

## MEMORANDUM

To: Industrial Economics, Incorporated (IEc)

From: Adam Zerrenner, Field Office Supervisor, Austin Ecological Services Field Office

Date: February 5, 2021

**Subject: Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for bracted twistflower (*Streptanthus bracteatus*).**

The purpose of this memorandum is to document the likely difference between conservation efforts that would be undertaken for bracted twistflower with and without critical habitat designation. This information will be used as the basis and underlying assumptions for conducting an economic analysis for the proposed designation of critical habitat for the bracted twistflower. This memorandum focuses on understanding the likely outcomes of consultation for bracted twistflower based on expert opinion, agency experience, consultation history, or proxy species. However, nothing in this memorandum is intended to pre-determine outcomes of specific consultation for bracted twistflower, as these would be developed on a case-specific basis.

The first sentence of section 4(b)(2) of the Endangered Species Act (Act) requires the Secretary of Interior (Secretary), and therefore by delegation the U.S. Fish and Wildlife Service (Service), to consider the economic, national security, and other impacts of designating a particular area as critical habitat. To comply with the requirement of the Act to consider economic impacts, the Service, often in conjunction with an economic contractor, prepares an economic analysis that describes and monetizes, where possible, the probable economic impacts of the proposed designation of critical habitat. The Secretary has discretion to exclude areas from a designation of critical habitat as described in the second sentence of section 4(b)(2) of the Act. The economic analysis may also be used to inform any discretionary balancing analysis the Secretary chooses to undertake.

### I. EFFECTS OF CRITICAL HABITAT

Current regulations at 50 CFR 424.19 require the Service to use an incremental analysis when describing the probable economic impact of a designation of critical habitat. Determining the economic impacts of a critical habitat designation involves evaluating the “without critical habitat” baseline versus the “with critical habitat” scenario, to identify those effects expected to occur solely due to the designation of critical habitat and not from the protections that are in place due to the species being listed under the Act. Economic effects solely due to the critical habitat designation include both: (1) the costs of increased administrative efforts that result from the designation; and, (2) the economic effects of changes in the action to avoid destruction or

adverse modification of critical habitat. These changes can be thought of as “changes in behavior” or the “incremental effect” that would most likely result from the designation if finalized.<sup>1</sup> Specific measured differences between the baseline (without critical habitat) and the designated critical habitat (with critical habitat) may include, but are not limited to: (1) the economic effects stemming from changes in land or resource use or extraction; (2) changes in environmental quality; (3) or time and effort expended on administrative and other activities by Federal landowners, Federal action agencies, and in some instances, State and local governments or private third parties. These are the incremental economic effects that serve as the basis for the economic analysis.

A primary purpose of this memorandum is to describe differences between actions that may be needed to avoid jeopardy to the species versus actions that may be needed to avoid destruction or adverse modification of critical habitat. Actions required to avoid jeopardy of a species are attributable solely to the listing of a species. Actions required to avoid destruction or adverse modification of a species’ critical habitat are attributable solely to the designation of critical habitat for a species. In some instances, actions required to avoid destruction or adverse modification of a species’ critical habitat may be the same as those to avoid jeopardy of a species. To get at this distinction, we need to make an informed decision as to whether destruction or adverse modification would occur based on whether the Federal agency’s action is likely “to result in the destruction or adverse modification of habitat which is determined by the Secretary... to be critical.” The Service considers how the proposed action is likely to affect the function of the critical habitat unit in serving its intended conservation role relative to the entire designation. The information provided below is intended to identify the possible differences for this species under the two different section 7 standards (i.e., jeopardy to the species and adverse modification of critical habitat). Ultimately, however, a determination of whether an activity may result in the destruction or adverse modification of critical habitat is based on the effects of the action to the designated critical habitat in its entirety. The information provided below is intended to identify the possible differences for bracted twistflower under the different section 7 standards for jeopardy to the species and destruction or adverse modification of critical habitat.

