

Amendment to the Recovery Plan for *Hackelia venusta* (Showy Stickseed)

Original Recovery Plan Approved: October 10, 2007

Original Recovery Plan Prepared by: Pacific Region, U.S. Fish and Wildlife Service

Recovery Plan Amendment Approved:



Regional Director, Pacific Region
U.S. Fish and Wildlife Service

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Species addressed in this Amendment: *Hackelia venusta* (showy stickseed)

We have analyzed all of the best available information and find that there is a need to amend the recovery criteria for *Hackelia venusta* (showy stickseed) that have been in place since the recovery plan was completed in 2007. In this amendment, we discuss the adequacy of the existing recovery criteria, identify amended recovery criteria, and present the rationale supporting the recovery plan modification. The modification is to be shown as an appendix that supplements the recovery plan, superseding only section II.C (“Recovery Criteria”) of the recovery plan (USFWS 2007).

BACKGROUND INFORMATION

Recovery plans should be consulted frequently, used to initiate recovery activities, and updated as needed. A review of the recovery plan and its implementation may show that the plan is out of date or its usefulness is limited, and therefore warrants modification. Keeping recovery plans current ensures that the species benefits through timely, partner-coordinated implementation based on the best available information. The need for, and extent of, plan modifications will vary considerably among plans. Maintaining a useful and current recovery plan depends on the scope and complexity of the initial plan, the structure of the document, and the involvement of stakeholders.

An amendment involves a substantial rewrite of a portion of a recovery plan that changes any of the statutory elements. The need for an amendment may be triggered when, among other possibilities: (1) the current recovery plan is out of compliance with regard to statutory requirements; (2) new information has been identified, such as population-level threats to the species or previously unknown life history traits, that necessitates new or refined recovery actions and/or criteria; or (3) the current recovery plan is not achieving its objectives. The amendment replaces only that specific portion of the recovery plan, supplementing the existing recovery plan, but not completely replacing it. An amendment may be appropriate in cases where significant plan improvements are needed, but resources are too scarce to accomplish a full recovery plan revision in a short time.

Although it would be inappropriate for an amendment to include changes in the recovery program that contradict the approved recovery plan, it could incorporate study findings that enhance the scientific basis of the plan, or that reduce uncertainties as to the life history, threats, or species’

response to management. An amendment could serve a critical function while awaiting a more comprehensive revised recovery plan by: (1) refining and/or prioritizing recovery actions that need to be emphasized, (2) refining recovery criteria, or (3) adding a species to a multispecies or ecosystem plan. An amendment can, therefore, efficiently balance resources spent on modifying a plan against those spent on managing implementation of ongoing recovery actions.

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

The recovery plan amendment was developed after a thorough review of the best available scientific information by a team of U.S. Fish and Wildlife Service biologists in consultation with botanists from the U.S. Forest Service (USFS) and the Washington Department of Natural Resources' Washington Natural Heritage Program (WNHP).

A draft of this recovery plan amendment was published for public review on January 31, 2019 (84 FR 790). In addition, we sought peer review. Please see the Appendix for a summary of the comments received and our responses.

ADEQUACY OF RECOVERY CRITERIA

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan shall incorporate, to the maximum extent practicable, "objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list." Legal challenges to recovery plans (see e.g., *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) also have affirmed the need to frame recovery criteria in terms of threats assessed under the five listing factors.

Recovery Criteria

See previous version of downlisting criteria in the Recovery Plan for Showy Stickseed (USFWS 2007, p. 26-30), and provided below.

Synthesis

When the Recovery Plan for *Hackelia venusta* was completed in 2007, a single extant population of approximately 600 to 700 plants was known to exist. The population was located in Tumwater Canyon on steep slopes in unstable granitic soils adjacent to U.S. Highway 2 (USFWS 2007). A 5-year review of the species was completed in 2011 and determined there had been no significant changes to the population distribution or threats since the writing of the recovery plan, although the population had declined to 283 individuals (USFWS 2011). When the 5-year review was conducted, the relationship of *Hackelia venusta* with several populations of a similar plant (with blue flowers and in the same genus) that occurs at nearby, higher-elevation sites had not yet been resolved. Some botanists considered these plants to be the same species, but they were considered separate species in the original recovery plan and 5-year review assessments (USFWS 2007, 2011). In 2013, these nearby, higher-elevation populations of similar plants were recognized as a different species - Taylor's stickseed (*Hackelia taylorii*) (Harrod *et al.* 2013). Genetic studies were not able to differentiate between *Hackelia taylorii* and *Hackelia venusta* (Wendling and DeChaine 2012). Further genetic research is needed to fully understand the relationship between the two species.

