

Hutton tui chub
(*Gila bicolor ssp.*)

5-Year Review:
Summary and Evaluation

U.S. Fish and Wildlife Service
Oregon Fish and Wildlife Office
Portland, Oregon

5-YEAR REVIEW

Species reviewed: Hutton tui chub (*Gila bicolor ssp.*)

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5-YEAR REVIEW
Hutton tui chub (*Gila bicolor ssp.*)

1.0. GENERAL INFORMATION

1.1. Reviewers:

Lead Regional Office:

Region 1 Endangered Species Branch, Sarah Hall (503) 231-2071

Lead Field Office:

Oregon Fish and Wildlife Office - Bend Field Office

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Cooperating Field Office(s):

Not applicable

Cooperating Regional Office(s):

Not applicable

1.2 Methodology used to complete the review:

In order to conduct this 5-year review for the Hutton tui chub, the U.S. Fish and Wildlife Service (Service): gathered available information since the time of listing, including a 2005 Progress Report from the Oregon Department of Fish and Wildlife (ODFW); reviewed activities undertaken since the time of listing to determine if recovery actions have progressed; reviewed new information regarding the status of the threats to the species; and, reviewed the recovery criteria in the recovery plan and made recommendations. This review was conducted by the Oregon Fish and Wildlife Office's Bend Field Office. The ODFW Assistant Project Leader for the Native Fish Investigation Project reviewed the draft 5-year review.

The notice of initiation of a 5-year review was published in the *Federal Register* on April 11, 2006. This notice requested any information concerning the status of the Hutton tui chub. No information was received.

1.3 Background:

1.3.1 FR Notice citation announcing initiation of this review:

The Service announced the initiation of a 5-year review of 70 species including the Hutton tui chub under section 4(c)(2)(B) of the Endangered Species Act (Act) in an April 11, 2006, *Federal Register* notice (71 FR 18345).

1.3.2 Listing History:

Original Listing

FR notice: Endangered and threatened wildlife and plants; Determination of threatened status for Hutton tui chub and Foskett speckled dace (50 FR 12302).

Date listed: September 27, 1985

Entity listed: The sub-species Hutton tui chub (*Gila bicolor ssp.*)

Classification: Threatened

Revised Listing, if applicable

Not applicable

1.3.3 Associated Rulemakings:

Hutton tui chub were listed with no critical habitat designated. Hutton tui chub are included in "Special rules-fishes" in 50 CFR 17.44 (j). The rule has four parts and states:

(1) No person shall take these species, except in accordance with applicable State fish and wildlife conservation laws and regulations in the following instances: for educational purposes, scientific purposes, the enhancement of propagation or survival of the species, zoological exhibition, and other conservation purposes consistent with the Act.

(2) Any violation of applicable State fish and wildlife conservation laws or regulations with respect to the taking of these species will also be a violation of the Endangered Species Act.

(3) No person shall possess, sell, deliver, carry, transport, ship, import, or export, by any means whatsoever, any such species taken in violation of these regulations or in violation of applicable State fish and wildlife conservation laws or regulations.

(4) It is unlawful for any person to attempt to commit, solicit another to commit, or cause to be committed, any offense defined in paragraphs (j) (1) through (3) of this section.

1.3.4 Review History:

This is the first 5-year review for the Hutton tui chub.

1.3.5 Species' Recovery Priority Number at Start of this 5-year Review:

The Hutton tui chub was assigned a recovery priority number of 15. A priority number 15 means the sub-species has a low degree of threat and a high potential for recovery.

1.3.6 Current Recovery Plan or Outline:

Name of plan or outline: "Recovery Plan for the Threatened and Rare Native Fishes of the Warner Basin and Alkali Subbasin"

Date issued: April 27, 1998

Dates of previous revisions, if applicable: Not applicable

2.0 REVIEW ANALYSIS

2.1 Application of the 1996 Distinct Population Segment (DPS) policy

2.1.1 Is the species under review a vertebrate?

Yes
 No

2.1.2 Is the species under review listed as a DPS?

Yes
 No

2.1.3 Was the DPS listed prior to 1996?

Not applicable

2.1.4 Is there relevant new information for this species regarding the application of the DPS policy?

Yes
 No

2.2 Recovery Criteria

2.2.1 Does the species have a final, approved Recovery Plan containing objective, measurable criteria?

Yes
 No

The recovery criteria focus on long-term sustainability rather than delisting ((See 2.2.3 below for the recovery criteria).

