

5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Monardella viminea*
(Willow Monardella)

Current Classification: Endangered



Monardella viminea (Willow monardella) and habitat in Lopez Canyon on June 28, 2011.
Photo credit: Sabrina West (USFWS 2011).

U.S. Fish and Wildlife Service

Carlsbad, CA

August 3, 2012

Federal Register (FR) Notice Citation Announcing Initiation of This Review:

A notice announcing initiation of the 5-year review for *Monardella viminea* (willow monardella) and the opening of a 60-day period to receive information from the public was published in the **Federal Register** on April 27, 2012 (USFWS 2012a, pp. 25112–25116). No information relevant to this taxon was received.

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Methodology Used to Complete This Review:

We recently published a final listing and critical habitat rule and accepted the taxonomic revision for *Monardella viminea* on March 6, 2012 (USFWS 2012b, pp. 13394–13447). In the final rule, we compiled the best scientific and commercial information available regarding past, present and future threats faced by the species, and used that information to assess the status of *M. viminea*. Included here is a brief summary of that information; see the final listing and critical habitat rule for a complete review of the threats (five-factor analysis) (USFWS 2012b, pp. 13394–13447). This review summarizes information from the final listing rule (USFWS 2012b, pp. 13394–13447) and provides an indication of progress towards recovery. Based on this synthesis and the threats identified in the five-factor analysis in the final rule, we recommend a prioritized list of conservation actions to be completed or initiated within the next 5 years.

Application of the 1996 Distinct Population Segment (DPS) Policy:

The Endangered Species Act (Act) defines “species” as including any subspecies of fish or wildlife or plants, and any distinct population segment (DPS) of any species of vertebrate wildlife. This definition of species under the Act limits listing as distinct population segments to species of vertebrate fish or wildlife. Because the species under review is a plant, the DPS policy is not applicable, and the application of the DPS policy to the species’ listing is not further addressed in this review.

Background:

Monardella viminea is a perennial herb or subshrub in the Lamiaceae (mint family) with a woody base and aromatic foliage. The species occurs in coastal sage scrub and riparian scrub in sandy bottoms and on banks of ephemeral washes in canyons where surface water flows for usually less than 48 hours after a rain event (Scheid 1985, p. 3; Elvin and Sanders 2003, p. 430; Kelly and Burrascano 2006, p. 51). *Monardella viminea* is a geographically narrow endemic species restricted to three watersheds north of Kearny Mesa in San Diego County, California

(Elvin and Sanders 2003, p. 431). Within these watersheds, *M. viminea* occurs on land owned by the Department of Defense at Marine Corps Air Station (MCAS) Miramar, the City of San Diego, the County of San Diego, and private parties. When we listed the species, we considered 20 occurrences to be extant in the United States (see Table 1) (USFWS 1998, pp. 54938–54956). Today, we consider eight occurrences of the listed entity to be extant (USFWS 2012b, pp. 13394–13447). Recent surveys have shown the population to be substantially declining in the past decade; the cause of the decline is uncertain (Tierra Data 2011, p. i).

Review Analysis:

A brief discussion of threats impacting *Monardella viminea* is discussed below. For a complete discussion of the species status (including biology and habitat), five-factor analysis, and an evaluation of ongoing management efforts please refer to final listing and critical habitat rule published in the **Federal Register** on March 6, 2012 (USFWS 2012b, pp. 13394–13447).

Monardella viminea was listed as endangered on October 13, 1998 (USFWS 1998, pp. 54938–54956). Based on the best available information at that time, we determined that *M. viminea* was threatened by: habitat alteration and destruction resulting from urban, recreational, and agricultural development; trampling from recreational activities; inadequacy of regulatory mechanisms; and competition from exotic plant species. In the 2008 status review, we concluded that *M. viminea* continued to be impacted by these threats and included threats to the species from stochastic events and fire (USFWS 2008, pp. 1–23).