Since the 5-year review in 2011, an additional threat to the species has been identified—trampling of plants or soil disturbance associated with walking near the plants due to

conservation work. Due to the limited occurrence of the species and its apparent dependence on unstable granitic soils on steep slopes, it can be easily damaged by this physical disturbance. Additionally, a previously determined threat—over-collection—appears not to be as significant as there has been little recent evidence to support this concern. Due to trampling and soil disturbance, impact from research and monitoring activities could potentially cause negative impacts to the species. Biologists working on the species are, however, cognizant of the sensitivity of the species and its surroundings and work to reduce human impact by limiting survey frequency and using protocols to reduce impacts from scientific research.

Currently, the only known population is in Tumwater Canyon where it was originally discovered, although two flowering plants still survived from outplanting efforts from 1994 to 1996 in Icicle Creek as of 2018 (personal observation, Randi Riggs, U.S. Fish and Wildlife Service Biologist in the Central Washington Field and Wildlife Office on May 23, 2018). The last full survey of the Tumwater population was conducted in 2012 and documented 477 individuals (Fertig 2018). Although the outplanting efforts of the 1990s were mostly unsuccessful, new outplanting efforts by the Rare Care Plant Program at the University of Washington Botanic Gardens commenced in 2015 once the program successfully developed protocols for germinating seeds and propagating them *ex situ* in a greenhouse (Taylor, 2008, Gibble 2015). In 2015, 228 plants were outplanted in Tumwater Canyon at 4 subpopulation sites surrounding and adjacent to the core population.

Another 39 plants were reintroduced to the Icicle Creek outplanting site (Arnett and Goldner 2017). In 2019, three plants and two seedlings were found at the Icicle Creek site (W Gibble pers. comm., July 22, 2019). Survivorship of the 2015 outplantings in Tumwater Canyon in 2016 was 83 percent and declined to 51 percent in 2017 (Gibble 2017). Overall survivorship at the Tumwater site was 26 percent in 2018 and 2019 (W Gibble pers. comm., July 22, 2019). The Rare Care Plant Program plans to continue outplanting, seed collecting, and propagation efforts in 2019 and beyond to foster recovery of the species.

AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened, or that the protections afforded by the Act are no longer necessary and *Hackelia venusta* may be delisted. However, the actual change in status (downlisting or delisting) requires a separate rulemaking process based upon an analysis of the same five factors considered in the listing of a species (see Section I-F, Threats/Reasons for Listing in the Recovery Plan for *Hackelia venusta*) (USFWS 2007). Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Downlisting is the reclassification of a species from endangered to threatened. The term “endangered species” means any species (species, subspecies, or distinct population segment) that is in danger of extinction throughout all or a significant portion of its range. The term “threatened species” means any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

The recovery criteria presented below represent our best assessment of the conditions that would most likely result in a determination that delisting of *Hackelia venusta* is warranted as the outcome of a formal five-factor analysis in a subsequent regulatory rulemaking. Achieving the prescribed recovery criteria is an indication that the species is no longer threatened or endangered,

but this must be confirmed by a thorough analysis of the five listing factors. We provide delisting criteria for *Hackelia venusta* which were not included in the 2007 recovery plan. The 2007 plan included downlisting criteria, but did not include delisting criteria due to the lack of information about the species' biology and habitat requirements, the magnitude of threats, and the precarious location of this population. All downlisting criteria from the previous plan were reviewed and found to be adequate. The current amendment establishes new delisting criteria for the Showy Stickseed in addition to the existing downlisting criteria.

Downlisting Recovery Criteria

Downlisting criteria will remain the same as in the Recovery Plan for *Hackelia venusta* (Showy Stickseed) (USFWS 2007, p. 26-30). For ease of reference, those downlisting criteria are as follows:

Hackelia venusta may be considered for downlisting to threatened status when all of the following conditions have been met to address the threats to the species:

- 1. Listing/Recovery Factor A:** The present or threatened destruction, modification, or curtailment of its habitat or range. In order to ensure the long-term recovery needs of *Hackelia venusta*, threats to the species habitat must be reduced or removed. This will have been accomplished if the following have occurred:
 - a. Tree and shrub cover in all populations is maintained at a level equal to or more open than that present in 2007* in the original population, through manual removal or controlled burns.
 - b. Noxious weed populations are not present within any populations or close enough to them to pose a significant threat of invasion, or are annually removed.
 - c. Herbicide and de-icer use continues to be minimized within all populations or close enough to them that individuals may be affected.
 - d. All population sites have been evaluated for mass wasting potential and plans have been developed and implemented to minimize the effects of landslides on *H. venusta*.

