

**Borax Lake Chub**  
*(Gila, syn. Siphateles boraxobius)*  
**Cooperative Management Plan**



Photo ©: Alan Mauer, US Fish and Wildlife Service

**Alvord Basin, Harney County, Oregon**

**June 2018**

Cooperating Partners:

**U.S. Fish and Wildlife Service**

**Bureau of Land Management**

**Oregon Department of Fish and Wildlife**

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# **Borax Lake Chub Cooperative Management Plan**

## **1. Introduction**

This Cooperative Management Plan (CMP) has been developed and entered into by the Bureau of Land Management (BLM), Oregon Department of Fish and Wildlife (ODFW), and U.S. Fish and Wildlife Service (USFWS), to manage and protect the Borax Lake area for the long-term conservation of Borax Lake Chub. These entities comprise, and will hereafter be referred to as, the “Cooperators” with reference to this CMP. Other entities may choose to participate in implementation of the agreement in the future.

The purpose of this CMP is to establish a strategy and framework to identify opportunities for collaboration and define responsibilities needed to complete conservation tasks to contribute to the recovery and long-term persistence of the Borax Lake Chub. The Cooperators recognize that collaboration and partnership among the parties is important for accomplishing priority tasks. By working together, the Cooperators anticipate sharing resources to fund, staff, and implement conservation actions to promote the recovery of the Borax Lake Chub.

The goal of this CMP is to provide for the long-term persistence of the Borax Lake Chub through the management and protection of habitat at Borax Lake. The CMP documents the actions needed for long-term conservation of the Borax Lake Chub population and identifies the roles and responsibilities of the Cooperators in carrying out these actions. Actions identified in the CMP include: 1) Borax Lake Chub population monitoring, 2) habitat and shoreline monitoring, 3) water temperature monitoring and assessment of potential impacts from climate change, 4) lake level monitoring and management to assure ODFW’s water right is maintained, 5) public education/signage, 6) vehicle management and monitoring, 7) restricting recreational use including boating and camping, 8) participants to this CMP working together to develop conservation easements or land acquisition to protect Borax Lake from impacts related to geothermal development on nearby private lands, and 9) emergency contingency needs. BLM will assure maintenance and retention of the Area of Critical Environmental Concern (ACEC) for the conservation of Borax Lake Chub.

The Cooperators recognize that collaboration and partnership among the parties is important in accomplishing priority tasks to achieve long-term conservation of Borax Lake and the Borax Lake Chub. The Cooperators commit to work together to efficiently implement conservation actions and promote conservation of the Borax Lake Chub. The Borax Lake Chub consists of a naturally occurring population that inhabits Borax Lake and some adjacent wetlands. In 1982, Borax Lake Chub were listed as endangered and 640 acres (259 hectares) of land surrounding the lake was designated as Critical Habitat under the Endangered Species Act of 1973 as amended in 1988 [16 U.S.C. 1536] (U.S. Fish and Wildlife Service 1982). Borax Lake Chub are currently listed as threatened by the State of Oregon (OAR 635-100-0105). Following development of the Borax Lake Chub Recovery Plan in 1987, the Cooperators have undertaken a number of actions to reduce the risk of extinction as briefly summarized below.

## 2. Recovery

To achieve the recovered status of Borax Lake Chub, the Cooperators will work together to implement the conservation strategy outlined in the Borax Lake Chub Recovery Plan which describes criteria to be accomplished before the species can be considered for delisting from the Endangered Species Act (U.S. Fish and Wildlife Service 1987). Additional recommendations contributing to the recovery of the species are included in the “Borax Lake Chub (*Gila boraxobius*) 5-year review: summary and evaluation” completed in 2012 (U.S. Fish and Wildlife Service 2012).

To reclassify the species from endangered to threatened status, conditions must include the following interim (downlisting) criteria:

**1. *The presence of a naturally-reproducing population of the Borax Lake Chub in Borax Lake that is free of exotic species.***

The Borax Lake Chub have been naturally reproducing. From 2005 through 2012 and in 2015, 2016, and 2017, ODFW estimated population abundance and assessed habitat conditions at Borax Lake (Scheerer et al. 2015a). Borax Lake Chub abundance estimates varied from 1,242 to 76,931 individuals and the population contained multiple size classes indicative of regular recruitment (Scheerer et al. 2012; 2015a, and Meeuwig pers. comm. 2017). In 2013, an ODFW biologist observed an unknown exotic fish species from the lake shoreline. Although this fish was not captured, observers believe that the exotic fish may have been a largemouth bass. Extensive follow-up sampling in 2013-2016 showed no evidence to suggest exotic fishes are currently present in Borax Lake.

