listing of the contents of the official public docket, and to access those documents in the public docket that are available electronically. For additional information about EPA's public docket, visit the EPA Docket Center homepage at *http://www.epa.gov/dockets.* Although not all docket materials may be available electronically, you may still access any of the publicly available docket materials through the Docket Facility identified in Section I.B.1.

C. What should I consider as I prepare my comments for EPA?

1. *Tips for Preparing Your Comments.* When submitting comments, remember to:

- Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).
- Follow directions—The agency might ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.
- Explain why you agree or disagree, suggest alternatives, and substitute language for your requested changes.
- Describe any assumptions and provide any technical information and/or data that you used.
- If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.
- Provide specific examples to illustrate your concerns, and suggest alternatives.
- Explain your views as clearly as possible.
- Make sure to submit your comments by the comment period deadline identified.

2. *Submitting Comments to EPA.*

Direct your comments to Docket ID No. EPA–HQ–OW–2011–0188. EPA's policy is that all comments received will be included in the public docket without change and could be made available online at *http://www.regulations.gov*, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. The *http://www.regulations.gov* Web site is an ''anonymous access'' system, which means that EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to EPA without going through *http://www.regulations.gov* your email address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If EPA cannot read your comment because of technical difficulties and cannot contact you for clarification, EPA might not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket, visit the EPA Docket Center homepage at *http://www.epa.gov/epahome/dockets.htm.*

3. *Submitting Confidential Business Information.*

Do not submit CBI information to EPA through *www.regulations.gov* or email. Clearly mark the part of or all the information that you claim to be CBI. For CBI information on a disk or CD ROM that you mail to EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI. In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

II. Extension of Comment Period for the NPDES CAFO Reporting Rule

A. Proposed NPDES CAFO Reporting Rule

On October 21, EPA published in the **Federal Register** the proposed NPDES CAFO Reporting Rule for public comment. EPA is requesting public comment on the proposed rule options for gathering the information identified in the proposal and the alternative approaches to achieve water quality protection. Copies of the proposal are available on EPA's Web site at *http://www.epa.gov/npdes/regulations/cafo_fr_proposed_reporting_rule.pdf.* More information regarding the NPDES permitting program for CAFOs can be found at *http://cfpub.epa.gov/npdes/home.cfm?program_id=7.*

B. Extension of Comment Period

EPA is extending the deadline for submitting comments on the proposed NPDES CAFO Reporting Rule to January 19, 2012. The original deadline for comments, based on a 60-day comment period, was December 20, 2012. EPA's decision responds to a request from several organizations to extend the comment deadline in order to provide a longer period of time in which to provide comments. EPA believes that this 30-day extension will assist in providing an adequate amount of additional time for these organizations as well as other members of the public to review the proposal and to provide written comments.

Authority: Clean Water Act, 33 U.S.C. 1251 *et seq.*

Dated: December 13, 2011.

Nancy K. Stoner,

Acting Assistant Administrator, Office of Water.

[FR Doc. 2011–32472 Filed 12–16–11; 8:45 am]

BILLING CODE 6560–50–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R6–ES–2011–0102; 4500030113]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Western Glacier Stonefly as Endangered With Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding and initiation of status review.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list the western glacier stonefly (*Zapada glacier*) in Montana as endangered under the Endangered Species Act of 1973, as amended (Act), and to designate critical habitat. Based on our review, we find that the petition presents substantial scientific or commercial information indicating that listing the western glacier stonefly may be warranted. Therefore, with the publication of this notice, we are initiating a review of the status of the species to determine if listing the western glacier stonefly is warranted. To ensure that this status review is comprehensive, we are requesting scientific and commercial data and other information regarding this species. Based on the status review, we will issue a 12-month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act. We will make a determination on

critical habitat for this species if and when we initiate a listing action.

DATES: To allow us adequate time to conduct this review, we request that we receive information on or before February 17, 2012. The deadline for submitting an electronic comment using the Federal eRulemaking Portal (see **ADDRESSES** section, below) is 11:59 p.m. Eastern Time on this date. After February 17, 2012, you must submit information directly to the Montana Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT** section below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: *http://www.regulations.gov.* In the Keyword or ID box, enter FWS–R6–ES–2011–0102, which is the docket number for this action. Then click on the Search button. You may submit a comment by clicking on ''Submit a Comment.''

(2) *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R6–ES–2011–0102; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We will not accept email or faxes. We will post all information we receive on *http://www.regulations.gov.* This generally means that we will post any personal information you provide us (see the Request for Information section below for more details).

FOR FURTHER INFORMATION CONTACT: Mark Wilson, Field Supervisor, Montana Ecological Services Field Office, 585 Shepard Way, Helena, MT; telephone (406) 449–5225. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at (800) 877–8339.

SUPPLEMENTARY INFORMATION:

Request for Information

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly review the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on the western glacier stonefly from governmental agencies, Native American tribes, the scientific community, industry, and any other interested parties. We seek information on:

(1) The species' biology, range, and population trends, including:

(a) Habitat requirements for feeding, breeding, and sheltering;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures and programs for the species, its habitat, or both.

(2) The factors that are the basis for making a listing determination for a species under section 4(a) of the Act (16 U.S.C. 1531 *et seq.*), which are:

(a) The present or threatened destruction, modification, or curtailment of its habitat or range;

(b) Overutilization for commercial, recreational, scientific, or educational purposes;

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; or

(e) Other natural or manmade factors affecting its continued existence.