- 2. Listing/Recovery Factor B:** Overutilization for commercial, scientific, or educational purposes. *Hackelia venusta* is vulnerable to overcollecting of seeds or plants, and to habitat damage through substrate disturbance. In order to ensure the long-term recovery of *H. venusta*, threats to the species through collecting and visitation must be reduced or removed. This will have been accomplished if the following have occurred:
 - a. Seed collection guidelines are established.
 - b. A guideline of not sharing specific site information with the public or the press has been accepted by the U.S. Forest Service.

* The quantitative measure of tree and shrub cover must be determined (Recovery Action 1.7.1).

- c. The pullout across the highway from the population has been modified or removed to discourage the public from stopping their vehicles and crossing the highway.
- d. The U.S. Forest Service has an entry log in place and all permitted entries into the population are logged.
- e. All research within the population is approved by the U.S. Fish and Wildlife Service and the U.S. Forest Service after review by the recovery team.

3. Listing/Recovery Factor C: Disease or predation. The viability of *Hackelia venusta* could be compromised by the presence of the borage-specific biocontrol weevil, *Mogulones cruciger*. In order to ensure the long-term recovery needs of *H. venusta*, threats to the species through predation by the biocontrol agent must be reduced or removed. This will have been accomplished if the following have occurred:

- a. A monitoring program is in place to inspect *H. venusta* and identified populations of *Cynoglossum officinale* (gypsyflower) in Chelan County on an annual basis for the presence of the biocontrol weevil, *Mogulones cruciger*.
- b. A written plan is in place for actions to undertake if the weevil is found and determined to have negative effects on *H. venusta*.

4. Listing/Recovery Factor D: Inadequacy of existing regulatory mechanisms. In order to ensure the long-term recovery needs of *Hackelia venusta*, regulatory mechanisms need to be strengthened. This will have been accomplished if the following have occurred:

- a. Habitat management plans have been developed and implemented by the U.S. Forest Service. Management plans will include provisions, as appropriate, for habitat maintenance and restoration, noxious weed control, fire management, recreational activities, monitoring, and research.
- b. A revised management plan has been developed and implemented by the Washington Department of Transportation. The management plan will include provisions, as appropriate, for habitat maintenance and restoration, noxious weed control, and highway maintenance activities.
- c. All *H. venusta* populations on public lands are within management areas where maintenance of the species is a primary management goal.

5. Listing/Recovery Factor E: Other natural or manmade factors affecting its continued existence. The long-term recovery needs of *Hackelia venusta* require more populations that are stable and self-sustaining. The genetic resources of the species must also be adequately protected through seed storage, in case of catastrophic events in Tumwater Canyon. This will have been accomplished if the following have occurred:

- a. At least **three** stable, self-sustaining populations are present within Tumwater Canyon on protected sites (owned or managed by a government agency or private conservation organization that identifies maintenance of *H. venusta* as the primary management objective for the site), separated by at least 2 kilometers (1.2 miles) or by the Wenatchee River. These populations could be the result of identification through further inventory, or through reintroduction or augmentation. If a new population is discovered outside of Tumwater Canyon, it may contribute to meeting this criterion. To be deemed stable and self-sustaining, a population must maintain a 5-year average of at least 1,000 adult plants, must show evidence of positive or neutral population growth over the same 5-year period, and must show evidence of natural reproduction and establishment.
- b. Genetic material, in the form of seeds adequately representing the geographic distribution and genetic diversity within the species, is stored in at least one facility approved by the Center for Plant Conservation.

6. Monitoring. In order to ensure the efficacy of recovery actions and allow for adaptive management, as necessary, population and habitat monitoring will have been established for all populations of the taxon at appropriate intervals. Habitat monitoring should include census, monitoring of *Hackelia venusta*, and of shrub and tree cover and nonnative species. Monitoring must be planned and conducted to minimize the potential negative impacts on the species and its habitat. Written agreements to continue monitoring after downlisting must be in place.