In the final rule, we determined that threats identified at the time of listing continue to affect *Monardella viminea*. Current threats affecting *M. viminea* and its habitat include:

(1) Urbanization and development, (2) altered hydrology, (3) fire and type conversion, (4) disease and predation, (5) nonnative plant species, (6) small population size and restricted range, (7) climate change, and (8) megafire (large, uncontrollable fire events). These threats are summarized below under their respective threat factor.

Factor A: Currently, the habitat of *Monardella viminea* is threatened by destruction and modification caused by land use, erosion, nonnative plants, fire, and fire management.

Destruction of habitat is no longer an immediate threat because seven of the eight *M. viminea* occurrences are on protected lands owned or managed by the City or County of San Diego Subarea Plans under the San Diego Multiple Species Conservation Program (MSCP) or MCAS Miramar.

Modification of *Monardella viminea* habitat is also continuing to affect the species. Within the watershed where *M. viminea* occurs, strong floods events have increased in frequency from 350 to 700 percent since listing in 1998 with no corresponding increase in rainfall (White and Greer 2006, pp. 134–135). Such watershed changes can alter the riparian vegetation community through changes in median and minimum daily discharges and by washing away plants as large as or larger than *M. viminea*; dry season run-off; and flood magnitudes (Kelly and Burrascano 2001, pp. 2–3; Kelly and Burrascano 2006, pp. 65–69; White and Greer 2006, pp. 133–136). We

expect that altered hydrology will continue to pose a significant threat to habitats that support *M. viminea*, particularly in developed areas outside the border of MCAS Miramar.

Monardella viminea habitat has also been strongly impacted by fire. Where naturally occurring fire is excluded, species adapted to fire (such as *M. viminea*) are often replaced by nonnative invasive species better suited to the new fire regime (Keane *et al.* 2002, p. 9). This type conversion (conversion of one type of habitat to another) produces a positive feedback mechanism resulting in more frequent fires and increasing nonnative plant cover (Brooks *et al.* 2004, p. 677; Keeley *et al.* 2005, p. 2109). Multiple areas supporting *M. viminea* are now covered in nonnative grasses, which could again exacerbate the threat of fire.

Factor B: Overutilization for commercial, recreation, scientific, or educational purposes of *Monardella viminea* for any purpose is not currently considered a threat.

Factor C: Disease and predation were not identified as threats affecting *Monardella linoides* ssp. *viminea* at the time of listing (USFWS 1998, pp. 54938–54956). Herbivory has since been documented (Kelly and Burrascano 2001, p. 5; AMEC 2011, p. 4-9); however, as *M. viminea* resprouts from perennial root crowns each year, herbivory is not likely to impact its survival or vigor (AMEC 2011, p. 5-1).

Factor D: *Monardella viminea* and its habitat are afforded protection through Federal (the Act, the Clean Water Act,) military mechanisms (Sikes Act—Integrated Natural Resources Management Plan for MCAS Miramar), and local mechanisms (the City of San Diego Subarea Plan under the San Diego MSCP, and the County of San Diego Subarea Plan under the MSCP). These plans provide significant protections for *M. viminea*. However, some threats, such as megafire (large or unmanaged fires), cannot be eliminated through regulatory mechanisms.

Factor E: Nonnative plants, fire, and climate change continue to impact *Monardella viminea* at all eight occurrences in San Diego County. Areas heavily invaded by nonnative grasses have fewer adult *M. viminea* plants than areas free from invasion, and areas that support adult plants have been reduced in size by the encroachment of nonnative species (Tierra Data 2011, p. 29). Predicted future drought in San Diego County could impact the dynamic of the streambeds where *M. viminea* grows. Monitors for the City of San Diego have observed decreased plant health and increased dormancy of *Monardella* species in years with low rainfall (City of San Diego 2003, p. 3; City of San Diego 2004, p. 3). Specific analyses of population trends as correlated to rainfall are difficult due to inconsistent plant count methods (City of San Diego 2004, p. 67).

