This document is scheduled to be published in the
Federal Register on 11/26/2019 and available online at
https://federalregister.gov/d/2019-25549, and on **govinfo.gov**

Billing Code: 4333-15

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R6–ES–2019–0026; FXES11130900000C6–156–FF09E30000]

RIN 1018–BD48

Endangered and Threatened Wildlife and Plants; Reclassification of the Endangered June Sucker to Threatened With a Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to reclassify the June sucker (*Chasmistes liorus*) from endangered to threatened under the Endangered Species Act of 1973, as amended (Act), due to substantial improvements in the species' overall status since its original listing as endangered in 1986. This proposed action is based on a thorough review of the best scientific and commercial data available, which indicates that the June sucker no longer meets the definition of endangered under the Act. If this proposal is finalized, the June sucker would remain protected as a threatened species under the Act. We also propose a rule under section 4(d) of the Act that provides for the conservation of the June sucker. This document also constitutes our 5-year status review for this species.

DATES: We will accept comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES** below), must be received by 11:59 p.m. Eastern Time on the closing date. We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

ADDRESSES: *Comment submission:* You may submit written comments by one of the following methods:

- *Electronically:* Go to the Federal eRulemaking Portal: *http://www.regulations.gov.* In the Search box, enter FWS–R6–ES–2019–0026, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rules link to locate this document. You may submit a comment by clicking on the blue “Comment Now!” box. If your comments will fit in the provided comment box, please use this feature of *http://www.regulations.gov,* as it is most compatible with our comment review procedures. If you attach your comments as a separate document, our preferred file format is Microsoft Word. If you attach multiple comments (such as form letters), our preferred format is a spreadsheet in Microsoft Excel.

- *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R6–ES–2019–0026; U.S. Fish and Wildlife Service; MS: BPHC; 5275 Leesburg Pike, Falls Church, VA 22041–3803.

We request that you submit written comments only by the methods described above. We will post all comments on *http://www.regulations.gov*. This generally means that we will post any personal information you provide us (see **Public Comments**, below for more details).

Document availability: This proposed rule and supporting documents are available on *http://www.regulations.gov* at Docket No. FWS–R6–ES–2019–0026. In addition, the supporting file for this proposed rule will be available for public inspection, by appointment, during normal business hours at the Utah Ecological Services Field Office; 2369 Orton Circle, Suite 50; West Valley City, Utah 84119, telephone: 801–975–3330. Persons who use a telecommunications device for the deaf may call the Federal Relay Service at 800–877–8339.

FOR FURTHER INFORMATION CONTACT: Larry Crist, Field Supervisor, telephone: 801–975–3330. Direct all questions or requests for additional information to: JUNE SUCKER QUESTIONS, U.S. Fish and Wildlife Service; Utah Ecological Services Field Office; 2369 Orton Circle, Suite 50; West Valley City, Utah 84119. Individuals who are hearing-impaired or speech-impaired may call the Federal Relay Service at 800–877–8337 for TTY assistance.

SUPPLEMENTARY INFORMATION:

Public Comments

We want any final rule resulting from this proposal to be as accurate as possible. Therefore, we invite tribal and governmental agencies, the scientific community, industry, and other interested parties to submit comments or recommendations concerning any aspect of this proposed rule. Comments should be as specific as possible. We particularly seek comments concerning:

(1) Biological or ecological reasons why we should or should not reclassify June sucker from endangered to threatened on the List of Endangered and Threatened Wildlife (*i.e.*, “downlist” the species) under the Act.

(2) New biological or other relevant data concerning any threat (or lack thereof) to this species or any current or planned activities in the habitat or range that may impact the species.

(3) New information on any efforts by the State or other entities to protect or otherwise conserve June sucker.

(4) New information concerning the range, distribution, and population size or trends of this species.

(5) Information on activities that may warrant consideration in the rule issued under section 4(d) of the Act (16 U.S.C. 1531 *et seq*.), including:

> (a) Whether a provision should be added to the 4(d) rule that excepts take of June suckers resulting from educational or outreach activities that would benefit the conservation of June sucker.
>
> (b) Additional provisions or information the Service may wish to consider for a 4(d) rule in order to conserve, recover, and manage the June sucker.

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. Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, may not meet the standard of information required by section 4(b)(1)(A) of the Act (16 U.S.C. 1531 et seq.), which 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.”

To issue a final rule to implement this proposed action, we will take into consideration all comments and any additional information we receive. Such communications may lead to a final rule that differs from this proposal. All comments, including commenters’ names and addresses, if provided to us, will become part of the supporting record.

You may submit your comments and materials concerning the proposed rule by one of the methods listed in **ADDRESSES**. Comments must be submitted to *http://www.regulations.gov* before 11:59 p.m. (Eastern Time) on the date specified in **DATES**.

We will post your entire comment—including your personal identifying information—on *http://www.regulations.gov*. If you provide personal identifying information in your comment, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov*, or by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Utah Ecological Services Field Office. (See **FOR FURTHER INFORMATION CONTACT**).

Peer Review

In accordance with our policy, "Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities," which was published on July 1, 1994 (59 FR 34270) and our August 22, 2016, Director's Memorandum "Peer Review Process," we will seek the expert opinion of at least three appropriate and independent specialists regarding scientific data and interpretations contained in this proposed rule. We will send copies of this proposed rule to the peer reviewers immediately following publication in the *Federal Register*. We will ensure that the opinions of peer reviewers are objective and unbiased by following the guidelines set forth in the Director's Memo, which updates and clarifies Service policy on peer review (U.S. Fish and Wildlife Service 2016). The purpose of such review is to ensure that our decisions are based on scientifically sound data, assumptions, and analysis. Accordingly, our final decision may differ from this proposal.

Public Hearing

Section 4(b)(5)(E) of the Act provides for one or more public hearings on this proposed rule, if requested. We must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by the date shown in **DATES**. We will schedule public hearings on this proposal, if any are requested, and places of those hearings, as well as how to obtain reasonable accommodations, in the *Federal Register* at least 15 days before the first hearing.

Previous Federal Actions

On April 12, 1982, the Desert Fishes Council petitioned us to list 17 fishes, including the June sucker. On December 20, 1982, we included the June sucker in a notice of review in the *Federal Register* (47 FR 58454). On June 14, 1983, we published our finding that the petition from the Desert Fishes Council contained substantial information for us to consider the June sucker for listing (48 FR 27273).

On July 2, 1984, we proposed the June sucker for listing as endangered under the Act with proposed critical habitat (49 FR 27183). On March 31, 1986 (51 FR 10851), we published the final rule listing June sucker as an endangered species and designating critical habit comprising the lower 4.9 miles (mi) (7.8 kilometers (km)) of the Provo River in Utah County, Utah.

On June 25, 1999, we finalized a recovery plan for the June sucker (Service 1999, entire). On November 13, 2001, we published a notice in the *Federal Register* formally declaring our intention to participate in the multi-agency June Sucker Recovery Implementation Program (JSRIP) in partnership with the U.S. Bureau of Reclamation (USBR), Utah Reclamation Mitigation and Conservation Commission (URMCC), the Department of the Interior (DOI), State of Utah Department of Natural Resources (UDNR), the Central Utah Water Conservancy District (CUWCD), Provo River Water Users Association, Provo Reservoir Water Users Company, and outdoor interest groups (66 FR 56840). The JSRIP was designed to implement recovery actions for the endangered June sucker and facilitate resolution of conflicts associated with June sucker recovery in the Utah Lake and Provo River basins in Utah. We have participated in the JSRIP since this time and remain an active program member.

On October 6, 2008, we published a notice of initiation of a 5-year review for June sucker in the *Federal Register* and requested new information that could have a bearing on the status of June sucker (73 FR 58261). This document serves as a completion of that 5-year review.

Species Information

It is our intent to discuss only those topics directly related to downlisting June sucker in this proposed rule. For more information on the description, biology, ecology, and habitat of the species, please refer to the final listing rule published in the *Federal Register* on March 31, 1986 (51 FR 10851) and the recovery plan (Service 1999). These documents will be available as supporting materials on *http:// www.regulations.gov* under Docket No. FWS–R6–ES–2019–0026.

We identify the species' ecological requirements for survival and reproduction using the concepts of resiliency, redundancy, and representation (the 3Rs). Resiliency is the ability of a species to withstand stochastic events. It is associated with population size, growth rate, and habitat quality. Redundancy is the ability of a species to withstand catastrophic events for which adaptation is unlikely. It is associated with the number, distribution, and resilience of populations. Representation is the ability of a species to adapt to novel changes in its environment, as measured by its ecological and genetic diversity. It is associated with the distribution of populations of the species across its range.

Taxonomy and Description

The June sucker, a unique lake sucker named for the month in which it was known to spawn, was first collected and described by David S. Jordan in 1878, in Utah Lake, Utah County, Utah (Jordan 1878, entire). However, taxonomic questions regarding hybridization of the June sucker and co-occurring Utah sucker (*Catostomus ardens*) ultimately resulted in reclassification of the species.

The two species likely evolved together in Utah Lake. During the 1930s, a severe drought stressed the sucker populations in Utah Lake, increasing the incidence of June and Utah sucker hybridization (Miller and Smith 1981, p. 7). After this hybridization event, as sucker populations increased in abundance, the new genes that occurred in both the June sucker and Utah sucker populations resulted in hybrid characteristics within both populations (Evans 1997, p. 8). It is likely that the two species may have hybridized at multiple points in the past, in response to environmental bottlenecks (Evans 1997, pp. 9–12). As a result of the hybridization event in the 1930s, two subspecies of June sucker were originally identified—*Chasmistes liorus liorus* to sucker specimens collected in Utah Lake in the late 1800s, and *Chasmistes liorus mictus* to specimens collected after 1939, following the drought years (Miller and Smith 1981, p. 11). This classification was never corroborated, and because the June sucker maintained its distinctiveness from other lake suckers, we determined that it should be listed as a full species under the name *Chasmistes liorus* (51 FR 10851, March 31, 1986).

The June sucker has a large, robust body, a wide, rounded head, and a distinct hump on the snout (Scoppettone and Vinyard 1991, p. 1). Adults are 17–24 inches (in) (43.2–61.0 centimeters (cm)) in length (Scoppettone and Vinyard 1991, p. 1; Belk 1998, p. 2). Lake suckers are mid-water planktivores (plankton feeders). June sucker is a long-lived species, living to 40 years or more (Scoppettone and Vinyard 1991, p. 3; Belk 1998, p. 6). In the wild, June suckers reach reproductive maturity at 5 to 10 years of age. They exhibit rapid growth for the first 3 to 5 years, with intermediate growth rates between ages 8 to 10, and a further reduced growth rate after age 10. Growth between sexes does not differ within the first 10 years (Scoppettone and Vinyard 1991, p. 9).

Distribution and Habitat

The June sucker is native to Utah Lake and its tributaries, which are the primary spawning habitat for the species, and is not found outside of its native range except in man-made refuge populations. A refuge population was established in Red Butte Reservoir, Salt Lake County, Utah, and has been maintained there since 2004 (Utah Division of Wildlife Resources (UDWR) 2010, pp. 4–5). The only other population of June sucker is maintained at UDNR's Fisheries Experiment Station (FES) in Logan, Utah, as part of the JSRIP stocking program to enhance the species' population in Utah Lake. The FES also uses ponds at Rosebud, Box Elder County, Utah, as a grow-out facility to allow fish bred at FES to increase in size prior to stocking in Utah Lake (UDWR 2018, entire). Refuge populations have aided in retaining ecologic and genetic diversity in June sucker, which in turn aids the species in adapting to changing environmental conditions (i.e., increases representation).