Section 7 consultation is required whenever there is a discretionary Federal action that may affect listed species or designated critical habitat. Section 7(a)(3) also states that a Federal agency shall consult with the Secretary on any prospective agency action at the request of, and in cooperation with, the prospective permit or license applicant if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species. The initiation of section 7 consultation under the jeopardy standard takes place if the species may be present

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<sup>1</sup> Changes in behavior include any additional conservation efforts or activities that would be undertaken to protect the species. For example, a change in behavior would include conducting a new consultation, relocating a project, or adding a particular conservation activity to the suite of conservation actions undertaken to protect a species.

and the action is likely to affect the species. Initiation of section 7 consultation under the adverse modification standard takes place if the action will likely affect critical habitat (the species need not be present).

The Service recognizes the “geographical area occupied by the species” at the time of listing as stated under section 3(5)(A)(i) of the Act as the geographical area that may generally be delineated around the species’ occurrences, as determined by the Secretary (i.e., current range). Such areas may include those areas used throughout all or part of the species’ life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). Because of the relatively coarse scale of analysis allowed by the definition of “critical habitat,” the species may or may not be present within all portions of the “geographical area occupied by the species” or may be present only periodically. Therefore, at the time of any consultation under section 7 of the Act, the species of interest may not be present within the action area for the purposes of the section 7 consultation, even if that action area is within the “geographical area occupied by the species.”

In this memorandum, when we describe occupancy for purposes of estimating the potential economic costs of the critical habitat designation, we are referring to the occupancy status within the action area of a particular Federal action at the time of a consultation under section 7 of the Act. The economic effects of the consultation would likely be considered incremental to critical habitat if a consultation would not have occurred absent the critical habitat designation, either because the area is unoccupied by the species or else because it is not known to be occupied by land managers, regardless of whether the area falls within the geographical area occupied by the species at the time of listing.

These incremental economic effects would derive both from changes in management, such as costs resulting from restrictions on development and other activities due solely to critical habitat, and changes in the scope of administrative review, i.e., the added costs of considering effects to critical habitat during consultation. Additional administrative costs would also occur in *occupied* areas (i.e., areas where the species is present) due to the need to analyze destruction or adverse modification of critical habitat along with jeopardy to the species.

## II. DESCRIPTION OF SPECIES AND CRITICAL HABITAT

### A. Bracted Twistflower.

Bracted twistflower (*Streptanthus bracteatus*) is an annual herbaceous plant in the Mustard Family (Brassicaceae) that occurs only along the southeastern edge of the Edwards Plateau of Texas, from Travis County in the northeast to Uvalde County in the southwest.

Bracted twistflower seeds germinate in the fall or early winter, flower the following spring, and set seed and die by mid-summer. The breeding system is primarily outcrossing; leafcutter bees and other native bees pollinate the flowers. However, there is wide annual variation in the quantities of seeds that germinate and establish from soil seed reserves. During most years, few or no plants appear, while large pulses in germination occur about once every 5 or 10 years. Although bracted twistflower is associated with live oak-Ashe juniper woodlands, we now know that its optimal habitats have less than 50 percent cover of woody canopy; it is an edge species, rather than a forest or prairie plant, that is best adapted to the ecotone between woodland and prairie—a transition zone under the periodic influence of wildfires. Therefore, bracted twistflower, like several other *Streptanthus* species, may be a fire-dependent species that has declined in the absence of fire.

Bracted twistflower habitats are closely associated with the Balcones Escarpment. The Interstate 35 corridor, one of the fastest-growing metropolitan areas in the U.S., parallels the escarpment. Consequently, urban and residential development is the most significant threat to the habitats and survival of bracted twistflower. Other major threats include herbivory from over-abundant herds of white-tailed deer and introduced ungulates, decreased wildfire frequency, increased juniper density, and the demographic and genetic effects of small population sizes.

