National Park Service
U.S. Department of the Interior

Chesapeake and Ohio Canal National Historical Park
Maryland

FINDING OF NO SIGNIFICANT IMPACT

Field release of knotweed psyllid *Aphalara itadori* for classical biological control of Japanese knotweed
Environmental Assessment
Williamsport, Maryland

The U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) prepared an environmental assessment (EA) to evaluate the impacts of releasing the biological control (biocontrol) insect knotweed psyllid (*Aphalara itadori*) to manage non-native invasive populations of Japanese knotweed (*Fallopia japonica*), giant knotweed (*F. sachalinensis*), and the hybrid Bohemian knotweed (*F.* x *bohemica*) in the continental U.S. Both knotweed psyllid biotypes, Kyushu and Hokkaido, are native to Japan and both were evaluated for field release to control the three invasive knotweed species.

Japanese knotweed has adverse effects on native plant populations and species, native wildlife, soil erosion, and recreational infrastructure. Within the Chesapeake and Ohio Canal National Historical Park (Park), Japanese knotweed grows in dense populations along the Potomac River and its tributaries. The current range of Japanese knotweed extends from the most western edge of the park in Cumberland, Maryland to Washington D.C, with more extensive populations in the western sections of the park. The Park currently houses nearly 190 State listed rare, threatened, and endangered plant species, many of which are found in the floodplain forest habitat wherein Japanese knotweed grows. Current treatment options for this invasive plant species include using herbicides and mechanical treatments, both with inherent limitations due to access, safety, and efficacy when used alone. The purpose of this project is to control and suppress populations of Japanese knotweed throughout the Park by using and releasing the developed biological control organism *A. itadori*.

The EA was prepared, consistent with USDA, APHIS' National Environmental Policy Act of 1969 (NEPA) implementing procedures (Title 7 of the Code of Federal Regulations [CFR], Part 372), regulations of the Council on Environmental Quality for implementing the provisions of NEPA (40 CFR Parts 1500-1508), and USDA regulations implementing NEPA (7 CFR Part 1b), and APHIS' NEPA implementing procedures (7 CFR Part 372). The statements and conclusion reached in this finding of no significant impact (FONSI) are based on the documentation and analysis provided in the EA, associated APHIS decision file, and NPS site-specific analysis and are tiered to the broader USDA APHIS EA. The NPS has reached this FONSI in accordance with the Department of the Interior NEPA regulations (43 CFR Part 46) and the NPS Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* (2011) and its accompanying handbook (2015).

PUBLIC AND AGENCY INVOLVEMENT

This EA was available for public review and comment from May 28 through June 27, 2019, and again from July 30 through August 26, 2019. Comments were received under Federal Register docket APHIS-

2019-002 at https://www.regulations.gov/document?D=APHIS-2019-0002-0309. The APHIS received 300 comments. Substantive comments mostly addressed potential impacts to honey bees and other pollinating species. As noted in the response to public comments in Appendix 4 of the Final EA, invasive knotweed species may provide late-season resources for pollinators, when fewer native plants are available and flowering. Diverse native vegetation provides floral resources throughout the growing season; however, Japanese knotweed outcompetes the native vegetation, limiting available resources throughout the remainder of the year. Other commenters expressed concern about *A. itadori* spreading to native plant species. This concern was addressed in the EA and the APHIS described the extensive host specificity testing process and the results of the testing for the two *A. itadori* biotypes.

The Technical Advisory Group for the Biological Control Agents of Weeds, consisting of representatives from the USDA (National Institute of Food and Agriculture, Animal and Plant Health Inspection Service, and Forest Service), the US Department of the Interior (Bureau of Land Management), the US Army Corps of Engineers, California Department of Agriculture, and Agriculture and Agri-Food Canada, recommended the release of *A. itadori* in October, 2013. Development of and testing for the release of *A. itadori* as a biological control agent is a complex process involving multiple agencies and coordinators. The following agencies and partners were consulted with and involved in the development of the biological control agent and the EA: USDA APHIS Plant Protection and Quarantine, USDA APHIS Policy and Program Development, Oregon State University, Agriculture and Agri-Food Canada-Lethbridge Research Centre, Center for Agriculture and Biosciences International, University of Washington, and the USDA Forest Service. Additionally, the USDA APHIS consulted with the US Fish and Wildlife Service regarding the potential for biological control agent release to affect threatened and endangered species. Concurrence on the determination that the biocontrol release may affect but is not likely to adversely affect threatened and endangered plant species was received in April 2018.