Utah Lake is a remnant of ancient Lake Bonneville, and is one of the largest natural freshwater lakes in the western United States. It covers an area of approximately 150 square miles (mi^2) (400 square kilometers (km^2)) and is relatively shallow, averaging 9 feet (ft) (2.7 meters (m)) in depth. The lake lies west of Provo, Utah, and is the terminus for several rivers and creeks, including the Provo, Spanish Fork, and American Fork Rivers and Hobble and Battle Creeks. The outflow of Utah Lake is the Jordan River, which flows north into the Great Salt Lake, a terminal basin.

Utah Lake is located in a sedimentary drainage basin dominated by erosive soils with high salt concentrations. Available geologic data indicate that Utah Lake had a sediment filling rate of about 0.03 in (1 millimeter (mm)) per year over the past 10,000 years; this rate more than doubled with the urbanization of Utah Valley (Brimhall and Merritt 1981, pp. 3–5). Faults under the lake appear to be lowering the lake bed at about the same rate as sediment is filling it (Brimhall and Merritt 1981, pp. 10–11). Inputs of nutrient-rich sediments combined with the lake's high evaporation rate cause high levels of sediment loading, high soluble salt concentrations, and high nutrient levels as a baseline condition (Brimhall and Merritt 1981, p. 11).

Shallow lakes, such as Utah Lake, are typically characterized as having one of two ecological states: a clear water state or a turbid water state (Scheffer 1998, p. 10). The clear water state is often dominated by rooted aquatic macrophytes (aquatic plants) that can greatly reduce turbidity by securing bottom sediments (Carpenter and Lodge 1986, p. 4; Madsen *et al.* 2001, p. 6) and preventing excessive phytoplankton (algae) production through a suite of mechanisms (Timms and Moss 1984, pp. 3–5). Alternatively, a shallow lake in a turbid water state contains little or no aquatic vegetation to secure bottom sediments (Madsen *et al.* 2001, p. 9). As a result, fish movement and wave action can easily suspend lake-bottom sediments (Madsen *et al.* 2001, p. 9). In addition, fish can promote algal production by recycling nutrients (both through feeding activity and excretion). Fish can also suppress zooplankton densities through predation, and the zooplankton would otherwise suppress algal abundance (Timms and Moss 1984, p. 11; Brett and Goldman 1996, p. 3).

Historically, Utah Lake existed in a clear water state dominated by rooted aquatic vegetation, as shown in sediment cores extracted from Utah Lake (Macharia and Power 2011, p. 3). This clear water state is a habitat characteristic necessary to improve resiliency of June sucker. Sediment cores reveal a shift in the state of the lake shortly after European settlement of Utah Valley to an algae-dominated, turbid condition, lacking macrophytic vegetation that serves as refugial habitat for June sucker (Brimhill and Merritt 1981, p. 16; Scheffer 1998, p. 6; Hickman and Thurin 2007, p. 8; Macharia and Power 2011, p. 5). This shift is believed to be a result of excessive nutrient input, management-induced fluctuations in lake levels, and the introduction of common carp (*Cyprinus carpio*). The end result of compounded natural and human-caused effects is a present-day lake ecosystem that is dominated by algae, rather than the clear water state in which June sucker evolved.

The extent of ideal riverine habitat available for spawning adults and developing larval June sucker was more abundant historically than it is currently. Prior to settlement of Utah Valley, spawning tributaries, such as the Provo, Spanish Fork, and American Fork Rivers and Hobble Creek, contained large deltas with braided, slow, meandering channels and aquatic vegetation that provided suitable spawning and larval rearing habitat (Olsen *et al.* 2002, p. 4). Multiple spawning tributaries provided redundancy for June sucker. The range of diverse habitats historically present within these tributaries was essential to larval sucker survival and maintaining the species' resiliency. Most importantly, slow water pool and marsh habitats provided refuge from predation by larger fishes.

Since settlement, changes to the tributaries have decreased the available habitat for June sucker spawning and rearing, although recent restoration projects have improved conditions in the Provo River and Hobble Creek. The Provo River contains many natural characteristics that support the majority of the June sucker spawning run and also play an important role in contributing to the recovery of the species. The Provo River is the largest tributary to the lake in terms of annual flow, width, and watershed area (Stamp *et al.* 2002, p. 19). All of these characteristics contribute to higher numbers of spawning June sucker using the Provo River than the other Utah Lake tributaries. These characteristics also best support the proper timing of the June sucker spawning period and help protect against further hybridization with Utah sucker. Continued increase and improvement of available spawning and larval rearing habitat in the Provo River is necessary for recovery of the species.

Biology and Ecology

June suckers are highly mobile and can cover large portions of their range in a short period of time (Radant and Sakaguchi 1981, p. 7; Buelow 2006, p. 4; Landom *et al*. 2006, p. 13). Adult June suckers exhibit lake-wide distributional behavior throughout most of the year (Buelow 2006). However, in the fall, June suckers congregate along the western lakeshore, and in the winter, move to the eastern areas. One explanation for the easterly orientation in the winter may be the presence of relatively warm fresh-water springs along the eastern shore of Utah Lake (SWCA 2002, p. 14).

During pre-spawn staging, in April and May, June suckers congregate in large numbers near the mouths of the Provo River, Hobble Creek, Spanish Fork River, and American Fork River (Radant and Hickman 1984, p. 3; Buelow *et al*. 2006, p. 4; Hines 2011, p. 8). June suckers generally initiate a spawning migration into Utah Lake tributaries (primarily the Provo River, but also Hobble Creek and, to a lesser extent Spanish Fork River and American Fork River) during the second and third weeks of May (Radant and Hickman 1984, p. 7). Provo Bay is likely one of their primary pre-spawn and post-spawn congregation areas (Buelow 2006, p. 4).

Most spawning is completed within 5–8 days. Post-spawning suckers congregate near the mouth of Provo Bay, which could be a response to the high food productivity that remains in the bay until the fall (Radant and Shirley 1987, p. 13; Buelow 2006, p. 8). Zooplankton densities are greater in Provo Bay than in other lake areas (Kreitzer *et al*. 2011, p. 9), providing abundant food to meet the energy demands of post-spawn suckers, as well as an ideal location for the growth and survival of young-of-year June suckers recently emerged from the spawning tributaries (Kreitzer *et al*. 2011, p. 10).

June sucker spawning habitat consists of moderately deep runs and riffles in slow to moderate current with a substrate composed of 4–8 in (100–200 mm) coarse gravel or small cobble that is free of silt and algae. Deeper pools adjacent to spawning areas may provide important resting or staging areas (Stamp *et al*. 2002, p. 5).

Under natural conditions, June sucker larvae drift downstream and rear in shallow vegetated habitats near tributary mouths in Utah Lake (Modde and Muirhead 1990, pp. 7–8; Crowl and Thomas 1997, p. 11; Keleher *et al*. 1998, p. 47). Juvenile June suckers then migrate into Utah Lake and use littoral aquatic vegetation as cover and refuge (Crowl and Thomas 1997, p. 11). June sucker juveniles form schools near the water surface, presumably feeding on zooplankton in the shallows. Young-of-year suckers form shoals (aggregations of hundreds of fish) near the surface under the cover of aquatic vegetation (Billman 2008, p. 3).

However, effects from nonnative common carp, altered tributary flows, lake water level management, nutrient loading, poor water quality, and river channelization have reduced the amount of shallow, warm, and complex vegetated aquatic habitat for rearing at the tributary mouths and Utah Lake interface. This reduction in rearing habitat has reduced survival of June suckers during the early life stages (Modde and Muirhead 1990, p. 9; Olsen *et al*. 2002, p. 6). As June suckers reach the subadult stage, they begin to move offshore (Billman 2005, p. 16).

Species Abundance and Trends

Early accounts indicate that Utah Lake supported an enormous population of June sucker (Heckmann *et al.* 1981, p. 8), and was proclaimed “the greatest sucker pond in the universe” (Jordan 1878, p. 2). The first major reductions in the number of June suckers were in the late 1800s. Through the mid-1800s, June suckers were caught during their spawning runs and were widely used as fertilizer and food (Carter 1969, p. 7). During this period, an estimated 1,653 tons (1,500 metric tons) of spawning suckers were killed when 2.1 mi (3.3 km) of the Provo River was dewatered due to reduced water availability and high demand (Carter 1969, p. 8).

Hundreds of tons of suckers also died when Utah Lake was nearly emptied during a 1932–1935 drought (Tanner 1936, p. 3). After the drought, June sucker populations gradually increased, but due to the combined impacts of drought, overexploitation, and habitat destruction, the population did not return to its historical level (Heckmann *et al.* 1981, p. 9). June suckers were rare in monitoring surveys during the 1950s through the 1970s (Heckmann *et al.* 1981, p. 11; Radant and Sakaguchi 1981, p. 5).

By the time the species was listed under the Act in 1986, the June sucker had an estimated wild spawning population of fewer than 1,000 individuals. In 1999, we estimated the wild spawning population to be approximately 300 individuals, with no evidence of wild recruitment (Keleher *et al*. 1998, pp. 12, 53; Service 1999, p. 5).

Due to the immediate threat of June sucker extinction at the time of listing, the UDWR began raising populations in hatcheries and at secure refuge sites. These efforts resulted in the stocking of June sucker into Utah Lake to boost population numbers beginning in the 1990s and continuing through the present day (UDWR 2018b, p. 3). As of 2017, more than 800,000 captive-bred June suckers have been stocked in Utah Lake (UDWR 2017b, p. 6). The vast majority of fish detected spawning in Utah Lake tributaries are stocked fish that have become naturalized (UDWR 2018c, p. 7).

An estimated 3,500 June suckers, most of them stocked fish, were spawning annually in Utah Lake tributaries as of 2016 (Conner and Landom 2018, p. 2).This represents a ten-fold increase in spawning fish from when the recovery plan was finalized in 1999 (Conner and Landom 2018, p. 2). For all spawning tributaries combined, the spawning population size for both sexes substantially increased from 2008 to 2016. The estimated total population size grew by 22 percent. However, this estimate may be low, as monitoring efforts in tributaries were not consistent across all years, and data were not available for one year due to high flows. We do not have a population estimate for the entire June sucker population in Utah Lake.

Additionally, monitoring of June suckers in the lower Provo River during the 2018 spawning period captured a significant portion of fish that were not PIT tagged (2018 UDWR, p. 3). It is unclear if these untagged fish were the result of wild recruitment or of hatchery origin. The natural geochemical markers (signatures) in the otoliths (ear bones) and fin rays of collected, unmarked June suckers show that 39 percent (12 of 31) of these fish likely originated from the FES hatchery, 42 percent from Red Butte Reservoir, other rearing facilities, or inconclusive; and 19 percent (6 of 31) had signatures indicating they originated in Utah Lake (Wolff and Johnson 2013, p. 9), meaning they were likely recruited naturally into Utah Lake. These results suggest that successful natural reproduction and recruitment is occurring, although the exact location and conditions that contributed to this successful natural recruitment are not known. Additional analysis of June suckers of unknown origin is planned in 2019, to determine the level of natural recruitment occurring in Utah Lake. Regardless of origin, capture of untagged fish indicates there is an unknown number of spawning June suckers that were not accounted for in the spawning population estimate.

