

Sustaining Wabanaki Traditions through Adaptation: Preparing for the Emerald Ash Borer in Maine

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With EAB's arrival in Maine imminent, this project informed and directed collaborative efforts among tribal natural resource management agencies, community stakeholders such as Ash harvesters, state and federal agencies, and university partners

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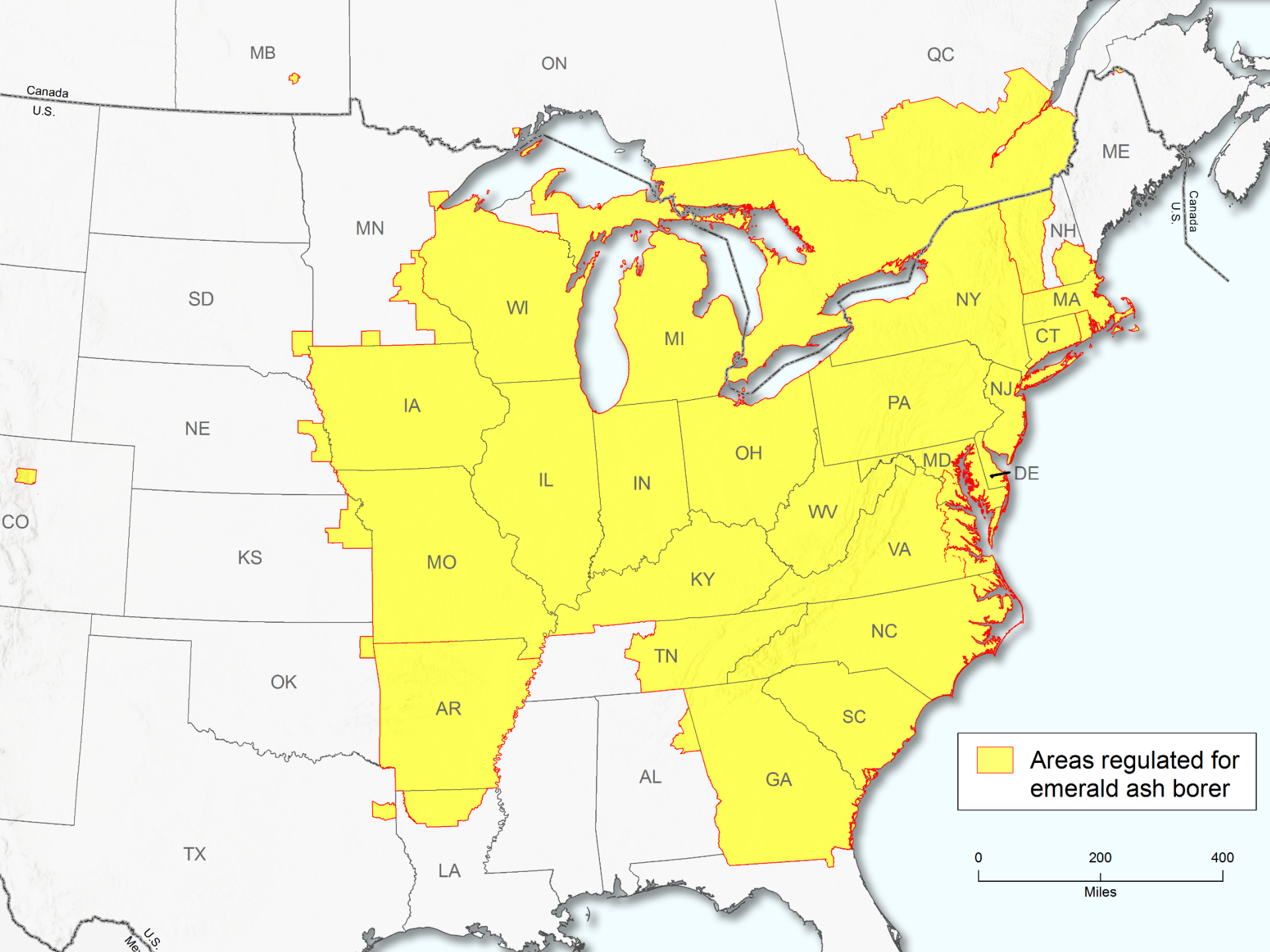
<http://www.nsrcforest.org>

Project Summary

For the Wabanaki nations of Maine (the Penobscot Indian Nation, Passamaquoddy Tribe-Pleasant Point, Passamaquoddy Tribe-Indian Township, Aroostook Band of Micmacs, and the Houlton Band of Maliseet Indians), the black ash serves critical roles in the social, cultural and economic spheres of contemporary life. A key goal of this research project is to help tribes, landowners, state, and federal regulators work together to manage and plan for uncertainties associated with rapid environmental change such as Emerald Ash Borer. It is believed that collaborating knowledge and joining together for collective action with engaged stakeholders will lead to a more effective response to issues and concerns of the various stakeholders. A multi-method Community Based Participatory Research (CBPR) process was utilized to engage stakeholders in all aspects of the research including inception, approach, analysis, dissemination of results and community response related to socio-cultural assets and vulnerabilities. The CPBR allows stakeholder priorities and perspectives to guide the research and planning processes along with design of strategies for collaboration among multiple stakeholders. In the early phases of the project the research objectives focused on understanding the different ways that stakeholders see themselves participating in the process for collective actions around planning and management for EAB. In the later phases of the project research objectives focused on how different knowledges can be integrated and brought forward to design strategies to address collective actions to address infestations of EAB.

