverse impact to the health of human or wildlife populations from mosquitoes identified and documented by Federal, State, and/or local public health authorities.

H. Integrated Pest Management (IPM). A sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.

I. Larvicide. Killing mosquito larvae, or a pesticide that kills mosquito larvae.

J. Mosquito-Borne Disease. An illness produced by a pathogen that mosquitoes transmit to humans and other vertebrates. The major mosquito-borne pathogens presently known to occur in the United States that are capable of producing human illness are the viruses causing eastern equine encephalitis, western equine encephalitis, St. Louis encephalitis, West Nile encephalitis/fever, LaCrosse encephalitis, and dengue, as well as the protozoans causing malaria.

K. Mosquito-Borne Disease Surveillance. Activities associated with detecting pathogens causing mosquito-borne diseases, such as testing adult mosquitoes for pathogens or testing reservoir hosts for pathogens or antibodies.

L. Mosquito Management. Any activity designed to inhibit or reduce populations of flies in the family Culicidae. It includes physical, biological, cultural, and chemical means of population control directed against any life stage of mosquitoes.

M. Mosquito Population Monitoring. Activities associated with collecting quantitative data to determine mosquito species composition and to estimate relative changes in mosquito population sizes over time.

N. Nontarget Organisms. Species or communities other than those designated for population control.

O. Public Health Authority. A Federal, State, and/or local agency that has health experts with training and expertise in mosquitoes and mosquito-borne diseases and that has the official capacity to identify health threats and determine when there is a high risk for serious human disease or death from mosquitoes.

P. Pupacide. A pesticide that kills the pupal stage of mosquitoes.

Q. Refuge-Based Mosquitoes. Mosquitoes that are produced within, or occur on, a refuge.

R. Reservoir Host. A species in which a pathogen is maintained over time. Reservoir hosts are capable of transferring the pathogen to a vector.

S. Vector. An organism, such as an insect or tick, that is capable of acquiring and transmitting a disease-causing agent, or pathogen, from one vertebrate host to another, or the act of transmitting a pathogen in such a manner.

7.8 How does the Service protect human and/or wildlife health from threats associated with refuge-based mosquitoes?

We take the following approaches, each of which we describe in more detail in sections 7.9 through 7.17.

A. Use of standard operating procedures based on an IPM approach (see section 7.9).

B. Development of mosquito management plans (see sections 7.10 and 7.11).

C. Determining health threats (see section 7.12).

D. Monitoring to determine appropriate response (see section 7.13).

E. Surveillance for mosquito-borne disease (see section 7.14).

F. Implementing treatment options (see section 7.15).

G. Education and outreach (see section 7.16).

H. High disease risk situations (see section 7.17).

7.9 What standard operating procedures are in place to reduce threats to human and wildlife health from mosquitoes?

When necessary to protect human and wildlife health, we reduce potential mosquito-associated health threats using an IPM approach. When practical, the approach may include compatible actions that reduce mosquito production and do not involve pesticides. We consider the procedures described below as long-term practices to reduce persistent potential mosquito-associated health threats that Federal, State, and/or local public health authorities have identified. Except in cases where the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity in a refuge to protect the health and safety of the public or any fish or wildlife population, where there is a need to take action immediately, any procedures we use to reduce mosquito production must be compatible with refuge purposes and the Refuge System mission. The procedures also must give full consideration to the safety and integrity of nontarget organisms and communities, including federally listed threatened and endangered species and candidate species.

A. We remove or otherwise manage artificial breeding sites such as tires, tanks, or similar debris/containers, where possible, to eliminate conditions that favor mosquito breeding, regardless of whether they are a health threat.

B. When enhancing, restoring, or managing habitat for wildlife, we will consider using specific actions to reduce

mosquito populations that do not interfere with refuge purposes or wildlife management objectives. For example, when manipulating water levels for managing wetlands, you can disrupt mosquito life cycles by timing flood-up and draw-downs. You also can manage vegetation in such a way that discourages mosquitoes from laying eggs.

C. Except when we determine it is appropriate during circumstances where the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity in a refuge to protect the health and safety of the public or any fish or wildlife population, we prohibit habitat manipulations for mosquito management (such as draining or maintaining high water levels inappropriate for other wildlife) that conflict with wildlife management objectives.

D. We will consider introducing predators to manage mosquitoes only if we can contain such introductions. To introduce predators, we require the following:

(1) We must be able to demonstrate effectiveness of the planned introduction.

(2) The refuge must evaluate the introduction for potential adverse impacts to nontarget organisms and communities to ensure the introduction will not interfere with the purpose(s) of the refuge or other refuge management objectives.

(3) We must have appropriate procedures in place for all species introductions to ensure that we do not release other species with the desired introductions.

(4) For introductions of nonnative predators, the refuge must prepare:

(a) A compatibility determination,

(b) A written plan for containment of the introduced species to the desired location(s), and

(c) The appropriate level of compliance with section 7 of the Endangered Species Act evaluating potential effects of the introduced predator on federally listed threatened or endangered species and candidate species.

(d) The appropriate level of NEPA compliance.

(5) In compliance with Executive Order 13112, we will not authorize any activities likely to cause or promote the introduction or spread of invasive species. (See 601 FW 3.)