The year-to-year survival rate of fish stocked into Utah Lake varies significantly depending on a number of factors including length of fish at stock (which correlates to age) and time of year stocked (Goldsmith *et al*. 2016, p. 5). June suckers stocked in early summer that were 11.6 in (296 mm) in length or more (usually representing an individual that was 2 years old) had a survival rate of 83 percent. June suckers stocked at age one had survival rates ranging from zero to 67 percent. The smallest June suckers, those stocked at under 7.9 in (200 mm), had a survival rate into the next year of only two percent (Goldsmith *et al*. 2016, p. 14).

Year-to-year survival rates for spawning June suckers ranged from 65 to 95 percent depending on the tributary and the year (Goldsmith *et al*. 2016, p. 3). Additionally, June suckers that were stocked more than 10 years prior were detected spawning on multiple occasions, indicating the capability for long-term survival in Utah Lake (Conner and Landom 2018, p. 3.). Between 2013 and 2016, June sucker showed a positive population trend with a combined annual growth rate of 1.06 for females and 1.04 for males across three tributaries (Provo River, Spanish Fork, and Hobble Creek), with Provo River having the highest population growth rate and Hobble Creek showing an overall decline (Conner and Landom 2018, p. 3). However, as nearly 50 percent of spawning June sucker detected in Hobble Creek were of unknown origin, a decline in detected spawners in this tributary does not necessarily mean fewer fish overall are using the tributary, because naturally recruited fish that have never been tagged would not be detected by the remote electronic methods used to collect June sucker presence information at spawning locations.

In summary, the viability of June sucker in its native range—as indicated by its representation, resiliency, and redundancy—has improved significantly since the time of listing, largely due to the efforts of the JSRIP (see **Recovery**). Stocking of June sucker, a program designed to maximize representation through genetic diversity, has been very successful at increasing the number of fish in Utah Lake. Stocked individuals are behaving as wild fish by migrating to new habitats, surviving many years, and participating in spawning activities. The JSRIP stocking program is planned to continue until the June sucker reaches self-sustaining population levels, with a focus on stocking 2-year-old fish over 12 in (300 mm) long to increase their chances of survival. The spawning population has increased at least ten-fold since 1999; there is evidence of high year-to-year survival rates and long-term survival for spawning individuals; and the spawning population is increasing at a high rate, improving the resiliency of the wild population. The stocking program and maintenance of refuge populations both at Red Butte reservoir and FES also provided redundancy to the wild populations. Moving forward, a planned origin study using fin-rays is meant to improve our understanding of the degree of natural recruitment of June sucker in Utah Lake, which will yield more accurate population estimates and inform future stocking rates and management decisions for the purposes of further bolstering the species' representation, resiliency, and redundancy to achieve full recovery.

Recovery

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Under section 4(f)(1)(B)(ii), recovery plans must, to the maximum extent practicable, include "objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions [of section 4 of the Act], that the species be removed from the list." Recovery plans provide a roadmap for full recovery success to the Service, States, and other partners on methods of enhancing conservation and minimizing threats to listed species, as well as measurable criteria against which to evaluate progress towards recovery and assess the species' likely future condition. However, they are not regulatory documents and do not substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all of the criteria in a recovery plan being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished. In that instance, we may determine that the threats are minimized sufficiently and the species is robust enough such that it no longer meets the definition of endangered or threatened. In other cases, recovery opportunities may be discovered that were not known when the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan. Likewise, information on the species may be learned that was not known at the time the recovery plan was finalized. The new information may change the extent to which existing criteria are appropriate for identifying recovery of the species. Recovery of a species is a dynamic process requiring adaptive management that may, or may not, follow all of the guidance provided in a recovery plan.

We finalized a recovery plan for June sucker in 1999, which included recovery actions and recovery criteria for downlisting and delisting of June sucker. These criteria lack specific metrics and may require updating. However, they are still relevant to the evaluation of recovery, and we discuss them in this document as one way to evaluate the change in status of June sucker.

Since 2002, the JSRIP has funded, implemented, and overseen recovery actions for the conservation of June sucker in accordance with the guidance provided by the recovery plan, including using adaptive management techniques to address new stressors as they arose. These recovery actions include: (1) acquiring and managing water flows, (2) restoring habitat, (3) removing carp, and (4) augmenting the wild June sucker population. These efforts, and how they relate to the recovery criteria, are described in the following paragraphs.

Acquisition and Management of Water Flows

The first downlisting criterion requires that Provo River flows essential for June sucker spawning and recruitment are protected (Service 2011, p. 5). We do not have enough information to determine the exact flow level required for June sucker spawning and recruitment. However, the JSRIP provides annual recommendations for June sucker on the Provo River and Hobble Creek based on the known biology of the species and the historical flow levels to the CUWCD and other water-managing bodies. These recommendations are currently supported by several reviews under the National Environmental Policy Act performed for their most recent restoration projects (Hobble Creek in 2016 and Provo River in 2015). The JSRIP has also acquired water totaling over 21,000 acre-ft (25,903,080 cubic m (m^3)) per year to enhance flows during the spawning season on the Provo River and to supplement base flows through the summer for the benefit of larval June sucker. Approximately 13,000 acre-ft (16,035,240 m^3) of this water is permanently allocated, and the remainder is allocated through 2021. The JSRIP is pursuing additional water, permanent and temporary, to bolster June sucker allocations after 2021 (JSRIP 2018, p. 5). Additionally, the JSRIP has acquired 8,500 acre-ft (10,485,000 m^3) of permanent water for Hobble Creek (USBR 2017, pp. 3–5). These protected water sources, when delivered as additional water, provide added resiliency by improving habitat quality for the species.

The amount of water delivered to supplement flows in the Provo River and Hobble Creek and the timing of those deliveries is determined annually through a cooperative process involving multiple agencies. In 1996, the June Sucker Flow Work Group was formed by the USBR, DOI Central Utah Project Completion Act (CUPCA) Office, Provo River Water Users Association, Provo River Water Commissioner, CUWCD, UDWR, the Service, Provo City Public Works, and the URMCC. These agencies initially worked together to adjust reservoir releases to mimic a Provo River spring runoff hydrograph and improve June sucker spawning success. Since 2002, this process has been overseen by the JSRIP.

As recovery-specific water was acquired, the role of this work group has expanded to provide a forum for determining the optimal delivery pattern of supplemental flows. Based on existing conditions for a given year (e.g., snow pack and reservoir storage), the multi-disciplinary work group uses operational flexibility for reservoir water delivery and runoff timing to evaluate and operate the system to deliver year-round flows to benefit June sucker recovery. Based on the meetings of the Flow Work Group, the JSRIP makes an annual recommendation for flow deliveries to the Provo River and Hobble Creek, adjusted for the available water conditions. Water managers (including USBR, CUPCA, Provo River Water Users Association, the Provo River Water Commissioner, CUWCD, and Provo City Public Works) then work to deliver water to meet that specific annual recommendation and have been successful in meeting the hydrograph scenarios agreed to by the Flow Work Group on an annual basis since 2004.

In 2004, the CUWCD, in cooperation with the Service and other members of the Flow Work Group, agreed on operational scenarios that mimic dry, moderate, and wet year flow patterns for the Provo River (CUWCD *et al.* 2004, p. 17). The Flow Work Group applied these operational scenarios in determining the spawning season flow pattern for the Provo River with the goal of benefiting June sucker recovery. In 2008, an ecosystem-based flow regime recommendation was finalized for the lower Provo River, based on available site-specific information (Stamp *et al*. 2008, p. 13). This year-round flow recommendation refined the operational scenarios identified in 2004 through the incorporation of relevant ecological functions into the in-stream flow analysis. Hydrologic variability, geomorphology, water quality, aquatic biology, and riparian biology were considered as aspects of flow recommendations, which were adjusted in consideration of these functions. The year-round flow recommendations are adaptive, with consideration of the variability within and among each water year. These include recommendations for a baseline flow, a spring runoff flow, and the duration of the rising and receding flow periods before and after runoff. As more is learned about the associations between flow and river functions, the recommendations can be adjusted (Stamp *et al.* 2008, p. 10).

In 2009, ecosystem-based flow recommendations were developed for Hobble Creek in the Lower Hobble Creek Ecosystem Flow Recommendations Report (Stamp *et al*. 2009, pp. 11–12). These recommendations were adopted by the JSRIP, included in the East Hobble Creek Restoration project Environmental Analysis (JSRIP 2009, p. 5), and are currently considered each year by April in determining the annual recommendations for delivery of flows to Hobble Creek (DOI *et al.* 2013, p. 41). Similar to the Provo River, these recommendations are intended to be adaptive.

Habitat Restoration

The second downlisting criterion for June sucker requires that habitat in the Provo River and Utah Lake be enhanced or established to provide for the continued existence of all life stages (Service 1999, p. 4). Habitat restoration projects have taken place both on the Provo River and Hobble Creek, and habitat quality has also been enhanced in Utah Lake as a result of nonnative species removal (see *Common Carp*, below).

Modifications of the Fort Field diversion structure on the Provo River, located within critical habitat, were completed in October 2009. This modification made an additional 1.2 mi (1.9 km) of spawning habitat available for the June sucker, permitting fish passage further upstream in their historical range (URMCC 2009, pp. 8–9; JSRIP 2008, p. 12). During the 2010 spawning season, June sucker were observed in the Provo River upstream of the modified Fort Field Diversion structure (UDWR 2011, pp. 7–8). In cooperation with the JSRIP, the CUWCD and URMCC are working with other diverters on the Provo River to evaluate further diversion structure removal or modification.

The JSRIP is also implementing a large-scale stream channel and delta restoration project for the lower Provo River and particularly its interface with Utah Lake to restore, enhance, and create habitat conditions in the lower Provo River for spawning, hatching, larval transport, rearing, and recruitment of the June sucker to the adult life stage, increasing the species' resiliency (Olson *et al.* 2002, p. 15; BIO-WEST 2010, p. 3). The Provo River Delta Restoration Project (PRDRP) will reestablish some of the historical delta conditions in the Provo River, thereby increasing habitat complexity and providing appropriate physical and biological conditions necessary for egg hatching, larval development, growth, young-of-year survival, and recruitment of young fish into the adult population. A Final Environmental Impact Statement for the PRDRP was released in April 2015, with a Record of Decision signed in May 2015. Federal agencies are currently acquiring lands needed for the PRDRP and developing a detailed design to provide optimal rearing habitat for June sucker (PRDRP 2017, entire).

Shortly after formation of the JSRIP, and based on delisting criteria identified in the 1999 June Sucker Recovery Plan (Service 1999, pp. 5–6), several Utah Lake tributaries were evaluated for the purpose of establishing a second spawning run of June sucker in addition to the Provo River spawning run (Stamp *et al*. 2002, p. 13). An additional spawning run would improve redundancy for the species by providing security in the event that a catastrophic event eliminated the Provo River spawning population. The study concluded that Hobble Creek provided the best opportunity, but would require habitat enhancements to make it suitable for June sucker spawning and allow for the development of quality rearing habitat for young suckers (Stamp *et al*. 2002, p. 13).

In 2008, the lower 0.5 mi (0.8 km) of Hobble Creek was relocated and reconstructed on land purchased by the JSRIP to provide June sucker spawning habitat, a more naturally functioning stream channel, and suitable nursery habitat for young suckers. The JSRIP partnered with the Utah Transit Authority to implement the habitat restoration project on the purchased property (DOI 2008, p. 14). The project re-created a functioning delta at the interface between Hobble Creek and Utah Lake and allowed the reestablishment of a June sucker spawning run. The restoration design results in more active river processes and includes numerous seasonally inundated off-channel ponds, which serve as larval nursery and rearing habitat to increase larval fish growth and survival (DOI 2008, p. 22).