ALTERNATIVES CONSIDERED AND SELECTED

The EA analyzed two alternatives, no action and the environmental release of *A. itadori*, and the associated impacts on the environment. The no action alternative would result in continued and increased competition and displacement of native plant species from competition with Japanese knotweed, subsequently reducing the local abundance of herbivorous insects, predatory insects, and higher trophic level predators. Stands of Japanese knotweed would continue to facilitate soil erosion into waterways and deteriorate recreational infrastructure, including roads and trails. The EA also noted that under the no action alternative, loss of Japanese knotweed may reduce available nectar for honey bees in the late summer.

The USDA APHIS has the authority to regulate biological control organisms under the Plant Protection Act of 2000 (Title IV of Pub. L. 106-224). Applicants who wish to study and release biological control organisms into the U.S. must receive PPQ Form 526 permits from APHIS for such activities. Based on the analysis presented in the EA, the APHIS selected the alternative to issue permits for environmental release. Based on APHIS' analysis, the APHIS' FONSI, and NPS site-specific environmental analysis, the NPS has similarly selected to release *A. itadori* throughout the Park in order to control invasive Japanese knotweed.

RATIONALE FOR DECISION

The NPS selected the proposed action/preferred alternative for implementation because it will minimize the extent of Japanese knotweed infestation and will reduce competition with native plants. Environmental release of this biological control organism, in conjunction with physical and chemical means of control, will allow for more effective suppression of Japanese knotweed throughout the Park.

Release of *A. itadori* will reduce the amount and frequency of pesticide use, suppress populations in locations that are difficult to access, and reduce potential impacts to recreational infrastructure, including trails, the towpath, campgrounds, and visitor use areas. Environmental release will not adversely affect historic properties, or cultural or natural resources.

MITIGATION MEASURES

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse impacts to affected resources, whether under the jurisdiction of the NPS or as a result of an NPS decision. The NPS will follow release protocol and post-release environmental monitoring as identified in Appendix A of the EA. These protocols and mitigation measures will allow the NPS to meet its conservation mandates as required by the Organic Act (16 USC 1 *et seq*.) and as further detailed in NPS Management Policies (4.4.4.1; 4.4.4.2; 4.4.5.3). Following the monitoring protocols in Appendix A will also allow the NPS to adhere to and comply with Department of the Interior policy (524 DM 1), the Endangered Species Act (16 USC 1531 et seq.), and Executive Order 13112, as amended by Executive Order 13751 (December 8, 2016).

WHY THE SELECTED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT IMPACT

After considering the environmental consequences described in the EA, the NPS has determined that the selected alternative and its associated actions will not have a significant effect on the quality of the human environment considering the potentially affected environment and degree of effects of the action (40 CFR 1501.3(b)(7)). Thus, an environmental impact statement will not be prepared. This finding is based on analysis of the short and long-term effects; beneficial and adverse effects; effects to public health or safety; and effects that would violate Federal, State, or local laws or requirements for the protection of the environment.

AFFECTED ENVIRONMENT

As documented starting on page 14 of the EA, the selected alternative was analyzed for potential impacts to non-target native host plant species, threatened and endangered species, economically important plant species, soils, wildlife, property and recreation, and beneficial uses; however, no significant adverse impacts were identified.