7.10 When does the Service develop mosquito management plans to help reduce threats to human and wildlife health from mosquitoes?

We develop refuge-specific mosquito management plans (see Exhibit 1) at the field station level for refuges where potential or existing mosquito-associated health threats have been identified and documented, or are reasonably expected to occur. We develop these plans in coordination with Federal, State, and/or local public health authorities that have expertise in vector-borne diseases, vector control agencies, and State fish and wildlife agencies.

A. The refuge may need to develop a plan if there has been documentation of mosquito-borne disease activity within flight range of refuge-based mosquito species in the previous year.

B. Refuges with an ongoing mosquito or disease monitoring program must develop refuge-specific mosquito management plans.

C. Identification and documentation of a potential human and/or wildlife health threat from refuge-based mosquitoes (see section 7.11) triggers the development of a refuge-specific mosquito management plan. Federal, State, and/or local public health authorities identify and document a mosquito-associated human health threat and bring it to the attention of the refuge manager. Appropriate documentation may include species-specific adult mosquito monitoring data from the refuge or areas adjacent to the refuge that indicate an abundance of species known to vector one or more endemic/enzootic diseases or otherwise adversely impact human or wildlife health. For refuges without an ongoing mosquito or disease monitoring program, mosquito-borne disease activity near the refuge may indicate a health threat or a situation in which mosquito management needs to be undertaken quickly (refer to section 7.17). The identification and documentation of a potential mosquito-associated health threat will not necessarily imply a need for us to manage mosquito populations, but may indicate the need to initiate on-refuge monitoring (if not already underway) and mosquito management planning.

D. We work collaboratively with Federal, State and/or local public health authorities in the identification of mosquito-associated health threats. However, the Secretary maintains the authority to act independently as necessary to protect the health and safety of the public or any fish or wildlife population.

E. Mosquito-borne disease and vector management may not be an issue on many Service lands, and not every refuge needs to develop a plan.

F. In the event that the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity in a refuge to protect the health and safety of the public or any fish or wildlife population, when there is a need to take action immediately, we allow refuges to manage mosquito populations even if they do not have a mosquito management plan (see section 7.17 for additional guidance).

7.11 What is in a mosquito management plan?

We base mosquito management plans on IPM principles. The Regional IPM coordinator reviews them, and the Regional and California/Nevada Operations Office (CNO) Refuge chief approves or disapproves them. Mosquito management plans consist of four parts: Health threat determinations, mosquito population monitoring, surveillance for mosquito-borne disease, and treatment options. See Exhibit 2 for details.

7.12 How does the Service make determinations about health threats caused by mosquitoes?

A. We determine if there are health threats at the local level based on historical incidence of mosquito-borne health threats and current, local monitoring of mosquito populations and disease activity. (See section 7.13 for more information on monitoring.) We work with local, State, or Federal public health authorities with expertise in mosquitoes and mosquito-borne disease epidemiology to identify refuge-specific categories of mosquito-associated human health threats based on monitoring data. Where local or State public health expertise in mosquito-borne disease epidemiology is lacking, we consult with the Department of Health and Human Services Centers for Disease Control and Prevention (CDC) to develop these categories.

B. Federal, State, and/or local public health authorities with jurisdiction inclusive of refuge boundaries determine the human health threat level using current local monitoring data (see section 7.13C). Wildlife health experts from Federal or State wildlife agencies determine if there are threats to wildlife health because of mosquitoes.

C. Once we identify a health threat through monitoring data, State/local public health authorities or vector control agencies may take the pre-determined response(s) developed for that threat category (see Exhibit 2). We

also respond appropriately when neighboring State/local public health authorities determine there is a health threat.

D. Following guidelines established by the CDC, threat categories will represent a hierarchical scale of increasing risk to human or wildlife health based on disease activity and mosquito vector population numbers, and will include appropriate actions to take for each threat level category. Such a locally developed health threat matrix will provide the basis for all future mosquito management decisions and activities on a refuge, so threat level categories and responses should be as specifically defined as practical.

E. If we cannot agree with other agencies on the determination of health threats, threshold values, or other components of the mosquito management plan, we will work with the public health and vector control agencies to identify third-party agencies or individuals with appropriate expertise in mosquito biology and vector-borne disease ecology for further guidance.

7.13 How does the Service monitor mosquito populations to determine if a response is necessary and, if so, what the appropriate response is?

A. The objectives of mosquito population monitoring are to:

- (1) Establish baseline data on species and abundance,
- (2) Map breeding and/or harboring habitats, and
- (3) Estimate relative changes in population sizes for making IPM decisions to reduce mosquito populations when necessary.

B. We use an approach based on specific health threats and refuge mosquito population monitoring data to determine the appropriate refuge mosquito management response (see Exhibit 2).

(1) Monitoring should occur at any time mosquitoes are active, even when there is no evidence of mosquito-borne disease present.

(2) Monitoring protocols specify detailed sampling techniques for larval and adult mosquitoes. When possible, identify mosquitoes to the species level.