Delisting Recovery Criteria

Delisting of *Hackelia venusta* may be considered when all of the following conditions, in addition to the downlisting criteria set in the Recovery Plan (USFWS 2007), have been met to address threats to the species:

Recovery Criteria associated with Factor A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

To delist *Hackelia venusta*, threats to the species' habitat should be removed or adequately managed. This will be accomplished when the following has occurred:

Criterion A/1: The primary threats are removed or adequately managed in all five populations counted toward recovery in delisting criteria (see also **Criterion E/1**).

1. Justification: Given the inherent rarity of the species and sensitivity of its habitat to degradation, consultation with species experts concluded that the primary threats need to be removed or adequately managed for the foreseeable future for all populations counted toward recovery. Recovery criteria for similar federally listed plant species have required 100 percent of primary threats to be removed or adequately managed for the foreseeable future. (USFWS 2015a, b).

2. Primary threats (and measures to address each threat) include:
 - a. Habitat loss due to plant succession in the absence of fire
 - i. Addressed when: Tree and shrub cover is maintained through manual removal and/or controlled (prescribed) burns at a level equal to or more open than that present in 2007 at the location of the original (currently only) population.
 - ii. How to maintain for the foreseeable future: Memorandum of Understanding (MOU) with the USFS to conduct overstory and understory thinning at regular intervals (every 1 to 5 years).
 - b. Competition from nonnative plant species
 - i. Addressed when either: Noxious weeds are not present within any *Hackelia venusta* population, are not close enough to pose a significant threat of invasion, or are annually removed.
 - ii. How to maintain for the foreseeable future: MOU with the USFS to conduct annual weed management using Best Management Practices (BMPs). USFS BMPs are developed and implemented where *H. venusta* occurs.
 - c. Herbicide and road de-icer use
 - i. Addressed when: Herbicide and road de-icer use is minimized or avoided within all populations or in close proximity to individual plants.
 - ii. How to maintain for the foreseeable future: MOU (or another agreement) with the Washington State Department of Transportation (WSDOT) to keep levels of de-icer in the soil below levels determined to be harmful near *H. venusta* populations (Chalker-Scott and Brickey 2004). Implement BMPs from the WSDOT rare plant management plan for application of de-icer and herbicide application near *H. venusta* (WSDOT 2000). Implementation of USFS BMPs for herbicide applications in close proximity to populations and individual plants.
 - d. Mass wasting
 - i. Addressed when: All populations are evaluated for the potential of landslide or mass wasting (downslope earth movement). Populations determined to be at high risk will require implementation of conservation measures to minimize mass wasting potential.
 - ii. How to maintain for the foreseeable future: Conservation measures implemented to minimize mass wasting potential (i.e., fencing and/or slope stabilization structures) near occupied habitat will be maintained for the foreseeable future by the appropriate entity such as the USFS or WSDOT. An MOU or other agreement that commits enforcement of off-trail hiking prohibitions near occupied habitat is implemented by the USFS.

Recovery Criteria associated with Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Criterion B/1: Threats to the species through visitation should be removed.

1. Justification: *H. venusta* is potentially vulnerable to habitat damage through substrate disturbance (overcollecting is not currently considered a threat).
2. Major threats (and ways to address each threat) include:
 - a. Monitoring efforts
 - i. Addressed when: Trampling from monitoring efforts is reduced by developing techniques that remove negative impacts to plants (i.e., surveys conducted using drones and/or satellite imagery).
 - ii. How to maintain for the foreseeable future: Develop and implement a monitoring protocol that minimizes impact to plants.

Recovery Criteria associated with Factor C: Disease or Predation

In order to ensure the long-term recovery needs of *H. venusta*, threats to the species through predation by the biocontrol agent, *Mogulones crucifer* (formerly known as *Mogulones cruciger*), should be removed. This will have been accomplished if the two recovery criteria for downlisting under Factor C have been met (USFWS 2007). Additional delisting recovery criteria beyond those for downlisting will not be required under Factor C.

Recovery Criteria associated with Factor D: Inadequacy of Existing Regulatory Mechanisms

The inadequacy of existing regulatory mechanisms beyond those addressed by the three recovery criteria for downlisting under Factor D (USFWS 2007) or by the MOUs (or other agreements) to manage habitat threats addressed above under Factor A (see also **Criterion A/1**) is not known to hinder the recovery of *Hackelia venusta* at this time. Therefore, no additional delisting criteria have been developed for this factor.