**2. *Permanent protection of the 160-acre parcel of land surrounding and including Borax Lake (T37S, R33E, Sec. 14) by TNC or other appropriate public resource agency.***

In 1993, TNC purchased two 160-acre (64.75 hectare) parcels (320 acres; 129.50 hectares total) of private land, bringing the entire designated Critical Habitat into public or conservation ownership. TNC ended water diversion from the lake for irrigation and livestock grazing within the Critical Habitat. Subsurface mineral rights were included and the acquisition prohibits surface water appropriation. ODFW acquired water rights at Borax Lake in 1991, to prevent further attempts at diverting the water and to ensure maintenance of the water elevation of Borax Lake. In 1983, the BLM designated the remaining 320 acres of public land within the designated Critical Habitat as an ACEC and expanded it to 600 acres (242.81 hectares) in the Andrews Management Unit Resource Management Plan (RMP) completed in 2005. An ACEC is a conservation ecology program in the western United States designated on certain lands managed by the BLM and directs them to protect important riparian corridors, threatened and endangered species habitats, cultural and archeological resources, and unique scenic landscapes that the agency assesses as in need of special management attention.

In 1987, 640 acres (259 hectares) of public and private land around the lake was designated as Critical Habitat for the Borax Lake Chub. TNC manages 320 acres of the

designated Critical Habitat, including Borax Lake, and the BLM manages 320 acres of designated Critical Habitat to the north, south and west of the TNC-managed property. BLM manages an additional 280 acres (113.31 hectares) east and west of the designated Critical Habitat as an ACEC. Within the ACEC, new rights-of-way are to be avoided, new rights of way for electrical transmission greater than 69 kilowatts must use existing corridors, wild horse and livestock grazing is permitted only on 120 acres (48.56 hectares) outside of the fenced enclosure, and the ACEC is closed for saleable minerals, withdrawn from exploration for locatable minerals, and not available for mineral leasing. In 2011, BLM and TNC completed a perimeter fence surrounding the designated Critical Habitat to exclude vehicles from the lake and in 2013 installed locks on these gates. A portion of the designated Critical Habitat remains unfenced and open for vehicle travel to an area designated for vehicle parking where walking access to the lake is allowed.

**3. *Removal of threats to subsurface waters from geothermal energy exploration and development.***

With the passage of the Steens Mountain Cooperative Management and Protection Act of 2000 (Steens Act) and the completion of the RMP, the BLM has withdrawn the Alvord Known Geothermal Resource Area from mineral and geothermal exploration and development (BLM 2005). The Steens Act congressionally designated a Mineral Withdrawal Area encompassing 900,000 acres (364,217.1 hectares) of the planning area on BLM administered lands. The mineral withdrawal area contains the majority of the Alvord Known Geothermal Resource Area, including Borax Lake and surrounding public lands, with the exception of 332 acres (134.4 hectares) located approximately 4.5 miles (7.242 kilometers) from Borax Lake (BLM 2005). Private lands within this area are not affected by the mineral withdrawal. Approximately 2,000 acres (809.4 hectares) of privately owned land occur within a 3-mile (4.83 kilometer) radius of Borax Lake and are not subject to BLM's withdrawal.

The potential exists that geothermal development could occur on private land near Borax Lake. When drilling and developing on private land to extract geothermal resources, drainage from federal land is a possibility. BLM does not have the authority to restrict geothermal development on private land; however, they can require a payment of compensatory royalty for the percentage of production of the resource estimated to be located under federal lands. The BLM may need to drill an observation well in order to show drainage; however, it is difficult to show drainage of "energy" resources. Further, the Steens Act may preclude the installation of an observation well on federal lands that where withdrawn for the purpose of geothermal issues. An observation well may need to be located on private land and angled under the federal land for observation purposes. Note that in this situation an observation well would be for the purpose to document drainage from the federal lands.