C. Human and wildlife health threats from mosquitoes may vary depending on geographic area and time, and we must determine the threat at the local level. State/local public health authorities and vector control agencies will be responsible for monitoring mosquito populations, conducting disease surveillance, and applying pesticide treatments. We recognize the importance of monitoring mosquito

populations to document species composition and estimate their size and distribution because we use this information to make IPM decisions. We allow State/local public health authorities and vector control agencies to monitor mosquito populations on Refuge System lands as long as monitoring is compatible with the purpose(s) of the refuge.

D. Refuges can issue an SUP, memorandum of understanding, or other agreement to allow compatible monitoring of larval and adult mosquito populations. To avoid harm to wildlife or habitats, access to traps and sampling stations must meet the compatibility requirements found in 603 FW 2 and may be subject to refuge-specific restrictions. Where federally listed or candidate species are present, monitoring methods must undergo the appropriate level of compliance with section 7 of the Endangered Species Act in order to determine whether or not such monitoring programs will adversely affect the listed or candidate species.

E. We expect the extent and intensity of a monitoring program to vary according to the potential and historical incidence of mosquito-associated health threats, as well as the resources available to the refuge and the public health authority or vector control district.

F. If a public health authority or vector control agency is not available to conduct monitoring, the mosquito management plan will identify the conditions under which refuge staff will initiate emergency monitoring. Refuges that want to monitor mosquito populations themselves may do so. They should outline their activities in the refuge-specific contingency plan (see Exhibit 1), and include mosquito monitoring protocols in the refuge inventory and monitoring plan. (See 701 FW 2 for more information about inventorying and monitoring populations.)

7.14 How does the Service use surveillance for mosquito-borne disease to reduce threats to human and wildlife health from mosquitoes?

We allow Federal, State, and/or local public health authorities or vector control agencies to perform compatible mosquito-borne disease surveillance on Refuge System lands.

A. The objectives of mosquito-borne disease surveillance are to:

- (1) Detect the presence of pathogens,
- (2) Estimate changes in disease or pathogenic activity, and
- (3) Assess human and wildlife health threats due to mosquitoes.

B. Federal, State, and/or local public health and wildlife management authorities may use appropriate documentation of previous or current mosquito-borne disease activity adjacent to the refuge to identify potential or existing health threats.

C. Disease surveillance adjacent to the refuge should be within flight range of vector species found on the refuge.

D. State and local public health authorities or vector control agencies are generally responsible for other disease surveillance methods, such as monitoring disease activity in reservoir hosts for pathogens or antibodies, collecting adult mosquito samples using live traps, and testing the samples in same-species pools for virus.

(1) On Refuge System lands, we may authorize these activities, and they must meet the compatibility requirements in 603 FW 2.

(2) Approved, compatible surveillance activities on the refuge will include specific, detailed methodologies and the number and location of detection stations.

(3) Where federally listed or candidate species are present, surveillance methods must undergo the appropriate level of compliance with section 7 of the Endangered Species Act in order to determine whether or not such monitoring programs will adversely affect the listed or candidate species.

(4) Surveillance for mosquito-borne disease may involve monitoring and testing wildlife, especially birds and mosquitoes, and testing captive sentinel birds on or adjacent to the refuge. We discourage using caged sentinel chickens on refuges for reservoir host surveillance due to the risk of spreading disease to wild birds.

E. Refuge employees note dead or sick wildlife during their routine outdoor activities. In most cases, this will only involve passive surveillance for affected wildlife.

(1) Refuges identify a facility to test dead or sick wildlife for mosquito-borne pathogens in mosquito management plans (also see Exhibit 1).

(2) Refuge personnel receive instruction on proper procedures for safely collecting, handling, shipping, or disposing of potentially infected wildlife.

(3) If wildlife specimens from a refuge test positive for mosquito-borne disease, we provide these results to the State and local public health authorities, State fish and wildlife agencies, and the refuge supervisor immediately.

7.15 How does the Service determine what treatment options to use for mosquitoes?

A. We establish numerical action thresholds in collaboration with Federal, State, and/or local public health authorities and vector control agencies and identify them in the mosquito management plan (see Exhibit 2).

(1) The action thresholds represent mosquito population levels that may require intervention measures.

(2) We develop thresholds considering many factors, including those listed in Exhibit 3.

(3) Thresholds are species-specific (or species-group-specific) for larval, pupal, and adult mosquito vectors and reflect the potential significance of a particular species or group of species in a particular health threat. For example, mosquito vector species known to be important in the transmission cycle of a disease may have a lower action threshold than species with lesser transmission roles (see Exhibit 3).

(4) We compare current mosquito population monitoring data to the established action thresholds.

(5) We implement intervention measures only when current mosquito population estimates, as determined by current mosquito monitoring data, meet or exceed the established action thresholds.

B. We choose treatment based on our pest management policy (30 AM 12). We base the choice on the following, which appear in order of preference:

- (1) Human safety and environmental integrity,
- (2) Effectiveness, and
- (3) Cost.

C. We use human and wildlife mosquito-associated health threat determinations combined with refuge mosquito population estimates to determine the appropriate refuge mosquito management response (see Exhibit 2).

D. Where federally listed or candidate species are present, we use Endangered Species Act section 7 compliance information to assist in the decision-making process.

E. After we evaluate all other reasonable IPM actions, we may allow pesticide treatments to control mosquitoes on Refuge System lands.

