

Survey of Surveillance Records of *Aedes aegypti* and *Aedes albopictus* from 1960 to Present

0920-1146

Expiration Date: November 30, 2019

Request for OMB approval of a Revision Information Collection

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Supporting Statement A

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Goal: The original goal of this survey was to collect county-level surveillance records of *Aedes aegypti* and *Aedes albopictus*, the vectors that transmit Zika Virus. CDC now requests to expand the project to prospectively include county and sub-county level data and to monitor the susceptibility and resistance of resident populations of mosquitoes to insecticides.

Intended use of the resulting data: As previously described, information will aid in 1) targeting vector control efforts to prevent mosquito-borne Zika virus transmission in the continental U.S. 2) targeting future vector surveillance efforts and now 3), to determine and model the range and distribution of mosquitos in the US.

Methods: Previously, written surveys were distributed to vector control professionals, entomologists, and public health biologists in order to gather information on the distribution of *Aedes aegypti* and *Ae. albopictus*. Going forward, surveillance and resistance data will be collected through an online data portal named MosquitoNET on a monthly basis.

Subpopulation to be studied: Vector control professionals, entomologists, and public health professionals.

How data will be analyzed: Distributions of each mosquito will be developed using data collected from the previous survey and from the published literature. The data collected from this expanded project will be used 1) to evaluate performance of the species distribution models, 2) to provide updated information on where Zika vectors were collected in recent and now future years, and now 3) to monitor insecticide and susceptibility patterns

CDC is requesting OMB review and approval of a Revision ICR to Control No. 0920-1146. The current expiration date is November 30, 2019. CDC is seeking three years of OMB approval. This revision proposes routine, monthly information collection going forward instead of one time collections as in the previous two iterations of this survey (0920-1101 and 0920-1146).

As CDC transitions from its emergency Zika response to ongoing Zika surveillance, monthly collection of data is necessary to accurately monitor the spread of invasive species of mosquitos in US localities and to provide up to date information on insecticide resistance.

1. Circumstances making the Collection of Information Necessary

In May 2015, the World Health Organization reported the first local transmission of Zika virus in the Western Hemisphere, with autochthonous cases identified in Brazil. As of March 16, 2016, local transmission has been identified in at least 32 countries or territories in the Americas. Further spread to other countries in the region is likely. Local vector-borne transmission of Zika virus has now been documented in Florida and Zika virus infections have been reported in travelers returning from areas with active Zika virus transmission. Zika virus infection also has occurred through sexual transmission, which may pose an additional risk to non-travelling pregnant women whose partners may have traveled to areas at high risk for Zika virus acquisition. With the ongoing outbreak in the Americas, the number of Zika virus disease cases among travelers returning to the United States likely will increase, and sexual transmission from male travelers to their sex partners in the United States will likely continue to occur. In addition, mosquito-borne local transmission may occur in states where *Aedes aegypti* or *Ae. albopictus* mosquitoes are present.

In February 2016, OMB issued emergency clearance for a county-level survey of vector surveillance records (OMB Control No. 0920-1101, expiration date 8/31/2016) and CDC initiated a survey distributed to vector control professionals, entomologists, and public health professionals in order to develop county- and sub-county-level species distribution maps and models for the prevalence of *Aedes aegypti* and *Ae. albopictus* (the vectors of Zika virus) in the United States. The results of the initial survey were published online in June 2016 (Hahn, M.B., et al. (2016) *J. Med. Entomol.* 53: 1176-1191). The survey revealed that we are lacking records from recent years of both species from areas where we expect to find Zika vectors based on historical records and environmental suitability. It is likely that the reason for this is because from 2004-2015 most vector surveillance focused on vectors of West Nile virus (*Culex spp.*), rather than Zika vectors. The collection of the former relies on collection techniques that are not optimized to capture the latter.