In 2009, June suckers were documented spawning in the restored Hobble Creek, with verified larval production (Landom and Crowl 2010, pp. 1–12), and in 2010, juvenile June sucker (from 2009 spawning) were collected with seines in ponds within the Hobble Creek restoration area (Landress 2011, p. 4). Due to the success of the restoration, additional reaches of Hobble Creek have been selected for habitat enhancements to increase the amount of available spawning habitat. For example, directly upstream of the lower Hobble Creek restoration area, the East Hobble Creek Restoration Project was completed to enhance the stream channel by increasing sinuosity and floodplain connectivity, modify or remove diversion structures, and provide additional stream flows for Hobble Creek (JSRIP 2016b, p. 17). An age-1 June sucker was observed in this area in January 2018, indicating that June sucker are using this area for rearing (Fonken 2018, pers. comm.).

Carp Removal

The third downlisting criterion requires that nonnative species that present a significant threat to the continued existence of June sucker are reduced or eliminated from Utah Lake. Common carp was identified as the nonnative species having the greatest adverse impact on June sucker habitat and resiliency, due to the large scale changes in water quality and macrophytic vegetation caused by carp introduction (see Distribution and Habitat, above).

In 2009, a mechanical removal program was instituted to remove common carp from Utah Lake. Between 2009 and 2017, over 13,000 tons (11,750 metric tons) of common carp were removed from the lake (UDWR 2017c, p. 2). This removal resulted in a decline of the common carp population. Catch-per-unit effort of common carp has decreased over the past 4 years, while average weight of individual common carp has increased, thus indicating a trend of reduction in common carp density in Utah Lake (Gaeta and Landom 2017, p. 7).

In 2015, after 6 years of common carp removal, native macrophytes were observed in Utah Lake vegetation monitoring studies for the first time (Landom 2016, pers. comm.). As of 2017, multiple sites in the lake have native littoral vegetation, including sites with increasing complexity supporting more than four native macrophytic species at one site (Dillingham 2018, entire). Sites with more complex vegetation support a higher diversity of macroinvertebrates, which provide additional food for June sucker, provide greater opportunities for June sucker to shelter from predators, and indicate improved water quality in the lake (Dillingham 2018, entire).

The common carp removal program in Utah Lake has had a positive impact on habitat quality, which may be contributing to natural recruitment and survival rates for June sucker (Gaeta and Landom 2017, p. 8; see *Species Abundance and Trends*). Ongoing research by Utah State University is continuing to assess the relationship between common carp removal, habitat improvement, and June sucker population response as well as develop long-term recommendations for sustainable common carp management (Gaeta *et al.* 2018, entire). The JSRIP is prioritizing continued suppression of the common carp population via mechanical removal, as well as research into genetically modified sterile (YY) male technology that has the potential to reduce or eliminate carp from Utah Lake in the future (JSRIP 2018, p. 2).

Population Augmentation

The fourth and final downlisting criterion in the June sucker recovery plan is that an increasing self-sustaining spawning run of wild June sucker resulting in significant recruitment over 10 years has been reestablished in the Provo River. This criterion does not define “significant” recruitment. Although the spawning population of June sucker is increasing, annual stocking continues in order to support the population. The augmentation plan for the June sucker set a goal, for the purposes of meeting the recovery criterion of a self-sustaining population, of stocking 2.8 million individuals into Utah Lake (Service and URMCC 1998, entire). The goal was based on early studies of June sucker survival and the production capabilities of the facilities. As of 2017, more than

800,000 captive-bred June sucker have been stocked in Utah Lake from the various rearing locations, and a long-term, continued stocking strategy based on the most up-to-date research on stocking success and survival rates is under development (JSRIP 2008, p. 8; UDWR 2017b, p. 6).

Although the June sucker has not met this downlisting criterion identified in the 1999 recovery plan, we find that the population increases and trends achieved thus far (see *Species Abundance and Trends*), with the addition of refuge populations to increase redundancy and genetic representation, will help prevent the species becoming endangered or extinct due to catastrophic stochastic events and provide a more realistic metric for downlisting eligibility.

Overall, recovery actions have addressed many of the threats and stressors affecting June sucker. The JSRIP has been effective in collaborating to implement a stocking program, increase June sucker spawning locations, acquire and manage water flows, remove nonnative common carp, and develop and conduct habitat restorations that target all life stages of June sucker. Studies are planned to improve understanding of the effects of other threats and stressors, including lake water quality and the impact of other invasive species on the June sucker. The JSRIP continues to be active and committed to full recovery of the June sucker.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or removing species from listed status. "Species" is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). 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.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We must consider these same five factors in downlisting a species. We may downlist a species according to 50 CFR 424.11(d) if the best available scientific and commercial data indicate that the species no longer meets the definition of an endangered species, but that it meets the definition of a threatened species.

For the purposes of this analysis, we evaluate whether or not June sucker meets the definition of an endangered or threatened species, based on the best scientific and commercial information available. We use the term "threat" to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term "threat" includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term "threat" may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an "endangered species" or a "threatened species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an "endangered species" or a "threatened species" only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

In our determination, we correlate the threats acting on the species to the factors in section 4(a)(1) of the Act.

The following analysis examines the five factors currently affecting June sucker or that are likely to affect it within the foreseeable future. For each factor, we examine the threats at the time of listing in 1986 (or if not present at the time of listing, the status of the threat when first detected), the downlisting criterion pertinent to the threat, what conservation actions have been taken to meet the downlisting criteria or otherwise mitigate the threat, the current status of the threat, and its likely future impact on June sucker. We also consider stressors not originally considered at the time of listing, most notably climate change.

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

Loss and alteration of spawning and rearing habitat were major factors leading to the listing of the June sucker (51 FR 10851, March 31, 1986) and continue to threaten the species' overall resiliency and its recovery. Suitable spawning and rearing habitat in Utah Lake and its tributaries has declined due to water development, habitat modification, introduction of common carp, nutrient loading, and urbanization.

Water Development and Habitat Modification

Water development and substantial habitat modifications have occurred in the Utah Lake drainage since the mid-1800s. These include the reduction in riverine flows (including the Provo River) from numerous water diversions, various water storage projects, channelization, and additional lake and in-stream alterations (Radant *et al.* 1987, p. 13; UDWR and UDNR 1997, p. 11; Andersen *et al.* 2007, p. 8). Many of these modifications and water depletions remain today, and continue to hinder the quantity and quality of June sucker rearing and spawning habitat, which in turn impacts species resiliency.

In 1849, settlers founded Fort Utah along the Provo River and began modifying the waters of Utah Lake and its main tributaries (USBR 1989, p. 3). In 1872, a low dam was placed across the lake outflow to the Jordan River, changing the function of Utah Lake into a storage reservoir (CUWCD 2004, p. 2). By the early 1900s, a pumping plant was constructed at the outflow to allow the lake to be lowered below the outlet elevation;

this structure has since been modified and enlarged (Andersen *et al*. 2007, p. 5). The present capacity of the pumping plant is 1,050 cubic feet per second (cfs) (29.7 cubic meters per second (cms)), and it can lower the lake level 8–10 ft (2.4–3.0 m) below the compromise elevation of 4,489 ft (1,368 m) (Andersen *et al.* 2007, p. 5). The compromise elevation is a managed lake elevation target that the interested water authorities have agreed not to exceed through the active storage of water. This compromise elevation was intended to balance the threat of flooding among lands adjacent to Utah Lake and those downstream along the Jordan River (CUWCD 2004, p. 7).

As a storage reservoir, the surface elevation of Utah Lake fluctuates widely. Prior to the influence of water development projects, annual fluctuations averaged 2.1 ft (0.6 m) per year. For approximately 50 years, under the influence of water development projects, water levels fluctuated an average of 3.5 ft (1.0 m) annually prior to the completion of the Central Utah Project. After its completion, annual lake fluctuations averaged 2.5 ft (0.8 m) (Hickman and Thurin 2007, p. 20). Fluctuation in surface elevation is one of the possible factors contributing to the marked degradation of shoreline habitat and aquatic vegetation in the lake and may contribute to a decline in June sucker refugial habitat from predators (Hickman and Thurin 2007, p. 23).

The long history of water management in the Provo River, including river alterations, dredging, and channelization efforts, have modified the historical braided and complex delta into a single trapezoidal channel (Radant *et al.* 1987, p. 15; Olsen *et al*. 2002, p. 11). The current channel lacks vegetative cover, habitat complexity, and the food sources necessary to sustain larval fishes rearing in the lower Provo River (Stamp *et* *al.* 2008, p. 20). Additionally, the lower 2 mi (3.2 km) of the Provo River experiences a back-water effect, where the velocity stalls under low-flow scenarios and a high seasonal lake level causes the water to back up from the lake into the Provo River (Stamp *et al.* 2008, p. 20). The slack-water substantially reduces the number of larvae drifting into the lake; as a result, the larvae, with poorly developed swimming abilities, either starve or are consumed by predators in this lower stretch of river (Ellsworth *et al.* 2010, p. 9). Because of the extensive modification of the lower Provo River, in the past June sucker larvae have not survived longer than 20 days after hatching (Ellsworth *et al*. 2010, pp. 9–10). The upcoming PRDRP is designed to increase survival of larvae by providing additional rearing habitat along the Provo (PRDRP 2017, entire).

Similar to the Provo River, Hobble Creek and other tributaries of significance (Spanish Fork River and American Fork River), have been extensively modified by human activities. The hydrological regimes have been altered by multiple dams and diversions, and the stream channels have been straightened and dredged into incised trapezoidal canals (Stamp *et al*. 2002, p. 5). As a result, the streams are isolated from their historical floodplains and have modified flow velocities and pool-riffle sequences (Stamp *et al*. 2002, p. 6). Until recent restoration efforts, the Hobble Creek channel had almost no gradient and ended without a defined connection to the lake interface in Provo Bay due to diversion structures and dredging. In the past, the channel was blocked by debris accumulation that created barriers to fish migration, preventing adult June sucker access to the main stem of Hobble Creek.

Located south of Provo Bay, the Spanish Fork River is the second largest stream inflow to Utah Lake, but the majority of the discharge is diverted during the irrigation season (June–September) (Psomas 2007, p. 12). While adult and larval June sucker occur in the Spanish Fork River (UDWR 2006, p. 2; 2007, p. 2; 2008a, p. 3; 2009a, p. 4; and 2010b, p. 2), the seasonally inadequate flows, poor June sucker rearing habitat at the Utah Lake interface, low water clarity, diversion structures, and miles of levees along the channel are obstacles to successful recruitment (Stamp *et al*. 2002, p. 5). Adult spawning habitat is limited to the lower 2.7 mi (4.3 km) of the Spanish Fork River, where it is of poor quality. Other tributaries where spawning may occur under favorable conditions include the American Fork River and Battle Creek, but streamflow to Utah Lake in these tributaries is not available most years; therefore, they are not believed to comprise a significant portion of June sucker spawning habitat.

Recovery actions for the June sucker to address impacts from water development and habitat modification have included water acquisition, water flow management, and habitat restoration (see **Recovery**). The availability of quality spawning habitat will improve species resiliency, and multiple spawning tributaries will improve species redundancy. The positive trend in spawning population numbers, increased number of June suckers, and observations of young-of-year and age-1 June sucker in the wild indicate that water acquisition, water flow management, and habitat restoration have had a positive impact on June sucker reproduction (JSRIP 2018, p. 1; see *Species Abundance and Trends*).

