

# DUCK VALLEY HABITAT ENHANCEMENT & PROTECTION

Final Annual Report 2000



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Bonneville Power Administration  
Environment, Fish and Wildlife Division  
P.O. Box 3621  
905 N.E. 11th Avenue  
Portland, OR 97208-3621

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**Duck Valley Habitat Enhancement & Protection**

**97011**

**Final Annual Report 2000**

**Guy Dodson Sr. - Project Director  
Vincent Pero - Principle Biologist**

**Shoshone-Paiute Nation  
Duck Valley Indian Reservation  
Department of Habitat, Parks, Fish and Game  
Box 219  
Owyhee, NV 89832  
208-759-3246**

### *Abstract*

*The Duck Valley Indian Reservations' Habitat Enhancement project is an ongoing project designed to enhance and protect the critical riparian areas, natural springs, and native fish spawning areas on the Reservation. The project was begun in 1997 with the hiring of a fisheries biologist and the creation of a new department for the Tribes. The project's goals are to protect and enhance the springs, Owyhee River, its tributaries, and to develop a database that can be used by other fisheries professionals which includes information on water quality and fish composition, health, abundance, and genetic makeup.*

*One habitat portion of the project is a focus on protection the numerous springs that provide clean, cool water to the Owyhee River. This will be accomplished through exclosure fences of the spring heads and water troughs to provide clean cool drinking water for wildlife and livestock. Another habitat portion of the project involves protecting headwater areas of streams with native fish populations. This is accomplished through exclosure fencing and riparian plantings on any eroded or degraded banks in the exclosure area.*

*Finally, we monitor and evaluate the areas protected and enhanced. This is accomplished through biological sampling for temperature, Oxygen, sedimentation, and measurements of water depth, bank height and undercut, and width of stream. With the habitat and biological indices we will be able to evaluate how well are protective measures are doing, and where to focus future efforts.*

## INTRODUCTION

The work in 2000 is a continuation of work in 1998 and 1999. We continue to develop the numerous natural springs on the DVIR. This includes enclosure fencing of the spring head and installation of water troughs for wild/domestic stock and wildlife, we have done maintenance on existing stock ponds, and maintenance on work completed in 1998/99. This project addresses NWPPC measure 10.8C.2, 10.8C.3, 10.8C.5 of the 1995 Power Act.

Also as part of work in 2000 we erected enclosure fences in critical headwater areas of streams that have been observed to have spawning populations of trout (Dodson and Pero 1998 unpublished annual report). The stream enclosure fences are approximately ¼ mile on each side of the stream sections. From work in 1999 we have observed that without disturbance willows and sedges seem to come back in the enclosure within one year. This work will be completed according to the Stream Corridor Restoration manual (1998 USDA).

In cooperation with the Tribes Environmental Protection Agency (EPA) program we have continued our water quality monitoring and assessments. This work involves testing of the major tributaries to the Owyhee River and the Owyhee River for dissolved oxygen, temperature, BOD, conductivity, and other pertinent biological factors. The majority of the water quality monitoring is accomplished using the Tribes EPA sampling plan. This plan is a working document and will be modified as the seasons progress in order to accommodate the great variety of streams, springs, reservoirs, ponds, and also the rugged terrain of the DVIR. The EPA program is responsible for much of the metals testing as well as testing for bacteria. The Tribes Fish and Game Department is responsible for the biological testing. The EPA share of the testing is funded through the Clean Water Act (Sec. 106) and the Fish and Game testing will be funded through this program.

As in 1999, we conducted fish population estimates and determine areas that have spawning populations of native fish. This work will be coordinated with the Assess Resident Fish Project in 2001. We will conduct visual counts of redds and spawners, and then conduct snorkel surveys of these streams to determine egg – parr survival and get an estimate of young-of-the-year trout in the streams. This work will help us to determine and set management objectives for the Owyhee River and its tributaries.