2.2.2 Adequacy of Recovery Criteria

2.2.2.1 Do the recovery criteria reflect the best available and most up-to-date information on the biology of the species and its habitat?

Yes
 No

Although the Recovery Plan was finalized in 1998, little new biological information on the Hutton tui chub and its habitat has been developed, with the exception of population estimates completed by ODFW in 2005 and 2007.

2.2.2.2 Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria?

Yes
 No

2.2.3 List the recovery criteria as they appear in the Recovery Plan, and discuss how each criterion has or has not been met, citing information:

The "Recovery Plan for the Threatened and Rare Native Fishes of the Warner Basin and Alkali Subbasin" (Recovery Plan) provides information to guide recovery for three listed fish species, the Hutton tui chub, Fosskett speckled dace and the Warner sucker (USFWS 1998). The Recovery Plan states: "The Fosskett speckled dace and Hutton tui chub will probably not be delisted in the near future because of their extremely isolated ranges and potential for degradation of these habitats from localized events. The primary objective, therefore, is the long-term persistence of these two species through preservation of their native ecosystems." The Recovery Plan also provides objectives and criteria for conserving Hutton tui chub. The Recovery Plan states that the Hutton tui chub spring habitat is currently stable, but extremely restricted, and any alterations to the spring or surrounding activities that indirectly modify the spring could lead to the extinction of this species. Due to these circumstances, the Recovery Plan focuses on the long-term persistence of the Hutton tui chub through preservation of its native ecosystem. The recovery criteria for Hutton tui chub is described in the Recovery Plan as:

"The conservation and long term sustainability of the Hutton tui chub and the Fosskett speckled dace, will be met when:

1. Long-term protection to their respective habitat, including spring source aquifers, spring pools and outflow channels, and surrounding lands, is assured.
2. Long-term habitat management guidelines are developed and implemented to ensure the continued persistence of important habitat features and include monitoring of current habitat and investigation for and evaluation of new spring habitats.
3. Research into life-history, genetics, population trends, habitat use and preference, and other important parameters is conducted to assist in further developing and/or refining criteria 1) and 2), above."

Below we discuss how each of these criteria have, or have not, been met:

Recovery Plan Criterion 1: Long-term protection of Hutton Spring, aquifer and surrounding land is not assured. Hutton Spring and a small nearby spring are located on private land; prior efforts to engage the landowner in a formal Conservation Agreement have not been successful. However, this criterion has been partially met because the landowner has placed a fence around Hutton Spring to protect the habitat from cattle grazing, and his normal operations at the spring are consistent with the maintenance of Hutton Spring due to its importance to his livestock operation. Long-term protection of the aquifer is not assured. The Alkali Lake Chemical Waste Disposal Site is within 1.2 miles of the spring, but ongoing monitoring by the Oregon Department of Environmental Quality (ODEQ) has determined that Hutton Spring is currently outside of the extent of contamination (See section 2.3.2.5).

Recovery Plan Criterion 2: No long-term habitat management guidelines have been developed to ensure long-term persistence. In a 2005 Progress Report for the Hutton Spring tui chub and Foskett Spring speckled dace the ODFW (Scheerer and Jacobs 2005) recommended monitoring Hutton tui chub and its habitat as part of a long-term management program. Additional research into life-history, habitat use, and habitat preference has not been completed. The development of management guidelines would benefit from this type of research.

Recovery Plan Criterion 3: This criterion has been partially met through coordinated population surveys by ODFW and the Service. In 2005, ODFW assessed the population of Hutton tui chub and developed a sampling protocol that can be used to study the trend of the population. A second population survey was conducted in 2007 and a preliminary estimate has been calculated. The ODFW recommended studies of key demographic parameters including population age structure, age and size at maturity, longevity, and spawning timing/duration. In addition, research into life history, habitat use and habitat preference would also be beneficial. Little genetic analysis has been conducted on Hutton tui chub beyond Harris (2000) (see section 2.3.1.3 and 2.3.1.4).