(3) Information specific to the western glacier stonefly in Glacier National Park (GNP):

(a) Documentation that the species still exists in GNP, including confirmed records of individuals collected after 1979;

(b) Methodology of previous surveys for the species, including specific locations and site characteristics where it has been found;

(c) Habitat requirements and physical description of the aquatic juvenile or larval forms; and

(d) Hydrology of the streams where the species has been documented to determine the contribution of glacier meltwater to its habitat.

If, after the status review, we determine that listing the western glacier stonefly is warranted, we will propose critical habitat (see definition in section 3(5)(A) of the Act), in accordance with section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to list the species. Therefore, we also request data and information on:

(1) What may constitute ''physical or biological features essential to the conservation of the species'' within the geographical range currently occupied by the species;

(2) Where these features are currently found;

(3) Whether any of these features may require special management considerations or protection;

(4) Specific areas outside the geographical area occupied by the species that are ''essential for the conservation of the species;'' and

(5) What, if any, critical habitat you think we should propose for designation if the species is proposed for listing, and why such habitat meets the requirements of section 4 of the Act.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made ''solely on the basis of the best scientific and commercial data available.''

You may submit your information concerning this status review by one of the methods listed in the **ADDRESSES** section. If you submit information via *http://www.regulations.gov,* your entire submission—including any personal identifying information—will be posted on the Web site. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal identifying information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov.*

Information and supporting documentation that we received and used in preparing this finding will be available for public inspection at *http://www.regulations.gov,* or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Montana Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Background

Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

Our standard for substantial scientific or commercial information within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is ''that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted'' (50 CFR 424.14(b)). If we find that substantial scientific or commercial information was presented, we are required to promptly commence a review of the status of the species, which is subsequently summarized in our 12-month finding.

Petition History

On January 10, 2011, we received a petition dated December 30, 2010, prepared by Jordan *et al.* (petition) on behalf of The Xerces Society for Invertebrate Conservation and The Center for Biological Diversity (petitioners) requesting that the western glacier stonefly be given immediate protection and listed as endangered under the Act and that critical habitat be designated. The petition clearly identified itself as such and included the requisite identification information for the petitioners, as required by 50 CFR 424.14(a). In an August 3, 2011, letter to the petitioners (Walsh 2011, entire), we responded that we had reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the species under section 4(b)(7) of the Act was not warranted. We stated further that due to staff and budget limitations it was not practicable to fully address the petition at the time it was received. This finding addresses the petition.

Previous Federal Actions

There are no previous Federal actions involving the western glacier stonefly.

Species Information

Species Description and Taxonomy

The western glacier stonefly is a slender, elongate insect with filamentous antennae and large eyes. The adults are generally brown in color with yellowish brown legs and possess two sets of translucent wings (Baumann and Gaufin 1971, p. 275). Adults range from 6.5 to 10.0 millimeters (mm) (0.26 to 0.39 inches (in.)) in body length with the larger forewings measuring 7.0 to 11.0 mm (0.28 to 0.43 in.) in length (Baumann and Gaufin 1971, p. 275). Females are larger than males. The nymphs (immature or larval forms) have not been identified and no physical description is available. In general, juveniles of the *Zapada* genus, which includes this species, differ from adults in the presence of large whorled spines on their legs (Baumann 1975, p. 31). The western glacier stonefly is referred to as a member of the *Z. oregonensis* group, which all have similar shape and unbranched structure of the cervical gills (Stagliano *et al.* 2007, p. 60).

The western glacier stonefly is in the phylum Arthropoda, class Insecta, order Plecoptera (stoneflies), and family Nemouridae (Baumann 1975, pp. 1, 31; Service 2011, p. 18688). The family Nemouridae is the largest in the order, comprising more than 370 species in 17 genera (Baumann 1975, p. 1). Members of the *Zapada* genus (also known as *Nemoura* genus) are the most common of the Nemouridae family (Baumann 1975, p. 31).

The western glacier stonefly was first described in 1971 from adult specimens collected from five locations in GNP, Glacier County, Montana, in the 1960s (Baumann and Gaufin 1971, p. 277), and is recognized as a valid species by the scientific community (Baumann 1975, p. 30; Stark 1996, entire; Stark *et al.* 2009, p. 8). We consider the western glacier stonefly (*Zapada glacier*) to be a valid species and, therefore, a listable entity under the Act.

Habitat and Life History

There is little information available on the biology of the western glacier stonefly. However, we assume that the western glacier stonefly is likely to be similar to other closely related stoneflies in terms of its habitat needs and life history traits. In general, insects in the order Plecoptera (stoneflies), and the family Nemouridae in particular, are primarily associated with clean, cool or cold, running waters (Baumann 1979, pp. 242–243; Stewart and Harper 1996, p. 217). Depending on the information source, cool or cold waters are defined as those with a mean temperature below 16 °C (60.8 °F) (Baumann 1979, p. 242) or 19 °C (66.2 °F) (Grafe *et al.* 2002, p. A1). Members of the Nemouridae family, which includes the western glacier stonefly, are usually the dominant Plecopteran found in mountain-river ecosystems both in total biomass and in numbers of species present (Baumann 1975, p. 1).