Introduction of Common Carp

Historically, Utah Lake had a rich array of rooted aquatic vegetation, which provided nursery and rearing habitat for young June sucker (Heckmann *et al.* 1981, p. 2; Ellsworth *et al.* 2010, p. 9). However, with the introduction of common carp around the

1880s (Sigler and Sigler 1996, pp. 5–6), this refugial habitat largely disappeared. Common carp physically uproot and consume macrophytes and disturb sediments, increasing turbidity and decreasing light penetration, which inhibits macrophyte establishment (Crowl and Miller 2004, pp. 11–12). Although not specifically identified at the time of listing, the successful establishment of common carp and their effect on the Utah Lake ecosystem is a threat to the persistence of the species (SWCA 2002, p. 19). However, the previously described carp removal program has reduced carp populations and increased macrophytic vegetation in the lake, improving resiliency of June sucker (see **Recovery**).

Urbanization

Rapid urbanization on the floodplains of Utah Lake tributaries stimulated extensive flood and erosion control activities in lake tributaries and reduced available land for the natural meandering of the historical river channels (Stamp *et al.* 2008, p. 4). Channelization for flood control and additional channel manipulation for erosion control further reduced riverine habitat complexity and reduced the total length of tributary rivers for spawning and early-life-stage use (Stamp *et al.* 2008, pp. 12–13). It is anticipated that further urban infrastructure development is likely as the populations of cities bordering Utah Lake and its tributaries continue to increase.

Among the potential impacts from continued urbanization near Utah Lake is the potential for the construction of bridges or other transportation crossings. One example is the Utah Crossing project, a causeway across Utah Lake proposed in 2009. An updated application has not been filed with Utah’s Department of Transportation for the project to proceed; however, as development continues on the western side of Utah Lake, the potential need for some type of crossing may increase.

A large-scale project to dredge Utah Lake, remove invasive species, and build habitable islands for private development was proposed in 2017 and is under early stages of planning and review at the State level (ULRP 2018, entire). This project has not received any approval or necessary permits at the State or Federal level. We do not expect the Utah Lake Restoration Project or the Utah Crossing project to move forward or impact June sucker in the next 5–10 years. All development projects on Utah Lake are subject to Federal and State laws and require consultation with the Service prior to beginning work. However, such projects could potentially impact June sucker by increasing habitat for predatory fish and restricting June sucker movement in Utah Lake (Service 2009, entire). Additional impacts to water quality due to the runoff from new structures could also pose a threat to June sucker (Service 2009, entire). The Utah Division of Water Quality (UDWQ) is partnering with the Utah Lake Commission and other stakeholders to research and provide recommendations to improve water quality and address impacts of urbanization and other factors that may negatively impact future water quality (UDWQ 2017, entire).

Summary of Factor A

Water development and habitat modification, common carp, and urbanization have been identified as threats to June sucker. Since the time of listing, the following recovery actions have been implemented: (1) 21,500 acre-feet of permanent water for instream flows has been secured to benefit the June sucker; (2) a mechanism for annually recommending and providing flows for June sucker spawning has been implemented; (3)

the common carp population has been suppressed resulting in measurable habitat improvement in Utah Lake; (4) the impacts of urbanization are being considered through active research and planning; and (5) a landscape-scale stream channel and delta restoration for the Provo River is being implemented (see **Recovery**). We find that the severity of the threats under Factor A have decreased since the time of listing; adaptive management of these threats is ongoing, and increased resiliency and redundancy are evident as indicated by increasing survival rates and overall population numbers.

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

Commercial fishing, including fishing for June sucker, was historically an important use of Utah Lake (Heckman *et al.* 1981, p. 9). Some commercial fishing for June sucker occurred through the 1970s, but on a very limited basis. Shortly thereafter, commercial harvest for the species largely stopped due to the limited population size. Currently, June sucker is a prohibited species and cannot be harvested (Utah Regulation 657–14–8). Consequently, commercial or recreational fishing is no longer considered a threat to the species. Regulated collections of June sucker for scientific purposes continue at a very limited level, but do not pose a threat to the population status. We do not consider overutilization for commercial, recreational, scientific, or educational purposes a threat to June sucker.

C. *Disease or Predation.*

Disease

Neither disease nor the presence of parasites were considered threats to June sucker at the time of listing. Although parasites likely exist in June sucker habitat, there is no evidence that June sucker at the individual or population levels are significantly compromised by the presence of parasites. Fish health inspections are regularly conducted on June sucker at the FES hatchery and in Red Butte Reservoir, and no known pathogens have been detected (JSRIP 2018c, entire). At this time, there is no information indicating that the presence of parasites or disease negatively affects June sucker.

Predation

Predation by nonnative fishes threatens the successful recruitment of young suckers into the spawning adult life stage (Radant and Hickman 1984, p. 6) and was a major factor for listing the species as endangered (51 FR 10851; March 31, 1986). The introduction of nonnative fishes significantly altered the native Utah Lake fish assemblage. Historically, Bonneville cutthroat trout (*Oncorhynchus clarkii*) was the top-level piscivore (fish-eating predator) in Utah Lake; however, 30 fish species have been introduced since the late 1800s. Twelve nonnative fish species have established self-sustaining populations, and seven of these are piscivorous (SWCA 2002, p. 14). As a result, June suckers currently face an array of predator species, including white bass (*Morone chrysops*), walleye (*Sander vitreus*), largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), black bullhead (*Ameiurus melas*), northern pike (*Esox lucius*), and channel catfish (*Ictalurus punctatus*).

Predation by nonnative fishes primarily targets the early life stages of June sucker. Adult June sucker are larger than the gape size of the average predatory fish, and therefore, are significantly less vulnerable. At the time of listing, the effects of predation were exacerbated by the lack of vegetated refuge habitat within Utah Lake.

White bass may have the highest potential to limit recruitment of young suckers into the spawning adult population (SWCA 2002, p. 132; Landom *et al*. 2010, p. 18).

White bass become piscivorous at age-0 in Utah Lake (Radant and Sakaguchi 1981, p. 12; Landom *et al*. 2010, pp. 11–12) and are the most abundant piscivore (UDWR 2010, p. 9). The white bass population in Utah Lake could consume as many as 550 million fish of various species throughout the course of 1 year (Landom *et al.* 2010, pp. 8–10). However, it appears that restored habitat with complex aquatic vegetation provides the sucker with effective refuge from white bass. Thus, habitat restoration is likely paramount to young-of-year June sucker resiliency and survival (see **Recovery**).

The recent illegal introduction of northern pike and its increasing population in Utah Lake raises concerns similar to white bass. Northern pike predominantly feed on juvenile fish; predation on adults is less than one percent (Reynolds and Gaeta 2017, p. 12). Thus far, the lake-wide number of northern pike has not measurably increased and active removal efforts continue to suppress populations (Reynolds and Gaeta 2017, p. 13). However, a northern pike population model shows potential for a high degree of population increase with potential for a high negative impact on the June sucker population by the year 2040 (Gaeta *et al.* 2018, entire). Despite these modeling results, unique factors impacting northern pike population dynamics in Utah Lake are still not understood. Recent habitat improvements in the lake from common carp removal (see **Recovery**) may help mitigate northern pike predation by providing refugia for June sucker. Additionally, high levels of total dissolved solids (TDS), similar to the levels found in Utah Lake, may suppress northern pike (Scannell and Jacobs 2001, entire; Koel 2011, p. 7). The JSRIP is funding research to clarify this relationship and to determine a course of action to prevent northern pike from becoming a greater threat to June sucker in the future.

While predation from nonnative species remains a threat, June suckers continue to persist in the lake, with spawning populations and the number of untagged fish (e.g., possibly natural recruitment) increasing. Adaptive management of nonnative fish is ongoing.

D. *The Inadequacy of Existing Regulatory Mechanisms.*

Under this factor, we examine the stressors identified within the other factors as ameliorated or exacerbated by any existing regulatory mechanisms or conservation efforts. Section 4(b)(1)(A) of the Act requires that the Service take into account "those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species…" In relation to Factor D under the Act, we interpret this language to require the Service to consider relevant Federal, State, and Tribal laws, regulations, and other such binding legal mechanisms that may ameliorate or exacerbate any of the threats we describe in threat analyses under the other four factors or otherwise enhance the species' conservation. Our consideration of these mechanisms is described below.

As a listed species, the primary regulatory mechanism for protection of the June sucker is through section 9(a) of the Act, as administered by the Service, which broadly prohibits import, export, take (e.g., to harm, harass, kill, capture), and possession of the species. Additional regulatory mechanisms are provided through section 7(a)(2) of the Act, which states that each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species that is determined by the Secretary, after soliciting comments from affected States, counties, and equivalent jurisdictions, to be critical. Section 10(a)(1)(A) of the Act provides a mechanism for research and propagation of listed species for recovery purposes through a permitting system that allows incidental take of a listed species in the course of scientific projects that will benefit the species as a whole. For non-Federal actions, section 10(a)(1)(B) of the Act authorizes the Service to issue a permit allowing take of species provided that the taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Section 10(a)(2)(A) of the Act requires that a conservation plan, which is part of an application for an incidental take permit, describe the impact of the taking and identify steps to minimize and mitigate the impacts.

The Act would continue to provide protection to June sucker after downlisting to threatened status, but would not provide protection for the species after delisting. However, after delisting, the June sucker and its habitat would continue to receive consideration and some protection through other regulatory mechanisms discussed below.

The National Environmental Policy Act (NEPA; 42 U.S.C. 4321–4370d) requires Federal agencies to evaluate the potential effects of their proposed actions on the quality of the human environment and requires the preparation of an environmental impact statement whenever projects may result in significant impacts. Federal agencies must identify adverse environmental impacts of their proposed actions and develop alternatives that undergo the scrutiny of other public and private organizations as a part of their decision-making process. However, impacts may still occur under NEPA, and the implementation of conservation measures is largely voluntary. Actions evaluated under NEPA only affect June sucker if they address potential impacts to the species or its habitat. Because of this, NEPA provides some protection for June sucker in the cases of projects that directly impact its habitat in Utah Lake or its tributaries.

The Fish and Wildlife Coordination Act (16 U.S.C. 661–666c) requires that Federal agencies sponsoring, funding, or permitting activities related to water resource development projects request review of these actions by the Service and the State natural resource management agency. Similar to caveats noted for NEPA, actions considered under the Fish and Wildlife Coordination Act are only relevant if they potentially impact the species or its habitat. The Fish and Wildlife Coordination Act does not provide strong or broad protections for June sucker on its own, but does provide an additional layer of review for projects likely to directly impact June sucker and works in concert with other regulatory mechanisms.

Section 101(a) of the Federal Water Pollution Control Act (i.e., Clean Water Act; 33 U.S.C. 1251–13287) states that the objective of this law is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters and provide the means to assure protection of fish and wildlife. This statute contributes in a significant way to the protection of the June sucker through provisions for water quality standards, protection from the discharge of harmful pollutants and contaminants (sections 303(c), 304(a), and 402), and discharge of dredged or fill material into all waters, including certain wetlands (section 404).

The Clean Water Act requires every State to establish and maintain water quality standards designed to protect, restore, and preserve water quality in the State. However, Utah Lake has failed to meet water quality standards due to exceedance of total phosphorus and TDS concentrations (Psomas 2007, p. 11), and it is listed as a section

303(d) "impaired" water (Utah Lake Commission 2018, p. 7). Poor water quality in Utah Lake could alter food availability for June sucker and contribute to increases in harmful algal bloom events and toxin concentrations from those events, which could increase the risk of large-scale June sucker mortality events. To meet Clean Water Act requirements, UDWR and the Utah Lake Commission are studying water quality in Utah Lake and have organized a steering committee and science panel for the purposes of providing recommendations to improve water quality standards in Utah Lake (Utah Lake Commission 2018, entire).