2.3 Updated Information and Current Species Status

2.3.1 Biology and Habitat

2.3.1.1 New information on the species' biology and life history:

No new information exists on the species biology and life history.

2.3.1.2 Abundance, population trends (e.g. increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends:

Historical data on abundance is limited; Bills (1978) made a visual estimate that there were fewer than 300 individual fish at Hutton Spring and 150 fish at a nearby second unnamed spring. This estimate was not based on sampling of the population. In 2005, ODFW estimated the population in Hutton Spring to be 809 fish (95% CI = 703-932) using a statistically-based sampling procedure (Scheerer and Jacobs 2005). Preliminary information from the 2007 survey indicates a population estimate of 959 fish (95% CI = 735-1,251) in Hutton Spring and 87 fish (95% CI = 50-149) in 3/8 Mile Spring (Paul Scheerer, email communication). Additional population estimates will be needed before a population trend can be established. During the 2005 survey, investigators noted the presence of multiple age-classes, and evidence of recent recruitment as indicated by presence of young-of-the-year. No additional information is available regarding abundance, population trends, age structure, sex ratio, birth rate, age at mortality, mortality rate, or demographic trends.

2.3.1.3 Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.):

Harris (2000) examined the systematics of the Genus *Siphateles* using mitochondrial DNA. Harris (2000) describes the Genus *Siphateles* (Cope) (1883) as monotypic, and Hutton tui chub as a subspecies of *Siphateles bicolor*, not a subspecies of *Gila bicolor* (see the following discussion regarding taxonomic classification or changes in nomenclature). Beyond Harris (2000), no genetic research has been done on this taxon.

2.3.1.4 Taxonomic classification or changes in nomenclature:

At the time of listing, the Hutton tui chub was considered to be an undescribed subspecies of *Gila bicolor*. Bills (1978) examined morphometric and meristic characters in samples from six allopatric populations of tui chub located in five endorheic basins in south-central Oregon. He determined that the morphometric and meristic data supports classification of Hutton Spring tui chub as a distinct subspecies. Bills (1978), did not provide a formal description or a scientific name for this subspecies, nor was his work peer reviewed.

Harris (2000) suggests a grouping of the Hutton Spring tui chub with populations of tui chub from Abert and Summer Lake basins. Harris (2000) also suggests changes in the classification at the genus and species level (see section 2.3.1.3), but does not recommend or discuss the classification of Hutton Spring tui chub as a subspecies. Harris (2000) describes the various synonyms to the genus *Siphateles* and discusses an alternate phylogenetic topology placing Abert Lake, Summer Lake, and Hutton Spring tui chubs in a lineage with Lahontan tui chub

(*S. obesus*). Harris (2000) agrees with the conclusion of Simons and Mayden (1998) that relationships among several clades of western minnows remain unresolved. Additional genetic, morphometric, and meristic data are needed to further address the categorization of the chub species group (Harris 2000).

The 2004 edition of the American Fisheries Society (AFS) "Common and Scientific Names of Fishes from the United States, Canada and Mexico" discusses the common use of the genus name *Siphateles* for three of the species of *Gila* including *bicolor* (Nelson et al. 2004), of which Hutton tui chub and Lahontan tui chub are subspecies. As Bills (1978) pointed out in his thesis, there had been a great deal of dispute amongst taxonomists concerning synonyms and the proper nomenclature for the *Siphateles* and *Gila* species. Bills considered the "chaos" finally resolved by Bailey and Uyeno (1964) placing *Siphateles* in synonymy with *Gila*, and retaining *bicolor* as the specific name for tui chub. The AFS publication discusses the current use of *Siphateles*, but does not conclude the necessity of a genus name change at this time. Despite the nomenclature, we will not try to resolve the dispute here, but recognize that the taxon containing Hutton tui chub is still recognized as *Gila* by AFS and the name may change to *Siphateles* in the future.