(1) Before applying pesticides to Refuge System lands, we must have an approved PUP in place.

(2) We determine the most appropriate pesticide treatment options based on monitoring data for the relevant mosquito life stage. We use current monitoring data for larval,

pupal, and adult mosquitoes to determine the need for larvicides, pupacides, and adulticides, respectively.

(3) We do not allow pesticide treatments for mosquito control on Refuge System lands without current mosquito population data indicating that such actions are warranted.

F. The mosquito management plan also identifies more aggressive monitoring and control efforts as health threat risk levels increase (see Exhibit 2). If we determine pesticide treatments are necessary to quickly reduce mosquito populations, we may allow appropriate pesticides based on the nature of the threat.

(1) Larvicides. When we can reduce health threats by using pesticides that kill mosquito larvae (larvicides), we choose an effective larvicide that causes the least impact to nontarget organisms.

(2) Pupacides. We limit the need for pupacides by treating threatening larval populations in a timely manner. We consider using pupacides only when there is a documented health threat. We select an effective pupacide that causes the least impact to nontarget organisms.

(3) Adulticides. We allow the use of adulticides only when there are no practical and effective alternatives to reduce a health threat. The mosquito management plan will identify best management practices to reduce nontarget impacts in cases where we use adulticide treatment.

G. We work with public health and vector control agencies to develop communication procedures, particularly to address high risk disease situations. Timely communication at the outset of a disease outbreak will speed any necessary response. We share contact information with other agencies. Refuge employees have the necessary contact information for appropriate Service personnel to expedite any necessary compliance documentation (see section 7.17).

7.16 How does the Service use education and outreach to protect human and wildlife health from threats from mosquitoes?

A. Where appropriate, we collaborate with Federal, State, and/or local wildlife agencies, public health authorities, agriculture departments, and vector control agencies to conduct education and outreach activities aimed at protecting human and wildlife health from threats associated with mosquitoes.

B. Where appropriate, we distribute information materials about mosquito-associated threats through refuge visitor centers and Service Internet sites.

C. Refuge employees receive instruction on personal protection measures to minimize their exposure to mosquito-borne diseases.

7.17 How does the Service address high risk mosquito-borne disease situations on refuges?

Federal, State, and/or local public health authorities may officially identify a high risk for mosquito-borne disease based on documented disease activity in humans or wildlife. In addition, the Secretary has the authority to identify a high risk for mosquito-borne disease independent of Federal, State, and/or local public health authorities. Such a high risk determination indicates an imminent risk of serious human disease or death, or an imminent risk to populations of wildlife. Public health authorities may request pesticide treatments to Refuge System lands to decrease mosquito vector populations and lower the health risk. Refuges with approved mosquito management plans will have addressed potential high risk situations and appropriate responses within those documents. Refuges without approved mosquito management plans should contact their refuge supervisor and Regional IPM coordinator in the event of a high risk determination. Even during high disease risk situations, we allow pesticide treatments for mosquito population control on Refuge System lands only when local and current mosquito population monitoring data are available and indicate that refuge-based mosquito populations are contributing to a human and/or wildlife health threat. Collecting such monitoring data is standard for making IPM decisions and should not delay appropriate treatment. For a high risk mosquito-borne disease determination, appropriate documentation includes identification of infected mosquitoes or abundant populations of vector species within refuge boundaries. In high risk mosquito-borne disease situations, we will do the following:

A. If no mosquito population data are available for the refuge, we will request (or undertake, if applicable) short-term (24 hours or less) monitoring of adult and/or larval mosquito populations on the refuge to ensure that intervention is necessary.

B. If necessary, we monitor the populations ourselves. We cannot use a pesticide unless we have current mosquito population monitoring data indicating intervention with pesticides is warranted. We will complete and submit a PUP to the Regional IPM coordinator and Washington Office IPM coordinator, if applicable, for expedited

review. In a high risk disease situation we may not wait for monitoring results to initiate the PUP process, and we will expedite the review of PUPs.

C. If there is no site-specific National Environmental Policy Act (NEPA) documentation for the proposed emergency intervention measure(s), contact the Regional NEPA coordinator for guidance (refer to section 7.5).

D. If federally listed or candidate species are present and Endangered Species Act section 7 compliance has not been completed for the potential intervention measures, contact the local Ecological Services (ES) office for recommendations (refer to section 7.17).

E. Notify refuge employees and visitors of the increased human health risk and provide information for personal protection against mosquito-borne disease. Where appropriate, we will consider restricting or closing all or part of the refuge to visitors and restricting outdoor activities of employees.

F. If monitoring data indicate that intervention with pesticides is warranted, we will prepare an SUP for pesticide application(s). In the SUP, we may identify pertinent conditions and restrictions on pesticide application activities to protect sensitive species or habitats. Although we may waive the requirement for a compatibility determination in a high disease risk situation, we will choose effective means to lower the health threat that pose the least risk to wildlife and habitats.

G. Preparation of SUPs, PUPs, and other compliance documentation will be expedited so that any necessary intervention measures will not be delayed.

H. After pesticide applications, we require (or undertake, if applicable) additional mosquito population monitoring to assess the effectiveness of the pesticide treatment(s).