June sucker also receives some protections at the State level. Commercial or recreational fishing for June sucker is not allowed. Possession of June sucker is prohibited in the State of Utah and it cannot be harvested (Utah Regulation 657–14–8).

Improved implementation of regulatory mechanisms described above is necessary for recovery of the June sucker and to ensure long-term conservation of the species. If the species were to be delisted, there will be a need for conservation plans and agreements to provide assurances that the recovered June sucker population will be maintained. However, in the case of downlisting, the June sucker will continue to receive protection under the Act when listed as threatened. The species will also receive the same level of protection under the other aforementioned regulatory mechanisms.

E. *Other natural or manmade factors affecting its continued existence*.

At the time of listing, the impact of pollution from local communities was considered to be adversely affecting June sucker, but more information was needed to document this threat. Water quality in Utah Lake continues to be a threat to the species, and climate change is considered a new threat. Riverine water quality has improved in two of the tributaries (Provo River and Hobble Creek) due to the water acquisitions and the augmentation of stream flow for the protection of the species.

Lake Water Quality

Utah Lake is hypereutrophic, characterized by frequent algal blooms and high turbidity (Merritt 2004, p. 14; Psomas 2007, p. 12). The increased turbidity, decreased water quality, and historical change in the plant community, from macrophyte-dominated to algae-dominated, affect the fishes of Utah Lake, including June sucker.

High turbidity can decrease the feeding ability of many species of planktivorous fish (Brett and Groot 1963, pp. 5–6; Vinyard and O'Brien 1976, p. 3), which could indicate a lack of access to sufficient food for rearing juveniles. Thus, elevated turbidity levels may decrease feeding efficiency of June sucker by limiting their ability to visually prey on preferred plankton food types.

Utah Lake is listed on Utah's 2016 section 303(d) list for exceedance of State criteria for total phosphorus and TDS concentrations (UDWQ 2018, p. 3-7). The majority of the total phosphorus load to Utah Lake is from point sources. Utah Lake also has naturally elevated salinity levels compared to other intermountain freshwater lakes, and there is anecdotal evidence that the concentrations are substantially higher today than they were before human development (Psomas 2007, p. 8). Within Utah Lake, natural salinity levels are due in part to high evaporation rates, which are a function of the lake's large surface-area-to-depth ratio and drainage basin characteristics. Evaporation naturally removes about 50 percent of the total volume of water that flows into the lake, resulting in a doubling of the mean salt concentration in water passing through the lake (Fuhriman *et al.* 1981, p. 7).

In addition, several natural mineral springs near the shore of Utah Lake contribute dissolved salts, although the magnitude and effect of these sources has not been quantitatively evaluated (Hatton 1932, p. 2). Evaporative losses continue to be the main driver of salinity concentrations in Utah Lake. However, settlement and development of the Utah Lake basin since the 1800s led to increases in irrigation return flows containing dissolved salts, which likely exacerbated natural salinity concentrations within Utah Lake (Sanchez 1904, p. 1). Despite the human influences on inflows, in recent years, salinity levels in Utah Lake have not increased markedly (Psomas 2007, p. 13). The UDWQ continues to monitor Utah Lake for any changes in salinity concentrations.

The effects of increased salinity concentrations on the various life stages of June sucker are unknown. Egg size, hatching success, and mean total length of larvae decreased as salinity levels increased for another lake sucker that occurs in Nevada, the cui-ui (*Chasmistes cujus*; Chatto 1979, p. 7). However, salinity concentrations were much higher in the cui-ui habitat than any recorded concentrations in Utah Lake.

Natural nutrient loading to the lake is high due to the nutrient- and sediment-rich watershed surrounding the lake. However, human development in the drainage increased the naturally high inflow of sediments and nutrients to the lake (Fuhriman *et al.* 1981, p. 12). Sewage effluent entering the lake accounts for 50, 76, and 80 percent of all nitrogen, total phosphorous, and ortho-phosphate, respectively (Psomas 2007, p. 12). Phosphorus inputs to the lake (297.6 tons (270.0 metric tons) per year) exceed exports (83.5 tons (75.7 metric tons) per year) during all months of the year. Thus, the lake acts as a phosphorus sink, accumulating approximately 214 tons (194.1 metric tons) annually (Psomas 2007, p. 15). These high nutrient loads increase the frequency and extent of large blue-green algal blooms, which greatly affect overall food web dynamics in Utah Lake (Crowl *et al.* 1998b, p. 13). Blue-green algae is inedible to many zooplankton species, which decreases zooplankton abundance and its availability as a food source for June sucker (Landom *et al*. 2010, p. 19). Reductions in feeding rates translate into long-term effects such as decreased condition, growth rates, and fish survival (Sigler *et al*. 1984, p. 7; Hayes *et al*. 1992, p. 9). Furthermore, the increased algal biomass limits available light for submergent vegetation (Scheffer 1998, p. 19), thus reducing refugial habitat for early life stages of June sucker. The frequency and size of algal blooms may be increasing as large-scale algal blooms occurred in 2016 and 2017 (UDWQ 2017, p. 3).

Although there is a significant amount of research indicating that algal blooms can be harmful to many types of fish, we do not have direct evidence regarding the degree or manner in which they impact June sucker in Utah Lake (Psomas 2007, p. 14; Crowl 2015, entire). No fish kills were documented during recent bloom events, but post-stocking monitoring of June sucker has noted that, during algal blooms, fish movement decreased measurably (Goldsmith *et al*. 2017, p. 13).

An average Utah Lake TDS concentration is about 900 parts per million (ppm)/milligrams per liter (mg/L), but large variations occur, depending on the water year (Hickman and Thurin 2007, p. 9). There is no evidence of direct mortality to June sucker due to higher salinity levels, but it is possible that increased salinity, when combined with increased nutrient input and turbidity, may adversely affect June sucker by reducing zooplankton and refugial habitat abundance as described above. Further study of June sucker responses during high salinity events is needed to better understand this relationship.

Water quality concerns in Utah Lake are being addressed through a large-scale study and the formation of a steering committee and science panel to develop recommendations for Utah Lake water quality for the benefit of June sucker (UDWQ 2017, entire).

Riverine Water Quality

Prior to listing, riverine water quality was heavily impacted by water withdrawal, agricultural and municipal effluents, and habitat modification. The water withdrawals reduced the ability of the rivers to effectively transport sediments and other materials from the river channel. Furthermore, withdrawals influenced temperature, dissolved oxygen, and pollutant/nutrient concentrations (Stamp *et al*. 2008, p. 18). Diverted streams with reduced, shallow summertime base flows are very susceptible to solar heating and can experience lethally warm water temperatures (over 80 °F or 27 °C, depending on life stage). High water temperature, especially if combined with stagnant flow velocities, can lead to low dissolved oxygen levels in streams where flows have been reduced (Stamp *et al*. 2008, p. 19).

Artificially high temperatures may also occur in streams where flow regime alterations and channelization have limited the recruitment of woody riparian vegetation, thereby reducing the amount of streamside shading (Stamp *et al*. 2008, p. 19). Subsequently, extensive colonization by filamentous algae can occur in warmer temperatures, creating extreme daily dissolved oxygen fluctuations that are harmful to June sucker (Service 1994, p. 12). Agricultural and municipal effluents can enrich production of algae, further impacting daily dissolved oxygen levels. These effluents can cause fish kills if significant runoff from agricultural and municipal properties occurs during low flow periods. Furthermore, heavy algal growth can cause the armoring of spawning gravels and aid in the accumulation of fine sediments that degrade spawning habitat quality (Stamp *et al*. 2008, p. 32).

The Provo River is listed on Utah's 2016 section 303(d) list for impairments harmful to cold-water aquatic life. Additionally, water quality has been considered poor in the river's lower reaches during summer low-flow periods due to low dissolved oxygen levels and elevated temperatures (Stamp *et al.* 2008, p. 34). It is likely that the recent supplementation of flows for June sucker recovery in the Provo River are minimizing the risk of lethal temperatures and dissolved oxygen fluctuations by providing water during critical periods and maintaining base flows throughout the summer while larvae are developing. The planned Provo River Delta Restoration Project will provide additional water storage and refugial habitat (see **Recovery**).

Hobble Creek is not currently on the Utah section 303(d) list as being an impaired waterbody. However, there are indications that total phosphorus and temperature may be problematic in Hobble Creek during certain times of the year (Stamp *et al*. 2009, pp. 22–23). Based on review of data collected since 1999 at the water quality station on Hobble Creek at I–15 (STORET site #4996100), average total phosphorous concentration is 0.06 ppm/mg/L, which exceeds the Utah indicator value of 0.05 ppm/mg/L (Stamp *et al*. 2009, p. 24). In addition, creek temperatures exceed 68 ˚F (20 ˚C), which is the State cold-water fishery standard; this temperature increase typically occurs during summer days when air temperatures are high and flow in the channel is low (Stamp *et al*. 2009, p. 26). Similar to the Provo River, the augmentation of stream flows in Hobble Creek has likely minimized the risk of lethal temperatures by providing flows during critical periods.

Effects of Climate Change

The predicted increase in global average temperatures is expected to negatively affect water quality in shallow lakes (Mooij *et al.* 2007, p. 2). Turbid shallow lakes such as Utah Lake are likely to have higher summer chlorophyll-*a* concentrations with a stronger dominance of blue-green algae and reduced zooplankton abundance with climate change (Mooij *et al.* 2007, p. 5). This could affect June sucker food resources since zooplankton are the primary food source for the species.

In Utah, the intensity of naturally occurring future droughts are expected to increase and historically unprecedented warming is projected by the end of the 21st Century. Projected changed in winter precipitation include an increase in the fractions falling as rain, rather than snow, and potentially decreasing snowpack water storage (Frankson *et al*. 2017; p. 2). These changes in timing and amount of flow could affect June sucker spawning, because the spawning cues of increased runoff and water temperature, on which the June sucker relies to determine spawning time, would potentially occur earlier in the year.

As changes to water availability and timing occur in the future, the JSRIP will need to coordinate reservoir operations to ensure timely releases. If runoff and upstream reservoir volumes are insufficient, peak and base flows desired in spawning tributaries will be reduced. This in turn would negatively impact the early season attractant flows needed by spawning adults, and potentially limit flows needed by larval suckers to move into downstream rearing habitats. While 13,000 acre-ft (16,035,240 m^3) of permanent water have been acquired for the Provo River and 8,500 acre-ft (10,485,000 m^3) have been acquired for Hobble Creek, and flows in both systems are intensively managed with consideration for June sucker, additional permanent water acquisitions may become necessary to secure water that can be used to supplement flows during critical spawning and rearing periods as the climate shifts.

Summary of Factor E

Water quality in Utah Lake continues to be a threat to June sucker, although water acquisitions and effective water management practices to benefit the species have greatly reduced its impact and increased resiliency in the species. In the future, climate change may make addressing this threat more difficult due to increased temperatures and decreased precipitation. However, both water quality and availability of water in the future are actively being studied and prioritized by the JSRIP, UDWQ, and the Utah Lake Commission. Current conditions in the Utah lake ecosystem support an increasing population of June sucker in the lake and increasing spawning populations in key tributaries. In addition, three refuge populations exist to prevent extinction should an unforeseen catastrophic water quality event occur, thereby ensuring continued redundancy. Therefore, we find that adaptive management of the threats under Factor E, through on-going water management and acquisition for the benefit of June sucker, as well as efforts to improve water quality in Utah Lake, prevents them from rising to the level that would place June sucker in imminent danger of extinction.