2.3.1.5 Spatial distribution, trends in spatial distribution (e.g. increasingly fragmented, increased numbers of corridors, etc.), or historic range (e.g. corrections to the historical range, change in distribution of the species' within its historic range, etc.):

The known range of the Hutton tui chub is limited to Hutton Spring and 3/8 Mile Spring, the later named because it is approximately 3/8 mile from Hutton Spring. Another small spring, estimated to be approximately 1/4 mile from Hutton Spring, was reportedly occupied by Hutton tui chub (White 1992), but the existence of this spring and whether it is inhabited by Hutton tui chub remains unverified. The total habitat available for this species in Hutton Spring is estimated to be 100 m² with unvegetated open water habitat comprising approximately 36 m² (Scheerer and Jacobs 2005). 3/8 Mile Spring is described as very small, consisting of two small pools with a surface area of approximately 2 m² (Paul Scheerer, email communication).

2.3.1.6 Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem):

In 2005, the ODFW considered the Hutton tui chub's habitat to be limited but in good condition (Scheerer and Jacobs 2005). Hutton Spring has been diked in the past. Recent observations indicate the spring and surrounding habitat are in stable condition. There has been no evidence of recent alterations or impacts to the spring. The total habitat available for the chub, including the vegetated perimeter of the spring pool, consists of approximately 100 m² with an open water area of 36 m². An estimated 330 m² of bull rush marsh surround the spring pool

(Scheerer and Jacobs 2005). Encroachment by aquatic vegetation may be limiting the availability of habitat (Scheerer and Jacobs 2005). The condition of 3/8 Mile Spring is unknown.

2.3.1.7 Other:

The State of Oregon enacted an Endangered Species Act (Oregon ESA) in 1987 and amended it in 1995. The Hutton tui chub was listed as Threatened as part of the original enactment of the Oregon ESA in 1987. See section 2.3.2.4 for a description of the Oregon ESA.

In 2002, the Oregon Fish and Wildlife Commission adopted the Native Fish Conservation Policy. The purpose of the policy is to ensure conservation and recovery of native fish in Oregon. As part of this policy, interim risk assessments were completed for selected native fish species in 2005, including the Hutton tui chub (ODFW 2005a). The ODFW concluded, based on criteria defined in the Native Fish Conservation Policy [OAR 635-007-0507], that the Hutton tui chub is "at risk." The rating is based on low abundance of individuals, lack of information on productivity, and limited distribution. Hutton tui chub was not considered at risk for reproductive independence and interspecific hybridization. The status review stated that: "Because of its highly restricted distribution and dependence on a single water source, Hutton Spring tui chub are vulnerable to catastrophic loss." Implementation of the policy will occur through the development of a conservation plan which will include current and desired biological status, primary threat factors, short- and long-term management strategies, monitoring and research needs, and reporting. A conservation plan has not been initiated for the Hutton tui chub. Until a conservation plan is completed, the ODFW will manage the Hutton tui chub according to existing statutes and administrative rules.

In 2006, the ODFW finalized their Oregon Conservation Strategy (Strategy) (ODFW 2005b). The Strategy is an overarching State-wide approach for conserving fish and wildlife through the use of voluntary measures and collaboration. The Hutton tui chub is a "strategy species" for the Northern Basin and Range Ecoregion in southeast Oregon. Strategy species include rare and at risk species. The Strategy identifies species requirements, limiting factors, data gaps, and actions needed to conserve these species. For the Hutton tui chub the Strategy states that it is vulnerable to random or localized disturbance, and data gaps include population abundance and productivity, and long-term habitat needs. According to the Strategy, actions that need to occur include: 1) secure spring waters; 2) maintain water quality; and 3) prevent infiltration of toxins into the spring water supply.

2.3.2 Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)

2.3.2.1 Present or threatened destruction, modification or curtailment of its habitat or range:

The 1985 listing rule stated: "Hutton tui chub are limited in distribution to two small springs and their outflows, which are vulnerable to modification or destruction. A portion of the larger Hutton Spring has already been enlarged by mechanical means" (50 FR 12303).

Since the time of listing, little has been done to modify or alter Hutton tui chub habitat. The Recovery Plan completed in 1998 (USFWS 1998), reported that the Hutton Spring habitat is in stable condition, but the existence of a second population was questionable. Field reconnaissance in 2005 indicated that Hutton Spring was still in stable condition and a second population was rediscovered in 3/8 Mile Spring in 2007. The presence of other occupied springs (see section 2.3.1.5) is still possible.