The project area includes all areas of the Park where Japanese knotweed currently exists and could potentially exist in the future. Japanese knotweed mostly exists in floodplain forests proximate to the Potomac River and its tributaries. Throughout North America, Japanese knotweed occurs in at least 41 States and in eight Canadian provinces and is considered most invasive and problematic in the Pacific Northwest and in the northeastern U.S. Globally, *Aphalara* species are restricted to feeding and developing on the plant genera *Rumex*, *Persicaria*, *Polygonum*, and *Fallopia*, which include the invasive knotweed species. Extensive host specificity testing, as described in pages 14-20 and in Appendices 1 and 2 of the EA, has shown that *A. itadori* has very high host specificity and is unlikely to affect non-target plant species outside of Japanese, giant, and hybrid Bohemian knotweeds. The host specificity of *A. itadori* is one of the most important factors contributing to its success in controlling invasive knotweeds. Of these genera, Maryland contains several species of rare, threatened, and endangered species.

Fallopia cilinodis was included in host specificity testing with very low rates of larval development and adult survivorship. While listed as S3 Watchlist in the State of Maryland, this species is only known outside of the Park from Garret County, Maryland. *Polygonum glaucum*, an S1 Endangered plant species in Maryland, is only known from dune habitats on the shoreline of the Atlantic Ocean and is well outside

of the immediate region surrounding the Park. *Polygonum ramosissimum* was last noted in Maryland in 1928 and is likely extirpated. This species is also known only from maritime habitats on the Atlantic Coastal Plain and no-choice testing resulted in zero adult survival. Both *Persicaria robustior* and *P. setacea* are found only on the Atlantic Coastal Plain of Maryland and are not known from the Park or surrounding areas. The conservation status of these two species in Maryland is also in question. *Rumex altissimus* is considered S1 Endangered in Maryland and is known from various areas of the Park; however, host-specificity testing of ten congeneric *Rumex* species showed zero percent larval *Aphalara* survival.

The plant genus *Muehlenbeckia*, a close relative of the target genus *Fallopia*, contains an introduced ornamental plant, *M. axillaris*. Page 19 of the EA notes that *M. axillaris* is much more vulnerable to generalist horticultural pests than to *A. itadori* and is of limited economic importance. Survivorship on the agricultural crop buckwheat, *Fagopyrum esculentum*, was very low and is not considered capable of sustaining ongoing populations of *A. itadori*. Additionally, buckwheat is grown within the native range of *A. itadori* in Japan and is not known to support *A. itadori* populations.

The Park is also known to contain four common native *Polygonum* species and one additional native *Rumex* species. While these individual species were not included in host specificity testing, numerous other congeneric species were tested, with results indicating that these genera are unable to host and rear viable adult organisms of either biotype. The Park also contains two exotic *Polygonum* species.

SHORT- AND LONG-TERM EFFECTS

Both short- and long-term effects of environmental release of the biological control agent are similar. Complete suppression of invasive knotweed populations may take several years, during which time dense knotweed stands may still exist. Other plant species may recolonize once knotweed is reduced; however, full recolonization of a dense knotweed population may be delayed. In the short-term, after reduction of knotweed density, early successional, weedy plant species may recolonize, while long-term restoration of native plants would occur with more time.

BENEFICIAL AND ADVERSE EFFECTS

As described in pages 22-23 of the APHIS EA, environmental release of *A. itadori* to control invasive knotweed species will not adversely affect soils and erosion, wildlife, property and recreation, or beneficial uses of the plant, but will instead result in varied benefits. Suppression of Japanese knotweed along the Potomac River will allow native, riparian vegetation to regrow, ultimately reducing soil erosion and providing beneficial impacts to native wildlife from added palatable food and habitat structure. In sections of the Park in western Maryland, Japanese knotweed grows in dense thickets that line the towpath. Where this occurs, knotweed growth affects visitor use and access to recreation, reduces visibility, and affects the ability of Park staff to conduct activities to maintain recreational areas for visitor enjoyment. Upon environmental release of the biological control agent, visitor experience will benefit as visibility is increased and maintenance of recreational areas is facilitated. Japanese knotweed may benefit late-season honey production in European honey bees and provide a source of resveratrol for commercially sold herbal supplements; however, these beneficial uses would still be available as release of *A. itadori* will suppress, but not eliminate, invasive knotweeds. Some reduction in knotweed-specific honey production may occur.