All of the DVIR is in the Columbia Basin and there are currently no documented threatened or endangered (T&E) fish species on the reservation. We will be in contact with National Marine Fisheries Service (NMFS) should we discover any T&E species. As part of this project we are also working with the U.S. Forest Service (USFS) and U.S. Fish and Wildlife Service (USFWS) to determine if any T&E species are present and to what numbers they are present.

## **METHODS**

### *1. Identify and protect spawning areas*

This objective is to determine where fish are spawning in the numerous streams on the DVIR. This work is a continuation of work begun in 1998/99. Streams will be surveyed and visual observations made and noted of where fish are spawning, water temperature, habitat condition, and water quality. Once these areas are identified, enclosure fences will be erected as needed, depending on present conditions of the area. If habitat is degraded and water temperatures exceed recommended levels protective measures will be implemented. These measures (also objective 2) include fencing of the riparian area, planting with willows and native grass seed.

These plantings and fencing will:

- Lower water temperatures
- Decrease sedimentation
- Increase bank stability
- Increase survival of juvenile trout

### *2. Enhance and protect stream habitat*

This objective provides many benefits to both fish and wildlife. In protecting critical areas we provide lower water temperatures, decreased sedimentation, increase of juvenile survivability, increased bank stability, as well as an increase in aesthetic value. Much of the habitat on the DVIR is in near pristine condition. However, there are areas in some of the headwater streams that are in need of protection and some enhancement. These streams will be determined as with objective 1 on where fish are spawning, present habitat condition, accessibility, and water flow (ephemeral, perennial). The benefits are to provide clean and cool water for the fish and wildlife on the DVIR.

### *3. Protect and repair natural springs*

The many natural springs will be fenced to protect these vital riparian areas from trampling by domestic and wild animals as well as humans. These areas provide a source of clean, cool water to the Owyhee River and streams on the Reservation. These areas will have a small (appr. 50yd X 50yd) fence erected around the area of the spring where the water exits the ground. PVC pipes will be placed in the spring and run to a water trough to supply water for stock (domestic/wild), and to keep them out of the spring area. Existing springs that are already fenced will be monitored (temps, biological information and metals testing) and maintained as needed to ensure this work is providing the desired outcome (clean, cool, free flowing water).

The monitoring and evaluation of this objective will be accomplished with the help of the Duck Valley Cattlemen's Association. They will aid us in determining which springs and windmills are in most need and also help in maintaining them once they have been repaired.

### *4. Collect water quality and fisheries data from streams and river*

In cooperation with the Tribal EPA program we will collect water quality data in the Owyhee River, Tributary streams to the river, and the reservoirs on the DVIR. This information will be used to help support management decisions and objectives. Work

will be done for approximately 6-8 weeks during the summer months. In working with the EPA program we will ensure the most efficient use of time and money and avoid any duplication of effort in sampling.

This objective also includes collecting fisheries data from these streams and the river. Work will include walking of streams in the spring to observe fish spawning and complete redd counts. Follow up work will include summer snorkel surveys to estimate egg-parr survival. In the late summer we will electro-fish many streams to obtain population estimates. These estimates will help in determining management decision as well as aid in giving priority to certain streams for habitat enhancement/restoration.

#### 5. *Work with Owyhee Schools*

This goal is to get the youth of the DVIR involved in environmental issues while giving them some on-the-job experience in an environmental project. In 2000 we had the biology class involved in sampling and recording data, analyzing data and interpreting the results. We will work with both the environmental club and with the biology class. With the help of the biology teacher for half the school year (he departed early), we went out and electrofished streams, collected temperature and O<sub>2</sub> data on the streams, planted trees at the reservoirs.

#### **Results:**

##### **Identify and protect spawning areas**

##### **Enhance and protect stream habitat**

In 2000 we looked at 7 streams where through visual observation of staff and others we gathered the following information. For the results section we combined tasks one and two. They both include habitat enhancement and monitoring of the streams on the DVIR. One includes spawning area protection and the other includes other areas for protection (ie. Headwaters).

##### **Papoose Creek:**

This creek is a small intermittent stream that is approximately 5 miles in length and begins in the high elevations and flows into the Blue Creek Wetlands area. Fish have been observed in previous years in the headwater areas.