We delineated proposed critical habitats for bracted twistflower within the boundaries of 8 protected conservation areas in Travis, Bexar, Medina, and Uvalde Counties, as well as one private parcel in Medina County. All of the proposed critical habitats may require special management; specifically, all require protection from white-tailed deer and other ungulates, or intensive deer herd management, and the maintenance of canopy gaps through prescribed burning or canopy thinning.

### B. Critical Habitat Description

We have identified 9 occupied critical habitat subunits within 3 critical habitat units totaling 1,606.0 acres. We are not proposing to designate any areas of unoccupied critical habitat at this time.

***Unit 1: Northeast. Subunits: Barton Creek Greenbelt/Wilderness Park, Bull Creek District Park, Mount Bonnell Park, and Ullrich Water Treatment Plant (Bee Creek Park).***

Travis County.

Subunit 1a. Barton Creek Greenbelt and Barton Creek Wilderness Park protect 838.76 ac and 1,120.26 ac of habitat, respectively, along Barton Creek within the City of Austin. These contiguous conservation areas are owned and managed by the City of Austin Parks and Recreation Department as units of the Balcones Canyonlands Preserve (BCP) system. The primary management goal of these BCP units is to conserve the golden-cheeked warbler (*Dendroica chrysoparia*), bracted twistflower, and protected cave invertebrates, while providing appropriate, safe, public recreational access; over 100,000 people visit the Barton Creek units annually for outdoor recreational uses (City of Austin 2007a, pp. 1–11). Threats to bracted twistflower include white-tailed deer herbivory, juniper encroachment, and the decreased frequency of wildfire. The specific management objectives relevant to bracted twistflower include posting educational signs, developing memoranda of cooperation with user groups, conducting outreach to user groups, blocking unauthorized trails, enforcing trail closures, thinning junipers, and controlling exotic species. The City of Austin Wildland Conservation Division monitors the Barton Creek bracted twistflower populations annually (City of Austin 2018); we estimate that this is the second largest known population of this species. We are proposing to designate 690.50 ac of the Barton Creek BCP units as occupied critical habitat for bracted twistflower.

Subunit 1b. Bull Creek District Park, acquired in 1971, is a 47.30-ac conservation area owned and managed by the City of Austin Parks and Recreation Department as a unit of the Balcones Canyonlands Preserve (BCP) system. The primary management goals of this BCP unit are to maintain and improve habitat for golden-cheeked warblers, to protect karst species and other species of concern, including canyon mock-orange (*Philadelphus ernestii*), a rare endemic shrub, and to protect the watershed, water quantity, and water quality (City of Austin 2007b, pp. 1–5). A secondary management goal is to provide safe public access for outdoor recreation. Although bracted twistflower is not specifically included in the BCP management plan for Bull Creek District Park, a small population was discovered there after the plan was developed and is now monitored annually by the City of Austin Wildland Conservation Division (City of Austin 2018). Threats to bracted twistflower include white-tailed deer herbivory, juniper encroachment, decreased frequency of wildfire, and small population size. We are proposing to designate 2.32 ac of this BCP unit as occupied critical habitat for bracted twistflower.

Subunit 1c. Mount Bonnell Park (Covert Park at Mount Bonnell) is a 6.07-ac conservation area owned and managed by the City of Austin Parks and Recreation Department as a unit of the Balcones Canyonlands Preserve (BCP) system. The primary management goal for the BCP acreage of Mt. Bonnell is to protect and manage habitat for bracted twistflower (City of Austin 2007c, pp. 1–4). Management objectives include stopping unauthorized foot traffic into the species' habitat, conducting annual monitoring of the population, increasing the population size, working with adjacent private landowners to protect and manage the species, and removing non-native invasive vegetation. Threats to bracted twistflower include white-tailed deer herbivory, juniper encroachment, decreased frequency of wildfire, and small population size. The City of Austin Wildland Conservation Division monitors the Mount Bonnell bracted twistflower population annually (City of Austin 2018). This small population is a remnant of a much larger population that extended onto adjacent private land and was mostly lost to residential