Stonefly larvae usually have specific habitat requirements with respect to water body size, temperature range, and substrate type (Stewart and Harper 1996, p. 217). Most aquatic invertebrates in stream environments in the northern Rocky Mountains exhibit very strong presence or abundance distribution patterns according to elevation gradients and, therefore, temperature gradients (Fagre *et al.* 1997, pp. 761–763; Lowe and Hauer 1999, p. 1642; Hauer *et al.* 2007, p. 110). Species in the *Zapada* genus are most likely to be found in aquatic environments not exceeding 16 °C (60.8 °F) (Baumann 1979, p. 243); however, optimal mean summer water temperatures are usually lower (Grafe *et al.* 2002, pp. A1–A2). The specific thermal tolerance of the western glacier stonefly is not known; however, abundance patterns for other species in the *Zapada* genus in GNP indicate preferences for the coolest environmental temperatures, such as those found at high elevation in proximity to the headwater source (Hauer *et al.* 2007, p. 110).

Nemourid stonefly larvae are typically herbivores or detritivores, and their feeding mode is generally that of a shredder or collector-gatherer (Baumann 1975, p. 1; Stewart and Harper 1996, pp. 218, 262). We assume this also is true of western glacier stonefly larvae.

We have no specific information on the longevity of the western glacier stonefly, but in general stoneflies complete their life cycles within a single year (univoltine) or in 2 to 3 years (semivoltine) (Stewart and Harper 1996, pp. 217–218). Eggs and larvae of all North American species of stoneflies are aquatic (Stewart and Harper 1996, p. 217). Mature stonefly nymphs emerge from the water and complete their development to short-lived adults on and around streamside vegetation or other structures (Hynes 1976, pp. 135–136; Stewart and Harper 1996, p. 217). Either temperature or photoperiod, or a combination of temperature and light, influence the timing of Plecopteran emergence in the Rocky Mountains (Nebeker 1971 cited in Hynes 1976, p. 137). Western glacier stonefly nymphs have never been collected, but adult forms have been collected from early July through mid-August (Baumann and Gaufin 1971, p. 277). Therefore, emergence may start sometime before this period.

Plecopterans inhabiting flowing water disperse longitudinally (up or down stream) or laterally to the stream bank from their benthic (larval) source, and this phenomenon has been reported for some members of the Nemouridae family (Hynes 1976, p. 138; Griffith *et al.* 1998, p. 195; Petersen *et al.* 2004, pp. 944–945). Generally, adult stoneflies stay close to the channel of their source stream (Petersen *et al.* 2004, p. 946), and lateral movement into neighboring uplands is confined to less than 80 meters (262 feet) from the stream (Griffith *et al.* 1998, p. 197).

Adult male and female stoneflies are mutually attracted by a drumming sound produced by tapping their abdomens on a substrate (Hynes 1976,

p. 140). After mating, females deposit a mass of fertilized eggs in water where they are widely dispersed or attached to substrates by sticky coverings or specialized anchoring devices (Hynes 1976, p. 141; Stewart and Harper 1996, p. 217). Eggs may hatch within a few weeks or remain in diapause (dormancy) for much longer periods if environmental conditions, such as temperature, are not conducive to development (Hynes 1976, p. 142). Environmental conditions also may affect the growth and development of hatchlings (Stewart and Harper 1996, p. 217).

Distribution and Abundance

Species in the *Zapada* genus are found throughout western North America (Baumann 1975, p. 74), but the western glacier stonefly has been collected only in the vicinity of five glacier-fed streams east of the Continental Divide in GNP, Montana (Baumann and Gaufin 1971, p. 277). Only 23 adult specimens (20 female and 3 male), all collected between 1963 and 1969, have been documented in publication (Baumann and Gaufin 1971, p. 277). There also is a report of one male collected in 1979 near the site of a previous 1966 collection (Schweiger pers. comm. cited in Jordan *et al.* 2010, pp. 6, 19); this detection is the last known on record. Only one to three individuals were collected per survey effort at any of the collection sites (Baumann and Gaufin 1971, p. 277). Baumann and Gaufin (1971, p. 277) indicated that the original collection efforts in the 1960s were limited in scope and suggested that collections at lower elevation and earlier in the season could expand the known range of the taxon.

Aquatic invertebrate surveys conducted in GNP between 1997 and 2010 did not detect the western glacier stonefly. However, only one drainage (Cataract Creek) previously known to be inhabited by the western glacier stonefly was surveyed during this period (Muhlfeld *et al.* 2011, p. 341). Although the species was not detected in or around Cataract Creek in 2010, the survey date of mid-September may have been too late in the season to detect identifiable forms of the species.

To our knowledge, there are no population numbers or trends known for the western glacier stonefly. There are no recent survey data for most of the known range, and the species' presence has not been documented for over 30 years. Richard Baumann, the professional entomologist who first described the western glacier stonefly, expects that it still exists in most areas where it was collected in the 1960s and 1970s (Jordan *et al.* 2010, p. 6). However, we are concerned that there is no recent record of the species, and we intend to seek documentation that the species is extant during the status review process. Overall, the limited information we have on the western glacier stonefly at this stage suggests that the species is generally limited in geographic distribution and rare in quantity where it has been collected in the past.

Evaluation of Information for This Finding

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR part 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive or contribute to the risk of extinction of the species such that the species may warrant listing as threatened or endangered as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact the species negatively may not be sufficient to compel a finding that listing may be warranted. The information shall contain evidence sufficient to suggest that these factors may be operative threats that act on the species to the point that the species may meet the definition of threatened or endangered under the Act.