Overall Summary of Factors Affecting June Sucker

As required by the Act, we considered the five factors in assessing whether the June sucker is an endangered or threatened species throughout all of its range. We carefully examined the best scientific and commercial information available regarding the past, present, and future threats faced by June sucker. We reviewed the information available in our files and other available published and unpublished information, and we consulted with recognized experts and State agencies. We evaluated the changes in resiliency, redundancy, and representation for June sucker since the time of listing.

June sucker resiliency has improved since the time of listing, with an increase in wild spawning population of at least ten-fold, a positive population trend, and increases in both the quality and quantity of habitat, which we project will continue to improve based on plans to continue successful management actions and implement new projects, such as the Provo River Delta Restoration and the Utah Water Quality Study. Redundancy in June sucker is assured by the existence of several refuge population, including a naturally self-sustaining population in Red Butte Reservoir and the stocking population maintained at FES and Rosebud Pond, as well as the presence of water flows in at least two spawning tributaries each year, with up to five spawning tributaries available in good water years. Prior to listing there were no refuge populations and in low water years there might be no available spawning tributaries with water throughout the summer. Representation for June sucker exists in the form of genetic diversity in the breeding and stocking program, which has preserved a high degree of genetic variation in the fish stocked in Utah Lake since listing. Based on these elements, we find that overall viability for June sucker has improved since the time of listing, to the point where it no longer meets the definition of endangered.

Factor B is not considered a threat to the June sucker due to the fact that harvest and collection of the species are strictly regulated and very limited. June suckers are affected by loss and degradation of habitat (Factor A), predation (Factor C), and other effects of human activities including climate change (Factor E). Existing regulatory mechanisms outside of the Act (Factor D) do not address all the identified threats to the June sucker, as indicated by the fact that these threats continue to affect the species throughout its range. However, recovery actions have significantly improved viability of the June sucker and reduced the immediacy of these threats.

Cumulative Threats

The June sucker faces threats primarily from degraded habitat and water quality, water availability, predation from nonnative species, and urbanization. Furthermore, existing regulatory mechanisms do not adequately address these threats. The June sucker also faces a future threat of climate change, which may exacerbate other existing threats. These factors may act cumulatively on the species. For example, urbanization can result in increased pressure on existing water resources as well as degraded water quality, which when combined with rising temperatures and decreased rainfall can result in less available water, increased water temperatures, and decreased habitat quality. These factors can cause reduced availability of food for June sucker, decreased reproductive success, and increased mortality.

However, since the time of listing, all of the identified threats to June sucker have either improved measurably or are being adaptively managed according to the best available scientific information for the benefit of June sucker (see **Recovery**). Conservation measures, including stocking of June sucker in Utah Lake, habitat restoration projects on spawning tributaries, and nonnative fish removal, have resulted in increased numbers of June sucker in the lake, evidence of wild reproduction, and improved habitat within the lake and its tributaries. As a result, resiliency, redundancy, and representation have all improved. Continued research and monitoring provide an avenue to respond to new and evolving threats, such as the effects of climate change, to recovery progress. The existence of refuge populations ensures that, should a stochastic event or extreme combination of existing threats greatly impact the population in Utah Lake, the June sucker would not become extinct.

This resilience to the cumulative threats is due largely to the actions of an active, committed, and well-funded recovery partnership. The JSRIP has been the driving force behind the reduction in threats, habitat improvement, and population augmentation and is able to adaptively manage new stressors as they arise. The improvement of conditions and success of the recovery program can be measured via the increased number of spawning June suckers, the positive population trend, and the high level of year-to-year survival.

Proposed Determination of Species Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of "endangered species" or "threatened species." The Act defines an "endangered species" as a species that is "in danger of extinction throughout all or a significant portion of its range," and a "threatened species" as a species that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The Act requires that we determine whether a species meets the definition of "endangered species" or "threatened species" because of any of the following factors: (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.

Status Throughout All Of Its Range

After evaluating threats to the species and assessing the cumulative effects of the threats under the section 4(a)(1) factors, we find that the threats of loss and degradation of habitat (Factor A), predation (Factor C), and other effects of human activities including climate change (Factor E) are still acting on June sucker. Existing regulatory mechanisms outside of the Act (Factor D) do not address all the identified threats to the June sucker, as indicated by the fact that these threats continue to affect the species throughout its range, although with less intensity than at the time of listing. Based on the analysis above and given increases in population numbers due to recovery efforts, we conclude the June sucker no longer meets the Act's definition of an endangered species.

Although population numbers have increased and the intensity of the identified threats has decreased, our analysis indicates that, because of the remaining threats and stressors, the species remains likely to become in danger of extinction in the foreseeable future throughout all of its range.

Based solely on biological factors, we consider 25 years to be the foreseeable future within which we can reasonably determine that the future threats and the June sucker's response to those threats is likely. This time period includes multiple generations of the species and allows adequate time for impacts from conservation efforts or changes in threats to be indicated through population response. The foreseeable future for the individual threats vary. In terms of population and threats, management and recovery progress are overseen by the JSRIP. The charter of this program states that the purpose of the JSRIP is to recover June sucker to the point at which it no longer requires protections under the Act, and to do so based on recovery guidance provided by the Service using the best available scientific and biological information in an adaptive management approach. Because the JSRIP is committed to achieving full recovery and the partners have committed to providing funding through that point, threats to June sucker will continue to be adaptively managed by the JSRIP until such time as we find it no longer requires protections under the Act. For at least as long as the species remains listed, the JSRIP will continue to manage threats, stressors, and population health and trends in an adaptive way, ensuring that it is extremely unlikely to go extinct. The Service will then rely on management actions that have been put in place by the JSRIP, and other factors such as a population viability analysis, habitat improvements, and future long-term agreements, when delisting is being considered. This ensures continued stability in the absence of the protections of the Act after the June sucker reaches full recovery.

The breeding and stocking program and the nonnative fish removal program are expected to be on-going, with the development of long-term strategies to maintain recovery progress expected within the next 2 years. Permanent water acquired by the JSRIP is expected to be managed through the existing mechanisms indefinitely. Temporary water expires in 2 years, but the JSRIP is actively pursuing the acquisition of additional permanent water, which will be managed through those same mechanisms for the benefit of June sucker spawning. The Provo River Delta Restoration Project should be completed within 5 years, but it will take at least several years before the impact on June sucker recruitment can be detected, and potentially longer as the changes made by the PRDRP are likely to evolve over time as vegetation matures and hydrology adapts to the structural alterations (PRDRP 2017, entire). Models of nonnative fishes provided by Utah State University extend until 2040, but are subject to a large range of variables and are in the process of being refined (Reynolds and Gaeta 2017, entire; Gaeta et al. 2018, p. 8-10).

Thus, after assessing the best available information, we conclude that the June sucker is not currently in danger of extinction, but is likely to become in danger of extinction within the foreseeable future throughout all of its range.

Determination of Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. Because we have determined that the June sucker is likely to become an endangered species within the foreseeable future throughout all of its range, we find it unnecessary to proceed to an evaluation of potentially significant portions of the range. Where the best available information allows the Services to determine a status for the species rangewide, that determination should be given conclusive weight because a rangewide determination of status more accurately reflects the species' degree of imperilment and better promotes the purposes of the Act. Under this reading, we should first consider whether the species warrants listing "throughout all" of its range and proceed to conduct a "significant portion of its range" analysis if, and only if, a species does not qualify for listing as either an endangered or a threatened species according to the "throughout all" language. We note that the court in *Desert Survivors* v. *Department of the Interior*, No. 16-cv-01165-JCS, 2018 WL

4053447 (N.D. Cal. Aug. 24, 2018), did not address this issue, and our conclusion is therefore consistent with the opinion in that case.

Determination of Status

Our review of the best available scientific and commercial information indicates that the June sucker meets the definition of a threatened species. Therefore, we propose to list the June sucker as a threatened species throughout all of its range in accordance with sections 3(20) and 4(a)(1) of the Act.

Proposed 4(d) Rule

Background

Section 4(d) of the Act states that the "Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation" of species listed as threatened. The U.S. Supreme Court has noted that very similar statutory language demonstrates a large degree of deference to the agency (see *Webster v. Doe*, 486 U.S. 592 (1988)). Conservation is defined in the Act to mean ''the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to [the Act] are no longer necessary.'' Additionally, section 4(d) of the Act states that the Secretary ''may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants.'' Thus, regulations promulgated under section 4(d) of the Act provide the Secretary with wide latitude of discretion to select appropriate provisions tailored to the specific conservation needs of the threatened species. The statute grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have approved rules developed under section 4(d) that include a taking prohibition for threatened wildlife, or include a limited taking prohibition(see *Alsea Valley Alliance v. Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council v. National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also approved 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana v. Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, ''once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species'' (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

The Service has developed a species-specific 4(d) rule that is designed to address the June sucker's specific threats and conservation needs. Although the statute does not require the Service to make a "necessary and advisable" finding with respect to the adoption of specific prohibitions under section 9, we find that this regulation is necessary and advisable to provide for the conservation of the June sucker. As discussed in the *Overall Summary of Factors Affecting June Sucker* section, the Service has concluded that the June sucker is at risk of extinction in the foreseeable future primarily due to the identified threats of water development, habitat degradation, and the introduction of nonnative species. The provisions of this proposed 4(d) rule would promote conservation of the June sucker by encouraging management of the Utah Lake system in ways that take into consideration the stakeholders while also meeting the conservation needs of the June sucker. The provisions of this rule are one of many tools that the Service will use to promote the conservation of the June sucker. This proposed 4(d) rule would apply only if and when the Service makes final the listing of the June sucker as a threatened species.

Provisions of the Proposed 4(d) Rule

This proposed 4(d) rule would provide for the conservation of the June sucker by prohibiting the following activities, except as otherwise authorized or permitted: importing or exporting; possession and other acts with unlawfully taken specimens; delivering, receiving, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce.

Anyone taking, attempting to take, or otherwise possessing a June sucker, or parts thereof, in violation of section 9 of the Act would still be subject to a penalty under section 11 of the Act, except for the actions that would be covered under the proposed 4(d) rule. Under section 7 of the Act, Federal agencies must continue to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of June sucker.

As discussed under **Summary of Biological Status and Threats** (above), nonnative species, water development, and habitat degradation are affecting the status of the June sucker. A range of beneficial conservation activities have the potential to impact the June sucker, including: nonnative fish removal, habitat restoration projects, monitoring of June sucker, research or educational projects, and maintaining June sucker refuges.

Under the Act, "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulation at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Allowing incidental and intentional take in certain cases, such as for the purposes of scientific inquiry, monitoring, or to improve habitat or water availability and quality would help preserve the species' remaining populations, slow their rate of decline, and decrease synergistic, negative effects from other stressors.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for the following purposes: scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

The Service recognizes the special and unique relationship with our state natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Services shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve the June sucker that may result in otherwise prohibited take without additional authorization.

This proposed 4(d) rule targets activities to facilitate conservation and management of June sucker where they currently occur and may occur in the future by eliminating the Federal take prohibition under certain conditions. These activities are intended to increase management flexibility and encourage support for the conservation and habitat improvement of June sucker. Under the proposed 4(d) rule, take will generally continue to be prohibited, but the following forms of take would be allowed under the Act, provided they were approved by the Service, in coordination with any existing designated recovery program, for the purpose of June sucker conservation or recovery:

- Incidental take resulting from activities intended to reduce or eliminate nonnative fish from Utah Lake or its tributaries, including but not limited to common carp, northern pike, and white bass.
- Incidental take resulting from habitat restoration projects or projects that would allow for the increase of instream flows in Utah Lake tributaries, such as diversion removals.