Recovery Criteria associated with Factor E: Other Natural or Manmade Factors Affecting Its Continued Existence

Criterion E/1: There are at least five stable, self-sustaining populations typically separated by 1.5 miles (W Fertig pers. comm., April 20, 2018; NatureServe 2018) or by a geographical barrier such as the Wenatchee River on protected sites where protection of the species is a priority.

1. Justification: According to the most recent surveys, a single population of fewer than 500 plants of *H. venusta* exists currently, making it extremely vulnerable to a single stochastic event (e.g., mass wasting) that could wipe out the world-wide distribution of this listed species. The distribution of *H. venusta* needs to include more than one population and populations need to be separated enough to prevent extinction through a single stochastic event. Additionally, five populations are needed to maintain an acceptable minimum level of genetic diversity within the species (Brown and Briggs 1991, Neel and

- Cummings 2003).
2. Major threats (and ways to address each threat) include:
 - a. Low seed production
 - i. Addressed when: By definition, if there are at least five stable, self-sustaining populations, this threat has been addressed.
 - ii. How to maintain for the foreseeable future:
N/A
 - b. Seedling establishment
 - i. Addressed when: By definition, if there are at least five stable, self-sustaining populations, this threat has been addressed.
 - ii. How to maintain for the foreseeable future: Establish agreements with WNHP for seed collection (only in high seed production years following the methods in the draft *Hackelia venusta* seed collection protocol (Arnett 2007), adapted from the collection guidelines published by the Center for Plant Conservation (1991)). Seeds will be stored at two storage facilities certified by the Center for Plant Conservation. Seeds should be collected at least every 5 years to ensure that seeds in storage are viable.

Criterion E/2: To be deemed stable and self-sustaining, a population should maintain a 20- year running average of at least 2,000 adult plants, show evidence of positive or neutral population growth over the same 20-year period, and be sustained through natural regeneration.

1. Justification for 2,000 adult plants per population: The number (2,000 adult plants) of *H. venusta* was chosen in order to prevent inbreeding depression which can occur in small, isolated populations when a deleterious allele becomes fixed (Lynch, Conery, and Burger 1995). If inbreeding depression were to occur, survival and reproduction of *H. venusta* would be greatly reduced furthering the probability of extinction (Falk, Knapp, and Guerrant 2002). The number (2,000 adult plants) was chosen as a conservative estimate in order to balance what is feasible for the available habitat and also as an intermediate value between the lowest and highest estimates given from the following studies: Frankham 1995; Franklin and Frankham 1998; Lande 1995; Lynch, Conery, and Burger 1995; and Burger and Lynch 1997.

Minimum Viable Population (MVP) size, the smallest number of individuals required for 95 percent probability of survival over 100 years (Mace and Lande 1991), is often used as the recovery objective for populations of listed species. However, determining the MVP can be challenging for many plant species as it requires genetic and demographic data that is often not known. Therefore, we used an alternative method to estimate likely MVP (Table 1) developed by Pavlik (1996), which has also been used to estimate MVP for other similarly rare, listed species (USFWS, 2016c; USFWS 2017). This method is based on

the life-history characteristics of the species. Using this methodology, a perennial plant that is woody and self-fertilizing with high fecundity and survivorship (with life history characteristics mostly in column A of Table 1) would have an MVP in the range of 50 to 250 individuals. A plant with life history characteristics that fall mostly in column B would have an MVP value between 1,500 to 2,500 individuals. Known life history characteristics of *H. venusta* are noted in bold in Table 1. MVP size for *H. venusta* is estimated at 2,000 individuals due to the following species' characteristics: outcrossing, herbaceous, low fecundity, low survivorship, ruderal successional status, no known ramet production, and unknown seed duration.

Table 1. Selection of objective for minimum viable population (MVP) size based on life history characteristics of the species. Adapted from Pavlik (1996) and USFWS (2017).