In making this 90-day finding, we evaluated whether information regarding threats to the western glacier stonefly, as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Information Provided in the Petition

The petition asserts that the western glacier stonefly is threatened by habitat loss due to climate change and provides several references about the effects of climate change in general to support this claim. The petition explains that human-induced climate change is causing global increases of ambient temperatures, increased summer water temperatures, altered precipitation and snow melt patterns, and contributing to the ongoing melting and loss of glaciers in GNP (Selkowitz *et al.* 2002, p. 3651; Fagre 2005, p. 1; Hall and Fagre 2003, p. 139; Intergovernmental Panel on Climate Change (IPCC) 2007a, p. 9; Pederson *et al.* 2010, pp. 133–134; U.S. Geological Survey (USGS) 2010, entire). These conditions are likely to continue (IPCC 2007a, pp. 8–15; IPCC 2007 cited in Saunders *et al.* 2008, p. iv–v; USGS 2010, entire). The petition also asserts that winter snow deposition cannot compensate for the loss of glaciers and warming summer water temperatures because snow cannot act as a source of cold water through the entire summer (Baumann 2010, pers. comm. cited in Jordan *et al.* 2010, p. 9), especially in light of increased summer temperatures, earlier snowmelt, and the decreased water equivalent held in seasonal snowpack (Fagre 2005, p. 1; USGS 2010, entire).

According to the petition, the disappearance of glaciers is a ''concern for this species'' (Baumann 2010, pers. comm. cited in Jordan *et al.* 2010, p. 9). The petition reasons that the western glacier stonefly is adapted to cold temperatures and high dissolved oxygen concentrations because its known occurrences are only from glacier-fed streams (Baumann 2010, pers. comm. cited in Jordan *et al.* 2010, p. 9). Species in the *Z. oregonensis* group, in which the western glacier stonefly is included, have a preferred temperature (8.8 °C (47.8 °F)), which is a relatively cool optimum temperature within the range of Plecopteran tolerance limits (Grafe *et al.* 2002, pp. A1–A2; Baumann 2010,

pers. comm. cited in Jordan *et al.* 2010, p. 9). Increasing water temperatures would likely render the habitat unsuitable by decreasing dissolved oxygen to levels beyond the physiological limits of the species or preventing temperature-sensitive larval development (Sweeney *et al.* 1990, pp. 169–170; Grafe *et al.* 2002, pp. A1–A2; Baumann 2010, pers. comm. cited in Jordan *et al.* 2010, p. 9).

The petition did not include any supporting material to show that climate change would alter the specific streams inhabited by the western glacier stonefly by inducing temperatures beyond the tolerance limits of the species or the *Z. oregonensis* group in general, but only speculated that the projected increases in air and water temperatures would be detrimental to the species' normal functions (Gaufin 1973, p. 110; Baumann 1979, p. 242; McLaughlin *et al.* 2002, p. 6073; USGS 2010, entire). The petition supported this conclusion by inference from projected climate change impacts to aquatic invertebrates in the eastern United States. Projected climate change scenarios are expected to increase water temperatures by 4 °C (7.2 °F) for first through fifth-order streams and rivers in eastern North America, which essentially shifts the thermal regime of a given stream to one that is presently 680 kilometers (km) (422 miles (mi)) south (Sweeney *et al.* 1990, pp. 144–145). A species with a limited geographic range at the headwaters of cold-water streams would be unlikely to persist with such a shift in thermal regime (Baumann 2010, pers. comm. cited in Jordan *et al.* 2010, p. 9).

The petitioners state that dispersal ability is important for the survival of freshwater taxa in general (Bilton *et al.* 2001, p. 161) and is especially important in light of the elevated temperatures and the shifting of habitat that are expected with climate change (Sweeney *et al.* 1990, p. 143). Glaciers are the primary source of cold-water streams in GNP, and recent models of carbon dioxide (CO_2) induced global warming predicts the complete loss of glaciers in GNP by 2030 (Hall and Fagre, 2003, p. 131; Fagre 2005, p. 1; USGS 2010, entire). Aquatic invertebrates, in general, are expected to migrate or disperse northward or to higher elevations with the changing water regimes expected with climate change (Sweeney *et al.* 1990, p. 147). The petitioners state that glacier-dependent species existing at high-elevation headwaters, including the cold-water dependent western glacier stonefly, even if possessing unlimited dispersal potential and intact landscapes, have no options if the glaciers and the streams they support are destroyed by climate change (Jordan *et al.* 2010, pp. 7–10).

The petition also indicates that climate change may alter the growth rate of the species by transforming the type or nutrient quality of streamside foraging vegetation, which has been documented to diminish recruitment and the likelihood of population persistence in other Plecopteran species (Sweeney *et al.* 1990, pp. 163–164).

Evaluation of Information Provided in the Petition and Available in Service Files

Consideration of climate change is a component of our analyses under the Endangered Species Act. The term ''climate change'' refers to a change in the state of the climate that can be identified by changes in the mean or variability of its properties (e.g., temperature, precipitation) and that persists for an extended period, typically decades or longer, whether the change occurs due to natural variability or as a result of human activity (IPCC 2007b, p. 30).

Scientific measurements taken over several decades demonstrate that changes in climate are occurring. Examples include warming of the global climate system over recent decades, and substantial increases in precipitation in some regions of the world and decreases in other regions (for these and other examples see IPCC 2007b, p. 30; Solomon *et al.* 2007, pp. 35–54, 82–85).