EFFECTS TO PUBLIC HEALTH OR SAFETY

Release of the biological control agent would suppress Japanese knotweed along road and trail edges, ultimately increasing visitor visibility. Enhanced visibility in these areas, particularly around curves or

bends, would benefit public safety and reduce potential pedestrian collisions with visitors on bicycles. The biological control agent under consideration feeds only on plants in a specialized taxonomic range. Because of specialized, plant-feeding mouthparts, the biological control insect poses no harm to humans or any risk to human health or safety.

EFFECTS THAT WOULD VIOLATE FEDERAL, STATE, OR LOCAL LAWS OR REQUIREMENTS FOR THE PROTECTION OF THE ENVIRONMENT

Implementation of the NPS selected alternative will adhere to the Plant Protection Act of 2000 (PL 106-224) and will not violate any Federal, State, or local environmental protection law.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

Recommended: TINA CAPPETTA Digitally signed by TINA CAPPETTA Date: 2021.05.17 11:18:37 -04'00'

Tina Cappetta
Superintendent
Chesapeake and Ohio Canal National Historical Park
Region 1 – National Capital Area

Date

Approved: KIMBERLY HALL Digitally signed by KIMBERLY HALL Date: 2021.06.06 16:27:49 -04'00'

Kym A. Hall
Area Director
Region 1 – National Capital Area

Date

Appendix A Environmental Release and Post-release Monitoring Protocols
Appendix B Non-Impairment Determination

APPENDIX A: ENVIRONMENTAL RELEASE AND POST-RELEASE MONITORING PROTOCOLS

To minimize impacts related to the environmental release of *Aphalara itadori*, the NPS will implement the below release and monitoring protocols. Release and post-release monitoring will occur in close coordination with the U.S. Forest Service Forest Health Technology Enterprise Team in Morgantown, West Virginia.

ENVIRONMENTAL RELEASE

- Release sites will meet the requirements established in Grevstad et al. (2020) and be at least 0.25 acres in size or located in a sensitive area where physical disturbance would be harmful. Consultation with the U.S. Forest Service on the best locations will be completed before releases are made.
- The NPS will seek available biological control agents from the New Jersey Department of Agriculture or from cooperators with Oregon State University.
- Number of individual *A. itadori* to be released is dependent upon availability. Based on previous releases and monitoring, a minimum of 500 to 600 individuals will be released. The park will implement environmental release at one site during the initial release.

POST-RELEASE MONITORING

- For the first three years following the initial release, weekly monitoring of the site(s) will occur over 11 weeks after release. Depending upon release methods, the NPS will complete timed counts of all life stages present on the target vegetation. For small sleeve cage releases, cages will be removed for censusing after one week using two 5-minute sampling periods. Large cages will remain in place for five weeks and individuals will be counted weekly in four 5-minute sampling periods. Individuals in free-release sites will be counted in ten 3-minute intervals. Sampling methods will follow Smith et al. (2020).
- Adult *A. itadori* are prevalent during April and May and are easier to locate on shorter, young knotweed shoots. Adults can also be seen in the fall when leaves begin to fall, concentrating adult insects on remaining leaves. Nymphs and eggs can be found from May to October, with nymphs occurring near the base of the leaf petiole and eggs on the top and bottom of the leaf near the veins. Crystallized honeydew deposits can also indicate nymph presence. Further descriptions can be found in Grevstad et al. (2020).
- To measure efficacy of biocontrol release on knotweed suppression, permanent quadrats should be established prior to release. Quadrats should be 1 m^2 and placed every 10 meters along the length of the knotweed population, with transect ends denoted with PVC pipe or other small, semi-permanent marker.
- Within each quadrat, the diameter and height of knotweed shoots will be measured. At random, ten stems should be selected to measure the diameter to the nearest millimeter between the second and third node. The height of the same shoot will be measured using a surveyor rod or a graduated pole. The number of shoots in each quadrat will be counted. From these measurements, biomass can be calculated and compared over time. These measurements will be taken when the Japanese knotweed is mature, in August. During this survey, any leaf curls or deformations of

leaves or stems should be noted and counted within the quadrat. Additional details on quantitative knotweed monitoring and data sheets can be found in Appendix VI of Grevstad et al. (2020).