Life History Characteristic	A. 50 individuals	B. 2,500 individuals
longevity	perennial --->	annual
breeding system	selfing --->	outcrossing
growth form	woody --->	herbaceous
fecundity	high --->	low
ramet production	common --->	rare or none
survivorship	high --->	low
seed duration	long --->	short
environmental variation	low --->	high
successional status	climax --->	seral or ruderal

- Justification for 20-year average: The lifespan of *H. venusta* is approximately 10 years (USFWS 2007). If the populations are stable or increasing for a time period of twice the lifespan of the plant, species experts can be confident that the population is stable and capable of regeneration. A stable or increasing population over a 20-year average was determined to be a reasonably conservative criteria considering the time period required for a stable or increasing population for delisting for similarly rare plants ranges from 10 to 60 years (see e.g., USFWS 2015b (10 years), USFWS 2016b (20 years), USFWS 2015a and 2016a (25 years), and USFWS 2017 (60 years)). Climate patterns in the Pacific Northwest are strongly influenced by the effects of the El Niño/Southern Oscillation (ENSO) with a period of 2 to 7 years and the Pacific Decadal Oscillation (PDO) pattern, with irregular periods lasting 20 to 30 years (Mote *et al.* 2003). Compounding these two drivers of climate in the Pacific Northwest are the current and future effects of anthropogenic climate change. ENSO and PDO can result in long periods of drier or wetter than average conditions, which could impact the stability of rare species with extremely limited ranges and habitat requirements such as *H. venusta*. Climate change and the PDO can cause significant, long-term changes to the forests of the Pacific Northwest via less precipitation in the summers and increased probability for forest fires, which could negatively impact rare plants like *H.*

venusta (Hessl 2004, Mote *et al.* 2003, W. Fertig, pers. comm. April 13, 2018). Therefore, a time period of 20 years for *H. venusta* to have five stable or increasing populations is likely needed to assess whether the species can be stable and resilient without the protection of the Act even during periods of changing climate patterns. However, if 5 populations maintain a 10-year running average of at least 2,000 adult plants, the Service at that time may reevaluate the necessity of the 20-year running average criterion.

All classification decisions consider an analysis of the following five factors: (1) is there a present or threatened destruction, modification, or curtailment of the species' habitat or range; (2) is the species subject to overutilization for commercial, recreational scientific or educational purposes; (3) is disease or predation a limiting factor; (4) are there inadequate existing regulatory mechanisms in place outside the Act (taking into account the efforts by states and other organizations to protect the species or habitat); and (5) are other natural or manmade factors affecting its continued existence. When delisting or downlisting a species, we first propose the action in the *Federal Register* and seek public comment and peer review on our analysis. Our final decision is announced in the *Federal Register*.

Rationale for Recovery Criteria

Justification for the amended recovery criteria is included above within the Delisting Recovery Criteria section.

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PERSONAL COMMUNICATIONS

- Fertig, Walt. April 13, 2018. Botanist, Washington Natural Heritage Program, Washington Department of Natural Resources, Olympia, Washington.
- Fertig, Walt. April 20, 2018. Botanist, Washington Natural Heritage Program, Washington Department of Natural Resources, Olympia, Washington. Message to Randi Riggs. E-mail.
- Gibble, Wendy. July 22, 2019. Botanist, Rare Plant Care and Conservation University of Washington Botanic Gardens. Seattle, Washington. Message to Gregg Kurz. E-mail.

Appendix. Summary of Peer Review, Agency, and Public Comments on the Draft Amendment to the Recovery Plan for *Hackelia venusta* (Showy Stickseed)

On January 31, 2019, we released the Draft Amendment to the Recovery Plan for *Hackelia venusta* (Showy Stickseed) for a 60-day comment period. The notice of availability, published in the Federal Register (84 FR 790-795), solicited written comments on the draft recovery plan amendment. This comment period ended on April 1, 2019.

This section provides a summary of general information about the comments we received. All comment letters are kept on file in the Central Washington Field Office of the U.S. Fish and Wildlife Service, 215 Melody Lane, Wenatchee, Washington 98801.

All comments received were considered. The majority of the comments were to point out minor corrections or suggest areas in need of further explanation or clarification; these have been incorporated directly into the final recovery plan amendment, where appropriate. Significant comments regarding the substance of the amendment are summarized below, along with our responses to those comments. We thank those who took the time to read the draft recovery plan amendment and provide us with their suggestions for improvement.

Summary of Comments and Our Responses

Comment (1): Concern that, “criteria are being added in the absence of any scientific peer review and that this will lead to a failure on the Service’s part to follow the best-available science.”

Response: Peer review was conducted following the publication of the Notice of Availability, and in accordance with the requirements of the Endangered Species Act (Act). Below we provide a detailed summary of peer review comments and our responses, where appropriate.