Scientific analyses show that most of the observed increase in global average temperature since the mid-20th century cannot be explained by natural variability in climate, and is ''very likely'' (defined by the IPCC as 90 percent or higher probability) due to the observed increase in greenhouse gas (GHG) concentrations in the atmosphere as a result of human activities, particularly carbon dioxide emissions from fossil fuel use (IPCC 2007b, p. 5 and Figure SPM.3; Solomon *et al.* 2007, pp. 21–35). Therefore, scientists use a variety of climate models (which include consideration of natural processes and variability) in conjunction with various scenarios of potential levels and timing of GHG emissions in order to project future changes in temperature and other climate conditions (e.g., Meehl *et al.* 2007 entire; Ganguly *et al.* 2009, pp. 11555, 15558; Prinn *et al.* 2011, pp. 527, 529).

The projected magnitude of average global warming for this century (as well as the range of projected values, which reflects uncertainty) is very similar under all combinations of models and emissions scenarios until about 2030. Thereafter, despite the projections showing greater divergence in projected magnitude, the overall trajectory is one of increased warming under all scenarios, including those which assume a reduction of GHG emissions (Meehl *et al.* 2007, pp. 760–764; Ganguly *et al.* 2009, pp. 15555–15558; Prinn *et al.* 2011, pp. 527, 529). (See IPCC 2007c, p. 8, for other global climate projections.)

Various types of changes in climate may have direct or indirect effects and these may be positive or negative depending on the species and other relevant considerations, such as interactions of climate with non-climate variables (e.g., habitat fragmentation). Identifying likely effects often involves climate change vulnerability analysis. Vulnerability refers to the degree to which a species (or system) is susceptible to, and unable to cope with, adverse effects of climate change, including variability and extremes; it is a function of the type, magnitude, and rate of climate change and variation to which a species is exposed, its sensitivity, and its adaptive capacity (IPCC 2007b, p. 89; see also Glick *et al.* 2011, pp. 19–22). Because exposure, sensitivity, and adaptive capacity can vary by species and situation, there is no single method for conducting such analyses (Glick *et al.* 2011, p. 3). We use our expert judgment and appropriate analytical approaches to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change that are relevant to the western glacier stonefly.

Projected changes in climate and related impacts can vary substantially across and within different regions of the world (e.g., IPCC 2007b, pp. 8–12). Thus, although global climate projections are informative, and in some cases are the only or the best scientific information available, to the extent possible we use ''downscaled'' climate projections. Those projections provide higher-resolution information that is more relevant to the spatial scales used to assess impacts to a given species (see Glick *et al.* 2011, pp. 58–61 for a discussion of downscaling). With regard to our analysis for the western glacier stonefly, downscaled projections of climate are available.

Downscaled projection information we have in our files supports the petition's assertions that climate change may threaten habitat for the western glacier stonefly in GNP. Specifically, global warming appears to be very pronounced in alpine regions where the western glacier stonefly has been known to occur (Hall and Fagre 2003, p. 134 and references therein). Since 1900, the

mean annual air temperature for GNP and the surrounding region has increased 1.33 °C (2.4 °F), which is 1.8 times the global mean increase (USGS 2010, p. 1). Glaciers in GNP are disappearing. Only 27 of the 150 glaciers estimated to have existed in GNP in 1910 exist today (Fagre 2005, p. 1). Glaciers and perennial snowpack (snow that persists from year to year) are expected to be gone from GNP by 2030 based on projected greenhouse gas emissions, temperature, and precipitation scenarios, eliminating them as a cooling source for natural springs or as a sole source of cool, running water (Hall and Fagre 2003, p. 137; Fagre 2005, p. 7).

With the complete loss of glaciers in GNP, high-alpine wetlands could be reduced, changed from perennial to ephemeral, or eliminated by decreased winter snow or accelerated snowfield melt due to elevated summer temperatures (Hauer *et al.* 2007, p. 109). Glaciers store water that is then released during dry periods of the year or through extended drought. Thus, streams that would otherwise dry-up in warm, dry seasons are assured a continual flow where glaciers persist. Although the juvenile form of the western glacier stonefly has not been described, it is presumed to be aquatic because eggs and larvae of all other Plecopteran insects are dependent on aquatic environments for their survival and development to adults (Stewart and Harper 1996, p. 217). The collection of adult western glacier stoneflies solely in and bordering glacier-fed streams, and the limited dispersal ability of Plecopterans, would suggest that the persistence of these streams is important to the persistence of the species (Baumann and Gaufin 1971, p. 277; Brown *et al.* 2009 cited in Muhlfeld *et al.* 2011, p. 343).

The information in our files supports the petitioners' assertion that the loss of glaciers in GNP may alter habitat for glacier-dependent or cool-water-adapted aquatic invertebrates. The specific habitat requirements or range of tolerance to environmental temperatures is not known for the western glacier stonefly, but glacier and perennial snowfield loss is expected to decrease the available habitat for another cool-water dependent stonefly endemic to GNP, the meltwater lednian stonefly (*Lednia tumana*) (Hall and Fagre 2003, p. 138). The meltwater lednian stonefly is limited in distribution by mean and maximum aquatic temperatures of 10 °C (50 °F) and 18 °C (64.4 °F), respectively, with the majority of collection locations in close proximity to high-elevation glaciers or permanent snowfields (Muhlfeld *et al.* 2011, p. 341). Western glacier stonefly collections indicate a similar pattern of proximity to high-elevation glacier-fed streams or glacier lake sources (Baumann and Gaufin 1971, p. 271). In addition, the thermal tolerances for the *Z. oregonensis* group, which includes the western glacier stonefly, are within the measured range of the lednian species (Grafe *et al.* 2002, p. A2).