In accordance with the Steens Act, the 2005 Andrews Management Unit RMP withdrew the Alvord Desert ACEC (21,615 acres; 8747.28 hectares); Borax Lake ACEC (600 acres; 242.81 hectares); Mickey Basin Research Natural Area (560 acres; 226.62

hectares); Mickey Hot Springs ACEC (42 acres; 17 hectares); and Serrano Point Research Natural Area (679 acres; 274.78 hectares) from development.

**4. *Reestablishment of ponds and natural marshes adjacent to Borax Lake and reestablishment of Lower Borax Lake by waters from Borax Lake to create more habitat.***

The Conservation Review (Williams and Macdonald 2003) found that the natural outflow pattern from the lake and into the marsh area to the southwest had been reestablished. The outflows of water on the northwestern, northern and northeastern shores are now stable and no additional chipping of the shoreline crust has occurred. There are some overflow channels that still allow water to flow into the wetlands to the north, but total outflow volume from Borax Lake is substantially less than in the past, when it resulted in drying of the marshland and overflow channel to the south. The overflow ditch on the south end of the lake, which in the past was operated to divert water out of Borax Lake, was plugged with a series of check dams. This ditch is now filled in and water on the south and southwest side of the lake flows into a wetland and marsh area (Williams and Macdonald 2003).

Williams and Macdonald (2003) also noted that occupancy of Lower Borax Lake would not likely contribute to the recovery of the species. The lower lake dries during most summers and it is questionable whether the habitat is adequate for over-winter survival. Without productive year-round habitat, the Borax Lake Chub are not likely to persist in Lower Borax Lake. Rather than contributing additional habitat for the Borax Lake Chub, it may actually function as a population sink. Therefore, the USFWS no longer considers Lower Borax Lake to be suitable Borax Lake Chub habitat (U.S. Fish and Wildlife Service 2012).

The species can be considered for delisting when a viable, self-sustaining population of Borax Lake Chub is maintained in Borax Lake and adjacent wetland within the 640-acre Critical Habitat. Conditions to meet this delisting objective include the four interim criteria listed above plus the following six criteria:

**1. *A viable, self-sustaining population of Borax Lake Chubs, which is herein defined as a naturally-sustaining population that is free of exotic species and fluctuates in size within the seasonal ranges that will be observed in 1986-1987.***

The estimated Borax Lake Chub abundance in 1986-1987 was 8,578-15,276. These were the only estimates available at the time the recovery plan was written. From 1986-1997, estimates ranged from a low of 4,132 in 1988 to a high of 35,650 in 1993 (Table 1). No estimates were obtained from 1998-2004. Estimates from 2005-2012, ranged from 8,246-26,571, 1,242 fish in 2015 and 9,003 in 2016 (Table 1) (Scheerer et al. 2016). From these data, it is apparent the Borax Lake Chub abundance shows substantial inter-annual fluctuation. In 2013, ODFW observed an unknown exotic fish species from the lake shoreline. Although this fish was not captured, the observer believed that the fish was a largemouth bass. Extensive follow-up sampling in 2013-2016 showed no evidence

to suggest exotic fishes were currently present in Borax Lake. Although abundance estimates range well outside the observed 1986 to 1987 estimates, the population appears to be naturally sustaining over the twenty plus years of population estimates, to the extent that this recovery criterion is satisfactorily met.

**Table 1.** Borax Lake Chub abundance estimates, 1986-2016.

Year	Estimate	Lower 95% Confidence Limit	Upper 95% Confidence Limit
1986	15,276	13,672	17,068
1987	8,578	7,994	9,204
1988	4,132	3,720	4,589
1989	14,052	13,016	15,172
1990	19,165	18,117	20,273
1991	33,000	31,795	34,251
1992	25,255	24,170	26,388
1993	35,650	34,154	37,212
1994	13,421	12,537	14,368
1995	35,465	33,533	37,510
1996	8,259	7,451	9,153
1997	10,905	10,377	11,459
2005	14,680	12,585	17,120
2006	8,246	6,715	10,121
2007	9,384	7,461	11,793
2008	12,401	10,681	14,398
2009	14,115	12,793	15,573
2010	25,489	23,999	27,071
2011	26,571	24,949	28,301
2012	9,702	9,042	10,452
2015	1,242	1,077	1,456
2016	9,003	8,045	10,560
2017	76,931	68,444	86,952