- Incidental take resulting from monitoring of June sucker in Utah Lake and its tributaries.
- Incidental and limited direct take resulting from research projects approved by the Service, in coordination with any existing designated recovery program, to study factors affecting June sucker or its habitat for the purposes of providing management recommendations or improved condition of June sucker.
- Incidental and limited direct take resulting from maintaining June sucker refuges and moving June sucker from refuges for the purposes of stocking them in Utah Lake.

These forms of allowable take are explained in more detail below. For all forms of allowable take, reasonable care must be practiced, to minimize the impacts from the actions. *Reasonable care* means limiting the impacts to June sucker individuals and population by complying with all applicable Federal, State, and Tribal regulations for the activity in question; using methods and techniques that result in the least harm, injury, or death, as feasible; undertaking activities at the least impactful times and locations, as feasible; procuring and implementing technical assistance from a qualified biologist on projects regarding all methods prior to the implementation of those methods; ensuring the number of individuals removed or sampled minimally impacts the existing wild population; ensuring no disease or parasites are introduced into the existing June sucker population; and preserving the genetic diversity of wild populations.

Nonnative Fish Removal

Control of nonnative fish is vital for the continued recovery of June sucker. At this point in time, control of nonnative fish is primarily conducted with mechanical removal via commercial seine netting and to a limited extent through angling (for northern pike). Other methods, including the use of genetically modified nonnative fish and electrofishing to reduce existing populations, may be implemented in the future.

This proposed 4(d) rule defines nonnative fish removal excepted from incidental take as any action with the primary or secondary purpose (such as the introduction of genetically engineered nonnative fish as part of an elimination strategy) of removing nonnative fish from Utah Lake and its tributaries that compete with, predate upon, or degrade the habitat of June sucker. These removal methods must be approved by the Service, in coordination with any existing designated recovery program, for that purpose. Such methods may include but are not limited to mechanical removal, chemical treatments, or biological controls. All methods used must be in compliance with State and Federal regulations.

Whenever possible, June sucker that are caught alive as part of nonnative fish removal should be returned to their source as quickly as possible.

Habitat Restoration and Improvement of Instream Flows

Habitat restoration projects are needed to provide additional spawning and rearing habitat and refugia for June sucker. Improvements in the ability to obtain and deliver water to spawning tributaries will allow for improved spawning conditions, entrainment of June sucker larvae for development, and periodic high flows providing scouring of spawning habitats. This proposed 4(d) rule defines habitat restoration or water delivery improvement projects excepted from incidental take as any action with the primary or secondary purpose of improving habitat conditions in Utah Lake and its tributaries or improving water delivery and available in-stream flows in spawning tributaries. These projects must be approved by the Service, in coordination with any existing designated recovery program, for that purpose. Examples of planned or suggested projects excepted from incidental take include the Provo River Delta Restoration Project and the removal of water diversion structures from the Provo River and Hobble Creek.

June Sucker Monitoring

Monitoring of June sucker is vital to understanding the population dynamics, health, and trends; for measuring the success of the stocking program; for evaluating impacts from threats; and for evaluating recovery actions that address threats to the species. With the use of PIT tag technology, monitoring is becoming less disruptive to the June sucker. However, many monitoring methods, including the initial PIT tagging of individuals, may harm fish or result in death. In addition to PIT tag readers, methods that may be used to detect June sucker in the wild include trammel netting, spotlighting, minnow trapping, trap netting, gill-netting, spotlighting, electrofishing, and seining. This proposed 4(d) rule excepts incidental take associated with any method used to detect June sucker in the wild for the purposes of better understanding population numbers, trends, or response to stressors that is not intended to be destructive, but that may unintentionally cause harm or death. Only activities conducted by UDWR, their agents, or agents (included academic researches) specifically designated and approved by the Service, in coordination with any existing designated recovery program, are excepted from take restrictions through this 4(d) rule.

Research

Additional research is needed on June sucker biology, ecology, habitat needs, predators, and response to threats in order to improve species status and provide recommendations for management, habitat improvement, and threat reduction. Research may involve capture of June suckers using methods described above, or a variety of other activities to study water quality, nonnative fishes, lake and riverine ecosystems, tributary flows, habitat, or other factors affecting June suckers that may impact individual fish inadvertently. In some cases, lethal sampling of June suckers for research purposes may be necessary and appropriate. This proposed 4(d) rule defines June sucker research excepted from take as any activity undertaken for the purposes of increasing our understanding of June sucker biology, ecology, or recovery needs under the auspices of UDWR, a recognized academic institution, or a qualified scientific contractor and approved by the Service, in coordination with any existing designated recovery program, as a necessary and productive study for June sucker recovery.

Refuges and Stocking

Maintaining refuge populations and stocking the June sucker in Utah Lake is an integral part of June sucker recovery. The process of breeding, rearing, growing, maintaining, and stocking June suckers may result in incidental take at all life stages, but the benefits to the species far outweigh any losses. At the present time, one facility (FES) breeds the June sucker for stocking in Utah Lake; this facility also functions as a refuge. FES uses offsite ponds as a grow-out facility to allow fish to reach a larger size before they are stocked in Utah Lake. An additional refuge population of June sucker exists in Red Butte reservoir and is maintained, but not actively managed, for stocking purposes. However, as fish from Red Butte consistently have the highest post-stocking success rates, Red Butte is an important source population and may be used for stocking more intensively in the future.

This proposed 4(d) rule defines June sucker stocking and refuge maintenance excepted from incidental take as any activity undertaken for the long-term maintenance of June sucker at facilities outside of Utah Lake and its tributaries or for the production of June sucker for stocking in Utah Lake. Such incidental take could occur from necessary facility maintenance or water management, including at Red Butte reservoir and its downstream drainages. Any breeding, stocking, or refuge program must be approved by the Service, in coordination with any existing designated recovery program. Any June sucker breeding program should be in compliance with all applicable regulations and best hatchery and fishery management practices as described in the American Fisheries Society’s Fish Hatchery Management (Wedemeyer 2002).

Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of the June sucker. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see **Information Requested**, above).

Required Determinations

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential

Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To help us with revisions to this proposed rule, your comments should be as specific as possible. For example, you should identify the sections or paragraphs that are unclear, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq*.), need not be prepared in connection with regulations pursuant to section 4 of the Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments (59 FR 22951), E.O. 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal

Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that no Tribes will be affected by this rule because there are no tribal lands or interests within or adjacent to June sucker habitat.

References Cited

A complete list of all references cited in this proposed rule is available at *http://www.regulations.gov* at Docket No. FWS–R6–ES–2019–0026, or upon request from the Utah Ecological Services Field Office (see **ADDRESSES**).

Authors

The primary authors of this proposed rule are staff members of the Service's Mountain Prairie Region and the Utah Ecological Services Field Office (see **ADDRESSES** and **FOR FURTHER INFORMATION CONTACT**).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we hereby propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245; unless otherwise noted.

2. Amend § 17.11(h) by revising the entry for "Sucker, June (*Chasmistes liorus*)" under "FISHES" on the List of Endangered and Threatened Wildlife to read as set forth below:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where Listed	Status	Listing Citations and Applicable Rules
* * * * * * *				
FISHES				
* * * * * * *				
Sucker, June	*Chasmistes liorus*	Wherever found	T	51 FR 10851, 3/31/1986; [*Federal Register* citation when published as a final rule]; 50 CFR 17.44(dd)[4d;] 50 CFR 17.95(e).[CH]
* * * * * * *				

3. Amend § 17.44 by adding paragraph (dd) to read as follows:

§ 17.44 Special rules—fishes.

*** * * * ***

(dd) June sucker (*Chasmistes liorus*).

(1) *Prohibitions*. Except as provided under paragraphs (dd)(2) of this section and §§ 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United

States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b).

(ii) Take, unless excepted as outlined in section (2)(i-iv) below.

(iii) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1).

(iv) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.21(e).

(v) Sale or offer for sale, as set forth at § 17.21(f).

(2) *Exceptions from prohibitions*. In regard to this species, you may:

(i) Conduct activities as authorized by an existing permit under § 17.32.

(ii) Conduct activities as authorized by a permit issued prior to [effective date of the rule] under § 17.22 for the duration of the permit.

(iii) Take, as set forth at § 17.21(c)(2) through (c)(4).

(iv) Take June sucker while carrying out the following legally conducted activities in accordance with this paragraph:

(A) *Definitions*. For the purposes of this paragraph:

(*1*) *Qualified biologist* means a full-time fish biologist or aquatic resources manager employed by Utah Division of Wildlife Resources, a Department of Interior agency, or fish biologist or aquatic resource manager employed by a private consulting firm that has been approved by the Service, the designated recovery program, or the Utah Division of Wildlife resources.

(*2*) *Reasonable care* means limiting the impacts to June sucker individuals and population by complying with all applicable Federal, State, and Tribal regulations for the activity in question; using methods and techniques that result in the least harm, injury, or death, as feasible; undertaking activities at the least impactful times and locations, as feasible; procuring and implementing technical assistance from a qualified biologist on projects regarding all methods prior to the implementation of those methods; ensuring the number of individuals removed or sampled minimally impacts the existing wild population; ensuring no disease or parasites are introduced into the existing June sucker population; and preserving the genetic diversity of wild populations.

(B) *Allowable forms of take of June sucker*. Take of June sucker as a result of the following legally conducted activities is not prohibited under this paragraph section (2)(iv)(B), provided that the activity is approved by the Service, in coordination with any existing designated recovery program, for the purpose of the conservation or recovery of June sucker, and that reasonable care is practiced to minimize the impact of such activities.

(*1*) *Nonnative fish removal*. Any action with the primary or secondary purpose of removing from Utah Lake and its tributaries nonnative fish that compete with, predate, or degrade the habitat of June sucker is not prohibited take. Allowable methods of removal may include but are not limited to mechanical removal, chemical treatments, or biological controls. Whenever possible, June sucker that are caught alive as part of nonnative fish removal should be returned to their source as quickly as possible.

(*2*) *Habitat restoration and improvement of instream flows*. Any action with the primary or secondary purpose of improving habitat conditions in Utah Lake and its tributaries or improving water delivery and available in-stream flows in spawning tributaries is not prohibited take.

(*3*) *Monitoring*. Any method that is used to detect June sucker in the wild to better understand population numbers, trends, or response to stressors, and that is not intended to be destructive but that may unintentionally cause harm or death, is not considered prohibited take.

(*4*) *Research.* Any activity undertaken for the purposes of increasing understanding of June sucker biology, ecology, or recovery needs under the auspices of UDWR, a recognized academic institution, or a qualified scientific contractor and approved by the Service, in coordination with any existing designated recovery program, as a necessary and productive study for June sucker recovery is exempted. Incidental and limited direct take resulting from research to benefit June sucker is not prohibited.

(*5*) *Refuges and stocking.* Any take resulting from activities undertaken for the long-term maintenance of June sucker at facilities outside of Utah Lake and its tributaries or for the production of June sucker for stocking in Utah Lake is not prohibited.

Dated: September 24, 2019

Margaret E. Everson

Principal Deputy Director,
Exercising the Authority of the Director,
for the U.S. Fish and Wildlife Service.

[FR Doc. 2019-25549 Filed: 11/25/2019 8:45 am; Publication Date: 11/26/2019]