In a previous finding, the Service evaluated the status of the meltwater lednian stonefly and determined it was warranted but precluded for listing under the Act based on the effects of the projected loss of glaciers in altering habitat in high-alpine streams by higher water temperatures, seasonal or permanent stream dewatering, and changes in the timing and volume of snowmelt (76 FR 18694, April 5, 2011). A separate evaluation and habitat model further supported predictions of habitat loss by up to 80 percent by 2030 for the meltwater lednian stonefly in GNP (Muhlfeld *et al.* 2011, p. 343). Based on this information, it is reasonable to expect that habitat for the western glacier stonefly might be similarly affected by warmer or curtailed stream flows due to glacier and snowfield loss associated with a changing climate. Given the limited information available on the distribution and population status of the western glacier stonefly, we cannot predict the extent to which the species would be affected or even if the species still exists in GNP; however, we will assess this factor more thoroughly during our status review for the species.

Information in our files also confirms the petitioners' statements that with increasing temperatures the type of streamside foraging vegetation present in GNP could be transformed, and GNP could see an increase in tree growth rates and evapotranspiration, which would reduce soil moisture and streamflow (Fagre 2005, p. 8). However, these projections are based on broad trends for the region, and we cannot predict at this scale how these scenarios would contribute to the loss or deterioration of western glacier stonefly habitat or how these changes would diminish recruitment and the likelihood of population persistence. We will assess this factor more thoroughly during our status review for the species. The transition of habitat and its effects on the physiology and phenology of the western glacier stonefly is discussed under Factor E.

Summary of Factor A

Based on the information provided in the petition, as well as other information readily available in our files, we find that the petition presents substantial scientific or commercial information indicating that the western glacier stonefly may warrant listing due to the present or threatened destruction, modification, or curtailment of the species' habitat or range. Little information is available on the ecology and biology of the western glacier stonefly, but it is described as a cool-water stonefly species based on its collection in or near glacier-fed streams. There is adequate information on the adverse effects of warming air and water temperatures projected to occur with climate change on habitat for cool-water stoneflies in general, and specifically through research conducted on another endemic stonefly in GNP—the meltwater lednian stonefly. Increased summer water temperatures and altered precipitation and snow melt patterns due to climate change contribute to the ongoing shrinking and projected loss of glaciers and perennial snowfields in GNP, which are sources of stream habitats on which the western glacier stonefly may depend. We will assess these stressors and habitat requirements more thoroughly during our status review in order to better quantify potential effects on the western glacier stonefly.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

The petition notes that the western glacier stonefly is not used commercially and is not at risk of overcollection (Jordan *et al.* 2010, p. 10). Neither the petition nor information within our files presents substantial scientific or commercial information that collection was, or is, occurring at a level that impacts the overall status of the species. Therefore, we find the petition does not present substantial scientific or commercial information to indicate that overutilization for commercial, recreational, scientific, or educational purposes may present a threat to the western glacier stonefly such that the petitioned action may be warranted. However, we will assess this factor more thoroughly during our status review for the species.

C. Disease or Predation

Information Provided in the Petition

The petition notes that disease and predation are not known to threaten the western glacier stonefly, although the threats from disease and predation have never been assessed (Jordan *et al.* 2010, p. 10). The petition asserts that the rarity and limited range of the species make it more vulnerable to extinction

from normal population fluctuations that could result from predation or disease episodes (Jordan *et al.* 2010, p. 11).

Evaluation of Information in the Petition and Available in Service Files

We address the potential risks due to a small population size under Factor E. We reviewed information in our files and the information provided by the petition and did not find substantial information to indicate that disease or predation on the western glacier stonefly are occurring outside the natural range of variation, such that they may be considered a threat. Therefore, we find the petition does not present substantial scientific or commercial information to indicate that disease or predation may present a threat to the western glacier stonefly such that the petitioned action may be warranted. We will assess this factor more thoroughly during our status review for the species.

D. The Inadequacy of Existing Regulatory Mechanisms

Information Provided in the Petition

The petition claims that the western glacier stonefly is threatened by the inadequacy of existing regulatory mechanisms, because it receives no recognition or protection under Federal or State law (Jordan *et al.* 2010, p. 11). The petition cites several references to show that adequate regulations do not exist to control or reduce greenhouse gas emissions from the burning of fossil fuels, the leading cause of global climate change and increasing average global temperatures, which the petitioners conclude contribute to the loss of western glacier stonefly habitat (Fagre 2005, p. 1; Hansen *et al.* 2008, p. 16; Jones *et al.* 2009, p. 484; Smith *et al.* 2009, p. 4135; Jordan *et al.* 2010, p. 11). The petitioners cite the Service's 2008 listing of the polar bear (*Ursus maritimus*), which concluded that there are no regulatory mechanisms that address the anthropogenic causes of climate change (e.g., greenhouse gas emissions) and the impact of warming temperatures and altered precipitation patterns on diminishing sea ice (73 FR 28288, May 15, 2008).

The petition explains that a reduction in atmospheric CO2, a greenhouse gas, to 350 parts per million or below is necessary to avoid dangerous climate change and maintain the conditions to which humanity, wildlife, and the biosphere are adapted (Hansen et al. 2008, p. 16). Current atmospheric CO2 is at approximately 385 ppm (Hansen *et al.* 2008, p. 16), and regulations are necessary to achieve the lower emission level. The petition also states that existing domestic laws which grant authority to require greenhouse gas emissions reductions (e.g., Clean Air Act, Clean Water Act, Endangered Species Act, Energy Policy and Conservation Act) are not exercised to their fullest extent (Jordan *et al.* 2010, p. 12); however, there is no explanation in the petition of how the majority of these laws apply to controlling emissions. The petition includes an example of the U.S. Environmental Protection Agency's (EPA's) application of the Clean Air Act to lower emissions by requiring improved fuel economy and higher emission standards for light-duty vehicles (75 FR 25324, May 7, 2010), but states that the majority of other Clean Air Act programs are not fully implemented to address the greenhouse gas emission problem (75 FR 17004, April 2, 2010).