To better approximate where these Zika vectors are likely to be encountered in the continental U.S., using the data from the previous survey, CDC then developed a second survey to develop a statistically-driven model of each species' distribution. This second survey was given OMB Control No. 0920-1146 (expiration date 11/30/2019). A follow up survey of entomologists, vector control professionals and public health biologists was conducted to evaluate the performance of the model and to provide a more accurate representation of counties from which the Zika vectors have been reported. The follow up survey yielded new information beyond what was collected in the spring of 2016 because 1) respondents had more time to mine their historical records and the survey dated back further in time to capture this information, and 2) with the emergence of Zika virus, many mosquito surveillance efforts have been expanded to include trapping methods sufficient to capture Zika vector mosquitoes.

Information collected as part of this second survey was used to update species distribution maps for the United States (e.g., showing where the mosquitoes *have been* reported) and to assess the

accuracy of a model aimed at identifying where these vectors can survive and reproduce (e.g., showing where the mosquitoes are *expected to be* reported).

The resulting maps from the first two surveys aided in 1) allocating resources for vector control efforts to prevent mosquito-borne Zika virus transmission in the continental U.S. and 2) targeting future vector surveillance efforts. In addition, this information will improve the quality of information on vector distributions that CDC is distributing to the public.

This information collection request is authorized by Section 301 of the Public Health Service Act (42 U.S.C. 241) (Attachment A).

2. Purpose and Use of Information Collection

This submission seeks to revise OMB Control No. 0920-1146, by expanding mosquito surveillance data prospectively to be collected throughout the life of this OMB approval. To facilitate data reporting, CDC developed the MosquitoNET website (<https://wwwn.cdc.gov/Arbonet/MosquitoNET>) for state and local health and vector control professionals to enter data. The purpose of the MosquitoNET surveillance survey (Attachment C) is to routinely collect county and sub-county level records for mosquitos, including *Aedes aegypti* and *Ae. albopictus*, the vectors of Zika virus as well as insecticide susceptibility and resistance data on collected mosquitos.

Information collected as part of this survey will be used to routinely update species distribution maps for the United States (e.g., showing where the mosquitoes have been reported), and to assess the accuracy of a model aimed at identifying where these vectors can survive and reproduce (e.g., showing where the mosquitoes are expected to be reported) and inform vector control and arboviral outbreak response effort. Such information improves the accuracy of information CDC communicates to the public regarding where vectors have been found historically and in recent years.

Information collected monitoring the insecticide susceptibility and resistance patterns in mosquitos will be used by CDC as well as state, county, and local public health departments and mosquito control groups to determine the most effective insecticide products and methodology for routine control and response.

Routine resistance evaluations will be compared to baseline susceptibility and patterns monitored over time to identify if insecticide resistance is developing. This routine collection of information is critical so public health authorities are best prepared for responsive control if mosquito borne disease outbreaks occur.

The portal is designed to limit users of data to viewing only data from their own localities. MosquitoNET was first launched in October 2016. Already, over 30 users have registered to enter data. So far, data entry has been limited and is expected to improve in the coming months.

The ongoing collection of data obtained from the proposed MosquitoNET survey will be used to evaluate the statistical model of where mosquitoes should be found and will be used to update reported distribution maps. We believe that because of very recent changes in vector surveillance aimed at capturing *Ae. aegypti* and *Ae. albopictus* and with additional time to review historical records, additional records will be reported using this revised survey. The resulting maps and models will inform the public and policy makers of the known distribution of these vectors, identify gaps in vector surveillance, and target allocation of surveillance and prevention resources (including funds allocated through the Epidemiology and Laboratory Capacity Cooperative Agreement with States).

3. Use of Improved Information Technology and Burden Reduction

One-hundred percent of burden hours will be incurred by respondents using improved information technology.

Previous surveys were distributed via email and carried out using an online survey tool. Going forward all mosquito and insecticide surveillance data will be collected via the MosquitoNET portal email and carried out using an online survey tool. State and local participants will access and enter data at this portal approximately monthly. Users will be able to either enter data directly through the interactive MosquitoNET site or upload data using the spreadsheet available through MosquitoNET. Users will be able to view, edit, and delete data for their jurisdiction only. Users will be able to export all data in MosquitoNET except location information outside their jurisdiction

4. Efforts to Identify Duplication and Use of Similar Information

As mentioned in section A.1, previous county-level surveys of vector surveillance records were undertaken in February and late 2016. The previous surveys aimed to describe the current reported distribution of the Zika virus vectors *Aedes aegypti* and *Ae. albopictus*. The surveys reviewed data records from 1960-2016 and resulted in a complete assessment of historical records of mosquito surveillance but were not designed to collect these types of data routinely over time. The MosquitoNET program now will establish surveillance of these mosquito vectors into the future and expand to include the surveillance of susceptibility and resistance of mosquitos to insecticides.