The 1985 listing rule stated: "Channeling of water or groundwater pumping (which could lower the water table) for irrigation purposes could destroy the spring ecosystem." The field reconnaissance conducted in 2005 did not reveal any sign of artificial channeling of water from the spring for irrigation purposes. The Service has no information regarding groundwater pumping activity at Hutton Spring and there is no apparent water pumping activity occurring.

Livestock trampling of the spring could have a negative impact on Hutton tui chub. Although trampling of the habitat by watering livestock has occurred in the past, Hutton Spring is fenced and livestock do not wallow in the spring or drink directly from it and there is no evidence of any recent "mechanized" impacts. The fence around the spring is still present and appears to be in adequate condition. Some maintenance may be needed to ensure that cattle can not access the spring and to ensure longevity of the fence. The ODFW's 2005 Progress Report noted that the Hutton Spring habitat was in good condition but that encroachment by aquatic macrophytes may be limiting population abundance (Scheerer and Jacobs 2005). 3/8 Mile Spring occurs on private property and is presently not fenced to exclude livestock. No additional information is available at this time on the status of 3/8 Mile Spring.

2.3.2.2 Overutilization for commercial, recreational, scientific, or educational purposes:

The original listing of 1985 stated: "There is no indication that the Hutton tui chub or Foscett speckle dace are overutilized for any of these purposes." No information is available to change this statement.

2.3.2.3 Disease or predation:

The original listing of 1985 stated: "There are no known threats to the Hutton tui chub or Foskett speckle dace from disease or predation." No information is available to change this statement. During the 2005 population surveys an ODFW biologist commented that: "[t]he fish appear to be in good condition with no obvious external parasites" (Scheerer and Jacobs 2005).

2.3.2.4 Inadequacy of existing regulatory mechanisms:

The 1985 listing rule stated: "The State of Oregon lists both the Hutton tui chub and Foskett speckled dace as "fully protected subspecies" under the Oregon Department of Fish and Wildlife regulations. These regulations prohibit taking of the fishes without an Oregon scientific collecting permit. However, no protection of the habitat is included in such a designation and no management or recovery plan exists for these subspecies."

The original listing was apparently referring to Oregon angling regulations that designated Hutton tui chub as a "protected species" and prohibited take or possession unless authorized by a permit. The Hutton tui chub has been a State of Oregon protected species since at least 1982 (Mary Hanson pers. comm.). The Hutton tui chub was listed as Threatened by the State of Oregon as part of the original enactment of the Oregon ESA in 1987. The Oregon ESA prohibits the "take" (kill or obtain possession or control) of listed species without an incidental take permit. The Oregon ESA applies to actions of State agencies on State-owned or leased land, and does not impose any additional restrictions on the use of private land (ORS 496.192). Under the Oregon ESA, State agencies (other than State land owning or managing agencies) determine the role they may serve in contributing toward conservation or take avoidance (OAR 635-100-0150). The Oregon ESA also directs that Survival Guidelines (OAR 635-100-0130 and 0135) or an approved endangered species management plan (OAR 635-100-0140) be prepared. Because the Hutton tui chub was State listed prior to these 1995 amendments these requirements do not apply to the Hutton tui chub. The Oregon ESA regulates the "take" of Hutton tui chub, but does not directly regulate or restrict activities that affect Hutton tui chub habitat because it is located on private land.

The Oregon Department of State Lands requires a "Removal-Fill Permit" for projects involving 50 cubic yards or more of alteration of stream bed, stream bank, wetland and any waters of the State. Activities involving less than 50 cubic yards are exempt from all permit requirements (unless it is designated essential indigenous anadromous salmonid habitat or a State scenic waterway). Given the small size of Hutton Spring and 3/8 Mile Spring it is likely that activities that cause direct or indirect habitat destruction, or degradation such as mechanical modification of the spring, trenching, piping, channeling or ground water pumping will be less than the 50 cubic yard threshold and thus will not be regulated by this permit process.

The U.S. Army Corp of Engineers (Corps) regulates the discharge of dredged or fill material pursuant to section 404 of the Clean Water Act. Section 33 CFR 328.3(a)(3) defines intrastate waters (lakes, rivers streams, playa lakes, natural ponds, etc) as “waters of the U.S.” if their “use, degradation, or destruction could affect interstate or foreign commerce.” Hutton Spring and 3/8 Mile Spring are isolated, non-navigable intrastate waters and are not likely to be regulated under section 404 of the Clean Water Act because they do not meet the definition of “waters of the U.S.” under existing Corps guidance.