Comment (2): Concern that, “the decision to update recovery criteria for these 42 species as a group is indicative of the Service moving away from utilizing recovery teams and outside scientific expertise.”

Response: Section 4 of the Act provides the Service with the authority and discretion to appoint recovery teams for the purpose of developing and implementing recovery plans. The current effort to update recovery plans with quantitative recovery criteria for what constitutes a recovered species is not indicative of the future need for, and does not preclude the future utilization of, recovery teams to complete recovery planning needs for listed species.

Comment (3): New and significant information has been developed in the years since the existing recovery plan was adopted. Updating this plan can serve to better inform the Service, the regulated community, and Federal, State, and local resource agencies.

Response: A recovery plan should be a living document, reflecting meaningful change when new

substantive information becomes available. Keeping a recovery plan current increases its usefulness in recovering a species by ensuring that the species benefits through timely, partner-coordinated implementation based on the best available information.

Comment (4): The Service should consider whether the updated recovery criteria would be less burdensome on Federal agencies and the regulated community than the existing criteria.

Response: Recovery plans are guidance documents that outline how best to help listed species achieve recovery, but they are not regulatory documents. Recovery plans are intended to establish goals for long-term conservation of listed species and define criteria that are designed to indicate when the threats facing a species have been removed or reduced to such an extent that the species may no longer need the protections of the Act.

Recovery criteria are achieved through the funding and implementation of recovery actions by both the Service and our partners. In addition to the existing recovery actions included in each of these recovery plans, the amendments address the need for any new, site-specific recovery actions triggered by the modification of recovery criteria, along with the costs, timing, and priority of any such additional actions. Because recovery plans are not regulatory documents, identification of an action to be implemented by any public or private party does not create a legal obligation beyond existing legal requirements. Nothing in a recovery plan should be construed as a commitment or requirement that any Federal agency obligate or provide funds.

Comment (5): The Service should consider whether the recovery criteria are achievable, because including unattainable recovery criteria could render such plans meaningless, or impede other processes under the Act.

Response: The National Marine Fisheries Service and U.S. Fish and Wildlife Service Interim Endangered and Threatened Species Recovery Plan Guidance (2010) emphasizes the development of recovery criteria that are specific, measurable, achievable, realistic, and time-referenced (SMART). The achievable component of SMART criteria implies that the authority, funding, and staffing needed to meet recovery criteria are feasible, even if not always likely.

In developing recovery criteria specifically, we attempt to establish criteria that are both scientifically defensible and achievable to the greatest extent possible. At times, however, the feasibility of achieving certain criteria can be, or appear to be, constrained by the particular, difficult circumstances that face a species. Even in such cases, criteria serve to guide recovery actions and priorities for the species. Furthermore, as recovery progresses, periodic reevaluation of the species status through the 5-year review process may reveal that the barriers to achieving certain criteria have been removed or that circumstances or our understanding of the species have evolved. In that event, the Service can revise recovery criteria to ensure that they reflect the strategy most likely to succeed in the goal of recovery.

Comment (6): The Service should consider conservation efforts that have been put into place for the listed species since the previous iteration of the recovery plan, especially where the Service has supported conservation efforts, in formulating recovery criteria that will be established or amended by the revised draft plan.

Response: While section 4 of the Act directs the Service to specifically develop and implement

recovery plans, several other sections of the Act and associated programs and activities also provide important opportunities to promote recovery. Information from these programs and activities about the biological needs of the species can inform recovery planning (including the formulation or revision of recovery criteria) and implementation. These conservation efforts have been considered during the development of this and other recovery plans.

Comment (7): The Service should determine whether ongoing species conservation efforts beneficially address one or more of the listing factors set forth in the Act implementing regulations addressing species listings and designation of critical habitat.

Response: All Service decisions that affect the listed status or critical habitat designation of a particular species, including our 5-year review of each listed species, are made by analyzing the five factors described in section 4 of the Act. Such an analysis necessarily includes an assessment of any conservation efforts or other actions that may mitigate or reduce impacts on the species. While our objective with this particular effort was to establish objective, measurable criteria for delisting, conservation actions play a crucial role in determining if and when those criteria have been satisfied.

Comment (8): The Service should be mindful of the impacts that recovery plan criteria can have on the section 7 process of the Act for the regulated community, because the Service and other Federal resource agencies sometimes request that recovery criteria be addressed in biological assessments and other planning processes under the Act addressing listed species.