In early March 2000 temperatures were near 40 degrees F. In late summer the stream goes dry in the lower elevations and has intermittent pool areas in the high elevations. This stream has a spring protected near its headwaters to try and keep more water in the small pools. This stream is slated for genetic work in 2001 to determine if any redband trout are present.

Future work:

Monitor this stream in early spring for signs of spawning. Continue water temperature and quality monitoring.

##### **Otter Springs Creek:**

This creek is a small 2 mile long creek that begins at a spring protected in 1997 and flows into a small irrigation reservoir. The creek has water temperatures in the low 40 degree F

range in May. The stream flows year round and the head water area is protected by an enclosure fence. Through previous sampling we have found rainbow/redband trout in the small reservoir but have yet to see fish in the stream. Temperature and O2 levels (8-10.5 ppm) are suitable for redband survival and reproduction (Leary et al. 1983).

Future work:

Monitor stream for spawning signs, water quality. Conduct genetic evaluations on fish in reservoir and stream

**Fawn Creek:**

Fawn Creek is a high mountain perennial stream that begins off the DVIR on USFS land at an elevation of approximately 8,000' and enters the Owyhee River at 5500'. The stream begins in numerous springs and enters the DVIR on the Southwest side. It flows through a highly degraded area due to cattle grazing and roads. Despite the degradation, fish populations appear to be high with 4 age classes of redband present. Riparian habitat is poor through the majority of the stream especially below 6500' elevation. Water temperatures ranged from a high of 79 F to a 90 F when it enters the Owyhee River in 1999. In 2000 water temperatures near the higher elevations were in the high 50's (58 degrees F) to the low 60 degree F range. Fish were observed throughout the stream in early August 2000. All age classes were present from fry to age 4 class trout.

Future work:

Continue monitoring of water quality. Continue spawning surveys. Conduct genetic work.

**Skull Creek:**

Skull Creek is a high mountain perennial stream that begins on the DVIR at numerous spring heads on the east side of the DVIR. The stream begins at about 7500' elevation and enters the Owyhee River at about 5500'. The stream has excellent fish populations with 4+ age classes present. Water temperatures range from 77 F to a high of 90+ where it enters the Owyhee River. The stream has been degraded through livestock over use in some of the headwater areas. Enhancement measures (exclosure fence at headwater springs) have taken place in early 1999. In early March 2000 water temperatures near the mouth were 38-40 degrees. In mid-July 2000 water temperatures were in the mid to upper 50 degree range. A considerable change from 1999 water temperatures, likely due to the exclosure fencing near the head waters.

Future work:

Continue monitoring of water quality and exclosure fence area. Continue spawning surveys.

**North Fork Skull Creek:**

The N. Fork of Skull Creek is a 5+ mile fork of the Skull Creek that enters from the North and begins in the high elevations (6500' +) and flows through a deep canyon into Skull Creek about 2 miles from the mouth of Skull Creek. Riparian areas in N Fork are in excellent condition due to the inaccessibility of the stream. Cattle can not get into the canyon area of the stream and water temperatures are in the range of 52-56 degrees F in mid July and Oxygen levels ranged from 7.4 – 11 ppm. This is the first year work has been completed on this stream by our department. Presence/absence information was collected in July and will be included in the “collect fisheries data” section below. This stream is slated for genetics work in 2001 and more information on the habitat and water quality will be available at that time.

Future work:

Continue water quality, habitat, and fisheries monitoring and data collection.

**Summit Creek:**

Summit Creek is an intermittent stream that flows into the Owyhee River from the west side of the Reservation. It begins in the higher elevations at about 4-6 springs. The stream goes almost dry in early July with only small pools at various spring sites being present. This stream flows through a small narrow canyon which precludes livestock from damaging much of the riparian areas. This stream has not had much work or data collected on it. However in early August 2000 biologist and staff hiked the entire length of the stream and located trout fry at various pool locations on this stream. The pools were located at the sites of springs entering the stream bed.

Future Work:

Continue water quality, habitat, and fisheries monitoring and data collection. Protect springs entering the stream to help maintain water temperatures and flows.