- Percent ground cover of Japanese knotweed and all native plant species will be estimated within each quadrat. This will provide a metric to identify changes in plant diversity, richness, and composition during active biocontrol release and subsequent years.
- The NPS intends to sample invertebrate communities within Japanese knotweed populations during the summer of 2021. Knotweed foliage will be vacuum sampled for a standardized time throughout an established plot. These sampling methods will be repeated in subsequent years to determine the correlation between invertebrate groups and the extent of knotweed growth.

LITERATURE CITED

Grevstad, F.S., J.E. Andreas, R.S. Bourchier, R. Shaw, R.L. Winston, C.B. Randall, and R.C. Reardon. 2020. Biology and Biological Control of Knotweeds. USDA Forest Service, Forest Health Assessment and Applied Sciences Team, Morgantown, West Virginia. FHTET-2017-03. 2nd Ed.

Smith, H., C. Hayes, Y. Wu., R. Reardon, D. Manning, K. Carrington, M. McGinnins, E. Belling, and F. Grevstad. 2020. First release and post-release monitoring of the psyllid (*Aphalara itadori*) for biological control of knotweeds (*Fallopia* spp.) in West Virginia. USDA Forest Service, unpublished report.

APPENDIX B: NON-IMPAIRMENT DETERMINATION

By enacting the National Park Service (NPS) Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of Interior and the NPS to manage units "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations" (54 USC 100101). Congress reiterated this mandate in the Redwood National Park Expansion Act of 1978 by stating that NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (54 USC 100101).

The NPS has discretion to allow impacts on Park resources and values when necessary and appropriate to fulfill the purposes of a Park (NPS 2006, Section 1.4.3). However, the NPS cannot allow an adverse impact that would constitute an impairment of the affected resources and value (NPS 2006, Section 1.4.3). An action constitutes an impairment when its impacts "harm the integrity of Park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment, the NPS must evaluate "the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts" (NPS 2006, Section 1.4.5). This ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

This determination on impairment has been prepared for the selected alternative described in this Finding of No Significant Impact. An impairment determination is made for the resource topics of vegetation, soils, and wildlife. An impairment determination is not made for visitor use and experience because impairment findings relate back to park resources and values, and these impact areas are not generally considered to be park resources or values according to the Organic Act and cannot be impaired in the same way that an action can impair park resources and values.

VEGETATION

The project as designed will not adversely impact non-target native plants, threatened or endangered plant species, or economically important plant species. Extensive host plant testing has been completed by USDA APHIS and researchers with little to no evidence that the introduction of *Aphalara itadori* will be capable of feeding, reproducing, and surviving on plants outside of the target invasive knotweed species. Release of this biological control organism will benefit native plants and threatened and endangered species by reducing competition. The selected alternative will not result in impairment because any impacts from environmental release will be beneficial to native vegetation.

SOILS

The selected alternative will reduce the extent and vigor of invasive Japanese knotweed populations. As native vegetation responds to the lack of competition, soil erosion should be reduced. The selected alternative will not result in impairment because any impacts from environmental release will mitigate and not facilitate erosion of soils.

WILDLIFE

The selected alternative will reduce availability of late summer floral resources for European honey bees and some native pollinators; however, Japanese knotweed outcompetes native vegetation that is required to sustain both plants and pollinators. While knotweeds can provide these resources when few native species are flowering, monospecific stands of knotweeds can limit available nutrients during the rest of the year. Japanese knotweed is also known to impair other vertebrate and invertebrate wildlife communities. The selected alternative will not result in impairment because the introduction of *A. itadori* will suppress invasive knotweed, which will benefit wildlife.

CONCLUSION

The NPS has determined that the implementation of the NPS selected alternative will not constitute an impairment of the resources or values of the Chesapeake and Ohio Canal National Historical Park. As described above, implementing the selected alternative is not anticipated to impair resources or values that are essential to the purposes identified in the establishing legislation of the park, key to the natural or cultural integrity of the park, or identified as significant in the park's relevant planning documents. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, the comments provided by the public and others, and the professional judgment of the decision-maker guided by the direction of the NPS Management Policies 2006.