I. See Section 7.5A.(3) for NEPA procedures in emergency situations.

J. Once a high risk mosquito-borne diseases situation is over, an affected refuge must develop a mosquito management plan and prepare all necessary compliance documents (see sections 7.5, 7.10, and 7.11).

Dated: September 21, 2007.

Kenneth Stansell,

Acting Director, U.S. Fish and Wildlife Service.

601 FW 7, Exhibit 1

Outline: Mosquito Management Plan for Mosquito Associated Threats on Refuges

I. Health Threat Determination

A. Describe the communication process and identify points of contact and their contact information for Federal and/or State/local public health authorities, vector control agencies, and recognized experts in vector ecology, epidemiology, public health, and wildlife health. Identify agency with public human health authority that has the official capacity to make a human health determination. Identify personnel with medical training on the epidemiology of mosquito-borne diseases.

B. Elaborate on regional/local history of mosquito associated health threat(s). Identify endemic and enzootic mosquito-borne diseases.

C. Determine health threat(s) using criteria in Exhibit 2 based on documentation from Service wildlife health experts, State fish and wildlife agency health experts, Federal and/or State/local public health authorities, and/or public health veterinarians employed by the appropriate public health authorities that refuge-based mosquitoes threaten human or wildlife health.

1. Off-refuge (or on-refuge, if available) mosquito surveillance summary data (species and abundance).

2. List of vector species present and enzootic/endemic diseases they may vector.

II. Monitoring Mosquito Populations (Developed in Cooperation With Federal/State/Local Public Health Authorities, Vector Control Agencies, and State Fish and Wildlife Agencies)

A. Identify the purpose and goals of monitoring on the refuge.

B. Identify who will conduct monitoring on the refuge and their contact information.

C. Identify when they will conduct the monitoring:

1. Routine, seasonal; or
2. Monitoring only when threat level is elevated (identify triggers for monitoring).

D. Description of monitoring protocols.

1. Larval and pupal mosquito monitoring and breeding habitat inventory and mapping.

(a) Objective(s).

(b) Method(s).

(c) Sampling locations and numbers of samples/location.

(d) Frequency of sampling.

(e) Processing/identification of samples (species, larval stage).

2. Adult mosquito monitoring.

(a) Method(s) of sampling (e.g., traps, landing counts).

(b) Sampling locations and frequency of sampling.

(c) Processing/identification of samples.

3. Post-treatment monitoring: Monitoring should continue after any treatment to determine efficacy.

E. Reporting.

1. Refuge receives copies of all monitoring data concerning refuge.

2. Refuge shares annual habitat management plans, if applicable, with public health or vector control agency.

F. Restrictions/Stipulations: Identify any restrictions/stipulations on monitoring activities (e.g., access, vehicle use, sensitive species or habitats, time of day, etc.) to ensure compatibility.

III. Surveillance of Mosquito-Borne Disease (Developed in Cooperation With Federal/State/Local Public Health Authorities, Vector Control Agencies, and State Fish and Wildlife Agencies)

A. Identify the purpose and goals of surveillance.

B. Identify who will be conducting surveillance on or near the refuge and their contact information.

C. Identify when they will conduct surveillance.

1. Routine, seasonal surveillance; or
2. Surveillance only when threat level is elevated (identify triggers for surveillance).

D. Description of surveillance protocols.

1. Disease monitoring.

(a) Objective(s).

(b) Method(s).

(c) Monitoring locations.

(d) Wildlife testing facility (for dead or sick wildlife found on the refuge).

2. Disease activity notification procedures between public health agency, State fish and wildlife agency, and refuge (we develop these procedures cooperatively).

3. Post-treatment monitoring: Surveillance should continue after any treatment to determine effectiveness.

E. Restrictions/Stipulations: Identify any restrictions/stipulations on surveillance activities (e.g., access, vehicle use, sensitive species or habitats, time of day, etc.).

IV. Treatment Options (Developed in Cooperation With Federal/State/Local Public Health Authorities, and Vector Control Agencies, and State Fish And Wildlife Agencies Using Stepwise Approach, Exhibit 2)

A. Identify and categorize refuge-based vector species or species groups based on role in transmission cycle(s) of enzootic/endemic diseases.

B. Identify species-specific larval, pupal, and adult mosquito vector action threshold levels that reflect the importance of vector species in the transmission cycle (see Exhibit 3).

C. Identify health threat levels and describe potential intervention measures for each level (Exhibit 2). Include non-pesticide and pesticide intervention options.

D. Complete NEPA process, as necessary, to examine potential environmental effects of potential intervention measures. In an emergency, contact the Regional NEPA coordinator for guidance.

E. Complete Endangered Species Act section 7 compliance for potential impacts to listed and candidate species from intervention measures.

F. Identify specific pesticides or other management actions to use at specific threat levels based on NEPA and section 7 analyses.

G. Unless the Secretary determines it is necessary to temporarily suspend, allow, or initiate any activity in a refuge to protect the health and safety of the public or any fish or wildlife population, complete a compatibility determination for intervention measures. Refer to 603 FW 2 for more information about compatibility and emergencies.

H. Follow Service pesticide use and permitting procedures, and attach approved pesticide use proposal (PUP) and special use permits (SUP).