Under Oregon water law, water users must obtain a permit from the Oregon Water Resources Department. Some uses of water are exempt from the requirement to obtain a permit including, but not limited to: 1) use of a spring that under natural conditions does not form a natural channel and flow off the property where it originates; 2) stock watering where stock drink directly from a surface water source and there is no diversion or other modification to the source; and 3) exempt wells that withdraw less than 15,000 gallons of water a day. Hutton Spring and 3/8 Mile Spring do not flow off the private property where they originate, and therefore uses of this water are exempt from the requirement to obtain a permit from the Oregon Water Resources Department.

The State of Oregon’s Native Fish Conservation Policy calls for conservation and recovery of native fish in Oregon. As described in section 2.3.1.7 above, the policy will be implemented through the development of collaborative conservation plans for individual species management units and will be adopted by the Oregon Fish and Wildlife Commission. The ODFW conducted an interim risk assessment using interim criteria and concluded that the Hutton tui chub is “at risk.” “At risk” status provides for an elevated priority for monitoring and development of a conservation plan, and modifications to fish management practices within ODFW statutory authority. The Native Fish Conservation Policy does not provide regulatory protection for Hutton Spring, 3/8 Mile Spring, or Hutton tui chub, and changes in management cannot be required on private land. No conservation planning effort has been initiated for Hutton tui chub. As a result of coordination on this 5-year review, the ODFW has indicated that they would be interested in working with the Service and other partners on a conservation plan for Hutton tui chub.

Since the Hutton tui chub was Federally listed, activities that could result in direct or indirect habitat destruction, or degradation, such as mechanical modification of the spring, trenching, piping, livestock grazing, channeling or ground water pumping, do not appear to have occurred. However, no State or Federal regulatory mechanisms exist to prevent such activities from occurring in the absence of Endangered Species Act protections. In addition, there are no Federal or State agreements in place with the landowner to ensure long-term conservation of the Hutton tui chub.

2.3.2.5 Other natural or manmade factors affecting its continued existence:

Alkali Lake Chemical Waste Disposal Site

The 1985 listing rule stated: "Hutton Spring is located approximately 1¼ miles north of a large chemical disposal site. Wastes from the dump have already contaminated the adjacent ground water, surface water, and air in the Alkali Lake area. It is likely that the spring habitat of the Hutton tui chub will become contaminated within the foreseeable future as levels of these toxic chemicals increase. This could endanger the Hutton tui chub and possibly result in its extinction if measures are not taken to prevent contamination of its habitat."

Since the time of listing, the Oregon Department of Environmental Quality (ODEQ) has been monitoring the Alkali Lake Chemical Waste Disposal Site. Chemical analyses of soil, surface water, sediment, and groundwater identified dioxins, furan, herbicides, semi volatile organic compounds, pesticides, volatile organic compounds and metals as the contaminants for the site. Groundwater monitoring has identified a contaminant plume extending to the northwest about 2,000 feet from the chemical waste disposal site. The plume has not expanded during the past 10 years (Ernst, et al. 2005). Hutton Spring is nearly directly north of the site, but is currently considered to be outside of the extent of contamination from the waste disposal site.

To limit potential exposures, an interim soil cap was placed on the chemical waste disposal site and fences with warning signs surround the site. In addition, the assessment evaluated whether the site poses an unacceptable risk to additional ecological receptors such as birds and other terrestrial animals (target receptors were golden eagles, snowy plovers and coyotes) in the vicinity and concluded that "...the site contaminants do not pose an unacceptable risk to the environment at, or adjacent to, the Alkali Lake site." (Ernst, et al. 2005).

The study did not conduct a detailed analysis of potential exposure due to blowing (fugitive) dust particles that could be deposited in waterbodies such as Hutton Spring. However, it did document movement of the toxins via fugitive dust which is transported via the prevailing winds. There is a potential that toxins could be transported to Hutton Spring or 3/8 Mile Spring via aerial transmissions. However, sampling at the contaminant site did not indicate significant migration via windblown dust.