Background and Justification

The damage and costs associated with infestations of pests impacting the health of our forests are severe. In North America EAB alone has caused the decline and mortality of millions of ash trees, driving economic costs for treatment, removal, and replacement of trees in cities and towns into the billions of dollars (Kovacs et al. 2011; Herms and McCullough 2014). Also important are the ecological and cultural considerations associated with these invasive forest pests. For example, black ash (*Fraxinus nigra* Marsh.) is a unique and significant tree species in terms of its ecosystem function as well as its importance as a cultural keystone species for Native Americans and First Nations people with centuries-old basketry traditions (Ranco et al. 2012; Costanza et al. 2017).



Background and Justification

For the Wabanaki nations of Maine (the Penobscot Indian Nation, Passamaquoddy Tribe-Pleasant Point, Passamaquoddy Tribe-Indian Township, Aroostook Band of Micmacs, and the Houlton Band of Maliseet Indians), the black ash serves critical roles in the social, cultural and economic spheres of contemporary life. The cultural importance of black ash is reflected in Wabanaki origin stories, wherein Gluskabe, the Wabanaki trickster hero, shot an arrow into the basket tree (the black ash), giving rise to the people who came into the world singing and dancing. Given this context, there is no substitute for the ash in Wabanaki culture. Moreover, baskets made of black ash are the oldest art form in New England and represent an original “green,” value-added, sustainable forest product. The loss of ash and the associated basketry tradition would have deep economic, cultural, and spiritual effect on tribes. Sales of ash basketry exceed \$150,000 each year and many tribal household incomes are partially dependent upon this resource (Daigle and Putnam 2009). More than 95% of tribal basketmakers in Maine live on or near reservations—many at or below the poverty level.

How do we respond and adapt to a future with diminishing ash resources?



Methods

A multi-method Community Based Participatory Research (CBPR) process was utilized to engage stakeholders in all aspects of the research including inception, approach, analysis, dissemination of results and community response related to socio-cultural assets and vulnerabilities. The CPBR allows stakeholder priorities and perspectives to guide the research and will also be used for planning processes and design of strategies for collaboration among multiple stakeholders. In the early phases of the project the research objectives focused on understanding the different ways that stakeholders see themselves participating in the process for collective actions around planning and management for EAB. In the later phases of the project research objectives focused on how different knowledges can be integrated and brought forward to design strategies to address collective actions to address infestations of EAB.

Methods

Specific objectives include:

- 1) Identify and understand assets and vulnerabilities related to recent and future large scale environmental changes such the emerald ash borer and cultural and economic sustainability;
- 2) Understand and articulate high value/important cultural resources for tribal communities and develop tailored biophysical decision support tools; and
- 3) Develop information that may be incorporated into adaptation plans to protect high value cultural resources that support indigenous community sustainability into the future.

Results/Project outcomes

Important in the inclusion of the research project meetings was entities that could bring in the latest information to learn about the invasive insect and these included among others the USDA Forest Service and APHIS (Animal, Plant, Health, Inspection Service) where scientists and resource managers shared the emerging science around EAB and unfortunately negative results to eliminate or contain EAB populations. Equally important was the inclusion of other tribal representatives from Michigan and New York at the meetings that helped all attendees learn about impacts of EAB to sustaining cultural practices as well as actions being initiated such as ash seed collection by Akwesasne Nation in closer proximity to EAB infestations. These meetings become an important platform to establish ideas around planning and management and most attendees quickly saw the value of different entities coming together, for example, forest entomologists shared the biology and life history of EAB and projected rate of spread and tribal harvesters shared knowledge of different ash species and in particular black ash. Another example and with agreement among black ash harvesters was that not all black ash are basket quality trees and greatly depends of the location of where it grows and the environmental features of the landscape. Clearly, there was value in multiple ways of knowing and learning from one another that had implications for planning and management around this invasive species.

Results/Project outcomes



The knowledge shared by harvesters of black ash for basket making is one of several key component to effective planning and management of forests

Results/Project outcomes

From the beginning meeting to subsequent meetings someone would always pose the difficult question to the state forester as to when EAB would likely arrive in Maine. An honest and best guest estimate was provided but all knew the difficulty in responding to the question as the rapid and leap frogging spread of EAB had less to do with biology and reproduction of EAB but more so through human assisted transportation of infested live trees initially with ornamental garden centers and then more so harvested trees infested but transported for camping trips and bringing home to heat houses. Project planning efforts led to meetings hosted and planned by tribal communities in Michigan and New York to better understand impacts of EAB and to learn the progressive efforts by the Akwesasne in New York with one of the first tribal EAB management plans. There has been a core group working at a regional perspective involving tribal, state, and federal entities helping with efforts to plan and manage for EAB.