**2. *Permanent protection of the 160-acre parcel of land to the north of Borax Lake (T37S, R33E, Sec. 11) by TNC or other appropriate public resource agency.***

In 1983, the BLM designated the public lands surrounding Borax Lake as an Area of Critical Environmental Concern. Following this designation, the area was fenced to exclude livestock grazing. In 1983, TNC leased two 160-acre (64.75 hectare) private land parcels, one surrounding Borax Lake and the other immediately to the north. With the purchase of these two parcels by TNC in 1993, all lands designated as Critical Habitat were in public or conservation ownership. With the acquisition by TNC, diversion of water for irrigation and livestock grazing within designated Critical Habitat ceased. The BLM manages public lands around Borax Lake consistent with the Andrews/Steens Resource Management Plan (BLM 2005). The RMP provides

additional protection of Borax Lake Chub Critical Habitat by directing BLM to pursue the establishment of a conservation agreement or other cooperative agreement among BLM, TNC, USFWS, ODFW, or other private landowners to manage and protect the area for the recovery of Borax Lake Chub, including closing the area to livestock grazing, off-road vehicle travel, and limiting or closing vehicle access. In addition, TNC and BLM closed the area within the fenced enclosure (fully encompassing Critical Habitat) to livestock grazing (BLM 2005).

### ***3. Withdrawal of Borax Lake waters from appropriations***

With acquisition of Borax Lake by TNC, surface waters on their land cannot be appropriated. Additionally, in 1991, the ODFW filed an application for the water rights to Borax Lake for conservation purposes. The instream water right for Borax Lake is held in trust by the Water Resources Department for the people of Oregon. It is a certificate that will remain in place in perpetuity. It is different from a typical out-of-stream right, in that it does not need to be actively used once every five years to protect it from forfeiture. As long as Borax Lake Chub remain in the lake, the use is applied as intended in the water right and the right maintains itself.

Groundwater is not protected from extraction by filing of water rights on private lands. There are approximately 2,000 acres (809.4 hectares) of private lands within a three mile (4.83 kilometer) radius of Borax Lake. The relationship between groundwater extraction and the Borax Lake ecosystem has not been thoroughly assessed. Borax Lake is a fault-controlled geothermal system (Fairley and Hinds 2004). Detailed studies would be needed to provide a better understanding of the relationship between fault mechanics and groundwater hydrology (Fairley et al. 2003). A discussion of the potential threat of geothermal energy development on private lands within the Alvord Known Geothermal Resource Area and the adequacy of existing regulatory protections can be found in Scheerer et al. (2015b).

### ***4. Establishment of a fence around the 640-acre Critical Habitat parcel to prevent vehicle entry.***

The BLM and TNC constructed a perimeter fence in 2012, which enclosed the majority (>95%) of the designated Critical Habitat and closed the area within 109 yards (100 meters) of Borax Lake to motorized vehicle entry. The BLM also constructed vehicle barriers at locations along the existing roadways. A locked gate has been installed to limit vehicle access, which will be provided by permit only for administrative and special needs by agency personnel. These actions will reduce the threat of vehicular damage to the fragile lake shoreline.

### ***5. Establishment of monitoring programs to survey habitat and fish population status.***

Numerous studies of the ecology and habitat of Borax Lake have been conducted (Salzer 1992; Scopettone et al. 1995; Furnish et al. 2002; see Scheerer et al. 2012). TNC conducted abundance estimates from 1986 through 1997. ODFW conducted mark-recapture population surveys from 2005 through 2016, developed a survey



protocol, and recommended a long-term monitoring strategy (Scheerer and Jacobs 2005; Scheerer et al. 2012; Scheerer et al. 2015a; and Scheerer et al. 2016). ODFW also conducted surveys to monitor the condition of the lake's shoreline, outflow channels, and adjacent wetlands. Twelve photo points were established around the perimeter of the lake, temperatures were recorded, and disturbances were noted. To monitor the potential effects of future geothermal development that could occur within the aquifer that supplies water to Borax Lake, ODFW mapped the lake bathymetry and installed a water level monitor (piezometer) in 2011. ODFW acquired baseline data from 2011 through 2016, which describe the natural, seasonal variability in: 1) lake elevations, 2) the quantity, quality, and availability of habitat, and 3) the connectivity between the lake and wetland.