5. Impact on Small Businesses or Other Small Entities

The collection of information does not primarily involve small entities. However, for the small entities involved, the burden imposed by CDC's information collection requirements have been

reduced to the minimum necessary for CDC to meet its regulatory and public health responsibilities.

6. Consequences of Collecting the Information Less Frequently

This revision to OMB Control No. 0920-1146 proposes routine information collection going forward instead of one time collections as in the previous two surveys. As CDC transitions from its emergency Zika response to ongoing Zika surveillance, monthly collections of data during mosquito season are necessary to accurately monitor the spread of invasive species of mosquitos in US localities and to provide up to date information on insecticide resistance. Monthly surveillance will provide real time monitoring of mosquito populations as well as an early warning system to alert public health officials for response planning. Monthly data collections will be necessary during the months that mosquitos are emerged. Surveillance and data reporting is not necessary during the months that mosquitos are not emerged, e.g. winter. Some localities will need to report year round if they have year-round mosquito activity. CDC's ongoing response to Zika and preparation for other mosquito-borne disease outbreaks would be significantly hindered if it were not able to collect the information at the frequency necessary to monitor and prohibit the spread of this disease. Routine monthly monitoring assures that mosquito population and insecticide resistance information is available to inform public health decision making. Additionally, this revision expands ongoing surveillance to include monitoring for mosquito susceptibility and resistance to mosquitos. This information is critical for ongoing vector-control programs.

Collecting information less frequently than the CDC recommendations indicate will interfere with the public health actions required to contain and respond to Zika virus transmission and to do everything possible to limit, if not stop, deaths and birth defects due to this disease. Given the limited information available on Zika virus disease during pregnancy, information is needed to inform CDC recommendations.

7. Special Circumstances Relating to the Guidelines of 5 CFR 1320.5

This request fully complies with the guidelines in 5 CFR 1320.5.

8. Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency

A. A 60-day Federal Register Notice was published in the Federal Register on April 6, 2017, Volume 82, No. 65, p. 16841 (Attachment B). No public comments were received.

B. There was no consultation outside of the Agency.

9. Explanation of Any Payment or Gift to Respondents

There is no payment or gift to respondents.

10. Protection of the Privacy and Confidentiality of Information Provided by Respondents

The Privacy Act is applicable. Records are covered under CDC Privacy Act System of Records Notice (SORN) No. 0920-0136 “Epidemiologic Studies and Surveillance of Disease Problems” and SORN No. 09-20-0113, “Epidemic Investigation Case Records Systems Notice.”

The routine survey will be conducted using the online MosquitoNET data portal. All captured information will be downloaded regularly and transferred to an encrypted format on a MS SQL server within CDC’s network. Access to this information will only be obtainable by personnel with the correct user rights. MS SQL server’s security model will be used to authenticate users. The system will be compliant with all of CDC’s network security policies.

11. Institutional Review Board (IRB) and Justification for Sensitive Questions

IRB Approval

The protocols and tools used to conduct this information collection request have been reviewed and approved by NCEZID’s Human Subjects Advisor, who determined that this data collection does not meet the definition of research under 45 CFR 46.102(d). NCEZID’s Human Subjects Advisor reviewed the proposed revisions to the information collection and determined that the expansion of the program to prospective monitoring does not change the initial non-research determination. IRB review is not required (Attachment G).

Justification for Sensitive Questions

No sensitive questions will be asked in the survey.

12. Estimates of Annualized Burden Hours and Costs

A. Estimated Annualized Burden Hours

There are sixty-four recipients of funding from the Epidemiology and Laboratory Capacity cooperative agreement (see attachment H). It is estimated to take 15 minutes to complete the MosquitoNET tool each month.