**Little Sheep Creek:**

This stream begins at the high elevations and eventually flows into Sheep Creek Reservoir. The stream flows year round, however in many locations goes sub-surface. In late July 2000 adult trout (12-17” length) were sampled in the lower portions of the stream. Water temperatures were in the mid-high 70’s early in the morning and raised to over 80 degrees F by mid- afternoon. Riparian areas are heavily damaged by livestock grazing in the lower portions of the stream. The upper areas of the stream are in better condition however, the limiting factor appears to be water flow in the upper half of this stream. Trout have been observed spawning in the first 3-4 miles of stream. The upper 3-5 miles has not been sampled in early spring for signs of spawning. This stream is slated for genetics work in 2001. More data will become available after this work is complete.

Future work:

Continue water quality, habitat, and fisheries monitoring and data collection. Protect springs entering the stream to help maintain water temperatures and flows. Focus work on upper 3-5 miles of stream.

## **Protect and repair natural springs**

During 2000 the Habitat, Parks, Fish and Game Department protected 5 natural spring heads and and three headwater areas of possible redband trout streams.

The springs were protected by erecting an exclosure fence approximately 25yards x 25yards (depending on number of spring heads and size of springs) square. A black plastic pipe (1 ½") is run from the spring head outside the exclosure fence and into a 250gallon water trough (USFS specs).

Photos are taken of the site prior to work and also upon completion in order to monitor the site in the future. Water temperature and flows are recorded entered into tribal records.

The following natural springs were either protected with exclosure fences or had water troughs added to them or both troughs and fences. This was done to help keep livestock and domestic animals from trampling these areas. All springs protected in 1999 are located at the headwaters of streams. Most streams are intermittent streams and our hope is that by protecting these vital areas we will be able to improve water quantity and temperature in these streams. According to work completed by the Idaho BLM (Zoellick personnel communication) many intermittent streams in the lower East Fork Owyhee subbasin are spawning areas for native redband trout.

### **Springs Protected 1998:**

<u>Spring Name</u>	<u>Location</u>
WM1	Willis Meadows
U3F	Upper 3 Forks (Mary's, Papoose)
OS1	Otter Springs Creek headwaters (2springs)

### **Springs Protected 1999:**

<u>Spring Name</u>	<u>Location</u>
CN1 & 2	Cranes Nest (2 sites protected)
HMC1	Watchabob
WB1	Watchabob
BCHW1	Boyle Creek headwaters
TVT1	TV tower
LSC1	Little Sheep Creek headwaters
LSC2	Little Sheep Creek headwaters
HFC1	Headwaters Fawn Creek
WG1	White Gate
WG2	White Gate
SC1	Summit Creek headwaters

ASI1

Antelope Springs

**Springs Protected 2000:**

<u>Spring Name</u>	<u>Location</u>
BCHW2	Boyle Creek headwaters
BCHW3	Boyle Creek headwaters
WM2	Willis Meadows enclosure
WM3	Willis Meadows
WM4	Willis Meadows
SS1	Stranger Springs

**Springs Proposed for Protection 2001/2002:**

- \*Headwaters of Miller Creek (fence)
- \*No-Name Reservoir (fence & trough 5acre)
- \*Summit Creek (fence riparian area ½ mile 2 locals)
- \*Circle Creek Reservoir (fence & trough)
- \*N. Fork Skull Creek (fence spawning areas)
- \*\*Bell Creek Headwaters (fence & trough)
- \*\*Three Forks (riparian area fence & trough)
- \*\*Mud Flats Springs (fence)

\*\* if money and time available

\* priority

The above springs have been protected with enclosure fencing and water troughs. Pictures were taken and GPS readings taken and applied to maps (attached).

**Future Work:**

Continue monitoring and evaluation of springs. Conduct annual maintenance of fencing and water lines to check for damage or problems.