Results/Project outcomes



Meetings with Michigan and New York tribal ash harvesters was an important part of the research project and remains important for continued collaborations for assessing and responding to the impacts of EAB on sustaining cultural practices.

Results/Project outcomes

EAB RESPONSE:

An Ash Resource Inventory Field Manual



One recent product related to this research project and the utilization of information from meetings has been the development of a field manual to inventory ash resources on tribal lands.

Results/Project outcomes

Critical to the efforts of planning and management related to EAB has been the gathering and insights of shared knowledge systems at meetings and organized conferences. Because of the interest and desire a conference was organized with financial support to bring together the latest science associated with the species of black ash along with traditional ecological knowledge in efforts to protect and conserve black ash and in particular basket-quality black ash. An output of this conference was a synthesis of current knowledge with implications for planning and management (Costanza et al. 2017). Other research has resulted in the vain of reducing the rate of spread of EAB through the human assisted movement of infested firewood. An important research project examining the behavior of campers in Maine, Vermont and New Hampshire and their knowledge of invasive species and behaviors around transporting firewood is another good example of the synergy of interest by university faculty and external funding support (Daigle et al. 2018).

Future directions

The considerable accomplishments to date notwithstanding, the work of responding to EAB is far from over and additional information is still needed. In particular, such efforts will benefit from sustained research to help assess, monitor, and evaluate the effectiveness of forest planning and management. For example, discussions during the public comment period on the proposed lifting of EAB quarantines highlighted that in many states, including Maine, only a small fraction of ash are presently impacted by EAB. In these areas, ongoing outreach and education to reduce the spread of EAB through transport of firewood and other practices can still have substantial benefit. Actions that delay the arrival of EAB support the legacy of a cultural practice and increase time for planning and management. Potential strategies in Maine include implementation of the Ash Inventory Field Manual, enhanced inventory and monitoring, development of seed collection protocols, and seed collection, as well as consideration of biological controls or chemical treatments. Continued research efforts will contribute to better understanding of EAB and its impacts on forest health (Burr et al. 2018; McCullough et al. 2018; D'Amato et al. 2018, Siegert et al. 2016). Continued assessments of the effectiveness of management strategies (McCullough and Poland 2017; McCullough et al. 2014; Siegert et al. 2017) also will support current and future adjustments to the Ash Inventory Field Manual and better guide forest planning and management.

List of products

Meetings and Workshops (Project funding leveraged with other projects)

Black Ash Symposium: Sharing Traditional and Scientific Knowledge, November 7-8, 2014 University of Maine, Orono, Maine.

EAB Socio-cultural Impacts Workshop, June, 2016 Grand Rapids.
Michigan

EAB Socio-cultural Impacts Workshop, September, 2016 Akwesasne,
New York

EAB Socio-cultural Impacts Workshop, October, 2016 Orono, Maine

List of products

Presentations

Daigle, J. (2018). Sustaining cultural practices with the threat of Emerald Ash Borer. Tribal Forest Invasive Pests and Pollinator Protection Workshop. September 25, Augusta, Maine.

Daigle, J. (2017). Sustaining cultural practices and the identity of Wabanaki citizens: Climate change, invasive species, and access to natural resources in Maine, USA, Department of Botany, University of Hawaii, April, Honolulu, HI.

Daigle, J. (2016). Culture, climate and invasive species: Emerald ash borer impacts on social and cultural wellbeing in U.S. northeastern native communities. Symposium on Society and Natural Resource Management. June, Estes Park, CO.

Daigle, J., J. Leahy, S. De Urioste-Stone, C. Straub, and M. Snell. (2015). A Framework for Understanding Individual Responses to Firewood Movement: The Case of Campers and Invasive Forest Pests in Northern New England, New England Forest Pest Meeting, March 12, Dartmouth College, Hanover, NH.

Daigle, J. (2014) Indigenous Experiences Worldwide Roundtable Discussion. Stream 7 – Respecting Indigenous and Traditional Knowledge and Culture, Resilient Livelihoods I, November 15, IUCN World Parks Congress, Sydney, Australia.

List of products

Peer-reviewed publications

Constanza, K.K.L., W.H. Livingston, D.M. Kashian, R.A. Slesak, J.C. Tardiff, J.P. Dech, A.K. Diamond, Daigle, J.J., Ranco, D., et al. 2017. The precarious state of a cultural keystone species: Tribal and biological assessments of the role and future of black ash. *Journal of Forestry* 115: 435-446.

Daigle, J.J., Straub, C.L., Leahy, J.E., De Urioste-Stone, S.M., Ranco, D.J. & Siegert, N.W. 2018. Campers and behaviors of firewood transport: An application of involvement theory and beliefs about invasive forest pests. *Forest Science* 65(3): 363-372.

Theses

Everett, T. 2019. Wabanaki Emerald Ash Borer Action Plan. Masters of Forestry Project, University of Maine, Orono, ME.

Other

Daigle, J.J., Ranco, D.J., and Emery, M. 2019. Human Dimensions research around the invasive species of Emerald Ash Borer and the Native American cultural keystone species of Black Ash. *News Quarterly*, 80(4). New England Section of the Society of American Foresters.