The human health risk assessment prepared for the ODEQ (Ernst, et al. 2005) did not specifically assess the possibility of contamination of Hutton tui chub because Hutton Spring is located outside of the "Locality of the Facility" for the Alkali Lake Chemical Waste Disposal Site. The ODEQ has concluded that Hutton Spring is outside the extent of contamination from the Alkali Lake site. The ODEQ has determined that risk to human and ecological receptors does not exceed acceptable levels, provided the current safeguards are maintained. Groundwater monitoring will be continued to verify that the assumptions used in

the risk assessment remain valid. The ODEQ has indicated that they are willing to collect water or particulate samples from Hutton Springs every 2.5 years for analysis, if the Service can fund the cost of sample evaluation.

Introduction of invasive species

The 1985 listing rule stated: "Additional threats include the possible introduction of exotic fishes into the springs, which could have disastrous effects on the endemic Hutton tui chub and Foskett speckled dace, either through competitive exclusion, predation, or introduced disease. Because these fishes occur in such limited and remote areas, vandalism also poses a potential threat."

No known occurrence of exotic fish introduction or of vandalism has occurred since the time of listing. The Hutton tui chub is vulnerable to invasive or nonnative species (aquatic plants, invertebrates, or fish species). This vulnerability is reduced in part due to the remoteness of the site and the lack of public access to the area. The risk of such invasions occurring through human caused mechanism may be low, but the potential magnitude of the impact is great due to the highly restricted distribution of this species. No Federal, State, or private management plan or monitoring program is in place to manage or monitor the species or its habitat for invasive species. No contingency plan is in place should invasive species or other catastrophic event occur.

Risk Factors

A species' habitat requirements, population size, and dispersal abilities, among other factors, help determine its vulnerability to extinction. Key risk factors include small population size, dependence upon a rare habitat type, inability to move away from sources of stress or habitat degradation, restrictions to a small geographic area, and vulnerability to catastrophic loss resulting from random or localized disturbances (Williams et al. 2005). These factors all apply to the Hutton tui chub.

Small population size. Due to the limited available habitat, this species is believed to occur in low numbers naturally. The 2005 and 2007 population estimates for Hutton Spring were 809 and 959 fish respectively. The 2007 population estimate for 3/8 Mile Spring was 87 fish. The investigators noted that Hutton Spring was near carrying capacity and that encroachment by aquatic macrophytes may be limiting population abundance. 3/8 Mile Spring is extremely small (approximately 2 m²) and therefore can only support a limited number of fish. More data is needed to track fluctuations in abundance and determine population trends.

Dependence upon a specific rare habitat type and inability to disperse. The Hutton tui chub is presently only known to occur within two small isolated springs. Due to the small size of Hutton Spring and 3/8 Mile Spring and the lack of connectivity to other aquatic habitat, there is no ability for the Hutton tui chub to disperse away from stress, habitat degradation, or disturbance factors. There

are no streams or drainages or other aquatic connections that provide alternate habitat or allow for emigration.

Restriction to a small geographic area and vulnerability to stochastic events. The Hutton tui chub occurs in only two small springs on private land. The size of Hutton Spring has varied with past excavations made by the landowner, but is presently estimated to provide 100 m² of available habitat. 3/8 Mile Spring provides only 2 m² of available habitat. Because of its highly restricted distribution and dependence on two water sources, Hutton tui chub are vulnerable to catastrophic loss. No State management or conservation plan exists for Hutton Spring or the Hutton tui chub. No conservation agreement or legal mechanism is in place with the private land owner to ensure long-term protection of Hutton Spring. No contingency plan exists in the event of a catastrophic disturbance, and no regular monitoring is in place to identify such disturbances.

2.4 Synthesis

The Hutton tui chub was listed as threatened in 1985 because it had an extremely limited distribution, occurred in low numbers, and inhabited springs that were susceptible to destruction and modification, and were experiencing human disturbance. Some of the initial factors that were directly degrading Hutton Spring such as mechanical manipulation and direct trampling of vegetation by livestock are not known to have occurred since the Hutton tui chub was listed as Threatened under the Federal Endangered Species Act.