Response: Recovery plans can both inform, and be informed by section 7 processes of the Act. When revising a recovery plan, existing section 7 consultations may provide helpful information on: recent threats and mechanisms to avoid, minimize, or compensate for impacts associated with those threats; a summarized status of the species; and indication of who important partners may be. Section 7 consultations can inform the need for revised recovery actions, recovery implementation schedule activities, recovery criteria, or species status assessments to provide more comprehensive recovery planning while the species remains listed.

Comment (9): The Service should include the full panoply of current information available for the species in all revised draft recovery plans.

Response: Our recovery planning guidance recommends that recovery planning be supported by compilation of available information that supports the best possible scientific understanding of the species. Although it is not necessary to exhaustively include all current information within the text of the recovery plan, to the extent that this information is specifically relevant and useful to recovery, the recovery plan may summarize such material or incorporate it by reference. Supporting biological information may also be included within a species status assessment or biological report separate from the recovery plan document itself.

Comment (10): The Service should consider whether the existing recovery plan should be revised or replaced in its entirety rather than amended in part.

Response: Under guidance established in 2010, partial revisions allow the Service to efficiently and effectively update recovery plans with the latest science and information when a recovery plan may not warrant the time or resources required to undertake a full revision of the plan. To further gauge whether we had assembled, considered, and incorporated the best available scientific and

commercial information into this recovery plan revision, we solicited submission of any information, during the public comment period, that would enhance the necessary understanding of the species' biology and threats, and recovery needs and related implementation issues or concerns. We believe the recovery plan amendment, which targets updating recovery criteria, is appropriate for the species. However, we will also continue to evaluate the accuracy and usefulness of the existing recovery plan with respect to current information and status of conservation actions, and may pursue a full revision of the plan in the future, if appropriate.

Comment (11): One peer reviewer questioned the availability of imagery or other data for establishment of the 2007 baseline of tree and shrub cover (section A/1, #2. A. i.) for future comparison.

Response: Satellite images and GIS data from 2007 are available for comparison of tree and shrub cover to 2007 conditions.

Comment (12): One peer reviewer asked what measures would be implemented to minimize mass wasting potential (section A/1 d. i) and if construction of these could impact *Hackelia venusta* occurrences.

Response: Mass wasting potential has been significantly minimized through past installation of slope stabilization cable netting and modified cable netting. Additional reductions in mass wasting potential would likely be accomplished using these same methods in the future. Past installation of cable netting and modified cable netting for slope stabilization resulted in no construction impacts to *Hackelia venusta*. Additional measures to minimize mass wasting potential may be considered in the future. Potential effects to *Hackelia venusta* from any slope stabilization measures will be fully evaluated in consultation with the Service prior to installation.

Comment (13): One peer reviewer noted that the narrative indicates the population has decreased by more than 50 percent yet there were no significant changes to the population distribution or threats since the writing of the recovery plan. The reviewer commented that a declining population could in itself represent a threat.

Response: The Recovery Criteria consider the threats which may be causing the population decline along with measures to address those threats in order to contribute to species recovery. Declining population itself is not considered a threat, but is a result of continued impacts from the threats that have been identified.

Comment (14): One peer reviewer noted that continued outplanting, seed collection, and propagation to foster recovery of the species may also contribute to the identified threat of trampling from monitoring.

Response: While trampling from monitoring is a threat, several precautions are taken to minimize potential impacts of this activity. As stated in the Recovery Plan Amendment, "Biologists working on the species are, however, cognizant of the sensitivity of the species and its surroundings and work to reduce human impact by limiting survey frequency and using protocols to reduce impacts from scientific research."

Comment (15): One peer reviewer noted the Synthesis (paragraph 1, lines 8-10) states, "Some

botanists considered these plants to be the same species,...”. The reviewer recommended deleting the statement noting that it introduces unnecessary uncertainty into the consideration of *Hackelia venusta* as a distinct taxon from *Hackelia taylorii* and fails to acknowledge who the botanists are or why their taxonomic opinion should be given any consideration.

Response: The Service contends that it is necessary to acknowledge the evolution of this taxonomic distinction. While the two taxa are currently considered separate species based on morphological and ecological differences, genetic studies have not yet confirmed differentiation between *Hackelia taylorii* and *Hackelia venusta* (Wendling and DeChaine 2012). Further genetic research is needed to fully understand the relationship between the two species.