***6. Lack of any new threats to the species or ecosystem for five consecutive years. The natural integrity of the physical (e.g., temperature, flows, etc.), and chemical constituents of the spring feeding Borax Lake must be maintained.***

No new threats have been identified in the past five years.

### **3. Cooperative Management Actions**

To address threats to the long term persistence of Borax Lake Chub, the Cooperators propose the following actions: 1) Borax Lake Chub population monitoring; 2) habitat and shoreline monitoring; 3) water temperature monitoring; 4) lake level monitoring and management to assure ODFW's water right is maintained to benefit Borax Lake Chub; 5) public education/signage; 6) vehicle management and monitoring; 7) monitoring recreational use including boating and camping; 8) working together to protect Borax Lake from impacts related to geothermal development on nearby private lands including conservation easements or land acquisitions; and 9) emergency contingency needs.

#### **3.1 Bureau of Land Management**

The BLM will:

- Install educational signs on an interpretive kiosk at the designated vehicle parking area explaining to visitors the need to protect the lake, the fragile shoreline of the lake, and history of borax mining at the lake. Informational panels at the vehicle parking area will include reasons for closure, emphasize the importance of protecting the fragile shoreline, and need to minimize the risk of invasive species introduction from boats. The kiosk will be located approximately 0.4 mile from the old borax works on the west access road to the lake.
- Monitor the effectiveness of the perimeter fencing and gates in eliminating vehicular access to the lake and monitor compliance with the camping restrictions and boating bans.
- Coordinate with Cooperators to conduct site visits approximately two times per year to Borax Lake, to determine continued presence of Borax Lake Chub, to determine the

general health of the shoreline and local spring environment, and to identify threats that may necessitate implementation of the emergency contingency plan.

- Retain and manage the Borax Lake ACEC for protection and conservation of Borax Lake Chub.

### **3.2 Oregon Department of Fish and Wildlife**

The ODFW will:

- Provide input to other State agencies and local governments in permit evaluations. For example, the Oregon Department of Geology and Mineral Industries (DOGAMI) permits drilling of wells for exploration and development of geothermal resources. The DOGAMI process for permitting requires routing of application information to ODFW as well as other state agencies, the governing body of the county, and the geothermal heating district in which the well will be located for review and suggestions of conditions under which a permit should be granted in accordance with OAR 632-020-0032 and ORS 522.125. The DOGAMI shall consider any suggested conditions submitted by a public agency within the required 45-day period. ODFW will also provide information to BLM, TNC, and the USFWS concerning any new activities related to permit applications or land use requests for geothermal development.
- Actively manage and monitor lake elevation by blocking excess flow from the damaged outlets on the north and east sides of the lake to maintain the water right certificate issued to the ODFW for maintenance and management of the elevation of Borax Lake. The purpose of the water right is to assure that the water elevation is adequate to maintain habitat conditions for Borax Lake Chub and is limited to not more than necessary to maintain a surface water elevation of 4,081 feet above mean sea level. The amount of flow needed to maintain this elevation is approximately 2.0 cubic feet per second aggregate flow for maintaining the lake elevation. The certificate also requires the holder to measure and report as may be required by the standards of the Oregon Water Resources Commission.
- Coordinate with Cooperators to conduct site visits approximately two times per year to Borax Lake to determine continued presence of Borax Lake Chub and determine general health of the shoreline and local spring environment, and identify threats that may necessitate implementation of the emergency contingency plan.
- Obtain an abundance estimate every three to five years (as funding is available and the information is needed) to assess the long-term abundance trend of the population and determine whether action is needed to increase open water habitat.

### **3.3 U.S. Fish and Wildlife Service**

The USFWS will:

- Assist (advice or labor) BLM/TNC in habitat enhancement and monitoring activities as needed.
- Assist (funding, advice, and/or labor) ODFW in obtaining an abundance estimate every three to five years (as funding is available and the information is needed) to keep track of the long-term trend of the population and determine whether action is needed.
- Make efforts to provide funding to ODFW every three to five years or more frequently if needed, to assess the abundance and habitat conditions of the Borax Lake Chub. If Borax Lake Chub is delisted, the post-delisting monitoring plan will define the amount and duration of funding.