Megafire events have the potential to severely impact or eliminate populations by killing large numbers of individual plants, their underground rhizomes (stems), and the soil seed bank. However, the impact of fire on *Monardella viminea* has been shown to be minimal due to the species' life history characteristics. Though 98 percent of *M. viminea* occurrences on MCAS Miramar and portions of the privately owned occurrences of Sycamore Canyon burned in the 2003 Cedar Fire, the decline of the burned occurrences was not as severe as initially expected, as plants were later able to resprout from the root system (Rebman and Dossey 2006, p. 13).

Additionally, new juveniles and seedlings occurred primarily on lands burned by the 2003 Cedar Fire (Tierra Data 2011, p. 16).

Cumulative Impacts:

Several of the threats discussed in this review have the potential to work in concert. For example, as discussed under Factor A, increased fire frequency in habitats supporting *Monardella viminea* can lead to an increased density of nonnative vegetation. Furthermore, nonnative density can become more severe if natural flows within a hydrological system decrease to the point where they no longer scour nonnative grasses from secondary benches and sandbanks. The synergistic effects of these threats combined with reduced number of *M. viminea* individuals has resulted in a population decline across the range of *M. viminea* and the continued population decline on MCAS Miramar. Additionally, small population size may exacerbate the effects of stochastic events. Therefore, the cumulative impacts of these threats may be greater than the sum of their individual impacts and are a likely factor in the decline of this species.

Recovery Criteria:

No recovery plan or recovery outline has been prepared for *Monardella viminea*.

Synthesis:

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to *Monardella viminea*. In our analysis, we find that threats from alteration of hydrology; type conversion and habitat degradation due to frequent fire; and impacts from nonnative plant species to individual *M. viminea* plants represent significant and immediate threats to the species across its range. Protection is afforded to *M. viminea* by the City and County of San Diego Subarea Plans under the MSCP and the Integrated Natural Resources Management Plan at MCAS Miramar, though we find that other existing regulatory mechanisms as described under Factor D would not provide protections adequate to alleviate threats to *M. viminea* in the absence of the Act. All threats impacting the species could be exacerbated by the ongoing decline of the species and the small size of the few occurrences that remain.

Given the immediacy and magnitude of continuing threats, the rapid population decline (particularly the 45 percent decline of the population on MCAS Miramar since 2002), and the species' limited range and small population size, we find that *Monardella viminea* continues to be in danger of extinction throughout its range. Therefore, *M. viminea* remains in danger of becoming extinct throughout its range and we recommend no status change at this time.

Recommendations for Future Actions:

- (1) Continue monitoring and management of *Monardella viminea* and its habitat, including flood control and anti-erosion measures.

- (2) Investigate the possible role of drought in the decline of *Monardella viminea*.
- (3) Provide viable *Monardella viminea* seeds to a seed bank operating under the Center for Plant Conservation Guidelines.
- (4) Investigate the possibility of reintroducing *Monardella viminea* to extirpated locations.
- (5) Complete a recovery outline for *Monardella viminea*.

New Recovery Priority Number and Brief Rationale: Change from RPN 3 to RPN 2.

The current recovery priority number is 3, indicating a high degree of threat and high potential for recovery of *Monardella viminea*. However, given the recent reclassification of *M. viminea* from a subspecies to a species, the new recovery priority number will be 2.

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**U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW**

***Monardella viminea* (Willowy Monardella)**

Current Classification: Endangered

Recommendation Resulting from the 5-year Review:

Downlist to Threatened

Uplist to Endangered

Delist

X No change needed

Review Conducted By: Carlsbad Fish and Wildlife Office

FIELD OFFICE APPROVAL:

Lead Field Supervisor, U.S. Fish and Wildlife Service

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Approve _____



Scott A. Sobiech

Date _____

AUG 03 2012