1. Complete PUP.

2. Submit PUP to Regional IPM coordinator. In an emergency, contact Regional/CNO pest management coordinator (and national IPM coordinator, if adulticides are involved) to expedite PUP approval.

3. Prepare SUP or other agreement for agency conducting intervention measures, outlining specific actions to be taken (when, where, how) and describing any restrictions, stipulations, or other conditions on such actions.

601 FW 7, Exhibit 2

Example of Mosquito-Borne Disease Health Threat and Response Matrix

| Current conditions | | Threat level | Refuge response |
|--|--|--------------|--|
| Health threat category ¹ | Refuge mosquito populations ² | | |
| No documented existing or historical health threat. | No action threshold | 1 | Remove/manage artificial mosquito breeding sites such as tires, tanks, or similar debris/containers. |
| | Below action threshold | 2 | Response as in threat level 1, plus: Allow compatible monitoring and disease surveillance. Consider compatible non-pesticide management options to reduce mosquito production (section 7.9). |
| Documented historical health threat. | Above action threshold | 3 | Response as in threat level 2, plus: Allow compatible site-specific application of larvicide in infested areas as determined by monitoring. |
| | Below action threshold | 4 | Response as in threat level 2, plus: Increase monitoring and disease surveillance. |
| Documented existing health threat (specify multiple levels, if necessary; e.g., disease found in wildlife, disease found in mosquitoes, etc.). | Above action threshold | 5 | Response as in threat levels 3 and 4, plus: Allow compatible site-specific application of larvicide, pupacide, or adulticide in infested areas as determined by monitoring data (refer to section 7.15). |
| | Below action threshold | 6 | Maximize monitoring and disease surveillance (refer to section 7.15). |
| High risk for mosquito-borne disease (imminent risk of serious human disease or death, or an imminent risk to populations of wildlife). | Above action threshold | 7 | Response as in threat level 6, plus: Allow site-specific application of larvicide, pupacide, and adulticide in infested areas as determined by monitoring (refer to sections 7.15 and 7.17). |

¹ Health threat/risk as determined by Federal and/or State/local public health or wildlife management authorities with jurisdiction inclusive of refuge boundaries and/or neighboring public health authorities.

² Action thresholds represent mosquito population levels that may require intervention measures. We develop thresholds in collaboration with Federal and/or State/local public health or wildlife management authorities and vector control agencies. They must be species- and life stage-specific.

601 FW 7, Exhibit 3

Factors To Consider When Establishing Thresholds for Use of Larvicides/Pupacides/Adulticides To Control Mosquitoes To Address Health Threats

| Factor | Description | Consideration |
|--|--|---|
| Mosquito species | Mosquito species vary in the following: Their ability to carry and transmit disease; flight distances; feeding preference (birds, mammals, humans); seasonality; and type of breeding habitat. | Consider these factors when establishing adult and larval thresholds. Often the species and biology of the mosquito are more important in developing thresholds than the relative abundance. |
| Proximity to human populations | The distance from potential mosquito habitat on NWRs to population centers (numbers and density). | The potential to produce large numbers of mosquitoes in close proximity to population centers may result in less tolerance or lower thresholds for implementation of mosquito control on NWRs. |
| Weather patterns | Prevailing wind patterns, precipitation, and temperatures. | Prevailing wind patterns that carry mosquitoes from refuge habitats to population centers may require lower thresholds. Inclement weather conditions may prevent mosquitoes from moving off-refuge, resulting in higher thresholds. |
| Cultural mosquito tolerance | The tolerance of different populations may vary by region of the country and associated culture and tradition. | In many parts of the country, residents accept mosquitoes as a way of life, resulting in higher mosquito management thresholds. NWRs in highly populated areas may require lower thresholds because of the intolerance of urban dwellers to mosquitoes. |
| Adults harbored, but not produced, on-refuge ... | Refuge provides resting areas for adult mosquitoes produced in the surrounding landscape. | Threshold for mosquito management on the refuge should be high with an emphasis for treatment of mosquito breeding habitat off refuge. |

| Factor | Description | Consideration |
|--|---|---|
| Spatial extent of mosquito breeding habitat | The relative availability of mosquito habitat within the landscape that includes the refuge. | If the refuge is a primary breeding area for mosquitoes that likely affect human health, threshold may be lower. If refuge mosquito habitats are insignificant in the context of the landscape, thresholds may be higher. |
| Natural predator populations | Balanced predator-prey populations may limit mosquito production. | If refuge vertebrate and invertebrate prey populations are adequate to control mosquitoes, threshold for treatment should be high. |
| Type of mosquito habitat | Preferred breeding habitat for mosquitoes is species-specific. | Because breeding habitat is species-specific, correlate thresholds for each species to initiate control with appropriate habitat types. |
| Water quality | Water quality influences mosquito productivity. | High organic content in water may increase mosquito productivity, lower natural predator abundance, and may require lower thresholds. |
| Opportunities for water and vegetation management. | Management of water levels and vegetation may reduce mosquito productivity. | Thresholds for treatment should be higher where we can control mosquitoes through habitat management. |
| Presence/absence of vector control agency | Many areas do not have adequate human populations to support vector control. In addition, resources available for mosquito management vary among districts. | Thresholds for management may be much higher or non-existent in areas without vector control. |
| Accessibility for monitoring/control | Refuges may not have adequate access to monitor or implement mosquito management. | Thresholds will probably be higher for refuges with limited access that will require cost-prohibitive monitoring and treatment strategies. |
| History of mosquito borne diseases in area | Past monitoring of wildlife, mosquito pools, horses, sentinel chickens, and humans have documented mosquito-borne diseases. | Thresholds in areas with a history of mosquito-borne disease(s) will likely be lower. |

[FR Doc. E7-20201 Filed 10-12-07; 8:45 am]
 BILLING CODE 4310-55-P

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

Indian Gaming

AGENCY: Bureau of Indian Affairs, Interior.