Previously, the approved number of estimated respondents was 500 with a total annualized burden of 125 hours. The estimated number of respondents is being reduced because the focus

of the data collection is now on key individuals responsible for mosquito surveillance and control at the State and in some cases, the local level. ELC funding recipients will determine which recipients will be responsible for data collection and reporting.

The revised burden hours to OMB Control No 0920-1146 are:

Type of Respondent	Form Name	No. of Respondents	No. of Responses per Respondent	Average Burden per Response (in hours)	Total Burden Hours
Public health professionals	MosquitoNET entry of monthly surveillance records of <i>Aedes aegypti</i> and <i>Aedes albopictus</i>	64	12	15/60	192
Total					192

There will be no anticipated costs to respondents other than time.

The mean hourly wage rate for biological scientists (\$38.08) was used for the category of public health professionals. Information on mean wage rates is available at http://www.bls.gov/oes/current/oes_nat.htm.

B. Estimated Annualized Burden Costs

The revised burden costs to OMB Control No 0920-1146 are:

Type of Respondent	Form Name	Total Burden Hours	Hourly Wage Rate	Total Respondent Costs
Public health professionals	Survey of county-level surveillance records of <i>Aedes aegypti</i> and <i>Aedes albopictus</i>	192	\$38.08	\$7,311.36
Total				\$7,311.36

13. Estimates of Other Total Cost Burden to Respondents or Record Keepers

There are no known capital and maintenance costs incurred by respondents or record keepers.

14. Cost to the Government

The cost to the federal government is estimated at \$27,331.40. This estimate represents the amount of time for the CDC staff to administer the survey, enter data, and conduct analysis. Hourly wage rates were used for step-1 FTEs for the Atlanta locality. These numbers are available at <https://www.opm.gov/policy-data-oversight/pay-leave/salaries-wages/salary-tables/pdf/2015/ATL.pdf>.

Grade	Hours	Hourly Wage	Total
GS-14	104	\$50.00	\$5,200.00
GS-13	260	\$42.31	\$11,000.60
GS-12	260	\$35.26	\$9,167.60
GS-9	80	\$24.54	\$1,963.20
Total			\$27,331.40

15. Explanation for Program Changes or Adjustments

This submission seeks to revise OMB Control No. 0920-1146, by expanding mosquito surveillance data prospectively to be collected throughout the life of this OMB approval. This revision to OMB Control No. 0920-1146 proposes routine information collection going forward instead of one time collections as in the previous two surveys. As CDC transitions from its emergency Zika response to ongoing Zika surveillance, monthly collection of data is necessary to accurately monitor the spread of invasive species of mosquitos in US localities]. Monthly surveillance during local mosquito season, will provide real time monitoring of mosquito populations as well as an early warning system to alert public health officials for response planning.

Additionally this submission seeks to expand on the previous survey to now collect mosquito insecticide susceptibility and resistance patterns in US localities. Routine collection of susceptibility and resistance patterns is critical so public health authorities are best prepared for responsive control if mosquito borne disease outbreaks occur.

Previously, the approved number of estimated respondents was 500 with a total annualized burden of 125 hours. The estimated number of respondents is being reduced because the focus of the data collection is now on key individuals responsible for mosquito surveillance and control at the State and in some cases, the local level. ELC funding recipients will determine which recipients will be responsible for data collection and reporting.

16. Plans for Tabulation and Publication and Project Time Schedule

Previous surveys described above were launched and finished in a matter of months. The MosquitoNET project is expected to run for multiple years, but at least until the expiration of this OMB approval at which time an extension may be submitted. Collected data will be analyzed approximately monthly by CDC and shared quarterly. Additionally, we will seek to routinely publish scientific articles describing the distribution of mosquitos in the US as well as models predicting their distribution and spread.

17. Reason(s) Display of OMB Expiration Date is Inappropriate

The display of the OMB expiration date is appropriate.

18. Exceptions to Certification for Paperwork Reduction Act Submissions

There are no exceptions to the certification.