The 1998 Recovery Plan also recognized the vulnerability of the Hutton tui chub based on its extremely small and isolated range and the potential for degradation of its habitat from localized events. The Recovery Plan stressed the need to address the threats to this species by preservation of its native ecosystem through long-term protection and management informed by research. To date, only limited implementation of one of the three Recovery Plan criteria has occurred: long-term protection of habitat through conservation agreements, land exchanges, or acquisition has not occurred; long-term management guidelines have not been developed and implemented; monitoring of current habitat and the population has been limited; and, research into life-history, genetics, population trends, habitat use and preference has not been conducted. Additionally, virtually no information exists on life history and demographic information regarding population trends, age structure, sex ratio, age at reproduction, growth rate, age at mortality, mortality rate, or behavioral patterns of the Hutton tui chub.

Our ability to confidently state that the Hutton tui chub is not likely to become endangered in the foreseeable future is dependent upon addressing the risks related to its small population size, restricted distribution, the quality and quantity of its habitat, and the potential impact of a catastrophic stochastic event. There are no State or Federal regulatory protections in place that would assure that activities that could result in direct or indirect habitat destruction, or degradation such as mechanical modification of the spring, trenching, piping, livestock grazing, channeling or ground water pumping would not occur in the absence of the protections provided by the Federal Endangered Species

Act. No conservation agreement or legal mechanism is in place with the private land owner to ensure long-term protection or management of Hutton Spring and 3/8 Mile Spring. No management plan has been prepared to allow for population and habitat monitoring, nor is there a contingency plan to address a catastrophic event or the introduction of an invasive species. The Hutton tui chub is presently only known to occur in two small springs that remain vulnerable to destruction or modification without the protection of the Endangered Species Act and therefore warrants the classification of threatened status.

3.0 RESULTS

3.1 Recommended Classification:

- Downlist to Threatened
- Uplist to Endangered
- Delist
 - Extinction
 - Recovery
 - Original data for classification in error
- No change is needed

3.2 Recovery Priority Number: 15

Brief Rationale:

We recommend maintaining the recovery priority number at 15 which is a low risk with a high potential for recovery. There are remaining threats, but there are also opportunities for recovery through an agreement with the landowner for long-term protection of the site, and development of a management and monitoring plan with the ODFW for the site.

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

1. Work with the landowner to determine if he is willing to enter into an agreement with the Service or ODFW that provides legal assurances for long-term protection of Hutton Spring and 3/8 Mile Spring.
2. Work with the ODFW and the landowner to develop a long-term management and monitoring plan. Both the fish population and spring habitat should be monitored. Monitoring should be sufficient to track fluctuations in fish abundance, quantity and quality of available habitat, and presence of any nonnative or invasive aquatic plant, invertebrate, or fish species. Population estimates and habitat conditions should be monitored every three years. Surveys every three years would limit injury or mortality due to handling while providing information on multiple age classes of fish, and population trends.

3. Assess encroachment by aquatic macrophytes and consider the need to increase open water habitat through the removal of some of the aquatic vegetation.
4. Collect key life history information, including population age structure, age and size at maturity, longevity, and spawning timing and duration.
5. Assess whether the fence surrounding Hutton Spring is in need of repairs or reconstruction to ensure that livestock do not degrade the spring habitat. This may involve providing technical assistance to determine the most efficient livestock watering infrastructure. Assess whether a fence is needed at 3/8 Mile Spring.
6. Conduct a thorough search for additional springs to sample for Hutton tui chub. Assess the need and feasibility for a refugial population at an alternate spring site in the Alkali Subbasin.
7. Conduct periodic monitoring for the presence of chemical waste residue at or near Hutton Spring to assess any risk of chemical contamination, and to allow for emergency management measures if needed.

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Signature Page
U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of *Gila bicolor ssp.*

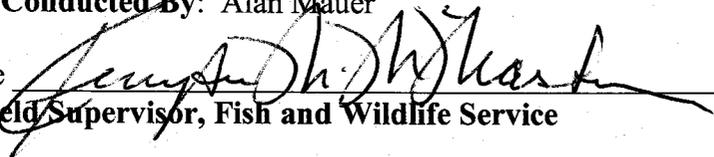
Current Classification: Threatened

Recommendation resulting from the 5-Year Review:

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: 15

Review Conducted By: Alan Mauer

Approve  Date 02/12/08
Lead Field Supervisor, Fish and Wildlife Service