ACTION: Notice of approved amended Tribal-State Compact.

SUMMARY: This notice publishes approval of the Tribal-State Class III Gaming Compact between the State of New Mexico and the Pueblo of Laguna.

DATES: *Effective Date:* October 15, 2007.

FOR FURTHER INFORMATION CONTACT: George T. Skibine, Director, Office of Indian Gaming, Office of the Deputy Assistant Secretary—Policy and Economic Development, Washington, DC 20240, (202) 219-4066.

SUPPLEMENTARY INFORMATION: Under Section 11 of the Indian Gaming Regulatory Act of 1988 (IGRA), Public Law 100-497, 25 U.S.C. § 2710, the Secretary of the Interior shall publish in the **Federal Register** notice of the approved Tribal-State Compacts and Amendments for the purpose of engaging in Class III gaming activities on Indian lands. This Amendment includes a provision that would

eliminate any payments to the state should the state permit any licensed horse racetrack to increase number of machines, increase hours of operation, allow operation of gaming machines outside licensed premises or operate table games. This Amendment extends the term of the Compact until 2037.

Dated: October 5, 2007.

Carl J. Artman,

Assistant Secretary—Indian Affairs.

[FR Doc. E7-20197 Filed 10-12-07; 8:45 am]

BILLING CODE 4310-4N-P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[ID 100 1220MA 241A: DBG081001]

Notice of Public Meeting: Joint Recreation Resource Advisory Council Subcommittee to the Boise and Twin Falls Districts, Bureau of Land Management, U.S. Department of the Interior

AGENCY: Bureau of Land Management, U.S. Department of the Interior.

ACTION: Notice of public meeting.

SUMMARY: In accordance with the Federal Land Policy and Management Act (FLPMA) and the Federal Advisory Committee Act of 1972 (FACA), the U.S. Department of the Interior, Bureau of

Land Management (BLM) Boise and Twin Falls District Recreation Resource Advisory Council (Rec-RAC) Subcommittee, will hold a meeting as indicated below.

DATES: The meeting will be held November 14, 2007, beginning at 9:30 a.m. and adjourning at 4:30 p.m. The meeting will be held at the Three Island State Park Visitors Center, West Madison Street, Glenns Ferry, Idaho. Public comment periods will be held before the conclusion of the meeting.

FOR FURTHER INFORMATION CONTACT: MJ Byrne, Public Affairs Officer and RAC Coordinator, BLM Boise District, 3948 Development Ave., Boise, ID 83705, Telephone (208) 384-3393, or Beckie Wagoner, Administrative Assistant, Twin Falls District, 2536 Kimberly Rd., Twin Falls, ID 83301, (208) 735-2063.

SUPPLEMENTARY INFORMATION: In accordance with section 4 of the Federal Lands Recreation Enhancement Act of 2005, a Subcommittee has been established to provide advise to the Secretary of the Interior, through the BLM, in the form of recommendations that relate to public concerns regarding the implementation, elimination or expansion of an amenity recreation fee; or recreation fee program on public lands under the jurisdiction of the U.S. Forest Service and the BLM in both the Boise and Twin Falls Districts located in

APPENDIX E

NEW HAMPSHIRE FISH & GAME DEPARTMENT RESOURCE MANAGEMENT AND PROTECTION POLICY INSECT CONTROL ON DEPARTMENT-OWNED PROPERTIES

WHEREAS, the legal responsibility of the New Hampshire Fish and Game Department is to “preserve, protect, and propagate the fish and wildlife resources of the state” pursuant to RSA 206:9 and RSA 206:10;

WHEREAS, the Department currently owns or hold conservation easements on several hundred thousand acres in New Hampshire which contain thousands of acres of tidal and non-tidal wetlands, vernal pools, upland forest and other critical habitats and natural communities;

WHEREAS, these habitats and natural communities provide habitat for insects including mosquitoes that may harbor diseases such as West Nile virus (WNV) or Eastern Equine Encephalitis virus (EEE), which can be transmitted to humans;

WHEREAS, both wetland and upland habitats on these lands produce numerous species of insects that are part of the food web and, therefore, are critical for the survival of fish and wildlife, some of which are rare;

WHEREAS, all other state departments and agencies, to the extent possible, consistent with their authority and responsibilities, shall assist and cooperate with the executive director of the Department to conserve endangered or threatened species as set forth in RSA 212-A:9;