The petition also refers to sources indicating that the international agreements to address greenhouse gas emissions (e.g., United Nations Framework Convention on Climate Change, Kyoto Protocol) rely on nonbinding and ineffective controls (Jordan *et al.* 2010, p. 13; Pew 2010, entire; Rogelj *et al.* 2010, p. 464).

Evaluation of Information Provided in the Petition and Available in Service Files

While the information in our files supports the petitioners' claim that the western glacier stonefly currently receives no direct protection under Federal or State law, we do not necessarily consider the absence of a regulatory mechanism to be a threat. The western glacier stonefly is ranked ''S1'' by the Montana Natural Heritage Program, indicating that it is vulnerable to extinction due to limited range, habitat, or population size (Montana Natural Heritage Program 2011, entire); however, this designation does not confer any legal protections for the species or its habitat. After examining the available information in the petition and in our files, we believe that the species is found only at high-altitude headwaters on Federal property in GNP and is not known to occur on State or private lands. Therefore, the western glacier stonefly and its habitat are not likely to be impacted directly or affected by State regulations. We conclude that there is not substantial information in the petition and our files to show that the western glacier stonefly may be threatened by inadequate State-level regulatory mechanisms.

Information in our files indicates that all known occurrences of the species are on National Park Service (NPS) land, which is protected indirectly by several Federal laws and regulations directing how NPS lands are managed. Projects conducted within the species' range may be subject to the National Environmental Policy Act of 1970 (42 U.S.C. 4321 *et seq.*) (NEPA). All Federal agencies are required to adhere to NEPA for projects they fund, authorize, or carry out. The Council on Environmental Quality's regulations for implementing NEPA (40 CFR parts 1500–1518) state that agencies shall include a discussion on the environmental impacts of the various project alternatives, any adverse environmental effects which cannot be avoided, and any irreversible or irretrievable commitments of resources involved (40 CFR part 1502). The NEPA is a disclosure law which does not require subsequent minimization or mitigation measures by the Federal agency involved. Although Federal agencies may include conservation measures for sensitive species as a result of the NEPA process, any such measures are typically voluntary in nature and are not required by the statute.

The NPS Organic Act of 1916 (16 U.S.C. 1 *et seq.*), as amended, states that the NPS ''shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations * * * to conserve the scenery and the national and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.'' The current distribution of the western glacier stonefly is entirely within the boundaries of GNP; therefore, the NPS Organic Act is one Federal law of particular relevance to the species. We do not have information readily available in our files to indicate that GNP has a management plan specific to the western glacier stonefly, or if a plan which targets this species explicitly is necessary in order to conserve the species. Management in GNP conducted under the NPS Organic Act may provide adequate protection for the species and its habitat from direct destruction or modification by most human activities. However, the NPS Organic Act does not regulate national or international greenhouse gas emissions. At this phase of the review process we cannot seek input from outside agencies such as the NPS or other additional information sources. We will contact the NPS and other agencies during the status review process to gather information to determine how and to what extent the existing regulations provide protection.

The petitioners referred to the limited application of the Clean Air Act by the EPA to effectively regulate greenhouse gas emissions. Information in our files indicate that, on December 15, 2009, EPA announced that current and projected concentrations of six greenhouse gases in the atmosphere threaten the public health and welfare of current and future generations (74 FR 66496). In effect, the EPA concluded that the greenhouse gases linked to climate change are pollutants whose emissions can be subject to the Clean Air Act (42 U.S.C. 7401 *et seq.*). Specific regulations to limit greenhouse gas emissions under the Clean Air Act were only proposed in 2010. The Service stated previously that there is no basis to conclude that implementation of the Clean Air Act will substantially reduce the current rate of global climate change through regulation of greenhouse gas emissions (76 FR 18694, April 5, 2011). As greenhouse gases are considered a major contributor to global climate change and increasing average global temperatures (Hansen *et al.* 2008, p. 16), which is believed to be the cause of the projected loss of glaciers and other environmental changes in GNP (Hall and Fagre 2003 p. 131; Fagre 2005, p. 8; Hauer *et al.* 2007; pp. 107–113), existing regulatory mechanisms may be inadequate to address potential changes to the western glacier stonefly's habitat as discussed under Factor A.

Summary of Factor D

Based upon the information provided in the petition, as well as other information readily available in our files, we find that there is substantial scientific or commercial information indicating that the western glacier stonefly may warrant listing due to the inadequacy of existing regulatory mechanisms that pertain to the primary potential threat to the species identified in Factor A: Habitat loss due to the environmental changes caused by climate change. Since the known distribution of the species lies within the boundaries of GNP, management of lands are subject to several Federal laws and regulations that protect the species' habitat from direct destruction or modification. Given the level of information we have at this 90-day finding stage, it is unclear whether these Federal laws and regulations are adequate as they pertain to addressing the potential threats to the habitat of the western glacier stonefly due to climate change. We will assess all the relevant regulatory mechanisms more thoroughly during the status review for the species.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Information Provided in the Petition

The petition asserts that the western glacier stonefly population sizes are unknown but are believed to be small because of the rarity of detection, and claims that the risks associated with this small population size represent a threat to the species (Jordan *et al.* 2010, p. 13). The petition cites Shaffer (1981, p. 31) as evidence that small and fragmented populations, in general, are at greater risk of extinction from normal population fluctuations, natural disasters, and loss of genetic diversity (Jordan *et al.* 2010, p. 13).