**Collect water quality and fisheries data from streams and river**

In cooperation with the Tribal Environmental Protection program the Wildlife and Parks Department collected water quality data from the Owyhee River (East Fork) and from 6 main tributaries to the Owyhee River. Temperature, dissolved O<sub>2</sub>, Conductivity, and Ph were the main biological components collected. Along with these indices, fisheries data was collected on these same streams as well as the inlets to Mt. View and Sheep Creek Reservoir. Water quality data is located in figure 4 of this report and fisheries data and water quality information for each stream sampled in 2000 is included in narrative form below.

#### Fawn Creek:

See methods section on identify and protect spawning areas/enhance and protect stream habitat for description of stream. Fisheries information collected in 1999 and 2000 amounted to presence absence information on trout species. Population information was collected in 1998 and will be conducted again in 2001 in correlation with the Tribes genetic study. Fawn Creek populations ranged in 1998 from 100 fish/100 yards and roughly the same in 1999 and 2000. Four age classes of fish were present in 1998/99/2000. In 2000 sampling numerous trout fry were collected in all areas of the stream. Work in 2001 will include trying to locate spawning areas and protecting them, however, it appears that there is no problem with reproduction success in this stream and the best management may be to leave these areas alone during spawning. Other species captured were sculpin and reidsided shiner.

Water temperatures range from a high of 79 F to a 90 F when it enters the Owyhee River. Despite these temperatures redband appear to be thriving in this stream.

#### Skull Creek

See methods section on identify and protect spawning areas/enhance and protect stream habitat for description of stream

Presence/absence information completed in 2000 in preparation for 2001 genetics study. Locations will be include in 2001 report and in genetics reports.

As in Fawn Creek 4 age classes of fish were present.

#### North Fork Skull Creek:

See methods section on identify and protect spawning areas/enhance and protect stream habitat for description of stream sections and topography.

In early July 2000 three sections of N. Fork were sampled using Smith Root electrofisher. Approximately 50 foot sections of stream were sampled. The upper section of stream was the most productive with 20 fish in length from fry (<2") up to 6 1/4" being collected in 50 foot of stream.

The next section sampled contained 12 fish in size from fry up to 7 1/2" being collected. The lower section, close to the mouth of the N. Fork (were it meets the main fork), 10 fish were collected, ranging in size from 4-7" in length. This stream is in excellent condition and we suspect it will be one of the streams on the DVIR containing native redband trout.

#### Summit Creek:

In early August 2000 biologist and staff hiked the entire length of the stream and located trout fry at various pool locations on this stream. The pools were located at the sites of springs entering the stream bed.

These streams will be part of a genetic study in 2001. Populations will be taken during this study and correlated to these numbers. This work will be compared to new work in order to better assess how the habitat program is helping fish populations in these streams.

**Future Work:**

Conduct population estimates on other streams of the DVIR. Continue to monitor these streams for fish population changes. Evaluate habitat conditions on above streams and other streams where fish surveys occur. Coordinate this work to genetic inventory to take place 2001.

**Conclusions:**

The spring protection/developments appear to be lowering water temperatures in streams sampled thus far. Data is currently being analyzed and will be included in future reports. Exclosures photos will be included in Final Report as will recommendations for monitoring and evaluation of exclosure areas. NRCS of Idaho and Oregon have recommended either, cutting or allowing grazing in exclosure areas to help prevent smothering of spring areas to allow better re-growth of native grasses. These recommendations will be evaluated and implemented in 2001/2002. The riparian areas of streams that have headwater areas protected will be evaluated through the genetics project in 2001. Data will be included in 2001 Annual Report for this project and the Assess Resident Fish Project.

The fisheries data and information collected is very valuable in it has helped us locate areas for protection/enhancement and has given us information on locations of trout species for work in 2001 and in the Assess Resident Fish Project. Data collected in that project and this project will be included in 2001 reports.

The area that is lacking is our work with the schools. This is very difficult with the inconsistency of teachers being present throughout the year. We have done well working with the environmental club and during the summer, however, it has been difficult to complete year round projects with the students. Work completed to date has included sampling fish and water quality on many streams, riparian plantings and tree plantings, and gill netting on the reservoirs. We hope to begin projects with the students during the fall of 2001.