WHEREAS, Department lands are open to the public for recreational, educational and scientific activities, and the Department endeavors to provide a safe and attractive environment within the limits of its mission, and it is the responsibility of the public to possess the necessary knowledge, skill and equipment necessary for a safe visit to Department properties;

WHEREAS, the Department cooperates with the Department of Health and Human Services to promote education and personal protection as the most effective means to reduce the risk of contracting diseases such as EEE or WNV through local signage and internet education;

WHEREAS, Department lands are equally owned and shared by all citizens of New Hampshire, and this diverse citizenry has an equal opportunity to have its broad range of goals accounted for within the responsibilities of the Department;

THEREFORE BE IT RESOLVED, that the Department will consider the use of chemical and biological agents for the control of insect populations including mosquitoes on Department-owned lands in accordance with the following provisions. These provisions may be altered if a Public Health Emergency is issued pursuant to RSA 21-P:35.

Section A. Provisions Specific to Mosquito Control

1) The Department considers mosquito surveillance to be an important tool for tracking changes in pathogen occurrence and planning control activities. As such, the Department will encourage mosquito surveillance on their lands by state/local public health authorities or vector control agencies. Monitoring will occur using methods approved by the Department of Health and

Human Services. The goal of mosquito monitoring is to detect relative changes in population sizes that can indicate an increased risk to human, wildlife, or domestic animal health as well as to collect adult mosquitoes for testing of pathogen presence.

2) Methoprene or similar insect growth regulator may be used to control mosquitoes in artificial water receptacles such as old tires, barrels, and manmade water catch basins identified on Department-owned lands;

3) The Department will allow the use of biological control agents (specifically *Bacillus thuringiensis israelensis* or *Bacillus sphaericus*) in natural wetlands and waterbodies on land it administers as long as those wetlands and waterbodies:

a. Contained disease-positive carrying mosquitoes in any of the preceding three years or the current year;

b. Are located in a buffer surrounding the location where disease-positive mosquitoes were trapped in any of the preceding three years or the current year; the buffer corresponding to the maximum flight range of the mosquito species (Table 1) that tested positive for either disease;

c. Are located in a buffer surrounding the location of a disease-positive mammal; the buffer corresponding to the maximum flight range of mosquito species that can potentially transmit either disease to mammals.

4) The Department will approve the application of adult mosquito pesticides on lands it administers in cases where a public health threat is declared by the Commissioner of the New Hampshire Department of Health and Human Services and the area proposed for treatment is identified as a source of either disease near an area of high public use (e.g., school, sports complex, etc.);

5) A municipality or mosquito control district will submit a detailed map of Department-owned lands they wish to treat during the Division of Pesticide Control's pesticide application process. The map will comply with the following criteria:

a. Be provided at a scale and with enough detail to locate wetlands proposed for treatment in the field.

b. Include mapped locations of potential mosquito breeding wetlands on adjacent lands along with an indication of whether those wetlands will be treated. If treatment will not occur, the applicant should explain why.

c. Applicants will also submit a description of the types of pesticides proposed for use, application rates, and timing of applications on Department-owned lands.

6) The municipality or mosquito control district implementing treatment on Department-owned land will contact a representative of the Department prior to treatment with enough time to visit the site and to coordinate the appropriate signage and possible access closures to prevent unintended human exposures to insecticides and their residues.

7) The Department will not use agency resources to initiate or implement chemical or biological control of adult or juvenile mosquitoes on lands that it administers for the purpose of nuisance control or to reduce natural populations;

8) If surveillance does occur on Department-owned lands, the municipality's or mosquito control district's Public Health Officer should contact the Department whenever mosquito traps are deployed and/or a positive result is attained on Department land. The PHO should also provide a summary of surveillance activities and positive results (if any) after the WNV/EEE season.

9) The Department will encourage the investigation of the feasibility and appropriateness of other options to manage mosquito populations in both fresh and saltwater wetlands in the long term. These may include, but not be limited to, water-level manipulation that disrupts mosquito life cycles, including timing and rate of flood-up and drawdown of managed wetlands; vegetation management to discourage egg laying by mosquitoes; and restoring natural hydrological regimes in ditched salt marshes.

Adopted March 28, 2007

Table 1. Flight ranges of known pathogen carrying mosquito species in New Hampshire*

| Mosquito Species | Flight Range | Bird or Mammal Biter |
|----------------------------------|---------------------|-----------------------------|
| <i>Aedes canadensis</i> | 0-1/4 mile | Birds & Mammals |
| <i>Aedes cinereus</i> | 1/4-1/2 mile | Mammals |
| <i>Aedes triseriatus</i> | 1/2-1 mile | Mammals |
| <i>Aedes vexans</i> | 1-5 miles | Mammals |
| <i>Coquillettidia perturbans</i> | 1 to 5 miles | Mammals |
| <i>Culex pipiens</i> | 1/4-1/2 mile | Birds & Mammals |
| <i>Culiseta morsitans</i> | 1-5 miles | Birds |
| <i>Culiseta melanura</i> | 1/2-1 miles | Birds |
| <i>Psorophora ferox</i> | 1-2 miles | Mammals |

* Compiled by Rachel Stevens, NH Fish & Game Department, with input from UNH Dept of Zoology and review by NH Dept. of Health & Human Services.