In addition to small population effects, the petition claims that increases in water temperature due to climate change may impact western glacier stonefly populations by causing direct larval mortality and altered phenology (timing of life events tied to seasons or climate), which has caused impaired development, behavior, dispersal, fecundity, and reproductive success in other stonefly species (Lillehammer *et al.* 1989, p. 173; Baumann 2010, pers. comm. cited in Jordan *et al.* 2010, p. 10; Sweeney *et al.* 1990, entire). The petition included these assertions under Factor A, but because they are physiological effects rather than habitat effects, we discuss them under Factor E.

Evaluation of Information Provided in the Petition and Available in Service Files

Small Population Size—The population size, trend, current status, or geographic extent of the western glacier stonefly is unknown. Based on the information presented in the petition and available in our files, the species is known to have occurred in five hydrological drainages on the east side of the Continental Divide in GNP. Only one to three individuals were collected per survey effort at each collection site (Baumann and Gaufin 1971, p. 277). Although there is limited recent survey data for these five drainages, aquatic invertebrate surveys conducted between 1997 and 2010 in many locations in GNP, including cold-water streams, did not detect additional occurrences of the western glacier stonefly (Stagliano *et al.* 2007, p. 60; Jordan *et al.* 2010, pp. 6–7; Muhlfeld *et al.* 2011, p. 339). Presuming the species is extant, we conclude that it is rare and limited in distribution.

In general, small populations are vulnerable to extinction from systematic pressures or stochastic (random) disruptions (Shaffer 1981, p. 131). Potential stochastic disruptions could include natural catastrophes such as flood, fire, drought, and landslides or genetic changes caused by a loss of genetic diversity. The petition presents no information and we have no information in our files to indicate that the western glacier stonefly is likely to be affected by these kinds of natural events or is experiencing a loss of genetic diversity. We do not consider the species' apparently restricted range to be a threat in itself. However, the vulnerability of small populations with limited range may be increased when threats are present. As discussed under Factor A, information in the petition and in our files would indicate that the effects of climate change on glaciers and perennial snowpack in GNP may contribute to habitat loss or deterioration by seasonal or permanent stream dewatering and changes in timing and volume of snowmelt. Considering the apparent limited range and rarity of the western glacier stonefly and the potential threat of habitat loss and deterioration, we find that the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to small population size.

Climate Change—In addition to habitat alteration induced by changing climate conditions, as discussed under Factor A, changing climate conditions may have physiological and behavioral effects on some species. Aquatic insects, in general, may be isolated by limited dispersal ability or physiological requirements for specific thermal criteria (Stewart and Harper 1996, p. 217; Griffith *et al.* 1998, p. 199; Hauer *et al.* 2007, pp. 109–110). However, discerning the impacts to aquatic organisms from global warming may be complicated and vary greatly at the species level (Williams and Feltmate 1992, p. 287). Aquatic insects may respond to elevated temperatures in two ways: (1) Behaviorally, by emigrating from or changing distribution within stressed regions; or (2) physiologically, by adjusting the duration and extent of growth and development in immature stages, and by adjusting their ultimate size, condition, and fecundity as adults (Williams and Feltmate 1992, pp. 285–286). It would be speculative to assess the degree to which the western glacier stonefly would respond behaviorally or physiologically to climate alterations, due to a lack of information regarding the ecological requirements and characteristics of the species. However, we will assess this factor more thoroughly during our status review for the species. Therefore, we find that the petition does not present substantial

information that the western glacier stonefly would be impacted behaviorally or physiologically by warming temperatures associated with projected climate change.

Summary for Factor E

We find that the information provided in the petition, as well as other information readily available in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to other natural or manmade factors affecting the continued existence of the western glacier stonefly, such as its apparent limited distribution and small population size. While we do not consider the species' apparently restricted range alone to be a risk, there is substantial information that it may be significant given the stressors the species may face from the loss or deterioration of habitat due to climate change. Though the species' habitat may be impacted by the loss of glaciers and perennial snowpack as discussed under Factor A, the species' behavioral or physiological responses and ability to adjust to increased temperatures caused by climate change cannot be predicted given the available information. We will assess these factors further and more thoroughly during the status review for the western glacier stonefly.

Finding

On the basis of our determination under section 4(b)(3)(A) of the Act, we determine that the petition presents substantial scientific or commercial information indicating that listing the western glacier stonefly throughout its entire range may be warranted. This finding is based on information provided under Factors A, D, and E. We determine that the information provided under Factors B and C is not substantial.

Because we have found that the petition presents substantial information indicating that listing the western glacier stonefly may be warranted, we are initiating a status review to determine whether listing the western glacier stonefly under the Act is warranted.

The ''substantial information'' standard for a 90-day finding differs from the Act's ''best scientific and commercial data'' standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act's standards for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a warranted finding.

References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Montana Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT** section above).

Author

The primary authors of this document are the staff members of the Montana Ecological Services Field Office.

Authority: The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: December 6, 2011.

Daniel M. Ashe,

Director, U.S. Fish and Wildlife Service.

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