#### **4. Cooperator Authorities and Responsibilities**

**4.1** The BLM enters into this agreement by the authority provided through the RMP and the Steens Mountain Cooperative Management and Protection Act of 2000 (Steens Act). The Steens Act withdrew the Alvord Known Geothermal Resource Area mineral and geothermal resources from development to protect Borax Lake and surrounding areas from development. The BLM also has authority and responsibility under the Endangered Species Act. Section 7(a)(1) of the Endangered Species Act directs all Federal agencies, in consultation with and with the assistance of the Secretary of the Interior or of Commerce, as appropriate, to utilize their authorities to further the purposes of the Endangered Species Act by carrying out conservation programs for listed species.

**4.2** ODFW enters into this voluntary conservation agreement through its authority for the State of Oregon to manage and conserve native fish (and other legally-defined “wildlife”), including Borax Lake Chub, which is currently listed as endangered on the Oregon Threatened and Endangered Species List (Oregon Administrative Rules [OAR] 635-100-0125). Management and conservation authority (e.g., rulemaking to establish seasons, amounts, manner, fees, and penalties for taking “wildlife”) is provided to the Oregon Fish and Wildlife Commission and ODFW in Oregon Revised Statutes (ORS) 496.080 to 496.166, with additional authorities and responsibilities relative to threatened and endangered species found in ORS 496.171 to 496.192 and 498.026. Other management and conservation direction is found generally in ORS 496.012 and more specifically in the Native Fish Conservation Policy (OAR 635-007-0502 to 0509), Oregon Conservation Strategy (Oregon Conservation Strategy 2016), and other documents, as well as in Endangered Species Act section 6(c) cooperation and recovery plans. In particular, the Native Fish Conservation Policy requires the conservation and recovery of native fish in Oregon with a focus on natural production, emphasizing avoiding the “serious depletion” of native fish and maintaining native fish “at levels providing ecological and societal benefits” while not unnecessarily constraining societal resource use.

**4.3** The USFWS enters into this agreement by the authority provided through the Endangered Species Act. Section 7(a)(1) of the Endangered Species Act directs Federal agencies, in consultation with and with the assistance of the Secretary, to utilize their authorities to

further the purposes of the Endangered Species Act by carrying out conservation programs for listed species. Section 7(a)(2) of the Endangered Species Act requires other federal agencies to ensure any action carried out by the action agency is not likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of habitat designated critical for the listed species. The Endangered Species Act section 6 provides for cooperation with States in furthering the conservation of listed species and allows the USFWS to enter into cooperative agreements.

## **5. Monitoring and Reporting**

The Cooperators will provide reports of monitoring activities and results to the USFWS. The USFWS will compile and distribute the reports to all Cooperators and others as appropriate. The USFWS will coordinate an annual working group meeting for sharing information regarding the conservation of Borax Lake Chub and other fishes located in the desert environments of eastern Oregon. Reporting will be completed annually, or as needed dependent on the frequency of work completed.

## **6. Implementation Schedule**

The following outlines the timeline for implementation of each action:

### **6.1 Action 1: Monitor the fish population and habitat**

- The ODFW monitored photo points since 2005 and will continue to retake photo points every three to five years.
- The BLM and/or ODFW will monitor presence/absence of Borax Lake Chub during periodic (twice per year) visits to Borax Lake.
- ODFW will complete population and habitat surveys every three to five years, pending funding from the USFWS or BLM.
- The USFWS and BLM will request funds and personnel to assist in population and habitat surveys (every three to five years).
- The Cooperators will meet, at least annually, to develop a strategy for protecting Borax Lake from any potential nearby geothermal development which may affect Borax Lake, by establishing conservation easements and land acquisition.
- Typically, the USFWS provides post-delisting funding for monitoring for an additional five years after a species has been delisted. Funding to continue additional monitoring activities may also be requested.

### **6.2 Action 2: Protect and manage the habitat**

- BLM will maintain the Borax Lake Habitat in a designated ACEC for the protection and conservation of Borax Lake Chub.
- BLM will coordinate site visits two times per year, to review the status of Borax Lake and the Borax Lake Chub.
- BLM will develop and install educational signage on an interpretive kiosk (2015).
- The BLM will monitor the effectiveness of the gated perimeter fence on eliminating vehicular access to the lake (annual).

**6.3 Action 3: Enhance the habitat as needed**

- The BLM and ODFW will conduct, and the USFWS will assist with, habitat enhancement activities (e.g., hand clearing the channel between the lake and the wetland) to be performed approximately every 5 to 10 years, or as determined necessary by the Cooperators.

**6.4 Action 4: Emergency contingency plan**

The purpose of this section is to describe the steps that will be taken to temporarily secure Borax Lake Chub in the event their persistence is under immediate threat (e.g., from introduction of non-native fish, low lake elevations, or pollutants).

- 1) Identification of problem: The Cooperators will check for signs of an imminent threat during the monitoring or site visits described in the CMP.
- 2) Communication: If a threat is deemed immediate, all Cooperators identified in Table 2, or their proxy, will be informed, including the ODFW District in Hines, ODFW Native Fish Investigations Program in Corvallis, the BLM office in Hines, and the USFWS’s Bend Field Office. In addition, The Nature Conservancy’s Stewardship Program will be informed.

Table 2. Cooperating Contacts.

Agency/Office	Name	Position	Phone	Email address
ODFW Hines District	David Banks	District Fish Biologist	541 573-6582 Cell 541 589-1905	<a href="mailto:david.t.banks@state.or.us">david.t.banks@state.or.us</a>
ODFW Native Fish	Mike Meeuwig	Non-game Project Lead	541 223-1576	<a href="mailto:michael.meeuwig@oregonstate.edu">michael.meeuwig@oregonstate.edu</a>
BLM Andrews Resource Area	Jarod Lemos	Natural Resources Specialist-Riparian	541 573-4558	<a href="mailto:jlemos@blm.gov">jlemos@blm.gov</a>

USFWS Bend Field Office	Alan Mauer	Fish and Wildlife Biologist	541 312-6421 Cell 541 410- 4261	<a href="mailto:alan_mauer@fws.gov">alan_mauer@fws.gov</a>
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- 3) Actions: The Cooperators will coordinate to provide staff and resources to: 1) remove the threat to the Borax Lake Chub, or 2) trap and transfer Borax Lake Chub to a holding location (e.g., hatchery or temporary facility), remove the threat, return the Borax Lake Chub to the lake, and monitor for continuing problems.

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### **Personal Communication**

Meeuwig, M.H. 2017. Email message from Meeuwig to Mauer re/ population estimate for Borax Lake chub conducted in 2017.



**8. Signature Pages**

**8.1.. Bureau of Land Management**

**Borax Lake Chub Cooperative Management Plan**

IN WITNESS WHEREOF, each Party has caused this agreement to be executed by an authorized official on the date and year set forth by their signature



Rhonda Karges  
Andrews Resource Area Field Manager  
Bureau of Land Management

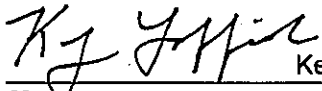


Date

**8.2. Oregon Department of Fish and Wildlife**

**Borax Lake Chub Cooperative Management Plan**

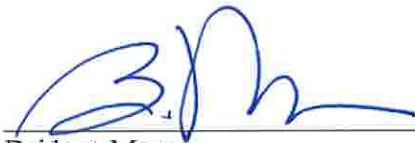
IN WITNESS WHEREOF, each Party has caused this agreement to be executed by an authorized official on the date and year set forth by their signature

  
Ken Loffink, for Shannon Hurn      6-6-18  
\_\_\_\_\_  
Shannon Hurn      Date  
Deputy Director for Fish and Wildlife Programs  
Oregon Department of Fish and Wildlife

**8.3. U.S. Fish and Wildlife Service**

**Borax Lake Chub Cooperative Management Plan**

IN WITNESS WHEREOF, each Party has caused this agreement to be executed by an authorized official on the date and year set forth by their signature



\_\_\_\_\_  
Bridget Moran  
Bend Field Office Supervisor  
U.S. Fish and Wildlife Service



\_\_\_\_\_  
Date

9. Figure 1. Map showing Borax Lake, Land ownership, ACEC, Critical Habitat, perimeter fence, and the access gate.

